

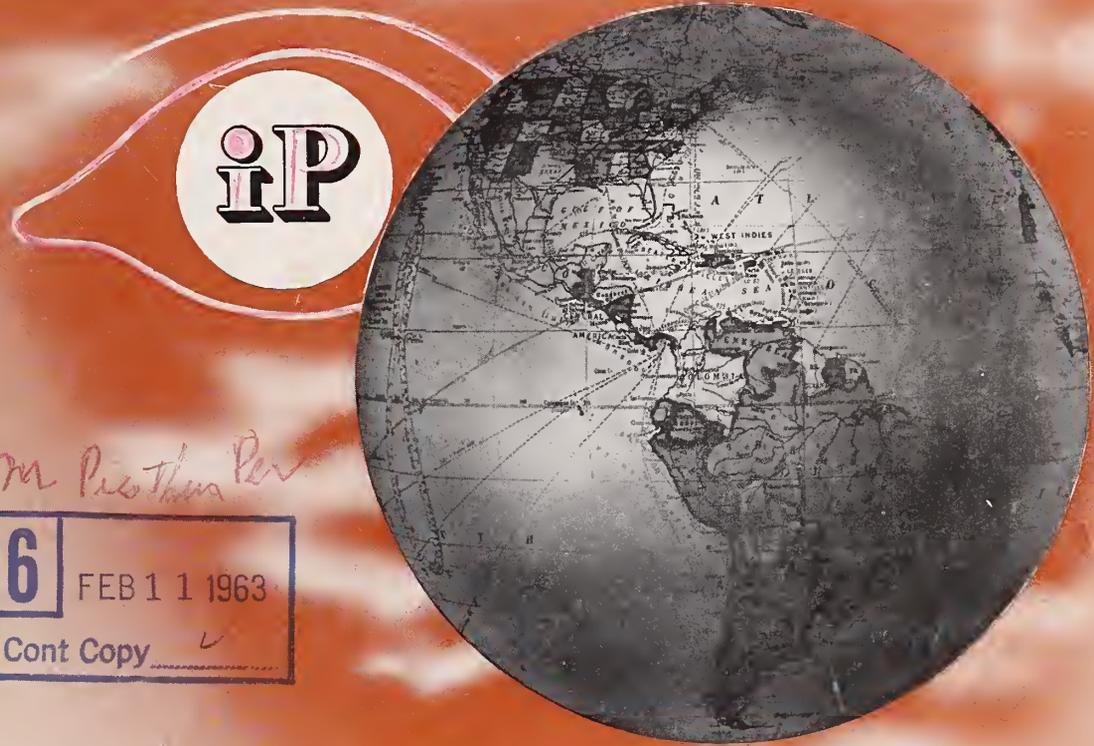
Scanned from the collections of
The Library of Congress



Packard Campus
for Audio Visual Conservation
www.loc.gov/avconservation

PROJECTIONIST

INTERNATIONAL



M. P. ...

6 FEB 11 1963
Cont Copy ✓

JANUARY

1963

VOLUME 38

NUMBER 1



40c A COPY

\$3.00 A YEAR

Washington 25, D.C.



Investment Opportunity

He's going to be your best salesman thirty years from now.

It's going to take a lot to make him that. A lot of care, a lot of love, a lot of training. A lot of money.

The kind of world he grows up in is important too. A strong and free America will be essential to his future, as it is to ours right now.

Our country needs investors, just as your own company does—to develop that star salesman of tomorrow, and thrifty, self-reliant employees today. That's why America's business leaders invite you to follow their lead in promoting the Treasury's Payroll Savings Plan for U.S. Savings

Bonds. When you bring the Payroll Savings Plan into your plant—when you encourage your employees to enroll—you are investing in that salesman of thirty years from now. In the chemists who will develop your new products. In the weavers, puddlers, drillers, assemblers who will make the products. You are investing in America's human resources. In America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U.S. Savings Bonds Division, Washington 25, D. C.



in your plant... promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**

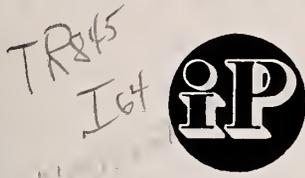


The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

International Projectionist

INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 January, 1963 No. 1

FRANK W. COOLEY, JR.
Editor and Publisher

MIDWEST OFFICE
1645 Hennepin Avenue
Minneapolis 3, Minnesota

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO
General Manager
Associate Publisher

EAST COAST OFFICE
545 Fifth Avenue
New York 17, N. Y.
Murray Hill 7-7746

IN THIS ISSUE

Projectionist News	4
Improvement of Theatres	5
By D. E. HYNDMAN	
Up-Dating the Disc Reproducer	6
By ROBERT A. MITCHELL	
Arc-Lamp Demonstrations	8
Automatic Projection	14

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dowson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

Lip Service to Good Projection

The late Harold B. Franklin, when he was president of the West Coast Theatres, published a book on motion picture theatre management, which had this to say about projection.

"Good projection is the heart of a motion picture theatre. Without a clear picture, with proper intensity of light, all the management's efforts are in vain."

In other words, no matter if the theatre owner picks and chooses from the available product supply those attractions suited to his patrons; the clean, attractive and comfortable surroundings; courteous service by the theatre personnel; effective exploitation and advertising in the city or community, all those efficient showmanship things go out the window if the theatre does not have good projection, with up-to-date equipment for the craftsmen in the theatre's booth.

Many progressive circuit heads and individual theatre owners have long agreed that without good projection the management, no matter how sufficient, is useless. And the reason we quoted Franklin about good projection is because he rose through the ranks—usher to theatre manager to general manager of Shea's Theatres in Buffalo, to general manager of Publix Theatres and finally to president of West Coast Theatres.

Still, many exhibitors who have out-dated equipment think they can go along buying expensive pictures—in these days theatres can't book low cost attractions—and the patrons are cheated out of the modern techniques the film maker puts in his picture at great cost.

There's now a rising trend to build new theatres and do major remodeling of existing theatres, so that the old and neglected theatres with worn-out booth equipment will have to get new projectors, arc lamps, and sound systems or face dwindling patronage.

So maybe the day will come for projectionists to have modern projectors, arc lamps, sound systems and all the necessary accessories—and the sooner the better.

Of course the projectionist who works with old equipment will have to be on his toes, with the know-how about the up-to-date projectors, lamps and sound systems.

The theatre owner, having spent thousands of dollars for new booth machines, has the right to demand that his projectionists operate the new equipment efficiently.

The manufacturer or the dealer says the new equipment will get all the details out of the print, with a rock-steady picture, more light on the screen and with quality sound. So the theatre owner won't be satisfied unless it's the best picture he has ever seen, and will blame the projectionist if it isn't perfect. (The projectionist crew should insist the installation man get things right, and give a demonstration to the exhibitor on screen.)

The theatre owner also has the right to ask the projectionists to keep machines oiled, cleaned, with the proper maintenance for all the equipment in the booth. Rightly, the exhibitor expects the new equipment to last for years, otherwise he has a bad investment, for projectors, lamps and sound systems are costly to buy.

This is a challenge the top craftsman will relish. After all, the projectionist has great respect for his machines, because he well knows that without the efficient tools

(Continued on Page 3)



Albert S. Johnstone Dies; Was IATSE Vice President

NEW ORLEANS—Albert S. Johnstone, fourth vicepresident of the IATSE, died Jan. 2 following surgery here. Although in poor health for several years, he had continued to handle a full schedule of union assignments prior to entering a hospital several days before.

A native and lifelong resident of New Orleans, Johnstone was educated at a private high school there and at Tulane University. While still in school, he became a rewind boy at a movie house and later a projectionist. For two years beginning in 1928, he traveled for ERPI, the predecessor of Altec Service Corp., installing sound equipment and instructing in the use of it.

A member of New Orleans Operators Local 293 since 1914, he became secretary two years later and served as president almost continuously from 1919 until the time of his death. In the course of his career, which began when only two of the city's theatres were organized, agree-

ments were reached with virtually all of them.

Johnstone was appointed an IA international representative in 1943 and was elected a vicepresident in 1954. Survivors include his wife, Mary, and two daughters. **iP**

Loew's Building Theatre in Suburb of Washington

NEW YORK—Arthur M. Tolchin, assistant to the president of Loew's Theatres, announced here that his company is building an 800-seat stadium type theatre in Springfield, Va. (a suburb of Washington, D. C.).

The new theatre will be erected in the Towers Plaza Shopping Center, located at Shirley Highway and Edsall Road.

The theatre will be known as Loew's Springfield, with the latest developments in screen projection, sound reproduction and modern automatic air-conditioning. In addition there will be substantial parking facilities.

Loew's Springfield is expected to be ready for operation in early 1963. **iP**

Camera Mart Sets Up Film Editors Seminar

NEW YORK — The first annual film editing workshop-seminar of the Camera Mart, a New York company specializing on sales, service and rentals of motion picture and television equipment, is set for Oct. 7-11, 1963, it was announced by Samuel "Chick" Hyman, president of the company.

The workshop-seminar for film editors will concentrate on the specialized film editing practices and problems encountered by industrial in-plant, university and government agency film editors.

All aspects of film editing will be covered during the five-day program, through technical demonstrations, general lectures, workshop sessions on practice editing projects. In addition, participants will visit well known New York film editing facilities.

Browning Memorial Award

Mr. Hyman also announced the Camera Mart's sponsorship of the "Irving and Sam Browning Memorial Award" to promising university film production students. Participating in this award are the motion picture departments of New York University, the City College of New York, and Columbia University.

The motion picture departments heads at each of these three universities will designate the student they believe has shown the most promise. Each of the students chosen will be given an award by The Camera Mart worth \$150 towards the rental of professional motion picture equipment. The first series of three awards will be granted in June, 1963. The award is a memorial for the two founders of The Camera Mart, Irving and Sam Browning. **iP**

ELECTED FOR 26TH TIME

NEW YORK—Morris J. Rotker, a projectionist for 51 years and now secretary to Judge Sidney H. Asch in the Bronx Municipal Court, has been reelected treasurer of his Masonic Lodge for the 26th time. **iP**

Projectionists Club Plays Santa For Ill Kiddies in N.Y. Hospitals

NEW YORK—Harry Garfman, the Brooklyn and Queens business representative of the M. P. Operator's Local No. 306, and members of the Movie Social Club of Kings County, spent their Christmas week visiting children's wards in Brooklyn public hospitals distributing toys and other gifts with presentations of movies and live entertainment to sick and needy youngsters.



Harry Garfman of MPO 306 and youngsters in Brooklyn hospital wards.

Garfman and the Club—made up of about 300 projectionists of Local 306—have played Santa Claus for the 20th consecutive year to underprivileged children confined to hospitals.

The Club, a humanitarian organization, in addition to their yearly Christmas effort, has conducted many fund-raising campaigns for juvenile illnesses.

Its current effort is on behalf of Dr. Joseph B. Pincus, the director of the Department of Pediatrics of the Jewish Hospital. Dr. Pincus has recently established a clinic for the treatment of cystic fibrosis, diabetes, epilepsy and other dreaded childhood diseases.

Harry Garfman, who is executive director of the Movie Social Club, and the members of the Club, have a fund-raising campaign for the support and enlargement of the clinic. **iP**

HOW CAN MOTION PICTURE THEATERS BE IMPROVED?

D. E. Hyndman, Assistant Vice President
Eastman Kodak Co.



In making suggestions to theater owners, I have the great advantage of not owning or operating a theater. This permits me to suggest almost anything that seems worthwhile without any financial penalties in case I am wrong. I hope you will keep my privileged position in mind throughout this article.

Perhaps we might just pause for a moment and philosophize on the things that, I think, motivate attendance in motion-picture theatres.

One of the great characteristics the motion picture has is its ability to transform one—in the twinkling of an eye—to another world. The minute you walk in off the street and sit down, you can forget what city you are in, what problems you have, what problems the world has, by *identifying* yourself with the activity on the screen. TV with its smaller screen and generally more distracting ambient atmosphere will *never* be able to do it. The *very good* mind can approach this with TV or by reading a good book but no medium can so engage the participant as the motion picture shown in a good theater.

We might consider the advance of the motion-picture industry during the great 1932 depression. People flocked to see Dick Powell and Ruby Keeler in "42nd Street." They flocked in to achieve 90 minutes of relaxing participation in someone else's escapades. The minute they walked off the streets they were in another world and the silver screen took them into this other world.

People Want to be Absorbed

During World War II the millions of men on duty around the world achieved a few minutes "Change of Pace" through the films that were shown to them—and they stood in line for a good long time to get into the over-crowded base theaters to do it.

What I'm trying to say is that

ED. NOTE: Mr. Hyndman echoes the pleas of projectionists for lo these many years as he goes directly to the exhibitors at the National Allied convention in Cleveland. His remarks emphasize the need for updated theatres to permit the technicians to do the job required of today's patron.

people want to become completely absorbed with what is going on before them on the screen. Regardless of their mental capabilities, the motion picture is capable of achieving a sense of participation far greater than any other medium I am aware of.

Theater owners must nurture this capability by presenting the film in its optimum manner. They must not place any roadblocks in the way of the theater goer that will impede his transformation from the harassed businessman, housewife, student, teen-ager or whatever he was when he walked in.

If owners do throw these roadblocks in my way, they are going to lose me as a customer.

I like movies and manage to see about a hundred or more every year. But I am selective as to the theater I attend. I don't like roadblocks—I don't like to break my bones finding a seat: I don't like to sit in a broken-down seat: I don't like to smell rancid butter and the like—nor does anyone else when he has paid for comfort. A theater must be a pleasant place to congregate with others, with people who really want to go to the movies.

Location is Important

Sometimes the best way to improve a theater is a very radical one. It consists in moving it from an undesirable location to a more suitable and promising location. Any owner who does this should carefully survey possible theater locations in his town or city getting the best real-estate advice which is available. The theater should be placed near a modern and growing center of population. There are some strategic neighborhoods where large numbers of important apartments or housing developments are being erected. Being as close to these as possible is a good idea. Furthermore, shopping centers are often attractive locations for a new theater. A great many people are drawn to a shopping center. Many of them find that they have some time to spare and will drop into a theater to enjoy the show and rest their aching feet. A big plus in a shopping center is the large available parking area.

But a successful theater requires more than a good location. It needs modern, efficient, and properly maintained equipment. The best available projectors are excellent devices and capable of throwing a large, bright, and sharp, steady picture on a good-size screen. Economy in picture brightness or sharpness is indeed foolish since the picture is the major part of what the exhibitor has to sell his audience. The screen and its surroundings are also of major importance. Modern and capable theater architects surround the screen by framing, luminous or otherwise, in such fashion as to make the picture blend into its surroundings thus increasing naturalness. This is also a good idea since the theater conditions are quite different from those in regular television viewing in the home. And theater exhibition should not resemble home entertainment if it is to attract a maximum audience.

It is very important that the quality of sound in all parts of the house be excellent. This means that the theater, possibly with some new acoustic treatment, must have the right amount and type of reverberation. Sound levels must not be too high—a common failing in many theaters. Speech and musical reproduction must be of the highest quality even for people with somewhat impaired hearing, so that they can understand all the dialogue and enjoy musical accompaniment.

General Environment Should be Pleasant

Needless to say, the refreshment section of the theater lobby should be attractive but not garish. And it should not give the theater an amusement-park atmosphere, but rather emphasize the comfort and convenience aspects. That is, it should be readily accessible, but not obtrusive.

Particular care is required for the marquee, and lobby displays. Often these are "busy," fussy, and confusing. One main theme should be emphasized and everything kept subordinate in these displays so as to avoid confusing the prospective customer.

The general environment in the

(Continued on Page 18)

Updating the Disc Reproducer

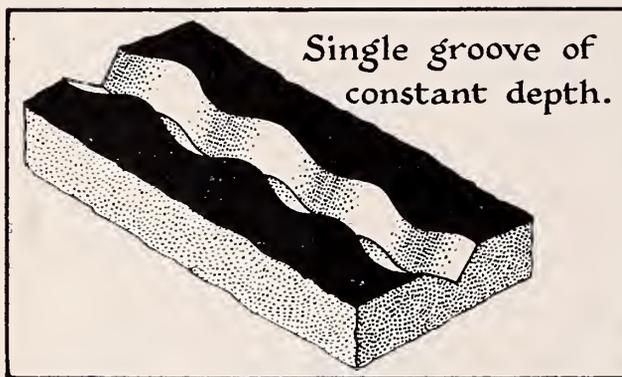
By ROBERT A. MITCHELL

PROJECTIONISTS are no strangers to the use of phonograph records for overture and intermission music in the theatre. The projectionist not only plays the records on a turntable in the projection room, but is usually responsible for selecting the appropriate musical

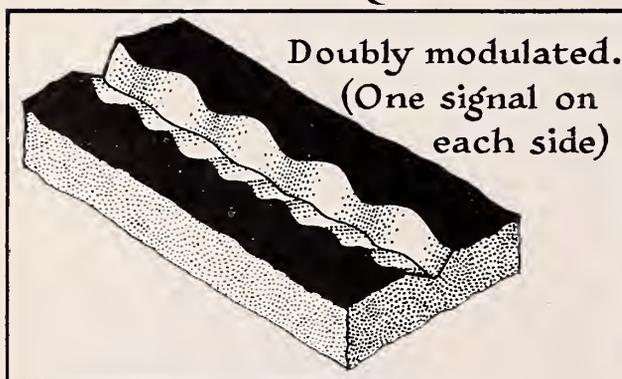
numbers to use with each film program that comes along.

Recorded music is admittedly "canned," and hence lacking in the "immediacy" of live musicians performing in the orchestra pit, but it should be remembered that the motion-picture is itself canned entertainment in the sense that it has been pre-recorded and worked up into a finished product before being presented to the public. There is thus no disparity in character between the recorded music played before the motion-picture presentations, or during intermissions, and the audiovisual entertainment on the screen.

The advantages of recorded music are its ready availability in the widest possible variety, its offerings of music played by accomplished artists employing the finest instrumental means, and its technical excellence when reproduced by suitable equipment through modern theatre sound systems. And compared with the cost of live talent, records are inexpensive.



MONAURAL



STEREOPHONIC

FIG. 1—An ordinary phonograph record (monaural) has a constant-depth groove that varies from side to side in accordance with the recorded sound vibrations. There is thus only one sound signal in the groove. A stereophonic record, on the other hand, carries one signal on one wall, of the groove and the other signal on the other wall, the two sets of variations being separated by an angle of 90 degrees. The combination of two channels of sound causes the depth as well as the lateral position of the groove to vary.

Incidental Music Indispensable

Only the very largest theatres can afford an orchestra in the pit or an organist to evoke musical magic from the pipes of the "Mighty Wurlitzer." Other theatres must have recourse to recorded music for the pleasure of the audience and to establish the appropriate moods for maximum enjoyment of the pictures. A theatre without music during the pre-show and intermission intervals seems rather "barren"—an atmosphere too cold to encourage frequent attendance. Incidental music cannot be neglected by any theatre management that aims to please its patrons and remain in business.

Phonograph records have been used in movie theatres ever since the inception of the electrical process of recording and amplifying sound (about 1925). Silent movies reigned supreme in the '20's, but some of the very smallest theatres found it advantageous to substitute electrically amplified phonograph records and special musical transcriptions for the tinkling nickelodeon piano. More prosperous theatres nevertheless retained "live" music because it could be perfectly keyed in mood and tempo to the action on the screen. This was particularly true of theatres having wondrous orchestral pipe organs which ordinarily cost much more than the most expensive projection equipment. Indeed, the organ was so popular that it continued to be played during intermissions in many theatres long after talking

pictures had banished the glamorous poetry of silent pantomime from the screen forever.

Speech came to the screen with astonishing suddenness, and in two distinctly different media of sound recording. One form of the screen's new-found voice was the 33 $\frac{1}{3}$ -RPM Vitaphone disc record which ran in synchronism with the film on a turntable geared to the projector motor. The other was, of course, the photographic soundtrack printed on the film alongside of the picture.

Projectionists thus spoke of "sound on disc" and "sound on film" in the early days of talkies—the days when critics of the new sound movies grumbled that Hollywood lost its brains when it found its voice. And to distinguish the reproduction of *synchronous* sound on disc for the audio accompaniment of a movie from the ordinary *non-synchronous* musical recordings played before the show, the ordinary phonograph for commercial 78-RPM discs was called a "non-sync." This obsolete term is still used to some extent.

33 $\frac{1}{3}$ -RPM Discs Now Preferred

78-RPM phonograph records held the field for musical recordings in spite of the fact that 33 $\frac{1}{3}$ -RPM discs had been used for the Vitaphone talkie records and for radio transcriptions. The old Victor Talking Machine Co. made a valiant attempt to introduce musical 33's for home use, but without much success. Incidentally, all these early 33 $\frac{1}{3}$ -RPM discs were made with the same 3-mil grooves used for 78's, not the finer 1-mil "microgrooves" now used for long-play records, and they started playing at the inside groove and ended at the outside rim.

Because 78's are no longer manufactured, and because a somewhat limited choice of music is available on the doughnut-shaped 45's, the emphasis for theatre music, as well as for music to be played in the home, is definitely focused upon the 33 $\frac{1}{3}$ -RPM long-play records. The theatre that has only a 45-RPM record player is cheating itself of good music.

The record player used in the theatre should be of the 4-speed type with a stereo cartridge in the 33 $\frac{1}{3}$ -45 side of the pickup in order that all kinds, speeds, and sizes of records may be played. Aside from the retention of excellent 78's which are still present in long-established collections of fine music, it is best to add only hi-fi 33's to a record collection.

With the exception of a somewhat higher noise level and a more restricted dynamic range, the later 78-RPM discs made of plastic are the equals of any. Plastic 78's are more resistant to wear than the soft and powdery shellac records made for many years, but the hardest and most wear-resistant records we know of were the 78's made for use with heavy acoustic reproducers in the days before electric pickups. These ancient discs, surprisingly, were also pressed from a material having a shellac base!

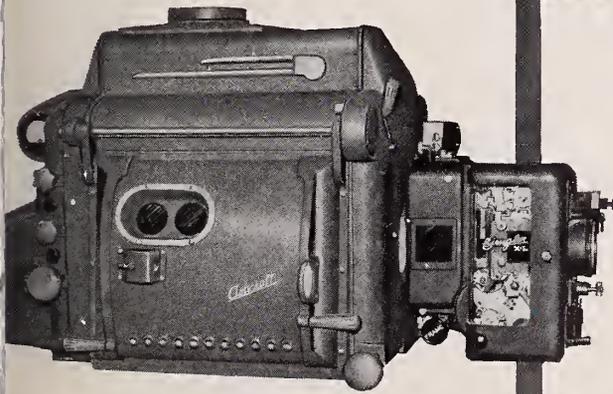
Needle Wear Problem

Modern 33 $\frac{1}{3}$ -RPM long-play records are extraordinarily sensitive to needle wear. This is due to the finer stylus point required to fit the fine 1-mil microgrooves, and to the finer sound variations in the grooves occasioned by extension of the high-frequency end of the sound spectrum to 12,000-18,000 cycles and by an

(Continued on Page 12)

There is a FIRST BEST in Anything! In ARC LAMPS IT IS THE OPTICALLY INTEGRATED

C. S. ASHCRAFT'S **CORE-LITE**[®] (Patent Pending)



It does unheard of things in screen lighting. Such as . . . up to 100% increase in screen side-lighting.

It works on any current from 78 to 115 amperes. It does it on a single size positive carbon, 11mm in diameter.

It will exceed accepted industry standards in lighting an outdoor screen 52 feet wide. It is the answer to the ill-lighted Drive-In screen up to 95 feet in width.

It is a miserly brute in its operating expenses. Saves you up to 50% in carbon costs.

Want proof? Call your National Theatre Supply Co. man. He will prove the CORE-LITE worth in indoor or drive-in theatres with existing screens and lenses.

Trademark registered and copyrighted. Patent applied for.
The C. S. Ashcraft Mfg. Co., Inc.
36-32 Thirty Eighth Street, Long Island City, N. Y.

Theatre Demonstrations Set Up To Show Core-Lite's Effectiveness

NEW YORK—The new Ashcraft Core-Lite projection arc lamp, specially designed and marketed to replace lamps burning 9mm copper coated positive carbons and lamps burning 9mm and 10mm black rotating positive carbons in indoor theatres, now has a greatly increased sales probability for drive-in theatres, according to the results of tests recently completed and just released by Clarence Ashcraft, inventor and manufacturer of the new lamp.

All previous tests on the new lamp, before it was introduced to the theatre market, were conducted by using currents confined to ranges between 78 and 95 amperes. Within these limitations, the lamp increased screen lighting and light distribution (side-lighting) up to 100%, and saving in carbon costs were as much as 50%.

Under the new tests, at current ranges between 95 and 115 amperes, the discovery was made of the even greater increased center and side lighting which makes the Core-Lite now particularly useful in small to medium size drive-ins, the inventor states. These higher current tests followed tests made in early December by Merle Chamber-

lain, technical supervisor for Metro-Goldwyn-Mayer Pictures, at the company's studio in California. Remarks made by Chamberlain, following the coast tests were highly laudatory.

It has been stated by carbon company technicians and by field representatives of the now defunct Motion Picture Research Council that among the thousands of drive-ins in the 350 to 800 car capacity range screen light has been woefully inadequate. The owners of these theatres have been so informed and are well aware of the poor light on their screens. It has not been possible, however, up to now to produce greater screen light at costs these smaller drive-in theatres could afford. With Core-Lite, it is estimated that carbon savings would more than pay for additional Core-Lite equipment expense in about 4½ years. This benefit would be in addition to the resulting increase in screen light, both center and at the sides, where the drive-ins are most deficient. Up to 20% in center lighting and up to 100% increase in side lighting will result by using the Core-Lite, Ashcraft has stated.

National Theatre Supply Co., distributors of the lamp, has stated that it will demonstrate the new Core-

Lite in theatre booths, using the theatre's now existing lenses and screens, to support its claim for the Core-Lite's efficiency, as contrasted with the arc lamp equipment now in the theatre. There will be a proven greatly increased light, greater distribution of light, combined with proven decreased carbon costs, according to both the inventor and the distributors.

In relation to its offered no-cost demonstration in theatres, National Theatre Supply Co.'s President, W. J. Turnbull, has stated, "The Core-Lite arc lamp is a piece of equipment that most indoor and drive-in theatres simply cannot afford to be without. Any of our branch managers will arrange a demonstration to prove the remarkable capabilities of the new lamp." **iP**

25-30 Club Installs New Officers at Dinner-Dance

NEW YORK—The 25-30 Club's Annual Installation Dinner-Dance were held in the grand ballroom of the Hotel Empire here. Formal installation of the new slate of officers occurred at this festive occasion.

The club elected William C. Anderson as president and Morris I. Klapholz as vice president.

Reelected were Morris J. Rotker as recording secretary, Jack Krimon as financial secretary, and Nathan Strauss as sergeant-at-arms. Harry Bergoffen, trustee 1963, Charles Sherman, trustee 1964, Robert Saunders, trustee 1965 were in the installation ceremonies. **iP**

MONTHLY CHAT

(Continued from Page 3)

he can't get the results he is ambitious to achieve.

If the theatre owner has confidence in his projectionists, and the expert communicates his knowledge of projection, he will consult the projectionist on the new equipment he is buying. Of course, the projectionist has a responsibility in that case. But the good projectionist willingly shoulders the responsibility, being assured by his knowledge about the modern theatre equipment, and is in a way complemented by the exhibitor's regard for his know-how about projection and sound reproduction.

Meanwhile some exhibitors have museum pieces in their booths and advertise "wide screen" just like the showcases; thus they pay lip service to good projection. **iP**

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity,
distortion free.

*Low installation cost,
minimum space needs.

*Increased reliability,
less maintenance.

*No vacuum tubes, no
photoelectric cells.

*and the only American-made 70 mm 35 theatre projection systems

SEE
YOUR CENTURY ... for bigger, brighter projection.
DEALER

CENTURY PROJECTOR CORP.

New York 19, N. Y.

Requirements of a Proficient Motion Picture Projectionist

Training of the young projectionist should start with a mastering of the basic principles of his craft — the working projectionist is his mentor.

By James A. Wagoner

This survey will review four basic qualifications of a motion picture projectionist. Since the inception of television it has become increasingly important that the theatre patron benefit from the finest projection and sound available because a superior picture with good quality sound is the one real asset of the motion picture theatre.

The theatre customer becomes a part of another world. Anytime this illusion of "make-believe" breaks, the basic goal of the motion picture theatre suffers. In order to acquire the skill of a good projectionist, one must keep this thought uppermost

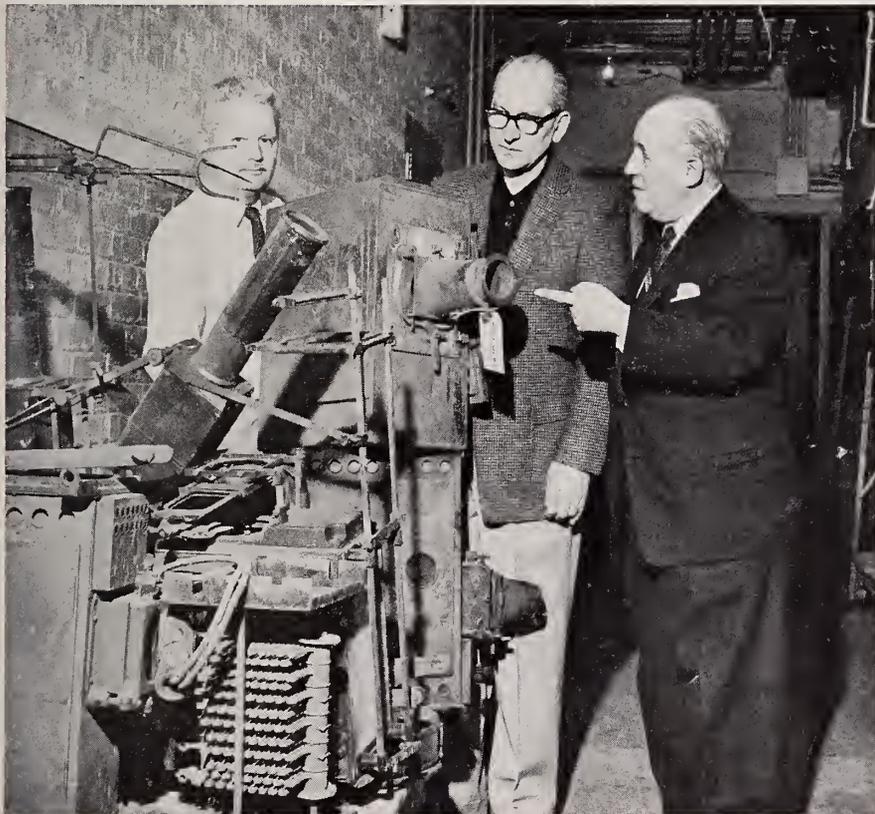
in his mind, for without it as a goal, the other qualifications lose their meaning through lack of purpose. In order for a projectionist to perform his duties well, he must be come proficient in the following four areas:

1. Electronics
2. Mechanics
3. Light and Lenses
4. Other requirements

Projectionist Should Know Electronics

Today's projection room is a maze of electronic marvels, and the industry provides more complex equipment as time goes on. Conse-

(Continued on Page 15)



ORLOVE OFFERS ANTIQUES — Anybody want a collection of early motion picture projection equipment suitable for display in a cinematic museum? Louis donate to any museum which will give it careful attention and a proper display. W. Orlove, veteran film exploiter now handling 20th Century -Fox campaigns in the Minneapolis-Milwaukee area, has a number of unique items which he'll Orlove's hobby began in 1925 when he acquired a Kinedrome projector from the Old Theatorium in Milwaukee. He has gathered many other interesting items since but lacks the room to display them. Interested curators can reach Orlove at 1618 N. 54th St., Milwaukee.

THIS IS NEW!

A Rectifier That Is Truly Different

Strong

BI-POWR

A new type silicon diode stack transformer rectifier designed as a power source

FOR THE OPERATION OF TWO ARC LAMPS

No flicker or other change in projected light at the time of striking the second arc.

DUAL OUTPUT RATING OF

60-85/60-85 AMPS/35-45 VOLTS

90-135/90-135 AMPS/56-70 VOLTS

120-160/120-160 AMPS/58-75 VOLTS

★ Designed for operation on 208/220V 50/60 cycle, three phase A.C.

★ Two independent stack assemblies, one for each output.

★ "Lo-Strike"* feature associated with each output protects stacks from overload and prevents destruction of carbon crater upon striking the arc.

★ Exclusive automatic reset* permits immediate restriking if arc is not established the first time.

★ A choke in the D.C. output circuit makes for quiet operation and holds ripple to less than 3%.

★ Down-draft fan cooled. No foreign matter can be drawn into the equipment.

★ Class H glass insulated transformers.

Send for literature.

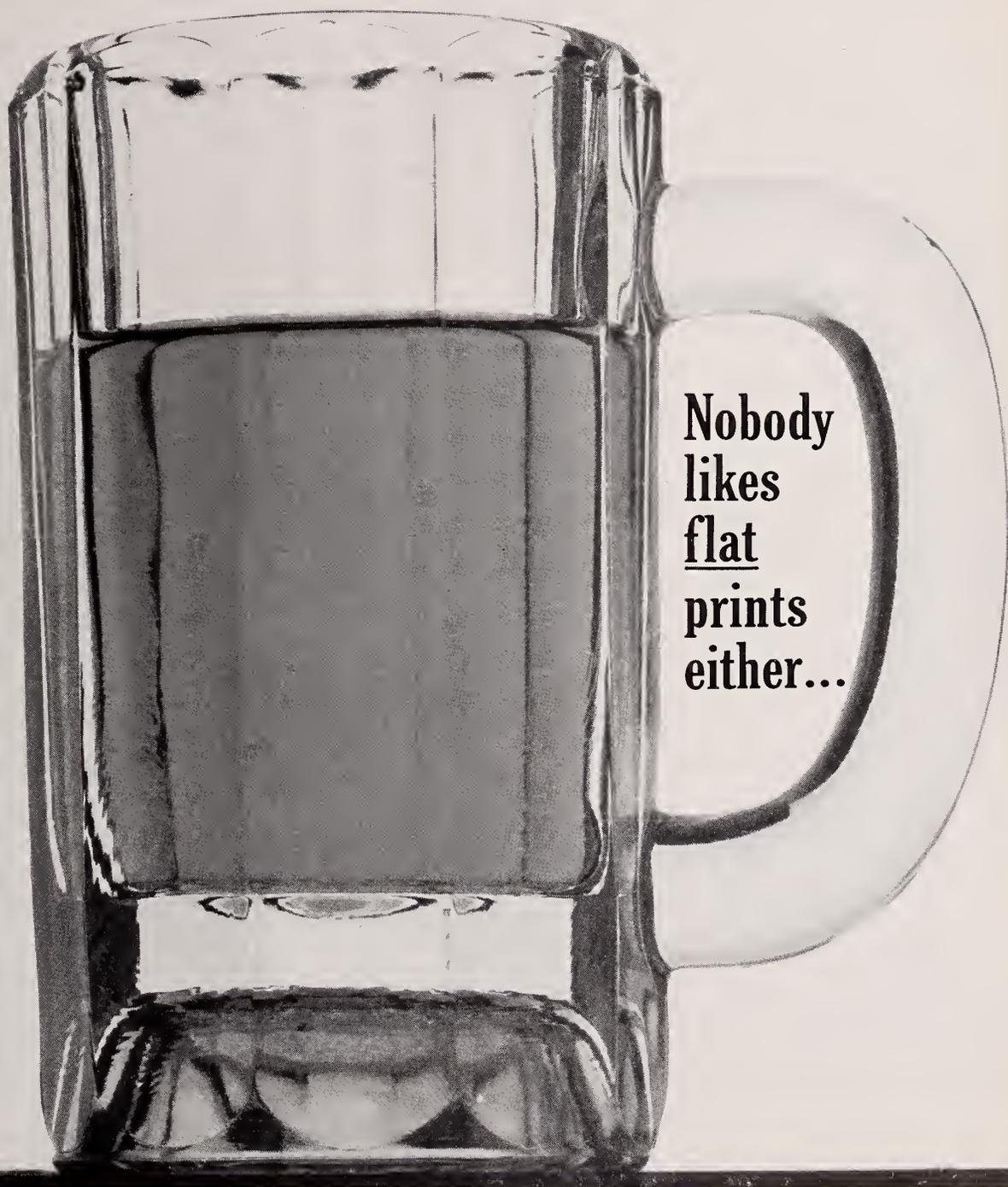
THE STRONG ELECTRIC CORP.

31 City Park Avenue
Toledo 1, Ohio

*Not supplied as regular equipment on 60-85 ampere model.



FACT IS a crisp, sparkling negative must have top-quality prints. Otherwise, it can't do its job, and your message falls flat on its face, wasting production time and money—station time, too, if your film's on TV. Moral: Go Eastman *all* the way—negative and print-stock. And in the case of questions—production, processing, projection—always get in touch with Eastman Technical Service.



Nobody
likes
flat
prints
either...

For further information, please write or phone: Motion Picture Film Department,
EASTMAN KODAK COMPANY, Rochester 4, N. Y. Or—for the purchase of film:
W. J. German, Inc. Agents for the sale and distribution of Eastman Professional
Film for Motion Pictures and TV, Fort Lee, N.J., Chicago, Ill., Hollywood, Calif.



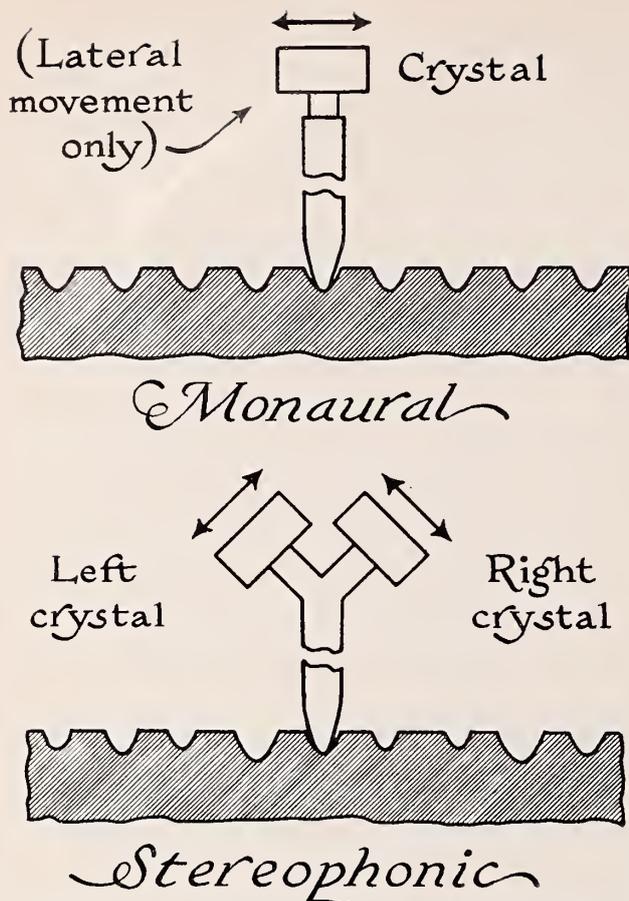


FIG. 2—The piezoelectric crystal of a monaural pickup is “twisted” in only one direction, the lateral direction parallel to the variations of the constant-depth groove. The crystal thus generates fluctuating sound currents. A stereo pickup works the same way, but it has two crystals positioned in planes 90 degrees apart. One crystal responds only to the variations in one wall of the record groove, and the other crystal responds only to the variations recorded in the other wall. Each crystal, accordingly, reproduces one of two separate channels of sound.

DISC REPRODUCERS

from page 7

average linear groove speed only 42.7% that of 78's. A slightly worn needle will distort the sound more badly on 33's than on 78's, while a severely worn needle may skip grooves, repeat grooves on overmodulated passages, and damage the record.

Oscilloscopic tests which reveal distortion in high-frequency waveforms lead us to the conclusion that standard-groove 78-RPM records are best limited to 8000 cycles, while microgroove 33's cannot go much beyond 10,000 cycles without distortion.

As a matter of fact, nothing in the way of audible “realism” is provided by frequencies higher than 10,000 cycles, which is more than twice as high-pitched as the highest note on a piano keyboard. Statements by recording companies (attempting 24,000 cycles) to the effect that excessively high frequencies add realism “even though they are not heard” are pure balderdash. Commercial amplifiers and speakers cannot reproduce 24,000 cycles; and few go up as high as 15,000 cycles.

It has been said that only “bulldogs and babies” can hear up to 30,000 cycles. The average young adult

can probably hear sounds as high as 15,000 cycles, and in some cases up to 20,000. Sounds higher than 10,000 cycles are scarcely audible to anyone over 60 years of age.

To a person who can easily hear 10,000 cycles, this extremely high-pitched tone sounds like a harsh whistling hiss totally devoid of timbre, or “tone color.” It has no timbre because its harmonic (20,000 cycles, 30,000 cycles, and 40,000 cycles for the first three harmonics) are too high to be audible, even if really present. (The first three or four harmonics establish the general character of any tone—fluty, reedy, dull, piquant, etc.)

A worn needle used on 33 $\frac{1}{3}$ -RPM discs will distort the lower as well as the higher frequencies, and accentuate certain frequencies. Such a needle may skip grooves and damage the record. Sapphire and ruby needles have a relatively short life and, in general, are rather a nuisance with long-play records. Diamond needles have a useful life of 20 to 100 times the life of sapphire needles, and should be installed at the outset. Diamond needles cost only 4 or 5 times as much as the sapphire ones, and hence represent a real economy.

Use Only All-Speed Stereo Players!

This writer very strongly recommends the use of a combination-speed record player (16, 45, 33 $\frac{1}{3}$, and 78 RPM) fitted with a flip-over cartridge, each side of which has its own needle. One side of the pickup plays 45 and 33 $\frac{1}{3}$ microgroove records, while the other side is for standard 78's. Be sure that the microgroove side of the cartridge is “stereo” *no matter whether the now common stereo discs are reproduced monaurally or stereophonically!*

On account of the musical limitations of 45-RPM records, and the likelihood that this speed may be discontinued in favor of 33's for popular “singles,” it seems best to concentrate exclusively on regular 12-inch 33 $\frac{1}{3}$ -RPM long-play discs, both high-fidelity monaural and stereophonic.

An ordinary monaural “lateral-cut” record has only sidewise variations of grooves of constant depth, but a dual-channel stereophonic record has two completely independent sets of variations in its grooves. One channel of sound is carried by lateral variations tilted 45° from the surface plane of the disc, while the other set of variations for the second channel is tilted 45° in the opposite direction. The two sets thus have a maximum angular separation of 90°.

When the same sound is present in both channels, the angular difference of the plane of needle movement from the surface plane of the record is less than 45°, that is, 45°—n°, in which n is the angle of needle movement on the side of the groove (right or left sound channel) having the weaker signal. In the case of a regular monaural record played with a stereo pickup (which improves the sound, by the way), the sidewise needle movement *in the plane of the record surface* is exactly the same as in a stereo record having identical signals of equal strength in both channels. (45°—45° = 0°.) The result is the same sound from the left and right speakers.

To repeat: Stereophonic records are now so commonplace that the record player used in the theatre should be equipped with a stereo pickup cartridge no matter whether the sound is played monaurally through just one channel or stereophonically through two or three amplifier and speaker channels.

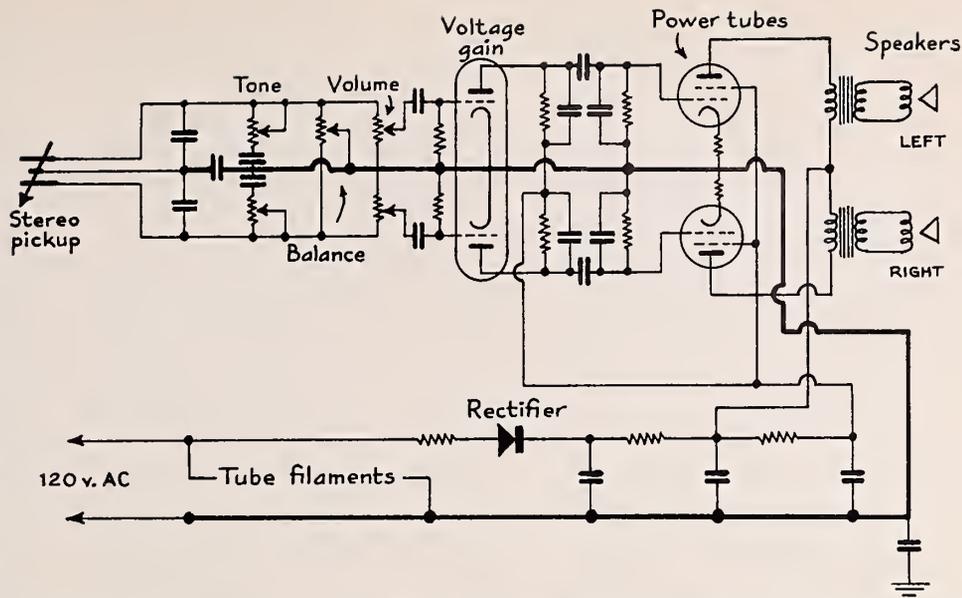


FIG 3—A simple stereophonic phonograph amplifier circuit by Telefunken, Germany. Note the common "floating ground" (heavy wire) shared by the two sound channels.

All monaural records can be played with a stereophonic pickup, *but stereophonic records CANNOT be played with a monaural pickup!* Attempts to play stereo records with ordinary monaural reproducers will result in severe needle chattering, distorted sound, and damage to the record.

Connecting Stereo Cartridges

The prevalence of stereo records should be reason enough for replacing all regular 33 $\frac{1}{3}$ -RPM pickup cartridges with stereo cartridges. (Yes, these play 45's, too.) Just make sure that the correct type and style of replacement cartridge is installed. There are no problems with crystal-type cartridges. If the theatre amplifier system is single channel, only the two outside leads from the crystals are used, and these are connected to the high-impedance phono input of the amplifier in the same way as a monaural pickup. The "common-ground" wire which connects the crystals of a flip-over stereo cartridge is not connected to the amplifier for single-channel reproduction.

The two back-to-back units of a flip-over cartridge having a stereo unit on one side for all 33's and 45's, and a monaural unit on the other side for 78's, are sometimes interconnected internally, but a common-ground terminal or wire is brought out. If there are four terminals, two are connected to each other (the so-called common ground), and the remaining two go to the amplifier input. If a stereo sound system is available, the common ground (left connected) is tapped and connected to the "neutral" or "floating-ground" terminal, while the right—and left—channel leads are connected to the proper input terminals.

Most commercial stereo phonographs for the home have a double preamplifier sharing a common floating ground. Indeed, amplification in the voltage-gain stage is usually accomplished by a single tube having a double cathode-grid-plate construction, such as the 12AX7. This functions as two separate tubes. In the power-gain stage, however, two separate power tubes are the rule.

Because a stereo record player has only two channels, right and left, it is necessary to obtain a mixed signal for the center channel of a 3-channel theatre sound system. This is absolutely mandatory when there is only one set of "woofers" for the non-directional bass tones. If the sound system has internal connections

for reproducing the low frequencies in all three CinemaScope channels through the single woofer, no problem arises. Otherwise the bass tones of the records would be totally lost. It is best to consult the theatre's sound service engineer about this matter.

Compensation for the frequency-response characteristics of a record reproducer must be provided unless the stereophonic amplifiers have phono input terminals. A CinemaScope magnetic soundtrack amplifier has a rather strong treble boost; and the low-impedance inputs of the film preamplifiers are unsuitable for crystal pickups. The following amplifier stage may or may not provide sufficient amplification for a frequency-compensated crystal-cartridge signal. If not, the output of the preamplifier of a commercial phonograph may be used.

All of these difficulties may be avoided, of course, by using the monaural optical-sound system, which is exactly what is done in many theatres. The directional effect of stereo records is lost, but the quality of the sound is entirely satisfactory if the low-frequency reproduction is sufficiently strong to balance the high-frequency reproduction. A high-frequency response which is too strong makes the sound "thin" and harsh. High frequencies may be attenuated if a separate phono preamplifier is used (highly recommended) by shunting a capacitor of 0.01 to 0.1 mf. across the preamplifier output.

With the technical details of record players and their connections out of the way, attention should be devoted to building up a good record library containing as many different types of music as possible—jazzy, moody, gay, atmospheric, etc. It will thus be possible to match the overture and intermission music to any conceivable type of feature film. And if "locale" music is at hand—French, Latin American, western, hillbilly, oriental, etc.—the matching of music and mood will be all the closer.

Next month's article, however, will concentrate on theatre-organ music in response to numerous requests from projectionists anent suitable organ records. We'll review and recommend quite a few such discs; and more than that, we'll delve into the mechanics and audio magic of the "Mighty Wurlitzer"!

(To Be Continued)

Automatic Projection: A Progress Report

In the past IP has kept projectionists up to date on automatic projection as it has developed in Great Britain, under the particular circumstances that make the system more practical than many other areas. U. S. projectionists have little to be concerned about, according to this recent TOA report.

We wrote recently to exhibitors in England, asking for a report on "automatic projection" in use in the United Kingdom. While we recognize that local safety ordinances would bar the system in many American communities, and the reaction of the projectionist union would be an important factor in the acceptance of this equipment in the United States, we felt the reply was so interesting, that it merits dissemination.

Here is the report:

* * *

"Here in the United Kingdom this automatic equipment is much beyond the testing stage; indeed, it is installed in over 350 cinemas and during the last 4-5 years has given a good account of itself.

The automatic equipment is of two distinct types, namely:

- (1) Projection Room Automatic Equipment
- (2) Automatic with Remote Control

In the former type the entire programme can be controlled by an electric clock, that is to say, at a predetermined time the house lights can be lowered, the screen curtains opened, and the projectors brought into operation automatically. Similarly and again automatically, when a film is completed, the curtains can be drawn and the house lights raised—and so on throughout the day's performance. All the projectionist has to do is to load the machines and thread the film through the gate, rewind in the normal manner and replace carbons when necessary. The projectionist is also responsible for focussing and framing.

The foregoing is the "full works," but a shortened version—which is the more popular—does not auto-

matically control the house lights, curtains, masking, etc., but controls the projectors, and here again, the projectionist is responsible for threading up the film, rewinding, replacing arc carbons, focussing and framing.

In the smaller theatres with a screen up to 35 ft. wide, the Xenon (lamp) arc is now being widely used with automatic control equipment, since it lends itself readily to automatic control and obviates the necessity for replacing carbons.

National Safety Laws

Cinemas in the United Kingdom operate under safety regulations issued by the secretary of state, and in 1958 the regulations were amended to take account of this automatic equipment. This permits the equipment to be in use without a projectionist being in the booth—although his absence is limited to fifteen minutes. The reason for this is that a projectionist must go to the booth once every fifteen minutes to remove the film that has been shown and replace the next reel.

The regulations require a warning bell to sound in the projection room suite and to be in a position where another member of the staff is normally employed and can hear it—in case anything should go wrong with the automatic control.

There has been no active opposition to automatic equipment by the labor union, although where the equipment is installed there was a tendency to demand a higher minimum wage. What happens in practice, however, is that in theatres that previously employed a total of four or five projectionists, there are only two on the payroll—one on duty at any given time. These two operators receive a wage higher than the minimum agreed between the employers and the union, but the wage is a matter for negotiation between the employer and the individual projectionist.

It must be remembered that there is a rather acute shortage of projectionists in the United Kingdom and many cinemas are able to keep going only because automatic equipment has been installed.

Remote Control System

Automatic equipment *with remote control* is installed in about 14 cinemas in the United Kingdom and is operating very satisfactorily. The automatic side includes the automatic changeover from one machine to the other and automatic close-down should anything go wrong with the light source circuit or the motor circuit. The remote control consists of a control board placed in a suitable position in the auditorium from which it is possible to start or stop either machine, to focus and frame the picture and to control the volume of sound. Although at the present time a projectionist is employed to operate the remote control, the control is so simple that an unskilled person, e.g. an usherette or under-manager, could run the show.

With this equipment it is, of course, still necessary to employ a projectionist to change the reels and rewind, but experiments are already being carried out with the possibility of accommodating the entire programme on two machines and to have automatic rewind. Indeed, we have a prototype equipment in two cinemas in a town in the United Kingdom where 8000 ft. spools are fitted to the machines. Since they are specialist houses, their programmes never exceed 16,000 ft. In this particular instance, we have one operator in charge of the two cinemas. The remote control is situated at the rear of the auditorium and is in the charge of the under-managers."

It is obvious from the above report, TOA points out, that the equipment is working satisfactorily, and is giving English theatres the equivalent of a one man booth. If the remote control operation does not evoke severe labor union reaction, it is also obviously conceivable that a very limited number of trained service projectionists could take care of a large number of British theatres within a small geographic area, with unskilled theatre help watching the individual theatre's control panel.

It is TOA's understanding that

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine  Carbons

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart

British laws regarding booth operation would probably have to be modified if remote operation is to become widespread. Unlike the U. S., Britain has one safety code administration that functions nationally.

The reported shortage of union projectionists in England, coupled with the distressed state of the English exhibition industry, set the stage in the United Kingdom for this technological advance. This would probably not be the case in the United States, the association comments.

Differences Highlighted

The British situation is yet another highlight of the differences between the British and American theatre industries. In Britain, as an example, there are no anti-trust laws similar to ours. In enforcing their "FIDO" plan to keep current feature films off television, British distributors, with the support of exhibitors, have refused to supply film to a violator, and the courts have condoned this boycott. Under the Eddy Plan, British theatres pay a small tax on each admission, and the funds are used to subsidize new production. Also, the British have a mandatory classification system. **iP**

Pine Hollow Theatre Uses Century Sound

An article in the November issue of International Projectionist described the sound system of the Pine Hollow Theatre incorrectly. The Pine Hollow is equipped with the Century Projector Corp. all-transistor 6-4-1 channel sound system. The sound equipment was furnished by Century dealer Joe Hornstein, Inc., and installed by engineer Joe Kelley of the Skouras circuit. **iP**

Reevesound Company Retains Barbara Skeeter

NEW YORK—Reevesound Company, Inc., Long Island City motion picture engineering firm, announced it has retained New York consulting publicist Barbara Skeeter to expand its information program.

Reevesound designs specialized sound and visual communications systems for governments and industrial firms.

A former director of public relations for the Society of Motion Picture and Television Engineers, Miss Skeeter has a broad background in corporate and association publicity and newspaper work. **iP**

PROFICIENCY

from page 9

quently, the person manning this equipment should have as much knowledge as possible about the projection room. For example, a knowledge of the electronic fundamentals connected with sound becomes increasingly important because the patrons, with their own Hi-fis at home, require high standards in sound reproduction. The added complexity of the four-and six-track stereophonic systems is a real challenge to the theatre projectionist. Although the sound service engineer maintains this system in many theatres, he cannot be present at all theatres all of the time; therefore, a major responsibility rests with the projectionist for keeping the system in good condition.

It is the good projectionist who possesses enough knowledge about his sound system that he can make emergency repairs when necessary. The patron becomes disgruntled if a sound outage occurs and he must wait until a sound service engineer comes from across town to repair it.

Though it is the most complicated part of the projection room equipment, the sound system does not constitute the only electronic apparatus. The various motors, the arc lamps, the motor-generators and the rectifiers must also function properly so that the show goes on the screen in a pleasing manner. In this area, the projectionist has a greater responsibility than in servicing sound systems because he must institute the maintenance procedures. Therefore, a thorough knowledge of the electronic fundamentals involved is a prerequisite of proper servicing. As the equipment, such as the arc lamp, becomes increasingly simple to operate, its construction becomes more complicated. Consequently, an increasing knowledge of electronics and theories explaining the operation of these systems is another reason why this subject represents a basic requirement for all projectionists.

Mechanics Should be Mastered

The motion picture projector is not only an electronic marvel, but it is also one of the most intricate machines in today's world of automation.

Again, the burden for adequate maintenance and servicing rests with the person in the projection room; it is only natural, therefore, that this man acquire a knowledge of mechanics so that he can adequately perform the duties required of him. Unless the basic mechanical func-

HEY: "LET'S TWIST"!

Yes, That Easy to Use—No Tools Needed
Just Twist The Stub In & Out . . .
NO GRINDING—NO DIRT



IF YOU ARE NOT USING The
"Little Miser" Carbon Saver
YOU are losing several Hundred Dollars
Each Year!

4 Sizes 9-10-11m.m. \$3.00 Each
13.6m.m. \$4.50 Each

ORDER Now—Start Saving Money \$\$
(We Suggest 3 In Each Projection Room)

LOU WALTERS
Projector Repair Service
(All makes projectors & movements
repaired)
8140 Hunnicut Rd.
Dallas 28, Texas

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

PROJECTIONISTS PREFER ETHYLOID

Film Cement For
BEST RESULTS

Available from
Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

tions of the projector become a part of his knowledge, he will have difficulty maintaining equipment.

For example, a knowledge of how the star-wheel intermittent operates precludes its servicing as directed for a specific brand of projector. With an understanding of the mechanical essentials, the projectionist can then make the necessary repairs and adjustments to his particular installation.

Light and Lenses Must be Understood

The third basic requirement for the well-equipped projectionist is an understanding of the principles of

optics. This requirement is important because of the ever-changing methods of presentation and the problems introduced by the drive-in theatre. With more and more theatres installing 70 mm. equipment is the projectionist's responsibility to make sure that the effect of the presentation meets the requirements demanded by the public.

For instance in a large downtown theatre, the new 70 mm. equipment was installed haphazardly and it was several days before the performance met already established standards. Although this may be a rare case, the man in charge of running the show should do his best to prevent such occurrences. Even though such practices are not the fault of the projectionist, a man with a thorough knowledge of optics is valuable when new theatres go up or when established theatres are remodeled.

Before concluding these three sections here is a brief summary. In order to do his job adequately, the theatre projectionist needs an understanding of (1) basic electronics, (2) basic mechanics, and (3) basic optics. A problem arises as to how one can properly gain this knowl-

edge. Experience is particularly needed for mechanics, but the theories of light and electronics require outside study. If possible, an engineering program at one of the leading universities would be beneficial, but since many projectionists cannot undertake such a program, there are other methods of learning this material. For example, there are many specialized electronic schools throughout the country, and correspondence courses also present a method of gaining necessary knowledge.

Positive Attitudes Are Necessary

This section includes the most important data in the report. In order to perform properly the skills mentioned, the three kinds of knowledge just discussed play an important role. One authority defined a projectionist who had these skills as a "presentation man." The term describes the actual running of the show as opposed to maintaining the equipment. It is in mechanics that experience proves most helpful, but just because a man has many years experience, he does not necessarily become an expert "presentation man." There are other factors entering into the qualification.

First, and one of the most important, is attitude toward the job. Because many of the duties performed daily become more or less routine after they are learned, the man running the projectors may develop a complacent feeling toward the work, and an inferior product sometimes results. With the new arch lamp and projectors that the present theatres use, the hazard of this attitude increases because one can get by with less supervision than before. The projectionist ought to feel that he is as much an artist as the stars on the screen, for without him their acting ability is lost; consequently, constant awareness of his important function to the entertainment industry is necessary, for every man regardless of the size of the theatre in which he works. With the proper attitude toward the profession, the normal daily duties contribute to job satisfaction and pride in the work.

Checking is a Key Word

The second requirement of a good presentation involves a key word in every projectionist's vocabulary — *checking*. Unfortunately, since people all make mistakes and projectionists are human, a good presentation demands constant checking of the various functions performed. On many jobs, a small mistake goes unnoticed and does little real harm, but even



Valley for
CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES
VALLEN, Inc.
AKRON 4, OHIO

DO YOU BUY

Heat-Reducing Reflectors

ON PRICE OR COST?

TUFCOLD 2-YEAR COATING GUARANTEED FIRST SURFACE DICHROIC REFLECTORS

They're a bargain because everything an ordinary reflector does TUFCOLD does better and longer. That's why they're worth more yet actually

COST 43% LESS

based on life expectancy. So, since your old reflectors, by wasting power, carbons, and light, cost more than new TUFCOLDS, replace them now.

THE STRONG ELECTRIC CORPORATION
31 City Park Avenue • Toledo 1, Ohio



the smallest mistakes in the projection room erupt upon the screen in view of hundreds of patrons. In order to eliminate these occurrences, the projectionist ought to check and re-check his work. Certain key points such as the proper lens and aperture plate, proper reel, proper threading, proper carbon trim, and others require constant supervision because without a program of double checking the show may suffer.

Another item that demands inspection and checking is the operation of the equipment. This is the section of the program that makes it necessary for the projectionists to have the specialized knowledge discussed in the first three sections, for without it the projectionist may find it difficult to adopt an effective preventive maintenance program for his machinery.

Film Inspection Must Take Place First

The last major topic considered in this section pertains to film inspection. A few brief remarks on this subject will suffice. First, if a projectionist wants a perfect show at all times, he must inspect all film before its showing. However, in many cases conditions may prevent the proper inspection. If this is the case, one must do the best possible job under the handicap. The time allowed for such inspection remains a controversial subject and until the question can be effectively solved the present unfortunate conditions must be tolerated. Again the factor of experience plays an important role in deciding the individual case.

But the projectionist should keep in mind that his primary job is to run the film and maintain his equipment, and the film should arrive at the theatre in good condition; therefore, if film inspection interferes with the primary obligation of the person running the show, the inspection of film ought to remain secondary on the agenda of duties.

Summary and Conclusions

Most of the material presented here is a part of every good projectionist's background but it is advantageous to review basic concepts and goals periodically so that primary objectives gain predominance in setting goals. This report says that in order to adequately perform the duties required of him, the theatre projectionist should possess a background in (1) electronics, (2) mechanics, and (3) optics. It is with this background, plus the specialized skills necessary, that this magician of the theatre can present a flawless show.

Sometimes overlooked, but equally important as his knowledge, is his

attitude toward his profession. The projectionist is an artist who uses machines to paint pictures, and he can gain satisfaction from a "canvas" well done. The projection equipment resembles the surgical instruments in the operating room of a hospital, for unless the person performing the operation uses highly skilled techniques, the job is a failure. Therefore, when the projectionist fails to present a flawless canvas of picture and sound, his patient dies. The patrons of the theatre go home to watch television.

iP

How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise — how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes — transistors — gas discharge tubes — klystrons — traveling wave amplifiers — and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects — these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota
Please send me a copy of "Electrical Noise"
by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State

IMPROVING THEATERS

from page 5

theater is a matter of the utmost importance. If members of the audience have a pleasant recollection of their hours in the theater, they will frequently return and become regular customers. If they are repelled by unpleasant surroundings, sooner or later they will be permanently lost. Some become bitter critics. Whispering campaigns are either the best or the worst advertising.

For this and other reasons, the theater lighting should be most carefully adjusted in each part of the theater. The street lighting of the theater is, of course, for conspicuous display purposes. The lobby lighting should be much softer, and graded downward so that entering the auditorium does not find the eye blinded by previous excessive illumination. Colored lighting (amber or rose, for example) is often helpful. And the lighting in the main portions of the house must be carefully adjusted so that vacant seats can be readily found and yet the general lighting level is low. Above all, house lights should never illuminate the screen.

It goes without saying that the utmost cleanliness and attractiveness in lounges, rest rooms, and lavatories is essential. Few things are less attractive to the audience than shabby or unpleasant rest portions of the house.

In this general connection, it is essential that odors of rancid butter or peanut oil shall be completely banished from the house and its refreshment portions. Sufficiently powerful ventilation and exhaust fans will greatly help. Many of the theater owners have found that the audience cultivates theaters which are free from stale odors.

Courteous Treatment Important

The operation of a theater is not a mere perfunctory matter, largely to be neglected as a routine proposition. Life in the theater should be a model of courteous treatment by ushers and management. Any requests for information or complaints should be very promptly handled and clearly answered with a real show of interest and sympathy on the part of the management. And the ushers and managers should not be remote and inaccessible people but should be continually on the lookout for any questions, complaints, disturbances, or events requiring attention. One of the great assets of the theater is the existence of dis-

cipline and control of the audience which ensures uninterrupted enjoyment of the performance. In the home there are often enough inevitable interruptions of any entertainment. But in the theater such unnecessary interruptions are often intolerable and repel the audience.

Of course, the main commodity which is sold in the theater is the program. Too much time can hardly be spent selecting and arranging the program, choosing times for the showings, and generally building up an attractive performance. A good showman will study the audience in his vicinity and learn their preferences. After a few months, he will know that in the vicinity of his theater, people prefer romantic shows, costume dramas, comedy, vivid action films, so-called "art" pictures, or other forms of entertainment. The successful exhibitor will learn of these preferences and will build up his programs, wherever possible, around a suitable selection and succession of attractive showings. It is a good idea to have different types of films at the same performance. It is also often worth while shifting the major emphasis in performances from each show to the ones on the following weeks.

The skilled showman will make good use of the advantages of color films which have now been developed to the point of exquisite beauty and dramatic value. Experience has shown that color can set a mood in a fashion almost impossible for black and white. Accordingly, the balanced theater program will have a full quota of color films wherever possible.

Exhibitor Should have Good P.R.

And finally, the exhibitor must establish the closest possible relationships with his community and its members. He should be the "best-liked man in town." This may take some time and trouble on his part. But anything he does with and for the community is well rewarded. In addition to studying the customer's preferences and establishing excellent public relations with the community, the exhibitor should discover whether his prospective audience respond better to hard-selling or to soft-selling in advertising. Of course the type of advertising may depend to some extent on the type of picture that is shown each week.

If the exhibitor establishes cordial

contacts with the schools, clubs, associations, and churches of his town—as well as with the civic leaders of the community—his prospects of success will be considerably brightened. It takes an extremely competent, pleasant, diplomatic, and capable man to be a truly successful showman. **IP**

London News

and Views

By Stanley T. Perry

The Odeon Theatre in Leicester Square which is the Rank Organization's key house had a "face lift" in its projection booth just prior to a Royal Film Performance.

The Odeon, which needed a change of equipment, installed three Cinemacanna Victoria X, a multi purpose 70/35mm projector, with electrical interlock between any pair. Also installed were three Super Zenith 460 arc lamps with 18 picroid reflectors, operating at 110 amps., with a carbon trim of 10 mm positive, 9 mm negative, both copper coated. The positive is non-rotating and the carbon contacts and the lamp are generally air-cooled, although water circulation is now being used, except for the projector film gate.

A new G. B. Kalee Duosonic-Multichannel sound equipment for all film systems, including unmarried prints was included. Also installed was a 12-way sound reinforcement system and remote control focusing, framing, sound volume from the auditorium.

Prior to the installation of the projection equipment, Mick McLaughlin, chief projectionist at the Odeon, and Bob Pulman, projection engineer of the circuit, were guests of the Cinemacanna Company in Milan, Italy, where they spent some days at the factory familiarizing themselves with the equipment.

The "late night show" policy which has been in operation for some time in the West End, is now spreading to the suburbs. The Classic Circuit, which runs a number of small repertory theatres, have started the late night shows at Chelsea and Notting Hill, and no doubt there will be more of these in the future. The nine small houses in the West End late night shows have now firmly established themselves. Some show the current feature and shorts. Others have a special program for the late show only. **IP**

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

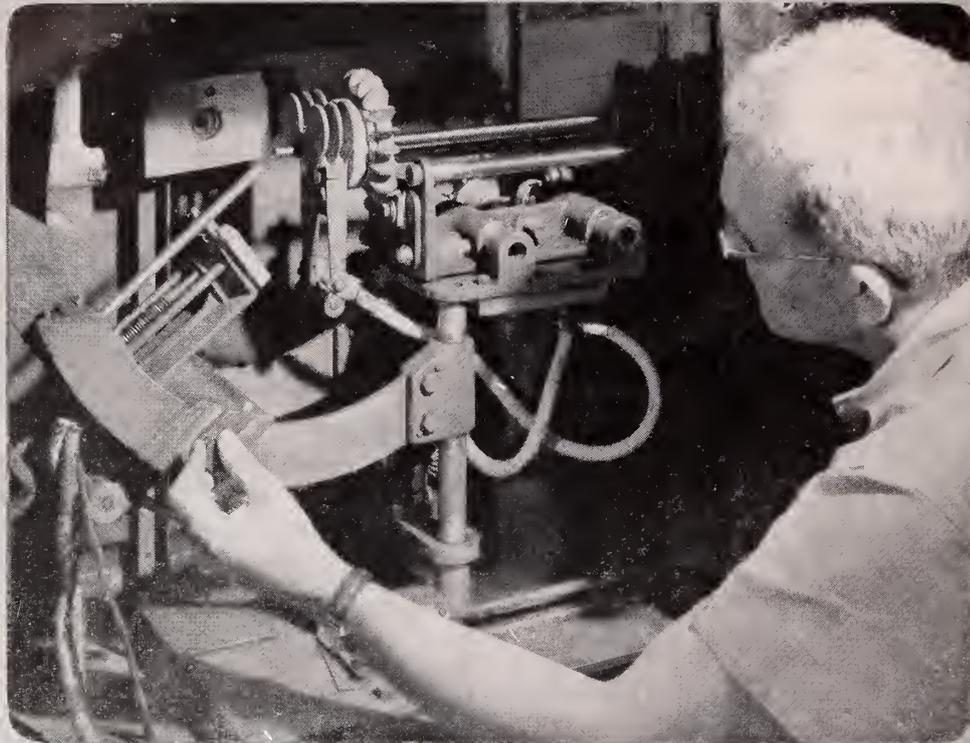
ADDRESS

CITY ZONE STATE

\$6.00

per copy
including postage

A Scene From America's Projector Carbon Center...



Lamp for simulating operating conditions

“With this unique lamp we keep millions of moviegoers happy with your screen lighting”

—says **GEORGE MAYER**
National Carbon Sales Engineer

To the best of our knowledge there are only two of these lamps in existence—and both are located in our Fostoria, Ohio, plant. This remarkable lamp is vital to quality screen lighting because it enables our development department to simulate *any* operating conditions encountered by projectionists.



George Mayer

For example, we can alter the *negative* carbon angle from 0 to 90°, with respect to the *positive* carbon axis. The lamp will take any size negative, either copper-coated or black. Jaws are available to burn either copper-coated

or black positive carbons. Rotational speeds range from 0 to 20 rpm, and feed rate can be varied from 1 to 120 inches per hour. Power variations range from 5 to 300 amps under normal conditions. Up to 800 amps have been carried for short periods of time.

Such advanced research equipment, quality production, and precision testing are only a part of the “National” projector carbon story. Since 1917, National Carbon has set the pace for outstanding technical service...through Sales Engineers equipped with today's most modern test devices for assuring optimum lighting efficiency.

Contact
Mr. National Carbon



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.

In Canada: Union Carbide Canada Limited, Toronto



PROJECTIONIST

INTERNATIONAL



6 MAR 1 1963
Cont Copy

FEBRUARY

1963

VOLUME 38

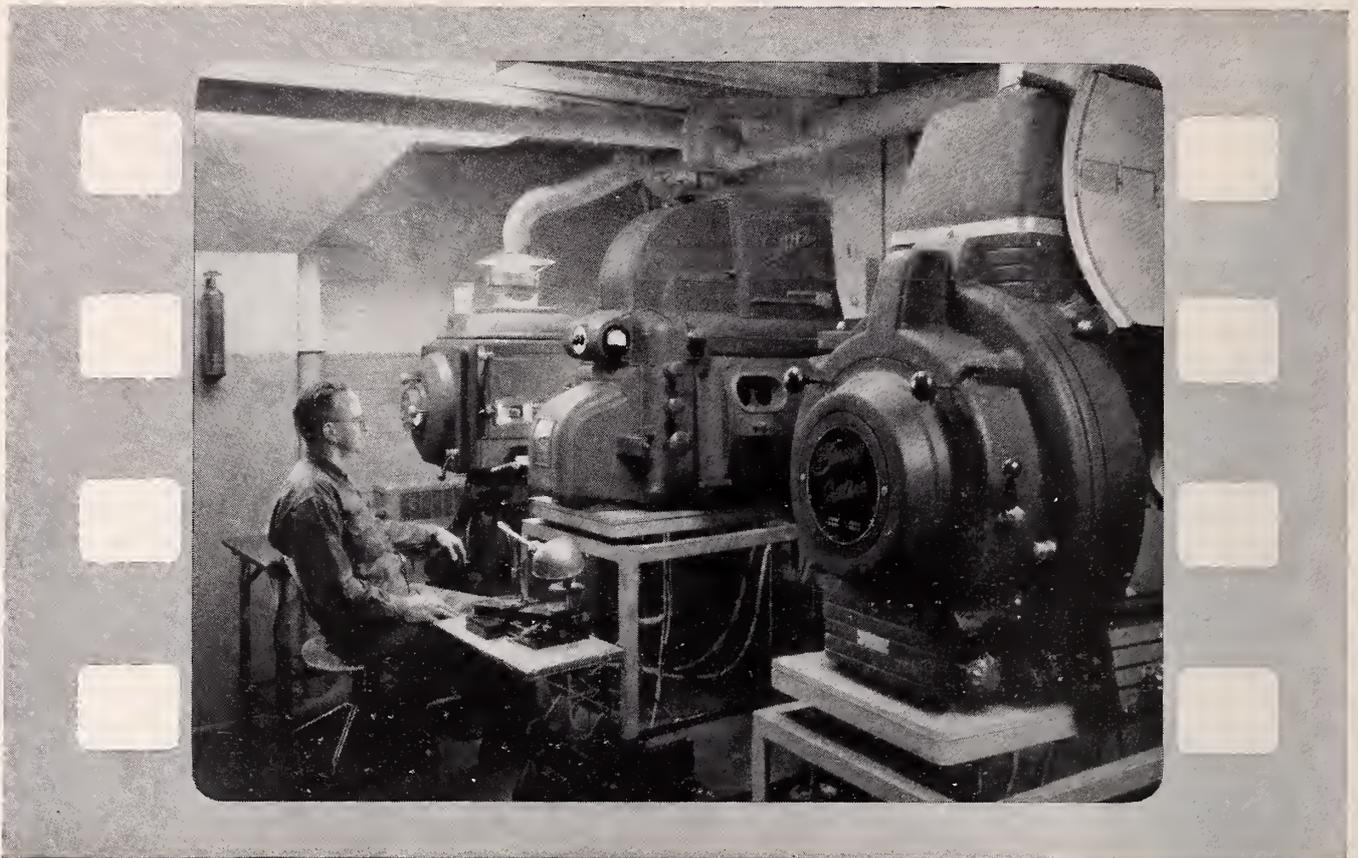
NUMBER 2

40c A COPY

\$3.00 A YEAR

Order Division (0368X)
Washington 25, D.C.

A Scene From America's Projector Carbon Center...



Testing for arc consumption and light distribution

**“Every day is ‘double-feature’ test day at
our projection booth in Fostoria, Ohio”**

says **BILL BRENNER**
National Carbon Sales Engineer

You're looking into the motion picture industry's most unusual projection booth. We run the same “double-feature” every day—fifty-two weeks a year. Our program covers two important phases of “National” projector carbon production—the testing of arc consumption and light distribution. Their ultimate results are to help you obtain the finest picture quality!



Bill Brenner

Tests are conducted on representative samples from every lot of projector carbons manufactured in Fostoria, Ohio. This specialized

quality control effort not only pays dividends to the theatre owner in projection carbon economy, but assures movie patrons the best-lighted indoor or outdoor presentations that carbon dollars can buy!

Quality manufacturing and precision testing are only a part of the “National” projector carbon story. For 45 years National Carbon has backed theatre owners with the industry's most dependable technical service.

Our Sales Engineers are equipped with today's most modern test devices... to assure you maximum light efficiency on your screen.

Contact
Mr. National Carbon



“National” and “Union Carbide” are registered trade-marks for products of
NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.
In Canada: Union Carbide Canada Limited, Toronto



INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38

February, 1963

No. 2

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 203)

IN THIS ISSUE

Part II	
Organ Recordings for the Theatre	4
By ROBERT A. MITCHELL	
Projectionist Profile: Ernest Lang	8
TESMA Board Named	12
New Century Projector Series	10
Norelco, Ballantyne Agreement	11

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

Better Days for Craftsmen Ahead?

1963 may be a year of good theatre business and a turning point for projectionists who were affected by theatre closings and discouraged by working with worn-out equipment. Film men who have traveled around the country talk about a possible revival of theatre owners' plans to build new theatres and refurbish older houses, including new booth equipment.

During the "golden age" of movies, 1920 to 1929, the theatre owners that prospered recognized that boothmen held a big responsibility in the proper presentation of the motion pictures. These owners encouraged constant improvement in projection equipment and used innovations and new developments for high quality screen shows as they came along.

Different From the Past

In the past decade the exhibitor wanted attractions to wow his audience from the film producer-distributor. But there are signs that the exhibitor realizes he must depend upon himself for high standards of screen presentation, including good housekeeping to induce the public to attend his theatre more often.

If that happens—as eventually it must—the projectionist will enjoy his old status as a key man of the theatre, responsible for keeping the equipment in shape and putting a good show on the screen.

During the "Golden age" of movies there were added attractions, such as organ solos and live stage presentation. Now more than ever the film house relies on the motion picture to attract patronage. The boothman is the key man in the theatre because the public has learned to expect good projection and sound from showcase houses featuring 70mm and stereo sound.

New Equipment Increases Prosperity

If theatre owners spend money on new projection equipment and remodeling older theatres, they can advertise that they have superior projection, comfortable seats and attractive surroundings, and that they provide courteous service for patrons. This can help make their theatre an institution of the city—after all, that was how prosperous showmen made money in the 1920's, in addition to exploiting the current and forthcoming attractions. Consequently, the exhibitor, realizing a good, efficient craftsman in his booth means a lot to his box-office business, will have more regard for his projectionists.

Veteran projectionists will remember P. A. MacGuire, who served as public relations man for International Projector Corp. for many years, and was a drum-beater for the cause of better projection. In his advertisements for the Powers and Simplex projectors he used the headline "Better Projection Pays." and he also preached the slogan in speeches to exhibitors. Not only did MacGuire promote his company's projector, but he made the exhibitor realize that there was more profit in better projection, and he caused the projectionist to take pride in his craft.

Time for Action

IP thinks the time has come for a similar slogan to be taken up by equipment makers, local unions, the projectionists' social clubs and the individual projectionist. After all, the modern projectionist is a technician, a well-read and skilled machinist; he has to be an engineer to handle the complex projection and sound equipment

(Continued on Page 14)



Part II

Organ Recordings For The Theatre

By ROBERT A. MITCHELL

THE ALLIANCE between the motion-picture theatre and the orchestral pipe organ seems indissoluble in spite of the fact that silent movies faded into history more than 30 years ago.

The tonal eloquence of the organ is no longer needed to support the action on the screen or to intensify its drama. Why, then, the continued association of the pipe organ with motion pictures and the theatres in which they are shown?

There is no doubt that the richly varied voices of the theatre organ exerted a tremendous impact upon moviegoers in the days when the audible "voice" of the screen was not speech, but dramatically keyed music. The "silents" were never really silent, at all!

The silent film, with its characteristic techniques of photography, acting, and continuity (with sparing use of dialogue subtitles), was an art in its own right, and one which attained a high degree of development before its demise. The silents were an extravagantly emotional form of visual story-telling enhanced, ordinarily, by an equally emotional form of musical scoring. (Many of our best-loved "pop" melodies, now classics, were composed for silent pictures, e.g. "Diane" written for the 1927 film "Seventh Heaven" with Charlie Farrell and Janet Gaynor.)

Even modern moviemakers of long experience must admit that the glamorous dream-stuff of the silent motion picture possessed a strange power to play upon the feelings of the audience to a degree seldom

achieved by the stage-borrowed eclecticism of the talking picture. This, in brief, is the background of cinema history which solidly established the pipe organ—or, at least, fond memories of the pipe organ—in the motion-picture theatre.

The silent photoplay will never return, despite its fluidity, its beauty, and its music. Tastes have changed. Modern movies must reflect everyday realities and communicate ideas to the mind as well as feelings to the heart. The exaggerated melodramatics usual in silent pictures would only be laughed at if presented today in the rose-tinted elegance of a by-gone era. But the organ, musical voice of cinematic never-never lands of yesteryear, persists even when its magic is transmitted through the medium of "canned sound."

Use All Types of Music

Although this article is specifically devoted to the music of the theatre organ, it should not be supposed that we advocate the use of organ recordings to the total exclusion of other kinds. Nothing could be farther from the truth. Different types of movie programs require widely different types of overture and intermission music to establish the moods appropriate to them, or at least to avoid monotony or musical incongruity.

In general, therefore, the projectionist should exercise a high degree of musical judgment. An "atmospheric" or intensely dramatic film should be prefaced by concert-type mood music, not by twist music or ballads which are more appropriate to light

comedy-dramas or genre plays of contemporary theme. Similarly, western-type music goes best on days when a western picture is playing, and is in-apropos with sea pictures, crime or mystery films, etc.

A particularly happy combination of overture music and the current screen attraction is furnished when the actual theme music of the picture is available on a disc. This is rarely possible with commercial records unless the picture is a second-run booking. (It's a mystery to us why the film companies, themselves, do not supply movie theme music on records for use in the theatre with their pictures. This would be especially desirable with musicals and dramatic pictures having notable incidental music.)

Vocal numbers are not the best choice for interval music. Intermission music is intended only as a background, not as a major performance requiring the full attention of the audience for its appreciation. So no matter how popular or desirable certain vocal numbers may be in the home or in juke boxes, they may prove distracting in the theatre at times when patrons either chat with friends or relax to a pleasing musical background without being forced to concentrate on the lyrics of a song.

These suggestions appear to apply to the great majority of theatres, no matter whether the interval music for any specific performance is played on an organ or by an orchestra, or features a solo instrument such as the violin, clarinet, piano, trumpet, or some other. Even rock 'n' roll and twist music is not ruled out for pic-

tures catering to adolescent audiences, but the antipathy of most adults toward this kind of music must be taken into consideration.

We recall a theatre that used the jazziest, most toe-tapping kind of barrelhouse piano music imaginable when "The World of Harold Lloyd" was playing. The effect was marvelous, and perfectly keyed to the rapid-fire pace of silent slapstick. (A perfect example of nickelodeon jazz highly recommended with silent comedy re-releases is Forum Hi-Fi 33 $\frac{1}{3}$ -RPM record no. F-9002, "Barrelhouse with Moe Wechsler.")

This same theatre concentrates on theatre-organ music most of the time with good effect; and we are happy to add that all the recorded music used in that theatre is selected by the projectionists.

Theatre Organ for the Theatre

Organ music is peculiarly suited to the motion-picture theatre because of the amazing tonal range, versatility, and mood-evoking power of the orchestral pipe organ. Only the organ can whimper and coo with sentimental intimacy one moment, then blare forth with all the thundering, trumpeting majesty of a brass band the next. The Mighty Wurlitzer is the instrument of a thousand voices; and of all the instruments devised by man, it is the one that truly glorifies music.

Moviegoers greatly enjoy watching an organist performing at the console of a giant pipe organ. But "live" organ music during intermissions is a rarity today, inasmuch as most theatre managements are unwilling to hire an organist when phonograph records are so readily available at little cost. As a result, thousands of fine theatre organs have been neglected or dismantled; and few of the theatres built since 1930 ever had pipe organs in the first place.

Only a handful of the largest and most famous motion-picture theatres, such as the Radio City Music Hall in New York, still spotlight the Mighty Wurlitzer as an added attraction—a real treat for moviegoers who cherish memories of the silents, and a delightful novelty for those whose memory does not go back so far.

What is the physical structure of a giant movie organ capable of surpassing a symphony orchestra in tonal variety and sheer audio power? How does the "king of instruments" imitate sound effects ranging from a whispering breeze and the hoofbeats of a horse to the roar of a speeding locomotive and the crashing of thunder? How is all this audio mimicry combined with every con-

ceivable musical effect from the plaintive sobbing of a distant flute to the brassy fortissimo of a military band?—and all through the artistry of a single musician seated at a console which includes a bewildering array of keyboards, pedals, and "stop" tablets? The answer is simply that an organ is many instruments combined.

No sound is emitted from the console of an organ. The console is fundamentally a complex switchboard. Even the keys of the keyboards are switches which operate electromagnets and pneumatic valves in the distant organ chambers containing, in addition to thousands of pipes, such percussive attachments as xylophones, chimes, celestes, drums, and pianos.

Theatre organs are classified in various ways as, for example, the number of kinds, or "ranks," of pipes and the number of keyboards, or "manuals," in the console. In addition to the manually played keyboards, every organ has a pedal keyboard played with the left foot. The pedals supply the deep, resonant bass notes which accent the rhythm of the music. The organist's right foot works the "swell pedal" which regulates the volume of the sound. Since organ pipes "speak" under constant wind pressure to maintain true pitch, the swell pedal actually only operates a series of shutters which open up or close off the chambers in which the pipes are housed. There may be several swell pedals for different parts of the organ, and there are "effect pedals" for cymbals, drums, traps, gongs, etc.

Complexity of a Theatre Organ

Above the keyboards of an organ are rows of tabs called "stops." These are marked with the names of various solo instruments and distinctive organ voices. One may be labelled "violin," another "French horn," another "melodia," another "dulciana," and so on. Also indicated on the tabs is the musical pitch of each stop on the basis of 8 feet for the open diapason pipe sounding the lowest note of the keyboard in "unison pitch"—the pitch of a particular "C" when the pipe is sounded by pressing the lowest key.

Ranks of pipes pitched an octave lower than unison are designated 16 feet, those an octave higher than unison, 4 feet, an octave higher than this, 2 feet. In addition, there may be 5 1/3, 3 1/5, 2 2/3, 1 1/5, and 1 1/3 foot stops that sound various G's and E's when a C is pressed on the keyboard. These modify the tone by adding new harmonics to the sound. The warm and vibrant tibia

quint, for example, sounds both C and the G next above at the same time! The organist can couple together as many tones and pitches as he desires in order to obtain distinctive "registrations." Hundreds upon hundreds of registrations are possible on a large organ.

An organ contains thousands of pipes, the largest ones 16 or 32 feet in length and the smallest ones no larger than penny whistles. Indeed, an organ is fundamentally a colossal agglomeration of horns and whistles together with bells, chimes, harps, vibraphones, pianos, bass drums, snare drums, cymbals, gongs, Chinese blocks, castanets, etc. Each of these is controlled by a stop tab or effect pedal in the console. The organ is thus a veritable one-man band which can be made to sound like almost anything imaginable, and is capable of effects no other instrument can give.

All of the pipes and percussives of a theatre organ are housed in large rooms, called organ chambers, which open into the auditorium through the volume-controlling "swell shutters" behind ornate grilles. The audience, accordingly, never sees the organ, itself, but only the organ-controlling console which the organist manipulates.

All of the pipes of a theatre organ are behind swell shutters, but a classical organ has rows of large diapason pipes exposed to view. These cannot be controlled as to the volume with which they are heard, and are generally played from the lowest keyboard of the console, called the "great organ." The second keyboard of a church organ plays the enclosed pipes, and is called the "swell organ" because its loudness may be controlled with the swell pedal. This old terminology is retained in theatre organs even though any stop may usually be played through any keyboard. When there are four manuals, the third is called the "solo organ," and the fourth, the "echo organ."

The theatre organ is characterized by the distinctive instrumental tone qualities of its stops. Many of its pipes are much too piquant in tone for any other kind of organ. Then, too, a church organ is usually played with unmodulated wind pressure, which results in a steady, rather monotonous tone. The theatre organ is nearly always "tremulated" by means of a vibrato control. This varies the wind pressure in a gentle 3 cycles-per-second rhythm. The rich expressiveness of tone provided by the vibrato contrasts amazingly with

the heavy, dull monotone of the classical organ.

The wind pressure needed to make an organ pipe speak is not very great. But in order to provide adequate pressure in all the wind chests at all times, permitting the full organ to be played, a large motor-driven blower is required. This is usually located in the cellar of the theatre, the wind being conducted into the wind chests of the organ by air-tight conduits.

Variety of Organ Pipes

A glance into an organ chamber will disclose rows upon rows of pipes in great variety. Some look like conventional diapason pipes, others are gently tapered, some look like trumpets, while still others are square wooden pipes. Each row is evenly graduated in the length of its pipes from the tallest giants down to the tiniest ones the size of lead pencils.

Tin is the preferred material for pipes of the "string" class — the violin, viol d'amour, cello, aeoline, dulciana, gamba, viola, salicional, voix celeste, etc. Not ordinary tinned iron, but pure block tin. Other materials include brass, copper, lead, zinc, and wood for both "flue" and "reed" pipes, the latter having vibrat-ing reeds to produce the tone.

All of the "flutes" in an organ are flue pipes which have no reeds, but generate a vibrating column of air. Some are open at the top, while others, an octave lower in pitch for the same length, are closed off at the top by stoppers. Among the organ flutes we find the orchestral flute, piccolo, melodia, and the soulful tibia, which is a stopped wooden pipe very characteristic of the theatre organ — intimately "throaty" and "cooing," and often played solo during tear-jerking scenes in silent movies.

A large part of the organ, however, is made up of the reed pipes of many shapes and sizes. These range from the powerful stentorphone to the delicate vox humana, and include the trumpet, cornet, trombone, clarinet, bugle, French horn, English horn, muted horn, bassoon, concertina, tuba, saxophone, and a whole family of organ oboes.

If the organist wishes to play a passage of music "full organ," using all of the ranks coupled together, he does not have to reach up and flick all of the stop tabs. He has only to touch a pre-set button under the keyboard—and so with all other stop registrations he may have selected beforehand for each of the keyboards.

"Theatre-Organ Style"

In general, theatre-organ music is distinguished from other kinds by its variety, use of the vibrato, open harmony, accented rhythm, and by a legato solo-type melody with glissandos to provide melting, gliding transitions from one note to another. The late Jesse Crawford, renowned self-taught organist at the old Chicago Theatre in silent-movie days, probably did more than any other organist to develop the characteristic style of theatre-organ music.

The theatre organ is often called the "Mighty Wurlitzer" because Wurlitzer pipe organs were acknowledged leaders in the field. But there were many others, just as there used to be a dozen makes of projectors on the market in more prosperous days. The Robert Morton organ, for example, was considered one of the very finest. The tonal beauty of its strings, tibias, and melodias has never been surpassed. Then there was the Marr & Colton, the Barton, Kilgen, Moller, and Kimball. Some of the orchestral organs used in theatres were modest 6- and 7-rank jobs; others were 20- and 30-rank giants. The Radio City Music Hall Wurlitzer, mightiest of all, comprises 58 ranks of pipework housed in eight large organ chambers!

The fascinating musical magic of many famous theatre organs, including the Music Hall colossus, is available via 33 $\frac{1}{3}$ -RPM phonograph records, both monaural high-fidelity and stereophonic. And before commenting on the content of some of these records, the writer wishes to transmit a word of warning to the unwary.

Warning No. 1. Quite a few phonograph records in the low-price category are inferior soundwise and, worse, are mislabeled and pirated. Special attention is directed to a long-play record titled "Organ Fantasies—Jesse Crawford." This includes ten selections, five of which are played on an electronic organ by God-knows-whom, and the other five are re-recordings of the Keith Memorial pipe organ in Boston played by John Kiley. The record jacket states specifically that this is all the music of Jesse Crawford—which is simply not true. Kiley's playing, by the way, has also been reissued on other discs as the work of "Merlin." *Caveat emptor!*—"Let the buyer beware!"

Warning No. 2. An electronic organ is *not* an orchestral pipe organ. No electronic organ ap-

proaches the theatre organ in tonal range, versatility, and beauty. The pipe organ has both sweetness and majesty; the electronic organ lacks in both qualities. No matter how skillful the organist, no matter how closely certain pipe-organ effects are imitated, the synthetic character and musical limitations of the electronic organ are always apparent. This is a point worth keeping in mind, inasmuch as several famous organists have recorded on both types of instrument, and the record labels do not always tell which has been used.

Only true orchestral pipe-organ recordings are reviewed below. Nevertheless, we recognize the importance of the electronic organ in its own field, particularly for novelty jazz. One of the most "organ-sounding" electronic-organ recordings we have heard recently is "Organ Songs We Love" played by Eddie Baxter on the Lowrey Organ. (Dot DLP-25435, stereo.) It is very good and suitable for theatre use, but it is still an electronic organ.

A Few Long-Play Pipe-Organ Records Suitable for the Theatre

Note: Records are rated for their suitability for theatre use as follows.
*** Just great. ** Pretty good.
* Only fair, or of limited usefulness.

*** POET AT THE PIPE ORGAN, Jesse Crawford, Decca DL-8565 (monaural). Irving Berlin's best oldies masterfully interpreted by the late Jesse Crawford at his finest. The sensitive artistry of the "poet of the organ" is displayed on the Lorin Whitney Studio Pipe Organ. (Needle-tracking difficulties have been noted with this disc if the record player is not perfectly level.) Highly recommended.

** THE SOUND OF JESSE CRAWFORD, Jesse Crawford, Decca DL-4028 (monaural). Broadway and movie show tunes of more recent vintage styled by the inimitable Crawford in a somewhat slow and pensive tempo.

* OVER THE RAINBOW, Jesse Crawford, Decca DL-8984 (monaural). A treasure chest of dreamily romantic Crawford stylings of older popular stand-bys. Crawford's tempo is terribly slow, unlike his playing 30-some years ago. Hear this record and use your own judgment as to the film programs suited to its use.

* GOLDEN OPERA FAVORITES, Jesse Crawford, Decca DL-4301 (monaural). An impeccable disc, but accorded only one star here only because as it seems just a mite too "classical" for routine use in the theatre. It comprises well-known melodies from grand opera (whence come some of our very best tunes), and is suitable for a subdued dramatic mood. If you appreciate a very fine pipe organ played by a real maestro, listen to this one whether you play it in the theatre or not!

** PIPE ORGAN MAGIC, Jesse Crawford, RCA Camden CAL-300 (monaural). Wow, get a load of that slinky siren on the jacket! No, Jesse Crawford didn't look anything like that. She must be the

goddess of the organ materialized for our visual delectation.

The jacket doesn't say so, but this interesting disc is a re-recording of Mr. Crawford's 78's made on the old Victor Orthophonic label more than 30 years ago. You will hear perennial pop tunes in Crawford's old-time "movie" style on the Chicago Theatre Wurlitzer. I compare this disc with the original 78's in my collection, and found the re-recording job well done. Some of the songs, not often heard nowadays, are certain to awaken memories.

***** COMMAND PERFORMANCE.** George Wright. Life L-1006 (stereo). IP has received many requests for the titles and catalog numbers of Wright's organ recordings, making it apparent that IP's projectionist readers have an ear for the very best in organ music. Yes, George Wright is universally considered to be one of the best theatre organists of all time. His playing is dramatically exciting, tonally varied, and gorgeously phrased. Under the enchanting spell of his artistry, the organ comes to life and speaks with the voices of celestial orchestras. How can one artist, with only two feet and ten fingers, summon forth such audio magic from the pipes of the organ? Well, it's nothing short of genius—the genius of a master musician who possesses the heaven-sent ability of translating mood and feeling into audible terms. **COMMAND PERFORMANCE** is Wright at his best, but no better than he is in the following discs, also highly recommended. George Wright is always at his best—and the best of all!

***** GEORGE WRIGHT PLAYS THE MIGHTY WURLITZER PIPE ORGAN,** George Wright. Hifirecord R-701 (stereo). Like the foregoing and the following George Wright recordings, this is also available on a monaural long-play disc and on stereophonic tape.

***** GEORGE WRIGHT ENCORES AT THE MIGHTY WURLITZER PIPE ORGAN,** George Wright. Hifirecord R-702 (stereo).

***** GEORGE WRIGHT'S SHOWTIME,** George Wright. Hifirecord R-708 (stereo).

***** THE GEORGE WRIGHT SOUND,** George Wright. Hifirecord R-710 (stereo).

***** THE ROARING 20'S,** George Wright. Hifirecord R-718 (stereo).

***** THE GENIUS OF GEORGE WRIGHT,** George Wright. Hifirecord R-713 (stereo).

***** HAVE ORGAN WILL TRAVEL,** George Wright. Hifirecord R-721 (stereo).

***** THE MIGHTY WURLITZER REMEMBERS THE GOOD OLD SONGS,** Leonard Leigh. RCA Victor LSP-1795 (stereo). The Mighty Wurlitzer sure goes to town when Minneapolis' Leonard Leigh tickles the keyboards! Talk about organ magic—this one is pure musical sleight-of-hand! The giant organ sheds its majesty and romps to toe-tapping glorifications of pre-World War I jazz. Sheer delight.

**** GREAT LOVE THEMES,** Dick Leibert. Reprise R-6037 (monaural). Dick Leibert needs no introduction. One of the greatest of theatre organists, he has been staff organist at the Radio City Music Hall for many years, and is also well known for his RCA Victor organ records and his many organ recitals throughout

the country. In this record he treats us to some of the most famous love music of all time—themes from the classics which have been turned into popular melodies. Beautifully played on the great Radio City Music Hall Wurlitzer Organ, but just a tiny bit too "serious" to show off the tremendous tonal resources of that famous organ with solo registrations. Highly recommended for a serious dramatic mood.

***** THE FAMOUS RADIO CITY MUSIC HALL ORGAN,** Ashley Miller. Columbia CS-8230 (stereo). Ashley Miller and Dick Leibert are equally talented organists, but in this disc Miller displays the tonal possibilities of the world's mightiest Wurlitzer to better advantage because his selections are more varied than Leibert's in the preceding record. Organist Miller's artistry treats us to glorious renditions of both old and new pop tunes on one side of this beautifully recorded disc, to exciting "theatrical" waltzes on the other.

***** GUS FARNEY AT THE GIANT FIVE-MANUAL WURLITZER PIPE ORGAN,** Gus Farney. Warner Bros. WS-1409 (stereo). Sometimes jazzy, sometimes sentimental, this disc is just about the best sampling of real theatre-organ music you can get. And no wonder! Gus Farney was employed by the Wurlitzer people in the days of silent movies to perform the Opening Night Concert at the new Wurlitzer Organ installations. Master Organist Farney's musical magic can now be yours for the price of a record.

(Continued on Page 14)

Ashcraft CORE-LITE®

(Patent Pending)

What it does

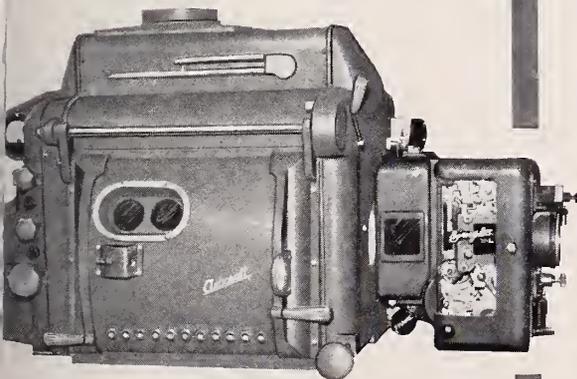
WHAT the Ashcraft CORE-LITE Arc Lamp does, makes more sense than **HOW** it does it.

So, ask any National Theatre Supply Company man to tell you **WHAT** the Ashcraft CORE-LITE Arc Lamp does and he will give you an earful of facts.

Like this. The CORE-LITE will increase your screen side-lighting 75 to 100%... and can prove it!

Or like this. The CORE-LITE will save more carbons than you can shake a stick at. 35% savings can be expected, 50% is not unusual.

And he will prove it in indoor or drive-in theatres, using existing screens and lenses. Call or write him **NOW!**



Trademark registered and copyrighted. Patent applied for.
The C. S. Ashcraft Mfg. Co., Inc.
36-32 Thirty Eighth Street, Long Island City, N. Y.

Projectionist Profile . . .

Ernest Lang, Secretary of Local 306, A Dedicated Man to the Labor Movement

New York's Moving Picture Machine Operators Union Local 306 rates high among the unions where the rule is democracy. And the major credit for that is Ernest Lang, elected secretary in 1947, and his stalwart fellow members. Just to name a few, Harry Garfman, Steve D'Inzillo, respectively business agents for Brooklyn and New York.

Ernie Lang's other religion is the labor movement. He's an idealist where the union brotherhood is concerned. He told his interviewer "that the union movement should be free of corruption, bossism and dictators and self-seeking leaders or officers."

Lang's door is open to 306 members, and the members can have their say or gripes at the business meetings.

In the old days of the local that was not the case. The leaders took control and the members could like or not. Lang became actively engaged in the struggle in Local 306. His aim was to destroy these evils and all the benefits for the membership of a democratic ruled union with sincere and honest officials. Ever since Lang's membership in 306—he joined the Local in 1933—he has studied the labor movement by taking extra courses, so his union dedication is honest and real.

He was on the executive board of 306 before he was elected secretary. Now he is responsible for the Welfare and Pension Funds (over \$2,000,000), negotiation of new contracts and the busy business of the Local. Under his leadership not a cent rides on the Funds.

Lang gets to his office at 262 W. 50 St. at 9 a.m. and he is lucky if his quitting time is 10 p.m. One time this reporter was in Lang's office the wife of a projectionist who was a member of 306 told Ernie about her family troubles and wanted Lang to speak to her husband to be more careful and considerate of his wife and their children. That same

day a member got Lang on the phone. It seems he got a divorce and wanted to change the beneficiary of his 306 death benefit.

Ernie Lang has joined numerous fraternal and charitable organizations. The Projectionist Square Club is giving Lang a Gold Card for his activity in the Club.

He instituted the Will Rogers Hospital donation whereby carbon drippings yield hundreds of dollars a year to Will Rogers Memorial Hospital and Research Laboratory. Lang devotes his time to the campaign to get the carbon from the odds and ends of the carbon from the city's theatre booths. His friends in the Local collect the carbons from Manhattan, Brooklyn and Queens on their own time. He is very proud of the plaque on which Will Rogers gave him a citation.

Local 306 operates with a part-time president since 1959. Ernie Lang, Harry Garfman and Steve D'Inzillo comprise the working executives. They had the foresight 10 years ago, when television was raising hell with theatre attendance, to slow down on new members. As a matter of fact now, on a membership of 16,000, about 70% of the membership is above retirement age.

That's why the contract in 1962 with theatres Local 306 negotiators insisted on raising from 10% to 15% for the welfare and pension funds. Incidentally that 1962 pact 6-year raises the vacation from two weeks to three weeks in 1964, with a 5% increase in wages.

About half of Greater New York theatres have closed since 1950. With a sick industry, the 1962 contract was all the 306 membership could expect, and without a strike, in which the projectionists would lose pay; the unions around the country have congratulated the negotiators.

Ernest Lang's forebearers were Hungarians. He went to public grade and high schools in New York City and had two years of college. When



Ernest Lang

he was in college he worked as a reel boy and as a projectionist in theatres in Manhattan, Brooklyn and Queens. His favorite hobby is hunting for deer. He can prove that he's a good shot by the mounted antlered buck which adorns his office.

IP

Ruth E. Sherman, Official of IP, Dies

NEW YORK—Ruth E. Sherman, widow of Harry I. Sherman, past president of the 25-30 Club, New York, and long-time official of IATSE locals in the New York area, died recently. Operating International Projectionist for many years following the death of her husband, Mrs. Sherman was serving as a consultant and official of IP at the time of her death.

IP

William J. German, Industry Film Veteran, Will Retire This Year

NEW YORK—William J. German, an associate of the Eastman Kodak Co. for the last 57 years and since 1922 a distributor of professional film to the industry, has announced that he will retire at the end of 1963.

It is expected that at that time the distribution of its films will be conducted directly by Eastman Kodak Co. Eastman expects to continue to operate from the New York, Los Angeles, and Chicago metropolitan areas, with no substantial change in operational methods. The many users of Eastman film who purchased film

• BRIGHTER LIGHT		• STEADIER LIGHT
• LONGER BURNING		• LESS ATTENTION
• SHARPER PICTURE		• PERFECT COLOR BALANCE
Free Test Samples	CARBONS INC., BOONTON, N. J.	Free Carbon Chart

through German will be able to do so in substantially the same fashion from Eastman.

Mr. German was first associated with Eastman in 1906 and in 1922 he joined the late Jules Brulatour as the distributor of Eastman raw film to the nation's motion picture producers. Jules Brulatour, Inc., was formed in 1924 with Brulatour as president until his death in 1946. At that time German succeeded as president.

In 1952 German negotiated the purchase of Brulatour interests and incorporated two firms under his own name in Fort Lee, N. J., and in California. German's firm continued as supplier to the motion picture industry and captured a large slice of the burgeoning television business. He also supplied film for commercial users and to the U. S. government.

Well-liked throughout the industry, he was frequently honored by trade groups for the contributions, both in time and money, to charity and welfare organizations.

In his 41 years of direct association with the motion picture industry, German has become one of its most widely known and prominent figures. He has been honored in New York and in California by industry and trade groups as well as industry charity and welfare organizations. He has been closely affiliated with a host of humanitarian activities.

His business is not limited to the motion picture industry since film was sold and distributed to the burgeoning television industry from its outset, as well as to industrial concerns and governmental agencies. Shipments were made to practically all of the states of this country.

In the years that German has been associated with the motion picture industry many wide changes took place. He spanned the era of the silent pictures, the advent of sound pictures, the second World War, and, finally, television. When the first distributed film there were essentially two kinds of black and white film available. Today, W. J. German, Inc., carries in its inventory more than three hundred different kinds of Eastman black and white and Eastman color films, and upon special order can make available to its users about 50 additional kinds of Eastman films.

Looking back over the years, German commented that his biggest reward during his years in business was in the many friends which he made.

"These years have been rich and rewarding for me because of the wonderful people I have come to know

and who have become my friends," German said. "These were people with extraordinary imagination and genius who enriched the lives, and are continuing to enrich the lives of all of us in this country and abroad. They utilized the technology and the scientific advances available to them to create the greatest form of entertainment yet developed by man which is able to be shared by so many people. Movies, from the days of the silent pictures to the present, continue their magical hold on all people of all nations. I am optimistic that in

the future, as in the past, the movies will continue as a great source of entertainment and influence throughout the world.

"From the beginning of the motion picture industry in this country, Eastman Kodak has made significant contributions throughout the years to the progress of the industry through its great products. The future holds as much promise as the past in the development of film products by the Kodak Co. Eastman films will be better than ever in the years to come," he concluded. **IP**



HIGHEST SPEED IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. High light uniformity and less light loss on the screen—the whole screen—are typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

- Wire sharp contrast
- Uniform illumination
- Crystal clarity
- Wide range of focal lengths
- Sealed construction



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS



Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.

Century Projector Announces New Series of Projectors, Sound Systems

NEW YORK—A new series of Direct Drive projector mechanisms and sound reproducers, to be known as Series M, has been made available to the theatre trade by Century Projector Corporation.

Frank E. Cahill, Jr., Century's distribution vice president, stated that the mechanisms are completely new in design and that both the projector mechanism and the sound mechanisms were designed to complement each other and will not be marketed separately. Sold as a combination, Cahill stated, the mechanisms "are the answer to the industry's long felt need for an integrated direct drive assembly."

Proved Gear Arrangement

The background and history in the development of the gear arrangement which has proven to be reliable over 25 years of operation were commented upon by Cahill, who said that the present day sound reproducer is an addition to the motion picture projector, not a part of a complete and logical mechanical design.

The speeds of the several shafts in projectors and sound reproducers now in use were dictated by the design of the original hand-cranked projectors and were never intended for motorized operation. Also is the fact that motion picture projectors were operated at 16 frames per second and then increased to 24 frames per second without adequate re-designs of bearings, shafts, etc. to withstand the increased motorized speeds. A large number of these projectors are still in use.

All this has been taken into consideration in designing the new Century direct drive projectors, Cahill said.

At the recent Allied-Tesma convention in Cleveland, Century Projector Corp. introduced and displayed this new arrangement for coupling the projector mechanism and sound reproducer together. This new drive incorporates additional features which result in optimum quietness with stable, vibration-free performance, safe and dependable operation. Cahill added.

Easily Adapted

The New Century drive is said to be easily adapted for interlock or synchronous operation with separate sound reproducers or interlocked together for 3-D projection. Because the main drive shaft of the projector mechanism operates at 1440 RPM (in exact synchronism with the shutter shaft) interlock motors are easily attached with simple 1:1 pulleys.

Because of the direct drive coupling between the mechanism and the sound reproducer in the new series it is no longer necessary to utilize a timing belt drive between the motor and reproducer, nor from the reproducer to the projector mechanism. Therefore the requirements for stable, quiet mechanical operation are fulfilled without troublesome multiple gear trains, excess gears and extra belts.

Analysis of features

(1) Direct Drive Projector Mechanism

(a) The PROJECTOR Main Drive Shaft Speed is now 1440 RPM (same as the Shutter Shaft).

(b) Good mechanical designs dictate that high speed gears driving low speed gears are advantageous for many reasons. *In other words, speed reduction should be used whenever possible.*

The new Century gear arrangement progresses with mechanical stability from the motor, operating at 1765 RPM, to the main drive of the projector at 1440 RPM. Then a step down in speed to the vertical shaft that now extends not only upward through the projector but also downward through a flexible, isolation, coupling to the sound reproducer. This vertical shaft running through the mechanism and sound reproducer rotates at 720 RPM. At the several sprocket shafts the speed is further reduced to 360 RPM which is standard sprocket speed for 35mm projectors using standard 16-tooth sprockets.

(c) Because of the direct drive coupling between the mechanism and the sound reproducer it is no longer necessary to utilize a timing belt drive between the motor and reproducer, nor from the reproducer to the projector mechanism. Therefore the requirements for stable, quiet mechanical operation are at last fulfilled without troublesome multiple gear trains, excess gears, extra belts, etc.

The Poly "V" belt incorporates six parallel "V" tracks running in space-saving pulleys especially grooved to mate precisely with the belt ribs. Thus the advantages of the smoothness of "V" belt drives is combined into 6 "V" belts operating together to give greater power efficiency and additional smoothness. Because the Mechanism is driven directly from the motor through the belt, fluctuations in load from the intermittent movement, sprocket shafts, etc. are not reflected to the sound reproducer.

IP

LaVezzi

THE VERY FINEST

IN PROJECTOR PARTS

LaVezzi MACHINE WORKS

4635 WEST LAKE ST., CHICAGO, ILLINOIS

PROJECTIONISTS PREFER ETHYLOID

Film Cement For BEST RESULTS

Available from Supply dealers

FISHER MFG. CO.

1185 Mt. Read Blvd. Rochester, N.Y.

Norelco, Ballantyne Sign Agreement For Distribution of FP-20 Projector

A major theatre equipment sales agreement has been announced between North American Philips Company, Inc., New York City and Ballantyne Instruments & Electronics, Inc. of Omaha, Neb., electronics division of ABC Vending Corp.

Ballantyne will become the major distributor for the Norelco Model FP-20 35mm projector.

The announcement was made by Niels Tuxen, general manager, Motion Picture Equipment Division of North American Philips and by J. Robert Hoff, executive vice president of Ballantyne.

Projectors to Ballantyne

The agreement calls for the purchase by Ballantyne of a large number of Norelco 35mm projectors. Norelco, in turn, will purchase from Ballantyne certain assemblies and sub-assemblies for its projector line which Ballantyne will manufacture to Norelco specifications.

Ballantyne will use the FP-20 projectors for a large number of indoor theatres already contracted for. In addition, the units will be adapted to accept high intensity lamps for use in drive-in theatres.

The Norelco units are considered to be among the most advanced on the market today and include the same engineering features as the Norelco 70/35mm model. Not only will the units conform to all American standards, but they will contain some unique features for positioning and focusing of all makes of arc lamps, it was stated.

Curved film gate

FP-20 features simple driving mechanisms with a minimum of transmission. It is said to be easy to thread with the smallest number of parts included in the film path. It has a curved film gate and is suitable for all 35mm films. It has double speed, single blade shutters and a high light efficiency, the announcer said.

In addition, the above projector can be supplied with facilities for remote focusing and framing. As a complete unit, the FP-20 incorporates the optical sound head on the same base with the projector mechanism. Provision is made for a magnetic reproducer which is supplied as an optional feature.

A water-cooled film gate is said to

eliminate the problem of film buckling.

Mr Hoff said that the trade will be supplied under the existing teams applicable to the sale of this projector. He also said that within a few weeks Ballantyne would announce a "revolutionary new concept in the marketing of theatre equipment."

iP



How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise—how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes—transistors—gas discharge tubes—klystrons—traveling wave amplifiers—and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects—these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST

Past Office Box 6174

Minneapolis 24, Minnesota

Please send me a copy of "Electrical Noise" by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State

W. J. Cosby, J. R. Hoff Named To TESMA Board of Directors

NEW YORK—W. J. (Bill) Cosby and J. Robert (Bob) Hoff have been appointed by TESMA president Larry Davee to the board of directors of that organization to fill unexpired terms of two resigned directors.

Cosby will fill the unexpired term of V. J. (Jack) Nolan of National Carbon Co. and Hoff is to serve the unexpired term of Leonard Satz, Techikote Corp. Both directors resigned because of press of business.

Cosby, presently marketing manager, arc carbon products for National Carbon Co., has been with that company since his graduation from Purdue in 1950. Cosby matriculated at Purdue, immediately upon his discharge from the U. S. Army Air Corps, in which he served as a bomber pilot in the European Theatre, as a 1st Lieutenant.

Cosby started with National Carbon as a salesman after undergoing the company's training course, was advanced to district sales manager in the Cleveland area. He came to New York three years ago as national sales manager for arc carbons in the theatre division and was advanced to his present job as marketing manager for all arc carbon products about a year ago.

Hoff is a veteran in the theatre equipment manufacturing field and

is a veteran executive of TESMA. He was a practicing attorney and subsequently joined the Ballantyne Co. as sales manager following World War II, during which he served in the Navy. He has been a board member, vice-president and president of TESMA and has served on its board since TESMA's reorganization in 1946. Hoff presently is executive vicepresident of the Ballantyne Instrument & Electronics Co. and a member of the board of directors of ABC Vending Co., the parent company of Ballantyne. **iP**

Radiant Represented At German Photokina

Radiant Manufacturing Corp., world's largest producer of projection screens for home, school and industry, will again participate in the International Photokina Exposition, March 16-24 at Cologne, Germany.

Being introduced for the first time is a new, low priced tripod screen with silver lenticular surface. Radiant pioneered in the development of lenticular surfaces and through its modern, fully automated plant has now brought the price within most budgets. The silver lenticular surface has achieved popularity around the world because it provides brilliant pictures over a wide angle of view both in darkened and partly lighted rooms. **iP**

SMPTE SETS MEETING PROGRAM; LITTLE ON PROJECTION EDUCATION

NEW YORK—A wide range of motion picture and television technical topics will be discussed when scientists and engineers meet this spring at the Traymore Hotel in Atlantic City, N. J., April 21-26, for the 93rd seminannual convention of the Society of Motion Picture and Television Engineers.

Subjects of interest to projectionists include:

"Application of Motion Pictures and Television to Education" under O. S. Knudsen of Iowa State University.

"New Instrumentation in Television" under R. L. Pointer of American Broadcasting Co., New York.

"New Technology of 8mm Commercial Motion Pictures" under Dr. C. Loren Graham, Eastman Kodak Co., Rochester, N. Y.

In a move to accommodate an increasing number of industrial firms and government agencies requesting exhibit facilities at its 93rd Convention, the SMPTE has, arranged for an additional 1,500 sq. ft. of display space.

The equipment exhibit will include a variety of high-speed and instrumentation devices, film laboratory control and processing tools, television cameras, television tape and film recording equipment, as well as special motion-picture and television devices and 8mm motion-picture equipment.

Among those manufacturers that have already contracted for display space at the convention are the fol-

lowing: Animation Equipment Company; Arriflex Corp. of America; Bell & Howell Co.; Birns & Sawyer Cine Equipment Co.; CBS Laboratories; Camera Equipment Co.; Camera Mart; Canon Camera Co. of Japan; ColorTran Industries; Comprehensive Service Corp.; Ehreich Optical Industries; Elgeet Optical Co.; Filmline Corp.; Oscar Fisher Co.; Florman & Babb, Inc.; Hi-Speed Equipment Co.; Hollywood Film Co.; Houston-Schmidt, Ltd. of Canada; Lipsner-Smith Corp.; Magnasync, Inc.; Motion Picture Enterprises; Photo-Sonics, Inc.; Precision Laboratories; Quick-Set, Inc.; Shiba Electric Co. of Japan; S.O.S. Photo-Cine-Optics; Sylvania Electric Products; Time Automated Mfg., Inc.; Wollensak Division, Revere Camera Co.; and Zoomar, Inc.

iP

Motion Pictures Being Lost Through Neglect

Large numbers of historically significant motion pictures are deteriorating through neglect. John Flory, Eastman Kodak non-theatrical film advisor, told participants at the 92nd convention of the Society of Motion Picture and Television Engineers at Chicago's Drake Hotel.

"Mile after mile of motion picture film is turned out each year for fictional, informational, and documentary productions," Flory said. "Little is being done to preserve these important records of our times. A coor-

HEY: "LET'S TWIST"!
Yes, That Easy to Use—No Tools Needed
 Just Twist The Stub In & Out . . .
NO GRINDING—NO DIRT



Little MISER CARBON SAVER *FOR ROTATING CARBON STYLE LAMP HOUSES*

IF YOU ARE NOT USING The "Little Miser" Carbon Saver YOU are losing several Hundred Dollars Each Year!
 4 Sizes 9-10-11m.m. \$3.00 Each
 13.6m.m. \$4.50 Each

ORDER Now—Start Saving Money \$\$
(We Suggest 3 In Each Projection Room)

LOU WALTERS
 Sales & Service Co.
 MOTION PICTURE EQUIPMENT
 EV 8-1550
 4207 Lawnview Ave. Dallas 27, Texas

minated, national program of motion picture archives is desperately needed."

Flory commended the work of the Library of Congress, the National Archives, several private museums, and a number of government agencies. But he said that these few institutions could not cope with the economic and engineering problems posed by ever increasing numbers of films.

"The current output of new motion pictures in the U. S. is nearly 30,000 per year," he said, "more than double the number of books published annually in this country."

"We will reach a point-of-no-return unless orderly channels can be set up to cope with the problems of housing, preserving, and cataloging this material," Flory stated. "The task is too great for one or a small number of groups. It must be undertaken at local, state, regional, and national levels."

Flory recommended a broad program to include: 1) efforts to make archivists more aware of the historical significance of film; 2) better dissemination of technical information; 3) the development of personnel qualified to serve as film archivists; 4) the collection of films by specialized institutions; 5) the collection and publication of a list of institutions where films exist; and 6) an immediate catalog of films now held in archives. **iP**

Harwald Develops "Coordinator" for Auto. Film Inspection

A further stride in the automation of motion picture film inspection and maintenance is offered in the new dual-unit "coordinator" developed by the Harwald Co., Evanston, Ill., manufacturer, to increase the efficiency and reduce worker fatigue in film libraries where one man operates two of the firm's widely used film inspection and cleaning machines. The new coordinator unit is designed to fill the corner created by two adjacent Inspect-O-Film machines set at right angles to each other. It adds to their already ample table space, keeps a record of the time each machine has been run, and affords an indisputable graphic paper record of an inspected film's physical condition.

When an expert inspector works by hand he passes the film slowly through his gloved fingers to "feel" for tears, thick splices, burned frames, punch marks, bad sprocket holes—

the machine does all this automatically by means of jewelled feelers with an electronic control that stops a film instantly, without coasting, whenever such defects appear. Furthermore, it does this many times faster than the most expert manual inspector, and much more accurately.

Professional engineering counsel is offered on all film inspection and cleaning problems, and on film library layout and operating routines, on a non-obligation collect phone-call basis, to Evanston, Ill. Area Code 312, DAvis 8-7070. **iP**

SOS Has New Front Projector Editor

NEW YORK—A new way of direct front projection editing by means of a small bench or table mounted unit has been announced by S.O.S. Photo-Cine-Optics, Inc. This device, measuring 7 in. by 6 in. by 7 in. is said to project a large image without flicker or distortion. Called the S.O.S. Projectola, it is designed for viewing by a number of persons simultaneously.

A four element projection lens with front objective 40mm diameter comprises the optical system which has been coated and corrected for high illumination and sharp, brilliant pictures.

The film guiding elements have grooves for the picture and soundtrack, thus safeguarding the film against damage and ensuring uniformly sharp pictures with forward, reverse or still projection. Little adjustment is required. The gate holds the picture in focus at all times.

The S.O.S. Projectola for 16mm silent and sound films, left to right operation, including lamp and projection case sells for \$169.50. Rewinds, rods and a splicing table for the unit cost \$29.95 additional. **iP**

MARTIN KIRCHNER

SPRINGFIELD, MO. — Martin A. Kirchner, 63, suffered a fatal heart attack while working at the Gillioz Theatre here. He had been employed at the Gillioz since it opened 36 years ago.

Mr. Kirchner was a member of IA local 447, Springfield, for most of that time.

Surviving are his widow, Edna M., two daughters, a brother, two sisters and two grandchildren.

A. J. Hatch of Strong Electric Details Xenon Lamp to Dealers

CLEVELAND—The place of the new Xenon projection lamp in motion picture theatres was the subject of an address by Arthur J. Hatch, president of the Strong Electric Corp., before more than 30 independent theatre supply dealers at a special meeting at the Allied-TESMA TEDA meet at the Sheraton-Cleveland. Hatch also presented a low current economy model projection lamp.

The dealers were briefed on the Strong sales policy, new prices and discounts.

Cliff Callender, sales manager discussed the blown arc type lamp and cold type reflectors. William White, sales, and Harold Plumadore, projection lighting engineer, were also in attendance. A question and answer session also was on the program.

Dealers registered at this special session included Jack Dusman of Baltimore; Hal Hornstein of Miami; George Hornstein, New York City; Lou Walters, J. H. Elders and J. C. Skinner, Dallas; Joe Birdwell, El Paso; Dick Sutton, Des Moines; William Edmondson and A. E. Geisler, Atlanta; Harold Wayne and Tom Graham, Charlotte; H. J. Ringold, Grand Rapids; Roy Smith, Jacksonville; Vivian Harwell, Birmingham; S. L. Contos, Lou Watke, and J. E. Miller, Los Angeles; A. Weiss and N. Lubich, Cleveland; Al Boudouris, Toledo; Bob Tankersley, Denver; Phil Wicker, Greensboro; John Kinney, Detroit; Al Morton, Houston; Ernest J. Comi and Peter E. Comi, Boston; Armond Besse, Montreal. **iP**

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

** EDDIE LAYTON AT THE MIGHTY WURLITZER. Eddie Layton. Mercury SR-60105 (stereo). Old and new pops played on the organ in the broadcasting studio above the Music Hall, not the giant organ in the Radio City Music Hall, itself. The added percussive accompaniment seems unnecessary, considering the percussive resources of a theatre organ. One of the numbers ("I'm a Little Teapot") is musically a mess; another ("Baubles, Bangles, and Beads") is spoiled by the presence of low frequencies which may cause groove-skipping and other tracking difficulties. Most of this record is very good, however.

PIPES AND PEDALS, Charles Rand. Coronet CXS-152 (stereo). Classical melodies somberly and unimaginatively styled. Definitely too "churchy" for the theatre. Limited display of organ voices, and no vibrato is used. As might be expected, Handel's "Largo," famous showpiece for the classical organ, is present, but cut off in the middle of a bar at the end of the second side! From the musical point of view, this is equivalent to decapitating Handel, himself. I cannot recommend this record, and mention it only because so many stores have it on their "bargain" shelves.

** ORGAN MAGIC, Kenneth Lanc. Tops L-1707 (monaural). Standard pop tunes well played on the Palace Theatre organ.

*** SOPHISTICATED PIPES, Don Baker. Capitol T-1171 (monaural). The famous organist Don Baker has never been heard to better advantage on a recording. His superbly masterful stylings are redolent of the dramatic eloquence we associate with the theatre organ. This is a thrilling and often haunting evocation of organ moods on the beautiful Robert Morton pipe organ, considered by many to be the finest theatre organ ever made. Marvelous!

*** AMERICA'S FAVORITE ORGAN HITS, Don George. Reprise R-6008 (monaural). Meltingly moody interpretations of older pops very beautifully played by a master of the theatre organ. Wonderfully enjoyable.

* LEON BERRY AT THE GIANT WURLITZER ORGAN, VOL. 4, Leon Berry. Audio Fidelity AFSD-5845 (stereo). The Wurlitzer recorded on this disc is not exactly a giant, but a rather small one located in the basement of Organist Berry's home near Chicago. The great variety of percussion attachments which have been added to this organ are overdisplayed, making the older pop tunes distinctly mechanical and unexpressive in rendition.

JOHN KILEY PLAYS BIG PIPE ORGAN, VOL. I, John Kiley. Diplomat 2203 (monaural). Old standards and chestnuts muddled by "nervous" phrasing and a tiresomely "quivery" pipe organ which doesn't seem to be quite in tune—the "calliope" in the Keith Memorial Theatre, Boston. Not even one star for this record.

JOHN KILEY PLAYS BIG PIPE ORGAN, VOL. II, John Kiley. Diplomat 2207 (monaural). It may be only a matter of personal taste, but this writer feels that Vol. I (above) is quite enough. Kiley's phrasing often appears nervously hurried, and some of the melody chords seem confused. But perhaps the organist is not so much to blame as the organ. The vibrato

is so excessively quivery that tonal purity is lost and some of the pipes sound slightly out of tune. The music somehow fails to "communicate," and tends to become irritatingly tiresome as it goes on—and on and on.

MAGIC FINGERS OF MERLIN, Merlin. Grand Prix K-141 (monaural). Merlin's fingers are not nearly as magical as his identity. All the selections on one side of this disc are duplicated exactly by numbers on John Kiley's Diplomat 2203, and all on the other side by Kiley's Diplomat 2207. They are *exactly* the same. The out-of-tune vibrato is the same, and this reviewer's estimation of the music is the same.

Worse than this, five of Kiley's Diplomat renditions have popped up on ORGAN FANTASIES—JESSE CRAWFORD (Spinorama S-102). John Kiley may be Merlin, but he is not Jesse Crawford!

Organ recordings with percussive accompaniments (bongo drums, traps, cowbells, rattles, etc.) are not recommended for use where theatre-organ solos are desired. In general, these percussion-accompaniment records sacrifice musical quality to show off high-fidelity recording or the stereophonic effect. These are "sound samples," not works of music, and hence generally fail to perform the functions of music, which are esthetic, not scientific. There is no place for these in the theatre.

There may be a difference of opinion with regard to organ music accompanied by some other instrument—a piano, harp, saxophone, harmonica, etc. Many people feel that the organ is sufficient unto itself, and that no independent accompaniment is needed. Pianos and harps, for example, are built into most pipe organs, and may be played from the keyboard by the organist. An independent accompanist tends to subdue the organ because the organist, aware of the power of his instrument, is always on guard against "drowning out" the accompanist. A full organ played with the swell pedal open is even louder than a large orchestra!

If you want to try out something a bit off the beaten track of independently accompanied pipe organ, however, you may find ORGAN IN THE MODERN MANNER by Perry Burgette with trio of pleasing listening experience. (Hi-Life HLS-36, stereo.) It features organ stylings of romantic favorites with instrumental accompaniments sandwiched between the straight organ solos on the disc. And there is something strangely bewitching about the organ—fluty and celestially remote like music from the stars. An odd one, but worth trying.

Skouras Building Theatre in New York Suburb

NEW YORK — Skouras Theatres Corp., will build a theatre in Lefrak City, near Rigo Park, Queens, Long Island, it was announced by Salah M. Hassanein, president of the circuit. The theatre will be located in the heart of a vast apartment house complex which is presently under construction by the Lefrak Organization.

According to Mr. Hassanein, the theatre will be one of the most luxurious showcases ever built in the metropolitan area. Included in the plan is provision for roof-top parking with direct access to the theatre. The attraction signs will face the Long Island Expressway. **iP**

New Brochure

A new brochure on a complete line of incandescent and carbon arc spotlights for theatres has just been produced by the Strong Electric Corp. It includes a description and illustration of each model, together with range of focal length lens system, and specifications.

A copy will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo 1, Ohio. **iP**

Sound Service Men Get Wage Increase

Sound service engineers employed by Altec and RCA this month are receiving first benefits of a two-step wage increase negotiated by the IATSE general office. The raise amounts to \$5 per week for 1963, to be followed by another \$2.50 in 1964. That will bring the minimum weekly pay of IA sound men to \$160.

The automobile allowance has been increased from 7c to 8c per mile. Special meal periods have been provided, and the clause covering compensation for work on holidays has been strengthened.

The contracts with Altec and RCA normally become the pattern for later settlements with other sound service companies. **iP**

MONTHLY CHAT

(Continued from Page 3)

of today's new developments in screen presentation. It's time for the film industry to launch a public relations campaign to recognize the theatre projectionist as an important man in the film house. **iP**

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me _____ copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$ _____.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

\$6.00

per copy
including postage

**WHY PAY 25%
MORE FOR
PROJECTION
LAMPS AND
RECTIFIERS?**

SAVE BIG MONEY

PROOF:

(See any published list prices of all makes)

on

Strong

**LOW CURRENT • HIGH INTENSITY
PROJECTION LAMPS
AND BI-POWR RECTIFIER**

**YOU GET MORE LIGHT
AND RADICALLY CUT
OPERATING COSTS**

Here's why:

- ★ Burns a 20-inch (not just a 17½") black 11 mm. positive carbon at 85 amperes, consuming only 7 inches per hour, insuring 2½ hours' operation at only 15.7c per hour. Projects about
10% MORE SNOW WHITE LIGHT
than lamps burning 8 mm. copper coated carbons at 70 amperes, which costs 23c per hour.
- ★ OBTAINS SCREEN UNIFORMITIES OF UP TO 100%
- ★ FULL 18-INCH DIAMETER REFLECTOR.
An Optical System Acknowledged To Have No Peer In Efficiency.
- ★ Both positive and negative drive motors are Bodine geared head—the finest. Each motor has a separate feed control.

See Your Independent Theatre Supply Dealer Today or send for details on this complete booth equipment.

BY FAR THE LOWEST IN COST
and having every desirable feature, is
WORTH MANY TIMES THE PRICE

The *Strong*

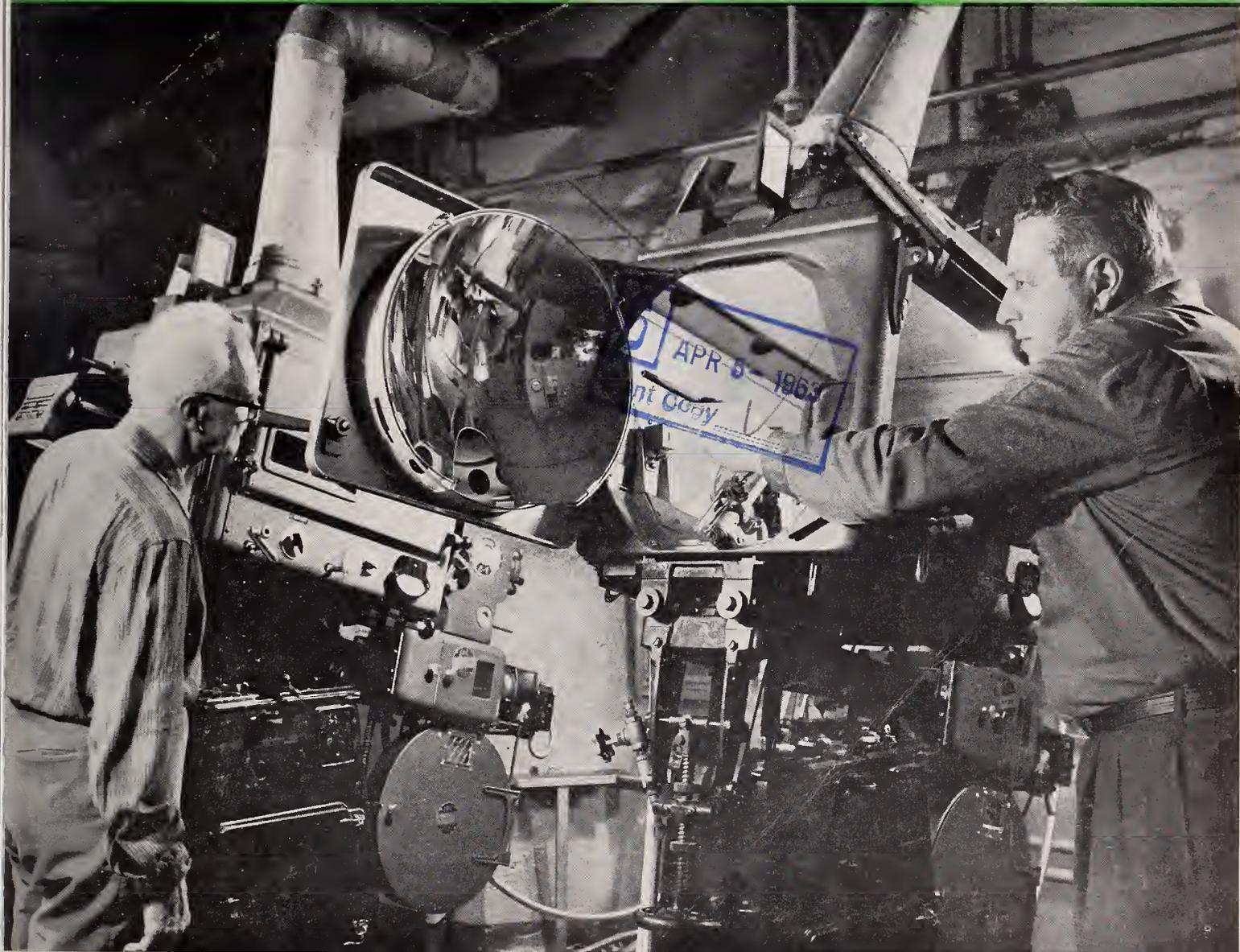
ELECTRIC CORPORATION

31 City Park Avenue

• Toledo 1, Ohio

**The World's Largest Manufacturer
of Carbon Arc Lamps
ALWAYS FIRST
with new and efficient developments.**

INTERNATIONAL PROJECTIONIST



Daniel Rehklau and Art Partis of IA Local 228 check Strong Electric Corp. lamps—Story on page 8.

MARCH

1963

VOLUME 38

NUMBER 3

40c A COPY

\$3.00 A YEAR

Library of Congress
Order Division (0368X)
Washington 25, D.C.





Sharp...
all
the way!

SHARP NEGATIVES RATE SHARP PRINTS! That's the only way to get and hold audience attention—to do full justice to a script. Answer: Go Eastman *all the way*—negative and print-stock. And give the print-maker time to do his job right. Also, in the case of questions—production, processing, projection—always get in touch with Eastman Technical Service.

For more information, write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.



INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 March, 1963 No. 3

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 203)

IN THIS ISSUE

Arc Lamps and Power	4
By ROBERT A. MITCHELL	
The Cover Story	8
Theatres and Pay TV	10
Letters to the Editor	12
New Cinerama Theatre	15
"Talaria" for Pay TV	16

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



1

MONTHLY CHAT

FILM HANDLING BEGINS AT HOME

No useful purpose would be served at this stage by opening up the perennial question: who is responsible for the poor condition of prints which are delivered to the theatres—the projectionists or the exchanges?

Leaving aside the exchange's lack of care, a minority of operators, so the conscientious projectionists say, mutilate the prints with cue marks and sloppy patches and badly done repairs.

The projectionist knows that the print and his equipment is the bloodstream of the film industry, because the paying customer sees the print the operator is projecting and that is what the customer will see whether its perfect print or a scratchy and mutilated one.

So the good craftsman will handle the print carefully in the many operations in the booth, such as its inspection, projection, rewinding, repair and storage.

The consensus of veteran projectionists is that about eight operators in ten will handle the film with the utmost care in addition to the operations in the booth such as repair of breaks, badly made splices and tears. So he can send it to the next projectionist in runnable condition at least.

Then maybe the laggards in the booths have been disgusted in the prints delivered to the theatre; have gotten tired of spending two or three hours to put the prints in running condition. Maybe the exchanges could give a good lesson to the minority of operators who don't handle film with care by delivering prints in fine running condition. The laggards in the booth have the perfect alibi for continuing their slouchy ways if the exchanges have the very same attitude.

While there is just as much need from the projectionists to exercise greatest care in handling prints as for exchanges to do so. There is one factor of negligence which is more glaring when the fault is with the exchange. The exchange is the real sponsor of the picture and should set a good example by seeing that the print is in good running condition before delivering it to the theatre.

The Projectionist Responsible

But the projectionist is responsible for screening a picture for the theatre customers in the best condition with the poor or good print and the condition of his equipment.

The projectionist has to be conscientious in inspecting the film when it's first delivered, and repair breaks and loose splices to put the print in running condition. The boothmen are responsible from the minute the print is delivered to the time that it goes out of the projection room. It's their responsibility to carefully handle the print during its operation in the projection booth.

The big city showcase houses do not have the print-problem the subsequent runs do, but patrons of the subsequent run theatres pay the admission price and their right to see the same picture is as valid as the city folks, because the picture is advertised in the national magazines as glowingly as in the city newspapers.

Sad to say, many of the subsequent run theatres have worn-out projectors, lamps and sound systems. But the skilled craftsman makes the best of it and carefully handles the print.

(Continued on Page 9)



ARC LAMPS ARE "FUSSY" ABOUT THE POWER THEY BURN!

By ROBERT A. MITCHELL

IT DOESN'T TAKE MUCH projection experience to teach the lesson that the carbon arc is mighty particular about the electric power supplied to it. So narrow is the minimum-maximum current range for any one trim of carbons, that it's inviting trouble to ignore the current ratings specified by the carbon manufacturers. And matters are complicated by the fact that the carbon arc, like any other gaseous discharge, is a greedy "current hog"!

We can burn an ordinary household light bulb at a certain standard voltage, and that is that. The bulb takes just so much current (amperes) from the line, and consumes electric power at a constant rate. A 100-watt bulb never takes it upon itself to burn up 150 or 200 watts! The electrical resistance of the filament remains constant (for all practical purposes) over a wide range of supplied voltages. The carbon arc behaves very differently—the more current it gets, the more it wants!

Apply a certain voltage across the terminals of an arc lamp, then strike the arc to start it burning. This voltage, if supplied by a powerful source of direct current, results in the passage of a certain number of amperes in the arc-lamp circuit. But as the arc stream (composed of gases and electrons) gets hotter, it becomes more conductive, and the resistance of the arc to the passage of current decreases. More current (amperes) then flows through the arc, making the arc stream still hotter and more conductive. Almost immediately (if the fuses don't blow or the wiring doesn't burn up) the arc becomes a virtual short circuit, flaming violently along the length of the carbons. A "fixed resistance," such as a light-bulb filament, never behaves like this.

In order to burn properly, therefore, the carbon arc must be electrically controlled in an automatic fashion. The supply of current must be automatically limited as the arc stream loses resistance and tends to pass more and more current. Rectifiers limit the current by means of the reactance of the transformer coils. The greater the current consumed by the arc, the greater the opposing counter-electromotive force which limits the voltage (and hence the current) in the rectifier circuit. This process is a continuous one, and results in a constant current in the arc-lamp circuit as long as the carbon-feeding mechanism of the lamp maintains a constant arc-gap length—

the distance between the tips of the positive and negative carbons.

The flow of current is automatically limited when a generator is used by a "ballast rheostat" which is connected in series with the arc lamp. The ballast is a "fixed" ohmic resistor having sufficient resistance to the flow of arc current to develop a "voltage drop" across its two terminals. As more current flows through the arc, more flows through the ballast rheostat, too. More current means a higher voltage in the circuit, and hence a proportionately greater voltage drop across the ballast. This limits the voltage (and hence the current, or amperes) which can flow through the arc. The arc stream then stops getting hotter and more conductive, and a constant current is established.

Unfortunately, a ballast rheostat wastes valuable power by converting it to heat (as any resistance does), but its use is absolutely necessary in an arc circuit supplied by a multiple-arc motor-generator set.

Wiring Requirement for Arcs

A high-amperage current needs heavy wires, connecting lugs, and switches to conduct it without loss from its source (generator or rectifier) to the unit in which it is used (carbon arc or xenon lamp).

B & S wire size No. 3 is the smallest that should ever be used between the power supply and an arc lamp, no matter how low-powered the lamp may be. This size will serve for all arc currents up to 100 amps. No. 2 wire, still heavier, should be used for currents in the 100-120 amp. range, while No. 1 wire is needed for 120-140 amps. Arc currents more powerful than 140 amps, require No. 0 wire. Most lamp manufacturers recommend that wires *one size larger* be used whenever the transmission line between the source and the lamps exceeds 15 or 20 feet in length. This recommendation is important for those theatres having a motor-generator set located in the cellar, far removed from the projection room.

The xenon lamp equipments presently on the market have power ratings ranging from 900 to 2500 watts. These xenon lamps are served by No. 3 leads from the rectifiers to the lamps.

It is always better to use transmission wiring larger than required by immediate needs. If the wires are heavy enough, they will still be serviceable when a

change is made to more powerful lamps. Undersize wires warm up when carrying the 40 to 180 amps. burned in an arc lamp. This is dangerous, particularly when the heat is confined by insulation, cable sheathing, conduits, etc. The temperature may rise high enough to char the insulation and render the transmission wiring more unsafe than ever.

A corroded or loose connection anywhere in an arc-lamp circuit will cause serious operating difficulties even when the transmission wires from the rectifier or generator to the arc lamp have adequate current-carrying capacity. And the heavier the arc current, the more likely that a bad connection will offer erratic resistance to the current and cause the arcs to behave unpredictably. Thus the projectionist is never allowed to forget that his projection lamps are the most sensitive of electrical devices. They brook no deviations whatever from their normal current requirements.

Are the Carbons at Fault?

Time and again the carbons get unfairly blamed for electrical defects in the arc-lamp circuits. If the carbons escape the projectionist's wrath, the current source or the lamps, themselves, may be the targets of a few choice cuss-words. And while it is true that carbons, generators, rectifiers, and lamp mechanisms *can* be at fault, a misbehaving arc is usually only reacting to current variations or inadequacies caused by a bad connection at the current source, the ballast rheostat, the fuse blocks, or in the lamp, itself.

The heat of the arc is very bad for the wiring inside

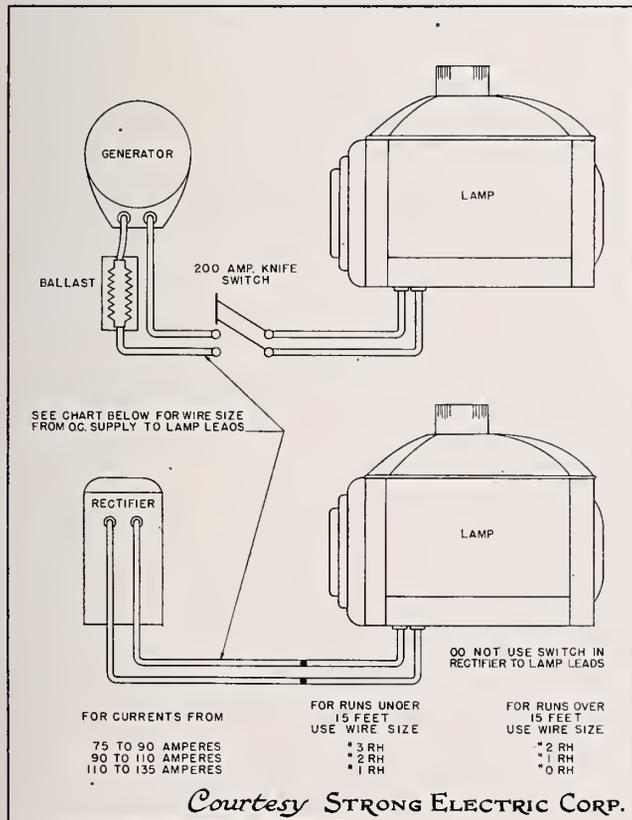


FIG. 2—A current-controlling ballast rheostat and a lamp-house table switch are absolutely necessary in each arc-lamp circuit powered by a motor-generator set. Rectifiers, on the other hand, require no heat-producing, current-wasting ballast. Many rectifier manufacturers also recommend elimination of the usual table switch, the current being turned on and off at the rectifier, either directly or by means of a relay button at the lamp.

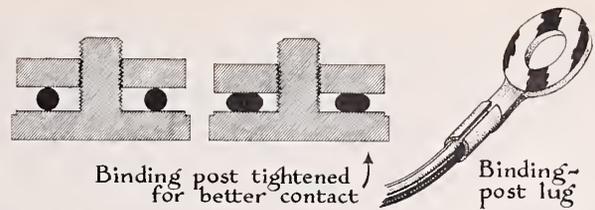


FIG. 1—An electrical binding post should be tightened securely in order to insure good electrical conductance. Note how the contact area of a round wire (shown in cross-section) is greatly increased by squeezing it out of shape when the binding post nut is tightened. A sufficiently large contact area is best established by use of a washer-shaped binding-post lug. Insufficient contact may offer enough resistance to the flow of current to develop heating and "burning" of the connection. This is especially true of arc-lamp circuits because of the heavy currents involved.

the lamphouse. The flexible stranded-wire leads are especially liable to deterioration. The individual copper strands are rather fine, and consequently expose a large total surface to the oxidizing influence of the air. Badly oxidized wires offer increased resistance to the flow of current, and hence hasten their own destruction by heating up.

Flexible wires will last for many years if large enough to carry the current without heating, but may in some cases deteriorate rapidly in a hot, poorly ventilated lamphouse. (Another good reason to heed the manufacturer's advice on lamphouse ventilation!) Examine the arc leads in each lamphouse to make sure that they are stiff and springy. If the individual strands are dark brown in color, and seem to be brittle and crumbly when bent sharply, the wiring should be replaced.

The carbon-holder or feed-head binding posts should be examined several times a year for evidence of looseness or corrosion. Lugs and other contact surfaces should be polished with extra-fine, or No. 00 sandpaper, and the binding-post nuts brought up tight when replaced. A loose contact "burns" and fails to transmit the power properly.

Never use emery paper or cloth for polishing or cleaning electrical contacts. Emery dust conducts current to a slight extent. Sandpaper is safe because quartz sand (unless molten) is a non-conductor of electricity.

Inasmuch as the *same number of amperes* flow in all parts of a circuit, the connections should also be clean and tight at the generator or rectifier terminals, the ballast rheostat, and at all fuse blocks and switches. In cases where the binding posts are so badly corroded that the lug nuts cannot be loosened without damage, a few drops of kerosene and thin lubricating oil applied to the binding post and left on for several hours often works miracles.

The carbon-holding jaws of simplified HI lamps and the contacts of rotating-positive HI lamps should normally never be filed or sandpapered. Filing roughens them and may get them "out of true" or spoil the fit. Roughened metal, by the way, oxidizes more rapidly than smooth, highly polished metal.

Carbon holders are usually made of special heat-resistant bronzes; and certain high-powered lamps have water-cooled contacts of pure silver, which is the best conductor of electricity known. The dull brownish coloration produced by a microscopically thin film of copper oxide (or silver sulfide) on the surface of the metal need cause no concern, and *should not be removed*. It offers no measurable resistance to the passage of current; and its formation is a normal occurrence. The copper commutator bars of motors and generators are

considered to be in good condition *only* when this red-dish-brown oxide film is present!

Generators Good, But Wasteful

Motor-generator sets are still retained in many theatres using simplified HI arc lamps. Motor-generators have the advantage of delivering extremely smooth direct current relatively unaffected by AC line-voltage fluctuations. This is important in neighborhoods where the main current is poorly regulated. But motor-generators are noisy, they are relatively costly to purchase and to maintain in good working order, and they require the use of current-wasting ballast rheostats. Even though a motor-generator set, considered by itself, may have the same 85% power-converting efficiency of a selenium, tube-type, or silicon diode rectifier, it is much less efficient than a rectifier in actual service because of the unavoidable ballast losses.

The voltage drop across a ballast rheostat (when the arc is burning normally) is the difference between the generator output voltage (indicated by the voltmeter in the control cabinet) and the actual voltage drop across the arc. This difference should never be less than 15 volts for the smallest simplified HI ("Suprex") arcs, or less than 25 volts for the most powerful rotating-positive HI arcs. An excessively large ballast drop insures stable burning of the arcs, but also wastes electric power unnecessarily.

In general, the ballasts should be adjusted so that the arcs burn at their maximum rated current or, better, at 2 or 3 amperes above the rated maximum. Then the generator voltage is slightly decreased by means of the field rheostat (usually located in the generator control cabinet) until the current drawn by the normally burning arc is at the desired value *in the current range recommended by the carbon manufacturer for the size of trim being used*. The voltage drop occasioned by the very slight resistance of the transmission line is so small that it may be ignored.

"Creeping" Arcs in Suprex Lamps

Certain lower-priced simplified HI arc lamps have a fixed positive-negative carbon feed ratio. The lamp manufacturer has assumed that the positive carbon will be consumed just so much faster than the negative carbon, and accordingly has threaded the carbon-feed shafts

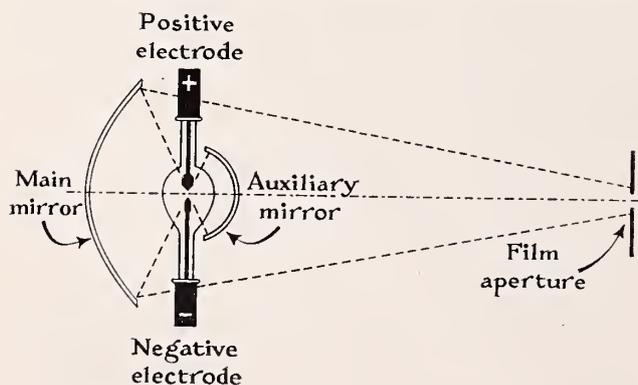


FIG. 3—The optical system of a xenon-bulb light source is similar to the optics of a carbon-arc reflector lamp. The spherical auxiliary mirror, not used in a carbon arc lamp except the "blown-arc" type, nearly doubles the luminous output of the lamp and smooths the screen illumination by superimposing an inverted image of the xenon arc upon the light source, itself.

Unlike the carbon arc, which emits most of its light from a crater in the tip of the positive electrode, the xenon lamp emits its light from the gaseous discharge between two tungsten electrodes.

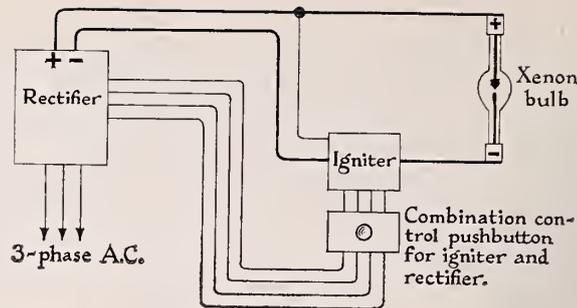


FIG. 4—The carbon arc has movable electrodes which are brought together and then separated to establish a current-conducting arc, but the xenon bulb has fixed electrodes. The low-voltage, high-amperage current needed for this lamp cannot pass until a conducting path has been established through the xenon gas by a high-voltage spark. This is furnished by an ignition device which automatically cuts in the low-voltage operating circuit the moment a spark jumps between the electrodes. Actual operation of a xenon projection lamp is extremely simple—just press a button! No optical adjustments are necessary once the long-life bulb has been installed and "lined up".

to correspond with this particular ratio. Actually, this ratio (whatever it may be) obtains only at *one definite arc current*. Other positive-negative feed ratios are observed at other arc currents even when the same trim of carbons is used.

If the current be decreased or increased in a lamp having a fixed feed ratio, the positive-negative burning ratio will be changed. No way is provided for the projectionist to compensate for the change in such a lamp: all he can do is make sure that the current is maintained at a value which will hold the arc in focus.

Suppose that the current is increased for some reason, perhaps to get a brighter picture or to get a whiter, more efficient light. The rate of positive consumption then increases over the rate of negative consumption relative to the feed ratio at which the lamp was set at the factory. What happens? The entire arc creeps out of focus away from the mirror, and the light on the screen gradually becomes dim and bluish. The reverse happens when the current is decreased, perhaps for the purpose of saving money on carbons—a false economy, by the way. The positive burning rate decreases over that of the negative, and the entire arc creeps toward the mirror. The screen light then becomes dim and brownish.

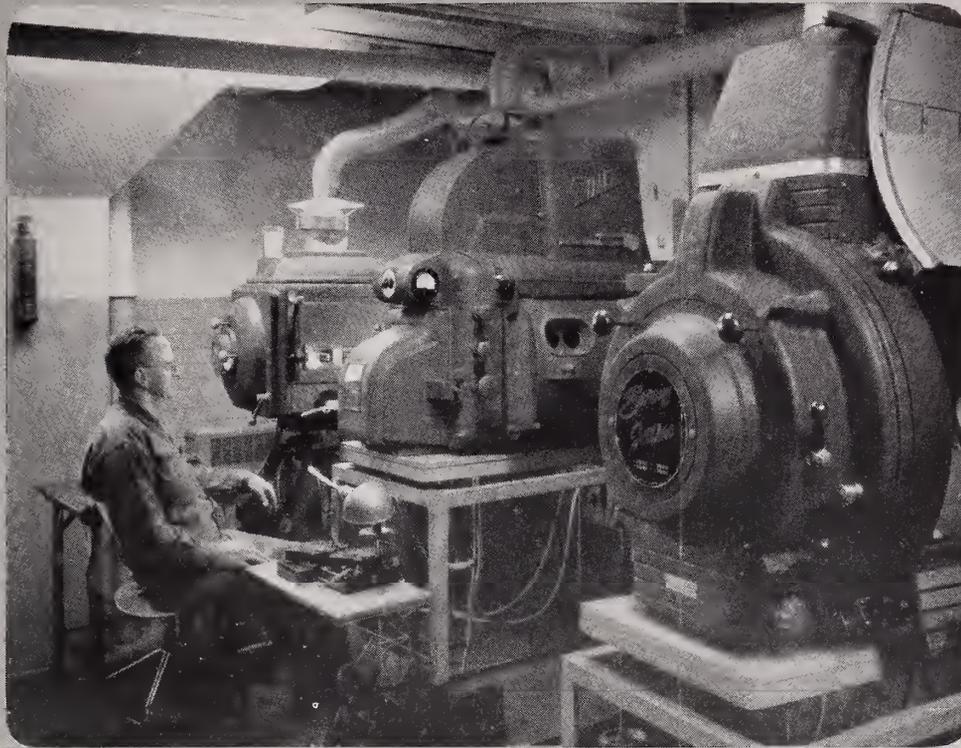
If a radical increase or decrease in arc current is desired in a fixed feed-ratio Suprex lamp, it is best to use the next larger or smaller trim of carbons. This is sometimes possible without having to replace the carbon holders, but not always. At all events, we suggest that the size of trim chosen be burned as close to the *maximum rated current* as possible in order to get the brightest, whitest light. It has been determined by actual test that a 7- and 6-mm Suprex (copper-coated) trim burned at 50 amps. gives *fully 30% more screen light* than an 8- and 7-mm Suprex trim burned at 60 amps!

There is more leeway in the choice of arc currents for burning any particular Suprex trim if the lamp has a separate feed control for the negative carbon. Even so, it is best to hang pretty close to the maximum rated current for the carbons in order to obtain the kind of light that pleases the cash customers.

Arc Gap in Rotating HI Lamps

Higher-powered HI arc lamps—those having rotating positive carbons—respond to current variations in a

(Continued on Page 11)



Testing for arc consumption and light distribution

“Every day is ‘double-feature’ test day at our projection booth in Fostoria, Ohio”

says **BILL BRENNER**
National Carbon Sales Engineer

You're looking into the motion picture industry's most unusual projection booth. We run the same "double-feature" every day—fifty-two weeks a year. Our program covers two important phases of "National" projector carbon production—the testing of arc consumption and light distribution. Their ultimate results are to help you obtain the finest picture quality!



Bill Brenner

Tests are conducted on representative samples from every lot of projector carbons manufactured in Fostoria, Ohio. This specialized

quality control effort not only pays dividends to the theatre owner in projection carbon economy, but assures movie patrons the best-lighted indoor or outdoor presentations that carbon dollars can buy!

Quality manufacturing and precision testing are only a part of the "National" projector carbon story. For 45 years National Carbon has backed theatre owners with the industry's most dependable technical service.

Our Sales Engineers are equipped with today's most modern test devices... to assure you maximum light efficiency on your screen.

*Contact
Mr. National Carbon*



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.
In Canada: Union Carbide Canada Limited, Toronto



Local 228 at the Valentine Theatre

IATSE Local #228 had been organized but one year when Daniel Rehklau, shown at the left in the cover illustration, became a member in 1912. For the next half century he worked in the booths of many Toledo theatres. In fact, he has never operated outside that city. During the last 12 years he has been at the Valentine Theatre, until recently a Loew's operation.

He particularly recalls when he was employed at the Vita-Temple, the first theatre outside New York City to present talking pictures.

With Rehklau in the Valentine booth is Art Partis, business agent of Local 228. Although he has worked in Toledo theatres since 1945, he has just joined the Valentine crew.

These craftsmen are shown operating the recently installed new low current Strong Electric Corp. projection arc lamps using a standard 20" by 11 mm carbon trim. These lamps provide what both the men claim to be by far the most evenly distributed screen light they have ever enjoyed. Actual light readings at the Valentine have proven a distribution of 87% over the 40-foot screen. Rehklau also says that these lamps are the easiest to operate of any he has had during 50 years as a projectionist.

Controls on the lamps are "self-suggestive," providing ease of adjustment. The lamps have 18-inch reflectors and improved carbon imager screen and carbon control system.

The Valentine is owned by Jack Armstrong, who operates 23 theatres in Northwestern Ohio. Armstrong was recently elected president of Allied States. He got his start in the theatre projection business as an operator in the Cla-Zel Theatre, Bowling Green, Ohio.

Born in Napoleon, Ohio, he started there as an usher 35 years ago in 1928, and worked up to management with Clark M. Young. Later went to work for Butterfield as manager in 1932 at Jackson, Mich., and manager for the Schine Circuit.

Mr. Armstrong was associated with Carl Schwyn for 14 years in operation of theatre circuit as general manager, booking and buying, and subsequently a partner upon Mr. Schwyn's retirement from theatre operations and purchased the balance



Jack Armstrong

of theatres. The circuit's headquarters in Bowling Green, Ohio, operates 11 drive-ins and 14 indoor theatres, all located in northwestern and central Ohio and served from the Cleveland exchange area.

Additionally he is a director and vice president of Theatre Owners of Ohio, member of Variety Tent No. 6, Cleveland, member of Bowling Green Country Club, director of Downtown Toledo Associates, also member and past president of Bowling Green Chamber of Commerce, and member of Port Clinton Yacht Club.

His home is in Bowling Green. He married Dorothy Wilken in 1935; they have one married daughter and Jack is the proud grandfather of two young grandsons. **iP**

C. W. Handley Retires From National Carbon

NEW YORK—Charles W. Handley, recognized as an authority on carbon arc light sources for the motion picture industry, has retired after 42 years of service with National Carbon Co., division of Union Carbide Corp.

Mr. Handley had been special representative for National Carbon in Los Angeles for a number of years. In addition to his work with motion picture theatre owners and managers on the use of carbon arcs for projection, Mr. Handley devoted a great deal of time to motion picture studio lighting, and was the author of several technical papers on the subject.

He was active in the American Society of Cinematography, and was recently designated a Life Fellow in the Society of Motion Picture and Television Engineers. **iP**

Jamestown Local Celebrates Its 50th Anniversary

JAMESTOWN, N. Y.—Local 266 of the IATSE is celebrating its 50th anniversary as a member of the motion picture projectionists union in conjunction with the New York State Association of Motion Picture Projectionists spring meeting.

Tentatively, the program will begin with registration at the Hotel Jamestown at 10 a.m. Monday, May 20. Following luncheon, an educational meeting will be held at 2 p.m., with the ladies' auxiliary planning a fine tour. A cocktail hour will precede the banquet in the hotel's Crystal Ballroom at 6:30 p.m., and there will be entertainment during and after the banquet.

R. Monaco, business agent of Local 337, Utica, N. Y. emphasizes that the ladies' tour will be through the Union-National Furniture Co., one of the top high-grade furniture plants in the country. They specialize in Italian and French Provencal Furniture. Here the group may see the machining and the assembling of these fine products up to their completion.

Those driving to Jamestown will be in for a spring treat, Mr. Monaco points out. Take New York State throughway to Westfield. (For scenic Route) Take Route 17 or 17J. Either route goes on one side of Beautiful Chautauqua Lake. Route 17J passes Chautauqua Institution, and those arriving on Sunday may go through the gates without charge and drive around the grounds, as the season is not yet open. **iP**

Ballantyne to Distribute Norelco FP-20 Projector

NEW YORK — North American Philips Co. Inc., and Ballantyne Instruments & Electronics Inc., electronics division of ABC Vending Corp., have signed an agreement whereby Ballantyne will become the distributor for the Norelco Model FP-20 35mm projector, and Ballantyne in their factory at Omaha, Neb., will make components for the Norelco 35mm projector, under the specifications of Norelco.

The agreement was announced jointly by Neils Tuxen, general manager of the motion picture equipment division of North American Philips, and by J. Robert Hoff, executive vice president of the Ballantyne Co.

The agreement calls for the purchase by Ballantyne of a number of Norelco 35mm projectors, and Norelco will purchase from Ballantyne

assemblies and sub-assemblies for its projector line.

Ballantyne will sell the FP-20 projectors to indoor theatres and the FP-20 projectors will be adapted to high intensity arc lamps for use in drive-in theatres.

The Norelco FP-20 has many advanced features, among which are claimed the smallest number of parts in the film path, simple driving mechanisms, curved and water-cooled film gate. **iP**

Technical Equipment Set For SMPTE Convention

NEW YORK — Displays of new film and laboratory equipment will be an important feature of the 93rd Convention of the Society of Motion Picture and Television Engineers, to be held April 22-25, at the Traymore Hotel, Atlantic City, N. J.

According to SMPTE Exhibit Committee Chairman, Dennis Kealey, of Reevesound, Inc., L. I. City, N. Y., the exhibition area will be comprised of 40 booths. Manufacturers will show: motion picture and television devices; film laboratory test, control and processing tools; instruments for time lapse and high and ultra-high frequency photography; means of making and using 8mm small format motion pictures; apparatus used in special motion picture and television technology, data recording and data reduction; color and black-and-white television cameras and television tape and film recording equipment.

Comprehensive Service Corp., Canon Camera Co. (Japan), Arriflex Corp. of America, Houston-Schmidt Ltd. (Canada), Camera Mart, Inc., Hi-Speed Equipment, Inc., Lipsner-Smith Corp., S.O.S. Photo-Cine-Optics, Inc. and Motion Picture Enterprises, Inc., are among the manufacturers who have already announced that they will show their equipment at the convention. **iP**

MONTHLY CHAT

(Continued from Page 3)

Tip To Help Will Rogers Hospital

I.A.T.S.E. locals around the country collect scrap carbons with the copper salvaged and the money donated to the Will Rogers Memorial Hospital.

If the projectionist would strip the carbons, the salvage operation would be more efficient. Also, it would help the collectors—who volunteer their time picking the “scrap-n-drippings” from theatre projection booths. **iP**

BalCOLD[®] REFLECTORS CUT HEAT IN HALF

Read this Hollywood test report. “Film gate heat at 1.85 aperture, is 280° F. with silvered reflectors, but only 140° F. with BalCOLD.” And look at the benefits when BalCOLD Reflectors cut heat in half:

NO FOCUS DRIFT. As much as 5400 feet of film have been run *without* refocus. Cooler film gate cuts down film bulge—keeps constant focus.

GREATER DEPTH OF FIELD. Less film bulge means better background resolution, color fidelity, and clearness of detail.

NO END-OF-REEL CONTRACTION. Lens and projector parts can't cool off and contract (thus changing focus) because BalCOLD Reflectors don't let them get hot enough to expand!

NO EMULSION PILE-UP. Green film never gets hot enough to leave emulsion coatings on film tracks and shoes.

LONGER REFLECTOR LIFE. Theatres all over the country report up to 17 months and more constant, top-quality performance.

LONGER FILM LIFE. Theatres report film life doubled with BalCOLD Reflectors. Means a lot when prints cost up to \$10,000 ea.

Next time you replace silvered reflectors, replace them with BalCOLD—the only reflector whose proven contribution to the advancement of motion picture projection has won for its designers the highly regarded technical award from the Academy of Motion Picture Arts and Sciences.

BAUSCH & LOMB



BAUSCH & LOMB INCORPORATED
61639 Bausch St., Rochester 2, N. Y.

Send me BalCOLD Data Brochure E-35.

Name

Theatre

Address

City Zone State

Century Has New Power Amplifier

Century Projector Corp. announces new and exclusive additions to their line of all-transistor 50 watt power amplifiers, which now have built-in insurance against failures from excessive overloads or other abnormal operations.

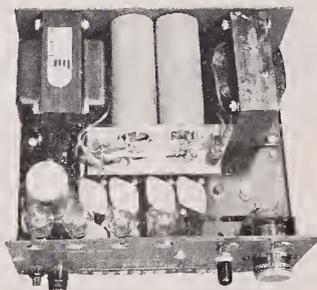
Also engineered into these 50 watt amplifiers are four special indicator lamps (shown in the illustrations) for observation of any overload, low impedance or short circuit conditions in the output circuit.

The red indicator lamps light up when an overload (volume) or some other abnormal condition develops or exists. This visual observation warns the projectionist or service engineer

of any abnormal condition which may be present. The lamps will automatically go off when the difficulties have been cleared.

If during a performance someone or something introduces a short circuit into the speaker system or the power amplifier output, the indicator lamps will light up. The lamps will go off when the abnormalities are removed.

The Century 50 watt all-transistor power amplifier with indicator lamps plus plug-in provisions (another Century exclusive) has been coded W6-13.



NEW POWER AMPLIFIER—The new Century Projector Corp. 50 watt power amplifier is shown here, featuring indicator lamps to instantly pinpoint system malfunctions. One view of the equipment shows the open top of the amplifier, the other indicator lamp viewing ports and plug-in provision, described in the article.

Davee Says Theatres Can Own a Toll-TV System

NEW YORK—Larry Davee, president of Theatre Equipment & Supply Manufacturers Assn., said that TESMA has a patented Pay-TV system and it will be available to any theatre or group of theatres interested in research and development of the patent.

According to the patent, Davee stated, the system ties in with the existing community antenna—systems in areas where signals from a regular broadcasting TV station cannot be received in homes in the area—with an unused TV channel in the area.

Davee said that the equipment can be manufactured for sale to theatres at a “very reasonable” cost, followed by amortization of research and development costs.

If a theatre or theatres were in the area of existing CATV system, the theatre owner could have home subscribers for his first run pictures, if he were to set up a pay-TV station.

Thus, a first theatre in any

area could widen its audience and be paid for it to the extent of the number of homes that are subscribers to the local community antenna system.

It is estimated that there are now licensed by the FCC as many as 3,000 CATV systems, each having hundreds and some case thousands of homes in the area subscribing to the system.

The CATV System

For the benefit of projectionists who are not familiar with it, a Community Antenna Television system exists in areas where signals from a regular broadcasting television station cannot be received in the home without a re-broadcast over wires of a CATV system. The CATV antenna, a high tower or in many cases perched atop a mountain, picks up the regular broadcast from the originating station, amplifies it and sends it by wire into subscribing homes, which pay for the service usually on a monthly basis. In some areas there

are as many as seven channels available to subscribing homes.

In areas where this kind of system exists, theatres may now or in the near future make a deal with the CATV system, whereby the theatre pick-up system will be enabled to channel exactly what is on its screen, over the wires and into subscribing homes for a fee.

A Theatre Opportunity

There are many systems (electronically) that will enable the theatre and its CATV cooperating system to collect their money from subscribing families. These charges would be in addition to regular monthly service fees under which the CATV system normally makes its money.

“It can be seen upon examination of the patent that there is no other way in existence, and none in the foreseeable future, under which theatres can supply television into homes, without the expenditure of enormous sums of money, except under the new patent. Under the projected, patented system now in the hands of TESMA for disposition, theatres are in a position to compete economically, and with considerable profit to themselves, with any Pay TV system now on the market,” Mr. Davee says. **iP**

Eugene Levy Head of Camera Equipment Co.

NEW YORK—Directors of CECO Industries, Inc. have elected Eugene H. Levy president of Camera Equipment Company, Inc., major operating subsidiary, it was announced by Robert B. Bregman, board chairman.

The company is the world's largest rental and sales service organization serving the motion picture and television industry with professional equipment used for theatrical and TV production. It maintains facilities at Hialeah, Fla., Hollywood, Cal., New York City and Syosset, N. Y.

Mr. Levy succeeds Frank C. Zucker, who retires to become president of Local 644, International Photographers of the Motion Picture Industry.

The new Camera Equipment president has been associated with the firm since its founding in 1936. Prior to assuming his new post, he was vice president for sales and national director of advertising and promotion.

Mr. Levy is a member of Local 644, International Photographers of the Motion Picture Industry, and The Pioneers of the Motion Picture Industry.

He also holds membership in the Society of Motion Picture and TV Engineers, the National Audio Visual Assn. and the Industrial Film Producers Assn. **iP**

LAMPS AND POWER

from Page 6

different way. Most reflector lamps of this type have an automatic optical crater-positioning device which insures that the positive crater remains in the focus of the mirror at all times. If the current supplied to the trim is too low, the arc gap becomes gradually shorter than normal; if the current is too high, the gap lengthens. Some lamps have independent negative-feed controls; others have positive-negative feed rate selectors for a number of different trims and currents.

The optimum length of arc gap (the distance between the tips of the two carbons) is about $\frac{1}{4}$ inch for arc currents between 40 and 50 amps., $\frac{3}{8}$ inch for currents between 60 and 120 amps., and $\frac{1}{2}$ inch for currents between 130 and 180 amps. A variation in gap length not exceeding $\frac{1}{16}$ of an inch does not appear to be important. However, the use of an excessively long arc gap may allow the arc to waver, causing the screen illumination to flicker in an annoying manner.

To sum up: If your arcs burn in an unstable manner, with erratic feeding of the carbons, check the electrical system before blaming the lamps or the carbons for the difficulty. A cracked carbon will certainly give trouble, but damaged carbons can usually be discovered by inspection. Water does no permanent damage to carbons, but they must be thoroughly dry when burned. It is a good idea to keep a few dozen carbons

under the lamphouse or in some other warm place to insure a supply of dry carbons.

Check the System Methodically!

How to go about checking the electrical system? A measurement of arc amperage and voltage comes first. Arc voltage drop is measured with a DC voltmeter across the lamp lead wires or table switch when the arc is burning normally. This voltage is less than generator output voltage (as indicated by the voltmeter in the control cabinet), and should be 15 volts less for the smaller lamps and about 25 volts less for the larger ones. This voltage difference happens to be the ballast-rheostat voltage drop spoken of earlier.

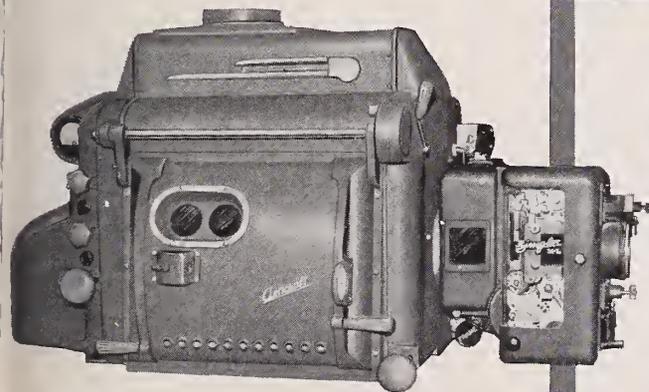
An ammeter is ordinarily present in the system, either in the generator control cabinet or in the lamphouse, itself. An ammeter is absolutely essential for keeping the projectionist informed as to the current being drawn by his arcs.

All connections everywhere in each arc circuit are then checked for evidence of corrosion, looseness, undue heating, etc., special attention being given to the wires and terminals exposed to the heat of the arc in each lamphouse. Perfect performance of the arcs is not guaranteed by a perfect electrical system, of course,—the lamp and carbon control and feed mechanism may be worn, out of adjustment, clogged by dust, incrustated with grime, or improperly lubricated. But no matter what the age or physical condition of the lamps may be, satisfactory burning of the arcs is manifestly impossible unless the electrical factors to which the carbon arc is extremely sensitive are all in A-1 order.

ip

There is a **FIRST BEST** in Anything! In **ARC LAMPS** IT IS THE **OPTICALLY INTEGRATED**

C. S. ASHCRAFT'S **CORE-LITE**[®]
(Patent Pending)



It does unheard of things in screen lighting. Such as . . . up to 100% increase in screen side-lighting.

It works on any current from 78 to 115 amperes. It does it on a single size positive carbon, 11mm in diameter.

It will exceed accepted industry standards in lighting an outdoor screen 52 feet wide. It is the answer to the ill-lighted Drive-In screen up to 95 feet in width.

It is a miserly brute in its operating expenses. Saves you up to 50% in carbon costs.

Want proof? Call your National Theatre Supply Co. man. He will prove the CORE-LITE worth in indoor or drive-in theatres with existing screens and lenses.

® Trademark registered and copyrighted. Patent applied for.
The C. S. Ashcraft Mfg. Co., Inc.
36-32 Thirty Eighth Street, Long Island City, N. Y.

Letters to the Editor

Editor, IP
Dear Sir:

While making magnetic sound installations for various theaters in the past few years I have become aware of the great amount of confusion among exhibitors, distributors, and the public in general about current motion picture sound. For instance; one exhibitor of my acquaintance, on the strength of three mag-optical prints in a row culminating in the 35 mm. release of "Ben-Hur," invested several thousand dollars in stereophonic equipment in 1960. In 1961 he was not able to get a single magnetic print and has had only one in 1962. In this respect the exhibitor is at the mercy of the distributor who is often equally uncertain as to which pictures are available in stereo.

Here are some questions I have which might serve as a guide to a future article on soundtracks in your magazine.

1. Is magnetic stereo sound being soft pedaled or phased out by the major producers or is there still a general enthusiasm for this type of sound?

2. Where can one obtain a listing of the type of sound that is available on current and future releases? In this regard the various trade publications such as Greater Amuse-

ments, Variety, Box-Office, Exhibitor, and even the press books and advertising copy carry no mention of stereo sound when such is available.

3. How is six-track sound re-mixed to four-track and single track sound for the 35 mm. version?

4. How much actual stereo is contained in current release tracks, that is, is only music recorded using three channels with dialogue and effects recorded mono and then shifted to follow the action during re-recording?

5. Are there any general rules that producers use in determining what material to put on the fourth or effects track?

Sincerely,
William E. Lobb

* * *

The views of this writer anent the present-day neglect of magnetic stereophonic sound for CinemaScope motion pictures closely parallel those implied by Mr. Lobb. In an article published in the February 1962 issue of INTERNATIONAL PROJECTIONIST I wrote: "In view of the demand for stereophonic sound, we cannot refrain from wondering why the great majority of movie producers have so neglected the CinemaScope magnetic sound process. The magnetic reproducers in thousands of theatres remain idle most of the time.

and in their failure to utilize fully a stereosound system *already at their disposal*, all too many movie moguls are guilty of the shortsightedness for which Hollywood is notorious."

To reply specifically to Mr. Lobb's first question, we can say that the neglect of stereosound by the major producers is deliberate. The movie-going public is far more enthusiastic about stereophonic sound for panoramic pictures than the producers, themselves, appear to be. Hollywood film producers have a well-known tendency to consider immediate costs rather than the quality of their product or long-range results in the theatre.

It might be assumed that the great popularity of stereosound in the home through the media of binaural phonograph records, multitrack sound tapes, and dual-channel FM radio broadcasts would stimulate the use of magnetic 4-track prints for stereosound in the theatre. As things actually turned out, producers began to neglect movie stereosound *from the very moment* that multichannel reproduction of music in the home soared to the zenith of popularity.

CinemaScope stereosound admittedly suffered from technical ineptitudes which proved distracting to audiences, but some of the early attempts in this sound medium were pleasing and effective. We know that optical-track recording is more serviceable than magnetic for monaural motion-picture sound, but the 4-track magnetic process is more convenient than multitrack optical for stereophonic reproduction, and the extra cost of magnetically striped prints is not excessive. Nevertheless, the producers seem unable to look beyond the added costs to the realism of the results and the benefits of patron satisfaction. Stereophonic sound may contribute little or nothing to standard non-anamorphic projection, but it is a definite advantage to spectacular CinemaScope pictures in natural color.

Question 2: There are not at present any complete listings of the type of sound available on current and future releases. This lack is just another example of the narrow-visioned, dead-head policies of an industry which goes on and on court-ignoring financial disaster through a deliberate process of business stagnation. Exhibitors' trade publications should be pressured into obtaining and publishing this vital information, inasmuch as the thousands of theatre owners who have gone to the expense of installing stereosound equipment have an indisputable right to know of



ALLEN SMITH HONORED—Allen G. Smith of National Theatre Supply Co., recently featured in an IP profile, is shown above receiving a presentation from W. J. Turnbull, left, president of National Theatre Supply Co. On the right, Arthur Baldwin, vice president in charge of export and New York operations, looks on.



Investment Opportunity

You are looking at a part of your employee benefit program. It's part of your neighbors', too. And your suppliers' and your customers' and your competitors'. It is there for all Americans to enjoy.

A healthy economy is a bulwark of the freedom it symbolizes—and of *our* freedom to enjoy it.

American businessmen like you can protect the investment you have in this benefit program by promoting the Treasury's Payroll Savings Plan for U.S. Savings Bonds. It makes for a strong America and a sound America. And it engenders a sense of thrift and independence and conservatism that helps us all to fathom the real significance

of monuments like that set in the beautiful Black Hills.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the most precious of America's natural resources. In the vastnesses of its mountains and plains and coasts that offer physical and spiritual recreation to us and our children. You are investing in the heritage and the future of America. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U.S. Savings Bonds Division, Washington 25, D.C.



in your plant... promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

INTERNATIONAL PROJECTIONIST

the availability of all stereophonic releases—what few there are.

Question 3: Although not the usual procedure, a 6-track stereophonic recording can be converted to a 4-track CinemaScope recording by omitting tracks 2 and 4 (left center and right center channels) and transferring the remaining four tracks to the four CinemaScope tracks. By taking special pains to insure accurate phasing, however, tracks 1 and 2 and tracks 4 and 5 of the 6-track recording can be electrically combined for tracks 1 and 3 (left and right channels) of the CinemaScope recording, none of the six tracks then being omitted.

A 4-track CinemaScope recording can be converted to a single monaural track by electrical combination of all signals, the fourth "surround" sound-effects track usually being omitted. A more common method is to utilize track 2 (center channel) alone for the monaural transcription. This is made possible by the admixture of some sound from the left and right channels (tracks 1 and 3) in the center-channel track. (The introduction of side-channel signals into the center-channel track has been criticized because it decreases the sound-separation, or directional, effect.)

Question 4: Most movie stereophonic sound is recorded monaurally in a single channel and afterward "pan-potted" by a sound-following technique to obtain the effect of directional sound in the four CinemaScope channels. In this case, the monaural optical-track version is transferred directly from the magnetic single-track original recording.

About the only actual stereophonic recording made with a multiple-microphone setup in CinemaScope pictures involves musical sequences in which an entire orchestra is photographed. Because a multiple-mike setup is acoustically "tricky" and rather time-consuming for the studio sound technicians, the pan-pot method of faking stereosound from a single-track original recording is nearly always used for action-and-dialogue scenes. The pan-pot method saves time and money and simplifies the "sound-mixing" operation wherein the original records are combined with effects and background music.

In general, the pan-pot method gives a stereophonic effect which is as good, and sometimes better, than is obtainable by multiple-channel original recording. Trouble in encountered in scenes where players located at opposite sides of the screen speak simultaneously, but even these difficult situations can often be faked reasonably

well by use of the center channel. When perfection is mandatory, however, complex scenes of this nature must be set up for multiple-channel recording on the set.

Question 5: The general rules governing material to be put on the "surround," or "effects," track reside mainly in the artistic intuition of the director and sound recordist. Naturally, all sounds which should emanate off screen are placed on this track—the sound of an unseen orchestra, of a roiling sea, of a distant locomotive whistle, or the voices of off-screen actors. A novel use for the fourth track involves what may be termed "psychological audio," that is to say, voices and other sounds heard only in the mind of a character in the story.

The use of the fourth track is therefore largely a matter of artistic creativity which strives to produce dramatic effects in the photoplay and an emotional response in the audience through the medium of sound which comes from speakers located at a distance from the screen.

—Robert Allen Mitchell
IP

Trans-Lux To Open New Theatre in April

A new theatre, "The Trans-Lux East," located at 58th St. and Third Ave., will open during the first part of April, it is announced by Thomas Rodgers, vice president of Trans-Lux Corp. Said to be the finest theatre

ever to be constructed in Manhattan. The architect, planned a "theatre with a personality," and the results are both striking and dramatic. Total investment for the 600-seat house, will be in excess of \$500,000.

An unusual feature of the theatre will be a viewing window in which the heart of the theatre, the sound and projection equipment, may be seen by the public.

The Trans-Lux East is the first theatre ever to be constructed as part of an office and apartment building.
IP

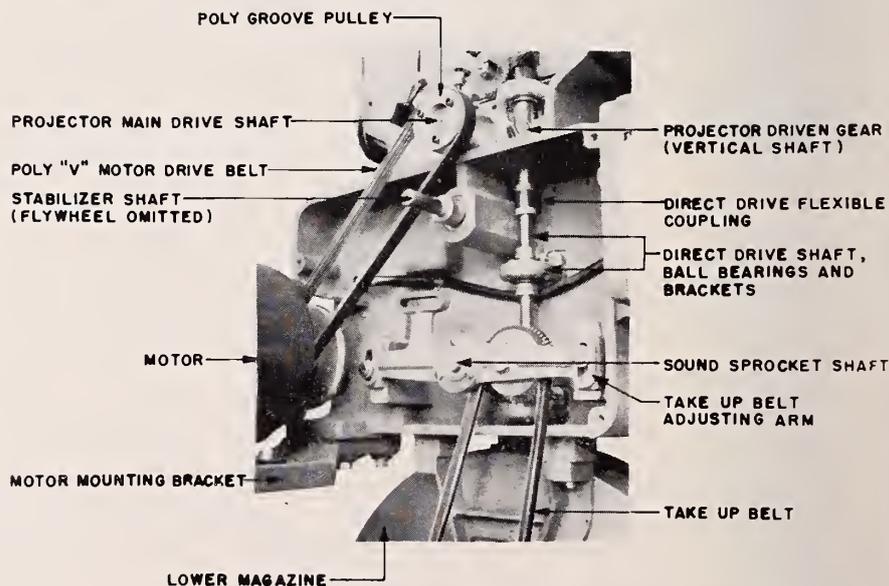
Eastman Kodak Sales Top Billion Mark

ROCHESTER, N. Y.—William S. Vaughan, president of Eastman Kodak Co., has announced that company sales and earnings topped the billion-dollar figure for the first time in its history last year.

In a report also signed by Albert K. Chapman, board chairman, Kodak disclosed that sales of \$1,056,072,473 were 7% higher than the \$989,171,969 reported for the previous year.

Net earnings were \$140,342,438, or almost 8% above the 1961 total of \$130,203,447 for 1961. The total was figured at \$3.64 per share as compared to \$3.33 per share in 1961.

The report also disclosed a favorable cash position with working capital available totaling \$412,000,000, up \$25,000,000 in the last year. Inventories were \$18,700,000 higher than at the close of 1961.
IP



PROJECTOR MECHANISM · SOUND REPRODUCER DIRECT-DRIVE

DIRECT DRIVE projector mechanisms and sound reproducers have been made available by Century Projector Corp. Detailed in this illustration, the mechanisms were described fully in the February issue of IP. The new Century drive is said to be easily adapted for interlock or synchronous operation. A timing belt drive between motor and reproducer is no longer necessary, it is said.



CINERAMA DOME THEATRE revealed by Nicolas Reisini, Cinerama, Inc. president. This radically-new movie theatre is based upon the "geodesic dome" concept.

Revolutionary New Cinerama Theatre Idea Revealed

A radically-new design for motion picture theatres has been disclosed to a special meeting of more than 100 leading movie exhibitors by Nicolas Reisini, president of Cinerama, Inc. The new Cinerama theatre is based upon the "Geodesic Dome" principle developed by R. Buckminster Fuller.

A model-and-plans of a typical Cinerama Dome Theatre of 1,000 seats, to be constructed of precast concrete, was displayed by Mr. Reisini, who stated that the new Cinerama theatre will cost approximately \$250,000, said to be one-half as much as a conventional motion picture theatre of comparable size, and it will take half as long to construct.

Cinerama is making its patented designs and blueprints available to selected exhibitors desiring to build these unique Cinerama showcases in the U. S. and Canada.

The revolutionary new motion picture theatre presents a new approach to geodesic dome design and the use of relatively - inexpensive precast concrete as a building material. The designs were produced by Geometrics, Inc., Cambridge, Mass. architectural and engineering firm, in association with Cinerama's own technical staff. Also present at the meeting was John J. McNamara, prominent theatre architect.

The model of the Cinerama Dome Theatre shown to the assembled

movie executives was of a 1,000-seat theatre approximately 140 ft. in diameter and 52 ft. high. It is assembled from some 300 precast concrete panels fitted together to form the dome shape.

Reisini stated that "Cinerama's goal is to see that at least 300 of these dome theatres are built in the U.S. and Canada in the next two years, and that an equal number are constructed abroad. The new and economical geodesic dome theatre will also enable exhibitors to bring Cinerama to many smaller localities which hithertofore could not afford to sustain a large house."

He added, "We hope to greatly enlarge the family of Cinerama exhibitors this way. The philosophy behind Cinerama's thinking is that we must concentrate not only in producing the best Cinerama films possible, but also in seeing that these films are exhibited in the most appropriate new theatres throughout the world."

The dome is constructed by bolting the panels together flange-to-flange. Resilient anchor plates are used for mounting the dome onto the foundation. After assembly, the joints between the panels are packed with an epoxy mortar. This transfers the loads between panels and forms a watertight seal. After the dome is assembled, an interior coat of sprayed

asbestos plaster is applied which provides thermal insulation, acoustical absorption and fireproofing.

The fire-resistant characteristics of concrete make it particularly advantageous for theatre use.

The geodesic dome is the creation of R. Buckminster Fuller, an architect-engineer, mathematician and philosopher whose work is based upon an analysis of the principles of structure as found in nature. The design is based on mathematical principles embodying force distributions similar to those found in atoms, molecules, and crystals. It is considered one of the lightest, strongest and most economical of all construction forms.

A geodesic dome has the structural advantage inherent in a spherical shape, which presents an almost ideal configuration for withstanding wind, snow and dead loads. Applied loads are transferred in an arc manner

(Continued on Page 18)

Vallen for
CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES
VALLEN, Inc.
AKRON 4, OHIO

Norelco
p r o j e c t i o n
e q u i p m e n t
Available from
leading theatre supply
dealers
North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine ORLUX Carbons

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart

"Talaria" Offers Pay TV to All Theatres

NEW YORK — National General Corp., owner of theatre circuits on the west coast and the continental divide (220 theatres), has announced that it is pushing ahead with plans to form a theatre pay television network utilizing General Electric's new Talaria light valve projector system.

Eugene V. Klein, National General president, said that by next year the company hoped to have approximately 100 of its houses in a pay television web which would include programming "52 weeks of the year."

Although Talaria was developed by General Electric and uses some of the patents included in the Eidophor process to which 20th Century-Fox has American rights, it is understood that GE carries it further, adding its own secret processes. National Gen-



TALARIA—New General Electric color projector which makes possible the nation's first full-scale pay TV network will be used in movie theater chain of National General Corp. Projector has wide range of possible uses outside the commercial entertainment field, including medical and other instruction, military briefings, long-distance business meetings and political conventions.

eral will handle the franchising, leasing and selling of Talaria on a nationwide basis but servicing of the equipment will be from GE shops located around the country.

Talaria makes possible, the joint announcement said, for the projection of both color and black and white television images on the large-size theater screens. It is National General's plan to include in its programming Broadway shows, national sports events and other special features which it may purchase or produce itself. Transmission of the programs to theatres joining NG's network will be by leased telephone wires.

Klein said that he believed that admission prices can be held "substantially lower" than those currently charged for conventional film product shown in metropolitan theatres.

"This new network makes pay TV a fact of today rather than a complex dream of tomorrow," Klein said. "It puts major entertainment events where they belong and can achieve their greatest effect — in the theatre.

"Our present theatre operations show that the American public wants to get out of their homes to be entertained. The type of entertainment now planned will prove this beyond a doubt," Klein declared.

The large-screen capability of G. E.'s new Talaria projector is expected to have important implications for the entertainment industry, as well as for education (particularly

medical education), military and business communications.

Until perfection of the projector by G.E.'s Technical Products Operation, Syracuse, N. Y., display of TV pictures on full size (25-by-33-foot) screens with adequate brightness was limited to black and white. Previously most color systems were limited to screens about one-fourth this size and thus were impractical for large audiences.

Robert L. Casselberry, general manager of TPO, said the Talaria projector provides a picture with brightness, contrast ratio, geometric accuracy and color fidelity that compares very favorably with color film.

National General has signed multi-million-dollar contracts under which General Electric will supply projectors and service.

The key factors which make possible the capabilities of this projector are the development of a special control fluid, the development of a novel light gathering system to utilize the very high light output of a 5-kw



BIG-SCREEN COLOR TV—Unique color television projector developed by General Electric throws high-quality picture on theater-size screen. National General Corp., 220-theater movie exhibitor, plans to use the new Talaria projector in a nationwide pay theater television network. Before G. E. developed the projector, only black-and-white TV projection was possible on large screens. Color projection was limited to one-fourth the size of standard movie screens. Talaria produces the three primary colors (red, green and blue) from only two light beams (green and magenta). Simplified projection optics make it possible to get primary red and blue from the single magenta beam.

HEY: "LET'S TWIST"!
 Yes, That Easy to Use—No Tools Needed
 Just Twist The Stub In & Out . . .
 NO GRINDING—NO DIRT

Little Miser CARBON SAVER FOR ROTATING CARBON STYLE LAMP HOUSES

IF YOU ARE NOT USING The "Little Miser" Carbon Saver YOU are losing several Hundred Dollars Each Year!
 4 Sizes 9-10-11m.m. \$3.00 Each
 13.6m.m. \$4.50 Each

ORDER Now—Start Saving Money \$\$
 (We Suggest 3 In Each Projection Room)

LOU WALTERS
 Sales & Service Co.
 MOTION PICTURE EQUIPMENT
 EV 8-1550
 4207 Lawnview Ave. Dallas 27, Texas

DIAMOND
 TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

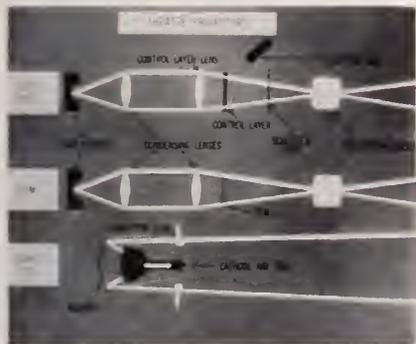
RINGSBORFF CARBON CORP., East McKeesport, Pa.

xenon arc lamp, and a simplification of the projection optics wherein all three primary colors are projected with only two output light beams.

This dual-beam method results in a simpler and more reliable projector, and substantially simplifies the problem of achieving and maintaining precise color registration. This is particularly important for large-screen projection where minute errors would be greatly magnified.

The Talaria projector has a high-power light source and an optical projection system similar to that of a motion picture projector. But in place of the motion picture film, a thin layer of viscous fluid is used. This control fluid was developed by General Electric for this particular application and is said to have unique electrical, mechanical, chemical and optical properties.

This control layer is continuously scanned by an electron beam in the



COMPARISON—Diagram compares operation of new General Electric Talaria (light valve) projector with standard film projector and with TV system using cathode ray tube. In Talaria system, a layer of special viscous fluid is continuously scanned by electron beam. Light from high-power source, is controlled by layer which takes place of printed film in standard movie projector. Third system at bottom projects light directly from cathode ray tube and is limited in brightness. The Talaria projector is similar to a standard movie projector in that both use a high-power light source and a system of lenses to direct the light beam through the film and produce a picture on the screen. For practical purposes, the Talaria light valve projector works the same way, except that the printed motion picture film is replaced by a transparent thin layer of viscous control fluid. An electron gun operating as it does in a TV picture tube scans the surface of the control layer. Instead of producing a picture directly on the layer as it does on the phosphor face of a TV picture tube, the electron beam causes the fluid layer to control the light so that the picture is projected onto the screen.

same manner as the phosphor on the face of the picture tube in a conventional TV set. But instead of producing a picture directly on the control layer, the scanning process controls the light from the lamp which passes through the control layer in such a manner that a live picture is instantaneously produced on a large screen in full color and brightness.

The projector uses an optical projection system so arranged that all of the light from the source is intercepted by sets of stops so that no light is projected onto the screen as long as the control layer is smooth. The electron beam deforms the surface in accordance with the incoming picture information. Electrostatic forces produce these deformations which cause the light to be deflected around the stops and onto the screen to reproduce the original scene.

The technique of employing a high efficiency 5-kw xenon lamp at the source of light for the projected picture and utilizing the electrical picture signal to control or modulate this light overcomes the limitations normally encountered regarding screen brightness and picture size.

The xenon lamp can convert far greater electrical power into light with much higher efficiency than can be accomplished on the phosphor face of a projection cathode ray tube. The xenon lamp has an intrinsic peak brightness of 750,000 candles per square centimeter, which is five times the apparent brightness of the sun. For comparison, tungsten lamps have a brightness of only 3,000 candles per square centimeter.

Persistence, or storage characteristics of the Talaria projector depends on the rate at which deformations of the control fluid decay or subside. Control fluids can be compounded which allow the persistence to be made correct for the fast frame rates required in live television presenta-

tions, or very long for long storage or slow rewriting cycles. This long storage characteristic prevents objectionable "flicker" when the projector is being used for static display in which much of the picture may remain unchanged for long periods.

The Talaria projector is a highly flexible unit that can be used for

**PROJECTIONISTS
PREFER
ETHYLOID
Film Cement For
BEST RESULTS
Available from
Supply dealers
FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.**

**LIFE EXPECTANCY
UNLIMITED**

NO "BE" ECONOMY PRICED, SCREW BASED, SILICON RECTIFIER FOR ARC AND SOUND SYSTEM POWER SUPPLIES HAS FAILED DURING MONEY BACK GUARANTEE PERIOD OF ONE YEAR.

A MODEL TO REPLACE ANY BULB TYPE RECTIFIER.

BROWN ELECTRONICS
1717 South St., ALLENTOWN, PA.

Breaking Mirrors? It can't happen with

HEYER-SHULTZ

UNBREAKABLE METAL REFLECTORS

TOP SCREEN ILLUMINATION	5 YEAR GUARANTEE
WILL NOT PIT OR TARNISH	FACTORY REFINISHING SERVICE

See Your Theatre Supply Dealer **HEYER-SHULTZ, Inc.** Manufactured by Cedar Grove, N. J.

How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise—how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes—transistors—gas discharge tubes—klystrons—traveling wave amplifiers—and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects—these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota
Please send me a copy of "Electrical Noise"
by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

black and white projection as well as color, it is claimed.

Light output from the projector is more than 3750 lumens. This is adequate for all types of theatre screens up to 25 ft. in height and 33 ft. wide, including drive-in theatres. With proper lens attachments the throw-distance-to-picture-height ratio changes from 3.1:1 to 10:1, which covers nearly all theatres.

The Talaria system is capable of producing a wider gamut of colors than the best color film available it is claimed, because color is determined by optical filters rather than dyes.

Resolution, or amount of detail, is about 500 TV lines, better than home TV receivers.

Uniformity of illumination is excellent. Illumination at the edges of the Talaria picture falls to 70% of that at the center. (SMPTE standards allow a drop to 60%).

The Talaria projector is designed to operate with the FCC-approved color system which encodes color on a 3.58-megacycle chrominance subcarrier. The FCC system uses a bandwidth of 4.5 megacycles, but the new projector can also work on a wide-band 7-megacycle system with a 6.44 megacycle subcarrier.

Overall length of the projector is 5 ft., 8 in.; height 5 ft., 4 in.; width, 2 ft., 5 in. Weight is approximately 1,000 lbs. The projector can be disassembled into two units for portability. **iP**

CINERAMA

from Page 15

over a much larger structural area, which contributes to the resistance of the loads.

Because the shortest distance between two points on a sphere is an arc of a great circle (called a geodesic) all of the force lines of the dome lie along great circles. This arrangement results in an equal distribution of stresses in all directions, balancing tension against compression. It also makes possible the use of lightweight materials which in conventional structures would hardly be able to support their own weight.

The dome can cover a large area without requiring support braces and trusses normally used in construction. Instead, its structure and skin are one. It is made by piecing together diamond-shaped panels of concrete, plastic, aluminum, or other material. Each panel has turned-up edges, like the rim of a pie pan. The dome is assembled simply by bolting together the rims of adjoining panels. **iP**

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$

NAME

ADDRESS

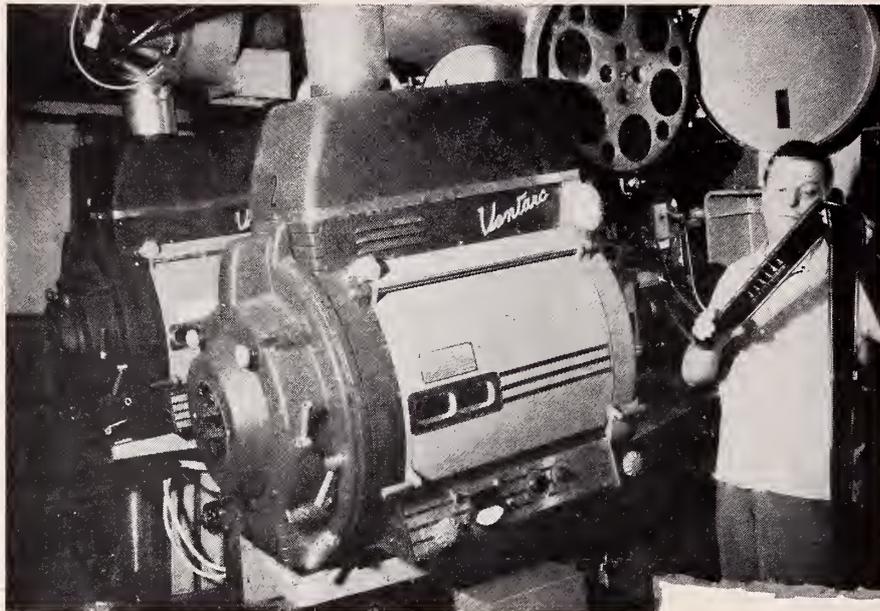
CITY ZONE STATE

\$6.00

per copy
including postage

The famous VENTARC

— BY FAR THE MOST POWERFUL OF ALL PROJECTION LAMPS



The 850-car Cranston has a 50' x 122' screen with a 47' x 118' picture projected 240 feet. Light readings show 6 foot lamberts on 35 mm projection and 8 foot lamberts on 70 mm.

The Ventarc employs a giant 21-inch reflector and a totally different technique—a three dimensional, cylindrical shaped light source which projects twice the light of any lamps using 16½" reflectors, and 51% more light than lamps using f 1.7—18 lens— evenly distributed screen light of constant intensity and unchanging color, without manual adjustment.

"Showing a picture in a drive-in theatre for the first time to compete with an indoor house. The increase in revenue is worth the investment," says the Cranston Auto Theatre, "New England's Finest Drive-In Theatre", Cranston, R. I.

TELEPHONE Regent 7-9801

COLUMBIA AMUSEMENT CORPORATION

Cranston Auto Theatre

1400 OAKLAWN AVENUE
CRANSTON, RHODE ISLAND
"New England's Finest Drive-In Theatre"
10n Bald Hill Road at End of Reservoir Avenue—Junction of Routes 1, 3 & 51

Gentlemen:

In the installation of your Ventarc lamps at the Cranston Drive-In, let me say that this lamp now puts me in the position of showing a picture in a drive-in theatre for the first time to compete with an indoor house.

We have played several pictures in black and white, namely, "Cape Fear" and "Bird Man of Alcatraz", and the major portion of these films were all night scenes and your Ventarc lamp produced these pictures on our screen comparable to any deluxe indoor house.

It goes without saying that the increase in revenue is worth the investment.

Very truly yours,

H. R. Ceine

HRC:ejc

NATIONAL THEATRE SUPPLY COMPANY

Branches Coast to Coast



A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

INTERNATIONAL PROJECTIONIST

SMPTE

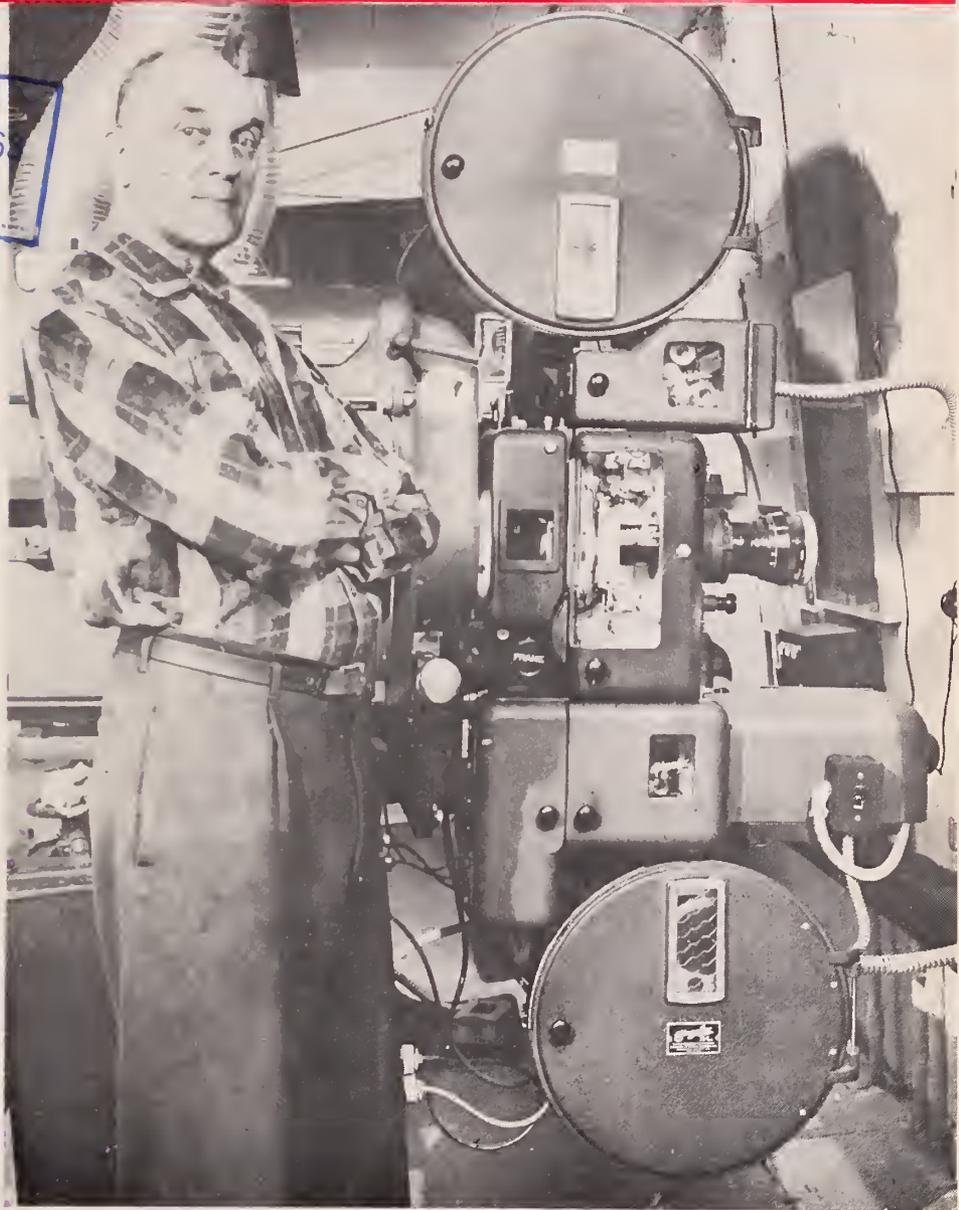
6 MAY 13 1963
Cont Copy ✓

Special issue

**Lighting
Requirements
for Drive-ins**

**THE PIGGY-BACK
BARONET-CORONET**

John Conway, Local 306 MPO, is shown with his Simplex XL projectors in the projection room of another twin theatre, Cinema I and Cinema II in New York. Story on page 12.



APRIL

1963

VOLUME 38

NUMBER 4

40c A COPY



\$3.00 A YEAR

Library of Congress
Order Division (0368X)
Washington 25, D.C.

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the **BEST** of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.

SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$

NAME

ADDRESS

CITY ZONE STATE

\$6.00

per copy
including postage

A Scene From America's Projector Carbon Center...



X-ray reveals breaks and voids in positive projector carbon cores

"The x-ray eyes of our inspectors are your assurance of perfect projector carbon cores"

—says **VERYL JOHNSON**
National Carbon Sales Engineer

You can't judge a movie by its title. And you can't judge a projector carbon solely from the outside. That's why carbon inspectors in our plant in Fostoria, Ohio, test every carbon *from the inside out*—with modern x-ray equipment. As an extra safeguard, our inspectors are paid a premium for every imperfect carbon they reject and scrap.



Veryl Johnson

Shown above is our x-ray room, through which all positive carbons must pass on a belt containing from 6 to 20 carbons, depending on size. The assignment is to weed out carbons with voids or

breaks in their *rare earth cores*—the key to uninterrupted burning and maximum light quality.

As a further inspection safeguard, operators of this x-ray equipment stay keen and alert by changing off *every 30 minutes!*

Quality manufacturing and precision testing are only a part of the "National" projector carbon story. For 45 years National Carbon Company has provided the motion picture theatre industry with unsurpassed technical service.

Our Sales Engineers are equipped with, and are specialists in using, today's most modern test devices for assuring *more* screen light per projector carbon dollar!

Contact
Mr. National Carbon



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.

In Canada: Union Carbide Canada Limited, Toronto



Proper Drive-In Projection By Robert A. Mitchell

A PICTURE that is consistently bright and clear on the screen bespeaks a high degree of competence on the part of the "unseen showman" in the projection room. A brilliant, uniformly illuminated screen, free from brownish or bluish discolorations, reveals that the projectionist takes extra care to line up his lamp equipment and to keep the arc burning properly at all times. Likewise, a knife-sharp focus of the picture (barring "fuzzy" prints) is another hallmark of the conscientious projectionist, inasmuch as different prints, and even different portions of the selfsame reel, ordinarily require slightly different lens settings for the highest resolution of the image.

It's a safe bet that the projectionist who gives frequent attention to the arcs and to the focus presides just as diligently over all the multifarious details of the complex projection process.

Now, when we go from an adequately equipped indoor theatre to the usual drive-in having an excessively large screen (perhaps badly weathered and in need of repainting), the aforementioned indications of expert work in the projection room come in for a rude shaking-up! How can the picture possibly be well lighted when the tremendous area of the drive-in screen overtaxes the capacity of the arc lamps? How can a knife-sharp focus be obtained when the radiant heat blazing upon the aperture is so intense that the film flutters like a rag in the breeze? The projectionist in the average drive-in labors under a disadvantage even when he does the best he can with the unsuitable equipment given him to operate. Low-powered lamps forced beyond their capacity, the absence of heat filters, cold mirrors, or water-cooled film gates, and the use of "slow" uncoated projection lenses all contribute to the shockingly low quality of much of the drive-in projection presently on view.

Minimum Brightness Raised to 4½ FL

The dim, shadowy images which wander like half-materialized ghosts on most drive-in screens today are wholly unnecessary. Up to a certain screen size for each type of screen surface, it is possible to achieve an acceptable screen brightness level in drive-in projection. Modern arc lamps of high power are capable of adequately lighting white-painted drive-in screens up to width of 75 feet, and aluminum-painted screens of only moderate "gain" up to a width of 105 feet. The lamps we have in mind are of the "blown-arc" type; but the maximum allowable screen sizes when the most powerful regular rotating-positive mirror lamps are used are only 10 or 15 feet smaller in width.

So gratifying have been the results obtained on drive-in screens with the powerful lamps *designed expressly for large-screen projection*, that the old unofficial standard of 4 footlamberts as the minimum center-screen brightness for drive-ins has been supplanted by SMPTE

Recommended Practice RP12, which requires a minimum of 4.5 footlamberts measured on the viewing axis at the center of the screen illuminated by one projector running without film.

A screen brightness of 4½ FL is 45% of the indoor *minimum* standard of 10 FL (the brightness difference between a rather pale light gray and white), or 28% of the indoor *median* standard of 16 FL. The *maximum* center-screen brightness for both indoor and drive-in theatres, specified by American Standard PH22.124-1961, as 20 FL.*

Unfortunately, more than half of the drive-in theatres recently surveyed by professional groups have screen brightness of less than 3 FL, substantially below the official recommended minimum. (About 40% of all drive-ins have screens from 80 to 100 feet wide, while another 40% have screens wider than 100 feet.)

Reflectivity of White Screens

Most drive-in screens are surfaced with matte (non-gloss white paint presumably formulated for high reflectance and resistance to sun, wind, rain, and the severe weather conditions of winter. If the white screen paint has a pigment composed principally of titanium dioxide, and if two coats are applied by spraying over a bright aluminum undercoat, the screen should reflect somewhat more than 90% of the light. A "diffuse reflectivity" in excess of 90% cannot be surpassed by any other white paint having acceptable covering power and resistance to time, weather, and chemical fumes.

Screen paints formulated with zinc oxide and/or barium sulfate have diffuse reflectivities of about 85%, which must also be considered good. Paints containing white lead (basic lead carbonate) have excellent covering power and are initially very white, but should be avoided because lead pigments darken and turn, first yellow, then brown, when exposed to the sulfurous fumes usually present in the air in the vicinity of towns and highways. The disastrous color change is due to the formation of traces of black lead sulfide.

A very cautious consideration of all available arc-lamps, lens, and screen data enables us to state that matte drive-in screens of 85% reflectivity be no wider than 65 feet for 4½ footlamberts or more of brightness with 18-inch mirror lamps burning 13.6-mm carbons at 160 amps., or no wider than 75 feet for the same light levels when blown-arc lamps—the most powerful of all—are used. Screens wider than 75 feet (most of them are!) require "directional" aluminum-type paints to obtain at least the minimum recommended 4½ footlamberts with even the most powerful arc lamps presently available.

*The SMPTE-American Standards specification of 10, 16, and 20 footlamberts for the minimum, median, and maximum indoor screen brightness levels is somewhat mystifying, inasmuch as visual brightness differences are Weber-Fechner functions of physical luminance. If 16 FL be accepted as the median, and 10 FL the minimum, we should expect a maximum allowable brightness very close to 23 FL.

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co., division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Second-class postage paid at Minneapolis, Minn.

Aluminum-painted screens require a difficult and expensive installation of the screen surface. This is also true when corrugated or lenticulated aluminum plate is used for optimum light distribution. It is absolutely necessary to tilt aluminum-surfaced screens so that the light will be thrown down into the viewing area. A perfectly vertical aluminum screen is very unsatisfactory in a drive-in, and is worse than useless if the upward projection angle is much greater than 5 degrees. Aluminum-painted surfaces reflect light mirrorwise; and failure to tilt the screen downward will result in the light being directed over the tops of the cars and up into the sky. Only the owls and nighthawks will see a bright picture.

The downward tilt of an aluminum drive-in screen should be 2 or 3 degrees less than the upward projection angle. That is, if the projectors tilt up at a 7-degree angle, the screen should tilt down by about 5 degrees. (Too great a tilt will rob the ramps *behind the projection building* of light!)

After some months of weathering, an outdoor aluminum screen loses both light-reflecting power and directional "gain." An aluminum-painted screen which initially had an overall "integrated" reflectivity of 80% dropped to 65% after one winter. This is a change in color from a bright silvery white to light gray. Then, too, the initial light gain of 3 of this screen (a center-screen reflectivity of 300% measured on the optical axis) dropped to 1½ (center-screen reflectivity of 150% in the same length of time. Even though the extreme ends of the ramps received a bit more light than they did when the aluminum paint was fresh, the overall reflectance was down, and the middle of the viewing area suffered excessive dimming of the picture.

Aluminum paint manufacturers may claim that the

particular brand of paint used on this screen was of poor quality, but this severe loss of reflecting power and gain in a 12-month period is entirely in line with our experience with several brands of aluminum screen paints used out of doors. Indeed, we are reluctant to assign a center-screen reflectance greater than 150% to any *weathered* aluminum-painted drive-in screen even when the screen is properly tilted so as to give the audience the benefit of this admittedly moderate light-gain. An aluminum-screen reflectivity of 150%, conservative though it may be, is a very safe one to guide us in the choice of a suitable screen size and a set of arc lamps to insure the standard minimum brightness of 4½ FL.

Therefore, if the aluminum screen has an axial reflectivity of 150%, it should be no wider than 90 feet when the lamps burn regular 13.6-mm carbons at about 160 amps., or no wider than 105 feet when the lamps are of the blown-arc type. Of course, a higher gain than 1½ will permit the projection of still larger pictures having a brightness of at least 4½ FL, but we refuse to count on a gain much exceeding 1½ for outdoor aluminum screens.

The foregoing maximum screen-width recommendations are for 35-mm non-anamorphic projection, and are based on the assumption that the light transmission of the projector shutter is at least 50% (it is usually a little more in drive-in projectors), that there are no physical obstructions in the path of the light beam as it comes from the arc lamp (only modern mechanisms fill this requirement), that the projection lens is anti-reflection coated and has an optical speed of at least f1.9, and preferably f1.7. If projector-port glasses are used in the drive-in projection building to prevent gritty dust from blowing in and settling upon the lenses,

SCREEN WIDTH (Feet)	LUMENS FOR 4½ FOOTLAMBERTS				LUMENS FOR 10 FOOTLAMBERTS			
	85% MATTE SCREEN	CARBON AND AMPERAGE	150% ALUMINUM SCREEN	CARBON AND AMPERAGE	85% MATTE SCREEN	CARBON AND AMPERAGE	150% ALUMINUM SCREEN	CARBON AND AMPERAGE
20	1,600	7mm 40A	900	7mm 40A	3,500	7mm 42A	2,000	7mm 40A
25	2,500	7mm 40A	1,400	7mm 40A	5,500	7mm 50A	3,100	7mm 40A
30	3,600	7mm 42A	2,000	7mm 40A	8,000	9mm 80A	4,500	7mm 46A
35	4,900	7mm 46A	2,800	7mm 40A	11,000	10mm 110A	6,100	8mm 60A
40	6,400	8mm 60A	3,600	7mm 42A	14,000	13.6 145A	8,000	9mm 80A
45	8,100	9mm 80A	4,600	7mm 46A	18,000	13.6 165A	10,000	10mm 100A
50	10,000	10mm 100A	5,600	7mm 50A	22,000	Blown arc	13,000	11mm 115A
55	12,000	10mm 105A	6,800	8mm 65A	(27,000)		15,000	13.6 150A
60	14,000	11mm 120A	8,000	9mm 80A	(32,000)		18,000	13.6 165A
65	17,000	13.6 160A	9,500	9mm 85A	(37,000)		21,000	Blown arc
70	20,000	Blown arc	11,000	10mm 110A	(43,000)		25,000	Blown arc
75	23,000	Blown arc	13,000	11mm 115A	(50,000)		(28,000)	
80	(26,000)		14,000	11mm 120A	(57,000)		(32,000)	
85	(29,000)		16,000	13.6 155A	(64,000)		(36,000)	
90	(32,000)		18,000	13.6 165A	(72,000)		(41,000)	
95	(36,000)		20,000	Blown arc	(80,000)		(45,000)	
100	(40,000)		23,000	Blown arc	(88,000)		(50,000)	
105	(44,000)		25,000	Blown arc	(97,000)		(55,000)	
110	(48,000)		(27,000)		(110,000)		(61,000)	
115	(53,000)		(30,000)		(120,000)		(66,000)	

TABLE 1 — Required screen lumens (projector running without film) and suggested sizes of positive carbons and arc currents for screen widths of 20 to 115 feet for either 4½ or 10 footlamberts brightness on white and

aluminum screens. (Lumen values in parenthesis exceed the capacities of the most powerful arc lamps.) MULTIPLY ALL LUMEN VALUES IN THIS TABLE BY 2 TO EQUATE WITH MANUFACTURERS' RATINGS.



Reasonably uniform illumination on drive-in screens is desirable.



Side-to-center light distributions of less than 60% results in a center-screen "hot spot"

they should be of the finest quality flat-ground and polished colorless optical glass. Anti-reflection coating of projector-port glasses is desirable, but not absolutely necessary.

All available methods of reducing heating of the film and projector gate should be utilized in drive-in projection, otherwise it will be impossible to get sharply focused pictures on the screen. Air cooling of the film is optional, however, as there is some doubt as to its efficacy in reducing film flutter. Water cooling of the gate and aperture is a necessary adjunct to successful drive-in projection; and the use of either heat filters or cold arc-lamp mirrors must be regarded as an absolute necessity.

Interference-type heat filters (*not* the older absorption type!) should be used with Suprex-type lamps burning 8-mm positive carbons at 70 amps. and with Suprex lamps burning 9-mm carbons at 75 or 80 amps. The more powerful rotating-positive high-intensity mirror lamps require either heat filters or cold mirrors, but the latter being preferred because they reduce heat as effectively as the best filters without wasting light as filters do. Light, it must always be remembered, is at a premium in drive-in projection.

Filters and Cold Mirrors Compared

Old-fashioned infrared-absorbing filters reduce heating of the film by about 40% with an accompanying light loss of 20%. Interference, or "dichroic,"* heat filters do not absorb infrared radiation, but reflect it back toward the lamphouse. These reduce the heat by approximately 45% with a 15% light loss. Cold mirrors, on the other hand, allow the invisible heat-producing infrared rays to pass through into the rear of the lamphouse, and thus reduce heating of the film by about 46% with no loss of light relative to the efficiency of ordinary silvered mirrors.

In order to reduce focus-ruining heat on the film without the light losses occasioned by heat filters, we

urgently recommend that interference (dichroic*) cold mirrors be installed in all rotating-positive reflector lamps, and that heat filters be eliminated. As a matter of fact, the successful operation of all the more powerful high-intensity arc lamps, including those of the blown-arc type, absolutely requires the use of cold mirrors.

Because of their prodigal consumption of power and relatively low luminous efficiency, condenser-type arc lamps are not recommended for drive-in use. A few of the larger indoor theatres retain these old power-eaters because they are relatively insensitive to small errors in arc focus, making their operation very simple, and because they provide exceptionally uniform illumination on the screen. Frequent replacement of chipped and cracked condensing lenses adds to the cost of their operation.

60%—80% Light Distribution

All high-powered mirror lamps of American manufacture provide a reasonably uniform distribution of light without a conspicuous "hot spot" in the middle of the screen. When the arc is focused for maximum screen light, Suprex-type lamps having 14-inch mirrors give a side-to-center light distribution of 60% with 7- and 8-mm positive carbons, and 65% with 9-mm carbons. Rotating-positive lamps having 16- or 18-inch mirrors provide a distribution of 55% with 9-mm carbons, 60% with 10-mm carbons, 65% with 10-mm Hitex and 11-mm regular carbons, and 70% to 80% with 13.6-mm carbons, the more uniform light distribution being obtained at currents close to the rated maximum for this size.

A new lamp on the market gives a side-to-center distribution in excess of 75% by shifting the "spot." or arc-image focus, ahead of the aperture. The Strong Jetarc blown-arc lamp, which burns 10-mm Hitex carbons in the 130-138 amp. range, and 10-mm Ultrex carbons in the 155-160 amp. range, provides a light distribution of 80% and higher on the screen. This appears perfectly uniform to the eye.

It was previously stated that the drive-in minimum light-level standard of 4½ footlamberts can be obtained on matte white screens 65 feet wide with mirror lamps burning 13.6-mm carbons at 160 amps., or 75 feet wide with blown-arc lamps. The maximum widths for the same light level with the same types of lamps on aluminum screens of 150% center reflectivity are 90 and 105 feet. If the screen width is substantially smaller, the attainment of the indoor minimum standard of 10 footlamberts is entirely feasible, providing a brilliance of projection which will prove an eye-opener to most drive-in patrons, and gain considerable favor for the theatre. Audiences appreciate seeing motion pictures at their best!

"Indoor" Brightness for Drive-Ins?

How wide can the screen be to have not less than 10 FL of center-screen brightness when the more powerful arc lamps are used? If the screen is matte white (85% refl.), it may be up to 45 feet wide for a 10 FL level when 13.6-mm carbons are burned at approximately 160 amps. in mirror lamps, or up to 50 feet wide when blown-arc lamp equipment is used. If the screen is of the 150% aluminum-painted type (properly

*The word "dichroic" actually means "two-colored," and should be restricted to mean only interference filters and mirrors which transmit one color, or portion of the visible spectrum, and reflect another. The term "color" does not properly apply to infrared or any other invisible radiation. All colors are perceived visible: the terms "invisible colors" and "invisible light" are absurd.

(Please turn to page 18)

The Cover Story:

Simplex Projector Line Humming

If you wanted to see some evidence of the recent upswing in the motion picture theatre industry, all you would have to do is visit the production line of Simplex XL projection mechanisms. Hundreds of XL's in various stages of completion and testing were in evidence at the Pleasantville, New York plant of National Theatre Supply's fellow subsidiary of the General Precision Equipment Corp., the Pleasantville Instrument Co.

At one end of the production line, one could see a remarkable \$45,000 Burgmaster machine, which is controlled by magnetic tape and automatically drills, taps and does other operations on castings. In the final stages of the assembly process, you find experts utilizing test film to check every mechanism for the steadiness that the Simplex XL mechanisms have become famous for. No projector can be shipped out unless it meets the most rigid standards of perfection set up for this equipment.

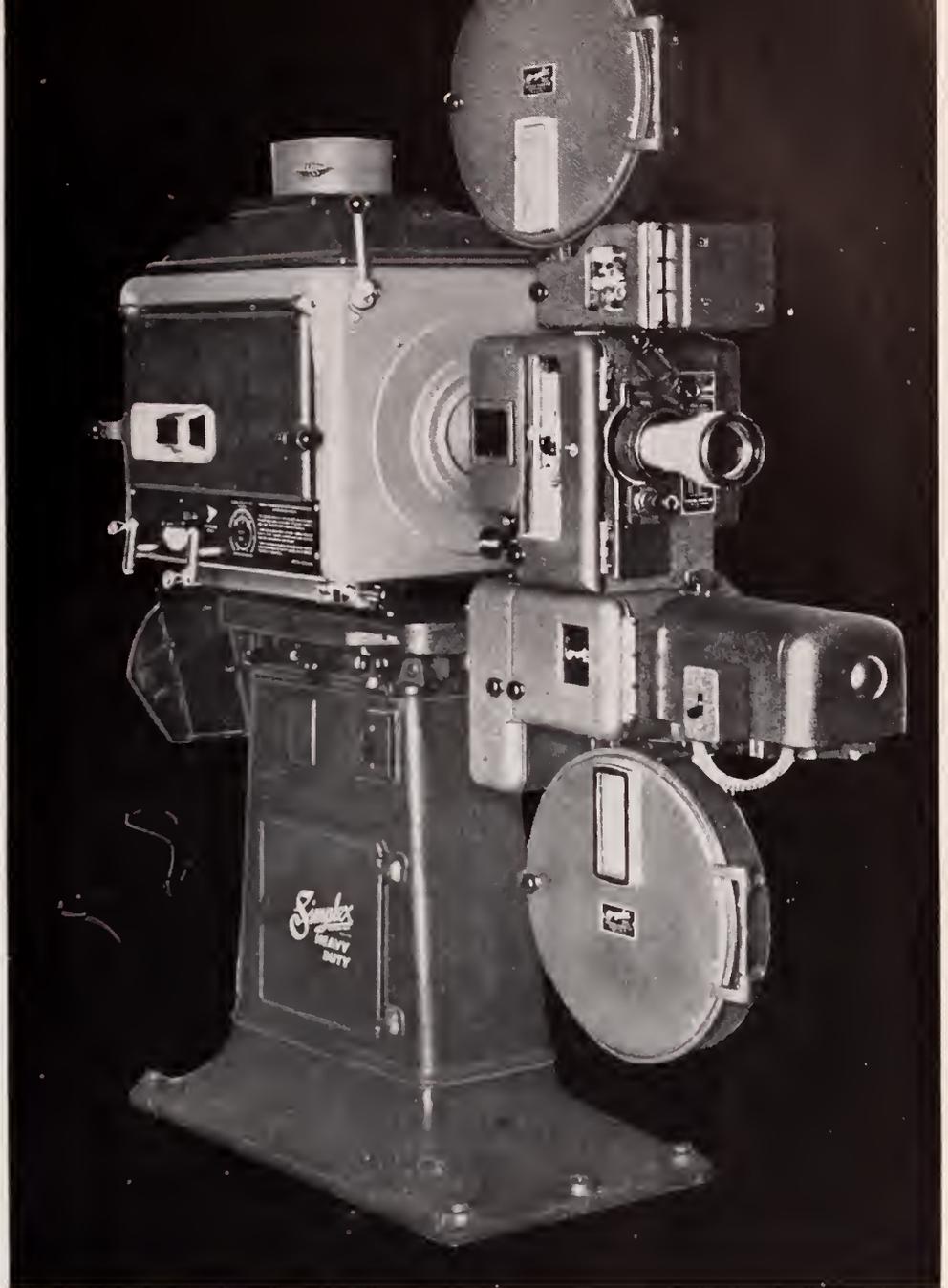
Willard J. Turnbull, president of National Theatre Supply Company, is extremely enthused about prospects of the motion picture industry. Last summer, for example, his company supplied Simplex XL projection and

Cover Story:

John Conway, member of local 306, Motion Picture Machine Operators, I.A.T.S.E., is shown on the cover in the projection room of Cinema II, the lower level theatre in the structure that houses two theatres in one building. The upper level theatre is called Cinema I.

Located on Third Avenue in New York City, Cinema I and Cinema II were opened last June by Rugoff Theatres, Inc. Both theatres are equipped with Simplex XL projection and sound systems. Conway, who has been a projectionist since 1923, feels very strongly that a pair of Simplex XL's are the best friends a projectionist can have. Their smoothness and reliability are unexcelled, in his experience.

Cinema I and Cinema II are two of the seven new theatres opened in the New York City area during a six week period last summer. All seven of the theatres chose Simplex XL projection equipment. National Theatre Supply's New York City branch handled all the installations.



"Remarkable Reliability"

At New York's famed Radio City Music Hall, chief projectionist Ben Olevsky put it this way. "The reliability of the Simplex X-L projector is remarkable. Our projectors were installed by National Theatre Supply in 1950 and have been maintained by our staff since then. In 11 years of operation they have never been removed for overhaul!" Similar opinions and experiences are reported all the time by projection "pros" like Ben at most top theatres throughout the country. The facts are that no other mechanism on the market is designed and built to the engineering perfection achieved in the X-L. Incorporating every new advance in projection, the X-L is your assurance that you'll have a dependable, up-to-date projector for many years to come.

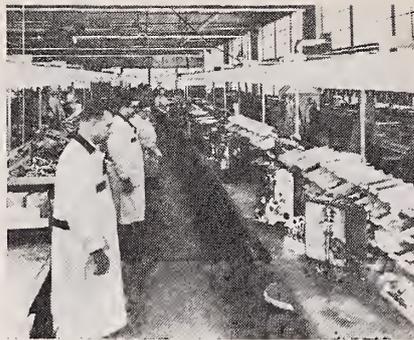
Simplex[®] **PROJECTION and
SOUND SYSTEMS**

NATIONAL THEATRE SUPPLY COMPANY *Branches Coast to Coast*
50 PROSPECT AVENUE • TARRYTOWN, N. Y. • MEDFORD 1-6200

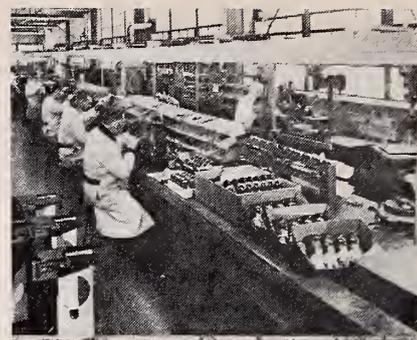
SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION



sound equipment for seven new theatres that opened during one six week period in the New York City area alone. Turnbull pointed out the growing awareness on the part of the industry for the need to have projection and sound of the finest quality. He stated "Brilliant projection and excellent sound reproduction are two vital elements of motion picture presentation that no other entertainment media can compete with. A theatre owner that shows a jumpy, out-of-focus film, with poor quality sound, is selling shoddy goods. Customers



The Simplex XL production line where parts and major sub-assemblies are added to the main frame.



HIGHEST SPEED IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. High light uniformity and less light loss on the screen—the whole screen—are typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

- Wire sharp contrast
- Uniform illumination
- Crystal clarity
- Wide range of focal lengths
- Sealed construction



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS

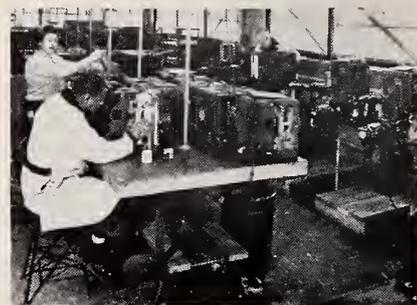


Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.

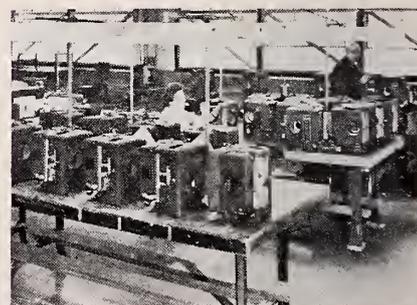
don't like it and won't come back even if the best feature pictures are being shown. This is one reason why many of our orders for new equipment are for replacement of 20 and 30 year old projectors."



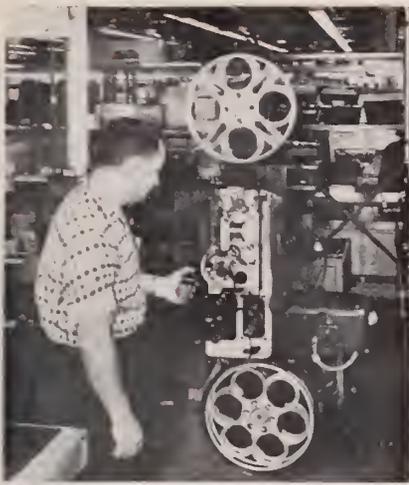
In the final stage of assembly, the shutter is installed prior to putting the outside covers and doors in place.



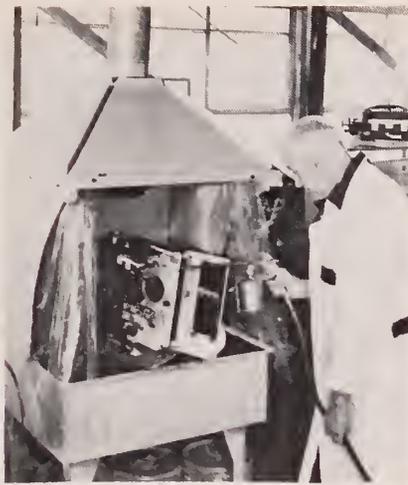
All mechanisms are run-in and final adjustments or touching up is completed at this stage of the production line.



The mechanisms are now ready for the steadiness test. The projectors shown here are part of over a million dollars worth of Simplex XL projectors in various stages of assembly.



Every mechanism is exactly tested for steadiness. Experts use special test films to check for picture jump and side weave.



Mechanisms are thoroughly cleaned by means of a spray bath with special chemicals.



This \$45,000 Burgmaster machine is controlled by magnetic tape. It automatically drills, taps and does other operations on the castings. **IP**

Three Get New Kodak Executive Positions

ROCHESTER, N. Y. — Appointment of three Eastman Kodak executives to new positions within the company have been announced here.

Willmont, Moss, eastern regional assistant credit manager since 1954, has been appointed manager of the western credit region. R. G. Van Duyn, office manager for the south-eastern sales division with headquarters at Chamblee, Ga., has been

brought to Rochester as credit manager for the midwestern division. He will be replaced by Louis B. Stahlman who moves from the Kodak Distribution Center to the office managership at Chamblee. **IP**

Ashcraft PROVED BY TEST...BY FAR THE BEST

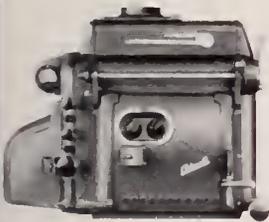
Arc Lamps and Rectifiers for Every Projector...for Every Theatre...The World's Finest

HERE ARE THE FACTS



SUPER CINEX . . . The masterpiece of the most experienced projection lamp designer. No other lamp has even remotely approached its perfection from every point of view—mechanically, electrically, optically, hydraulically or its fine air-conditioned system. Its durability and stamina have been proved. More and more fine theatres and drive-ins are re-equipping with Ashcraft Super Cinex daily due to their fine reputation for perfect screen light and service. Current range with 13.6 mm carbon, 125-165 amperes.

CINEX 35/70 SPECIAL . . . The Great of the Ashcraft Arc Lamps is a modified Super Cinex. Like the Super Cinex no third element or relay lens is necessary regardless whether 35 mm or 70 mm film is being projected. Uses a 13.6 mm high intensity positive carbon at current ranges between 125 and 140 amperes.



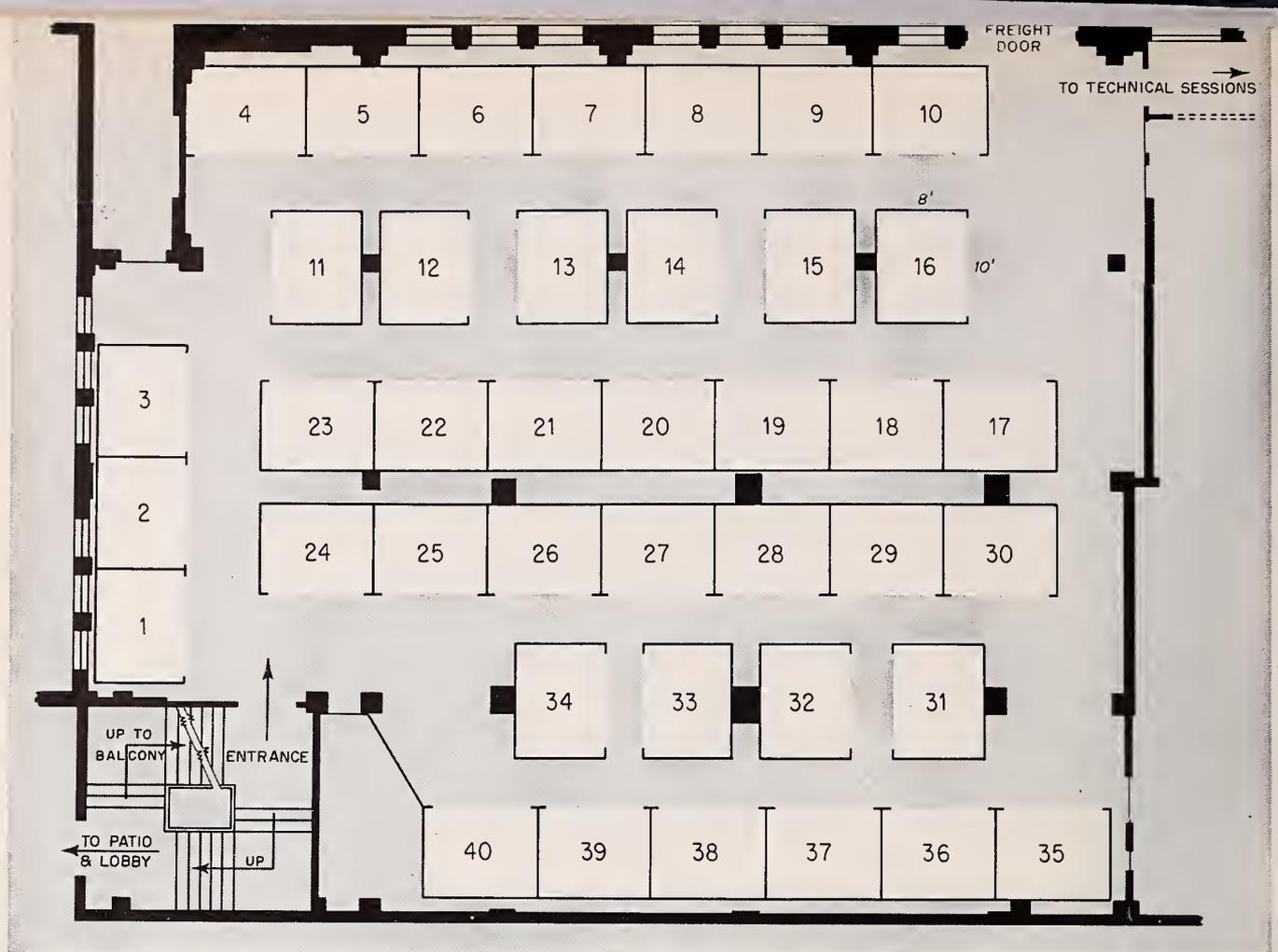
CORE-LITE . . . the latest and most phenomenal producer of white light at lowest possible operating cost in the family of Great Ashcraft Arc Lamps. Same arc burner and arc controls as the SUPER-CINEX. Same quality and built-in reliability. The lamp is optically designed to give greater white light distribution at less cost for carbons and electricity. There is none better—anywhere! 70-110 amp.

RECTIFIER . . . THE SPECIAL CORE-LITE 12 PHASE HIGH REACTANCE RECTIFIER . . . designed for the requirements of the Core-Lite lamp, this rectifier will give the best results. Low reactance 6 phase rectifiers should not be used. Certain motor generators, but not all, are acceptable. The special Core-Lite S/1212 rectifier will give you long, excellent service with an absolute minimum of expense. Other Ashcraft rectifiers available for every power need. The cost is no more than for inferior rectifiers.



SOLD EVERYWHERE IN THE UNITED STATES BY LEADING RECOGNIZED THEATRE SUPPLY DEALERS

C. S. ASHCRAFT MFG. CO., INC. • 36-32 38th STREET • LONG ISLAND CITY 1, N.Y.



W. J. GERMAN, INC.

. . . agent for the sale and distribution of

EASTMAN FILMS

FORT LEE, N. J.
Jane Street
LOnacre 5-5978

CHICAGO, ILL.
6040 N. Pulaski Rd.
IRving 8-4064

HOLLYWOOD, CALIF.
6677 Santa Monica Blvd.
HOLlywood 4-6131

that you should specify for the best of motion picture and television quality from photography thru release printing.



EXHIBITS

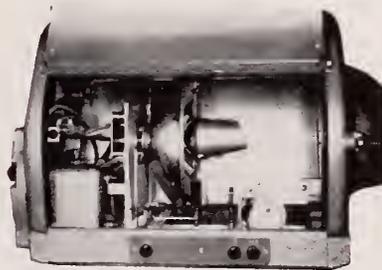
AT THE 93RD SMPTE CONVENTION, ATLANTIC CITY,

Compony	Booth	Compony	Booth	Compony	Booth
Mr. Edward Willette Animation Equipment Corp. 38 Hudson Street New Rochelle, N. Y.	9	Mr. Arthur Flormon Flormon & Babb, Inc. 68 West 45th Street New York 36, N. Y.	21, 22	Mr. D. J. White Mognosync Corp. 5546 Sotsuma Ave. North Hollywood, Calif.	8
Mr. Victor James Arriflex Corp. of Americo 257 Pork Ave, South New York 10, N. Y.	24, 25	Mr. Rolph T. Jope Hi-Speed Equipment, Inc. 73 Pond Street Wolthom 54, Moss.	3	Mr. T. H. Truesdell D. B. Milliken Co. 131 North Fifth Avenue Arcodio, Calif.	6
Mr. James L. Wossell Bell & Howell Co. 7100 McCormick Rd. Chicogo 45, Ill.	29	Mr. Harry Teitelboum Hollywood Film Co. 956 N. Seward Street Hollywood 38, Calif.	28	Mr. Herbert Pilzer Motion Picture Enterprises, Inc. Torrytown 83, N. Y.	10
Mr. Clifford Sawyer Birns & Sawyer Cine Equipment, Inc. 6424 Sonto Monico Blvd. Hollywood 38, Calif.	34	Mr. Guenter Schmidt Houston-Schmidt Ltd. 1450 O'Connor Drive Toronto 16, Ont., Conado	39, 40	Mr. Wolter Broun Poillord Incorporated 100 Sixth Avenue New York 13, N. Y.	38
Mr. Elliott R. Kurtz CBS Laborotories High Ridge Rood Stomford, Conn.	12	Mr. E. Werner Lipsner-Smith Corp. 3475 W. Touhy Ave. Chicago 45, Ill.	2	Mr. A. Potter Photographic Applicotons, Inc. 160 Herricks Rood Mineolo, L. I., N. Y.	32
Mr. Lou Girolo Comero Equipment Co. 315 West 43rd Street New York 36, N. Y.	5	Mr. Richard P. Sullivan Logos, Inc. 1017 New Jersey Ave., S. E. Woshington 3, D. C.	36	Mr. A. M. Urenovich Photo-Sonics, Inc. 95-25 Georgio Ave., Suite 201 Silver Springs, Md.	18
Mr. Poul Meistrich Comero Mort, Inc. 1845 Broodwoy New York 23, N. Y.	17				
Mr. George Kyotow Conon Comero Co., Inc. 30 East 42nd Street New York 17, N. Y.	16				
Mr. Herbert A. Hollonder ColorTron Industries P. O. Box 188 Burbonk, Calif.	23				
Mr. Jules Leni Comprehensive Service Corp. 245 West 55th Street New York 19, N. Y.	4				
Mr. Stuart Held Ehrenreich Photo-Optical Industries Inc. 111 Fifth Avenue New York 3, N. Y.	7				
Mr. Monny Kiner Elgeet Optical Co., Inc. 303 Child Street Rochester 11, N. Y.	26				
Mr. Edward B. Krouse Filmline Corp. Erno Street Milford, Conn.	14, 15				
Mr. Stephen G. Fisher Oscor Fisher Co., Inc. P. O. Box 426 Newburgh, N. Y.	30				



XENOSOL

THE REVOLUTIONARY XENON LIGHT SYSTEM
FOR SUPERIOR MOTION PICTURE PROJECTION



*check these big zeiss-ikon
xenosol advantages:*

- COLOR FIDELITY
- LOW CURRENT CONSUMPTION
- SUPERIOR QUALITY PROJECTION
- TROUBLE-FREE CLEAN OPERATION
- IMMEDIATE STARTING

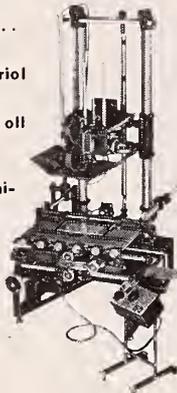
ZEISS-IKON XENOSOL equipment—for new installations and existing carbon arc housings—is available in 900 watt, 1,600 watt and 2,500 watt sizes to fit every theatre's need.

For complete information: CINE ELECTRONIC SYSTEMS, INC.
225 East 46th Street, New York, New York, Phone: PLaza 8-1561

Animation Stands*

* OXBERRY

- For Slide-Filmstrip... For Full Animation.
- Available with Aerial Imago Projector.
- Models Built to fit all requirements... all budgets.
- America's finest on-motion studios use only Oxberry.



FOR TECHNICAL INFORMATION AND BROCHURE... WRITE

the **ANIMATION EQUIPMENT corp.**

DEPT. P 38 HUDSON STREET
NEW ROCHELLE, N. Y.

West—7445 Sunset Blvd., Hollywood, Calif.
England—33 Liberty Lane,
Aldershot, Surrey

You Name It... S.O.S. Has It!

Everything from A to Z

Here, under one roof, on entire building devoted to all your needs for producing processing, recording, editing, lighting and showing motion picture films... and at WORTH-WHILE SAVINGS IN PRICE!

- Amplifiers
- Anamorphic Lenses
- Animation Stands, Titlers
- Arc Lamps
- Auricon Cameras
- Books, Technical
- Booms, Microphones
- Cameras, Professional
- Colortran Lights
- Dollies, Cranes, Tripods
- Drive-In Theatre Equipment
- Film Magazines
- Film Printers
- Film Cleaning Machines
- Film Cabinets
- Film Editing Equipmt.
- Film Lab Equipmt.
- Film Numbering Machines
- Film Processors
- Generators
- Hot Presses
- Lenses, All Sizes
- Lighting Equipmt.
- Marquee Letters
- Moviola Editors
- Projection Equipmt.
- Projection Lamps
- Projector Mechanisms
- Rectifiers
- Reels, Cans, Film, Tape
- Reflectors
- Sound Cameras
- Soundheads
- Sound and Speaker Systems
- Stage Equipmnet
- Stripping Machines
- Synchronizers, Splicers
- Technical Books
- Theatre Equipmt.
- Viewers, Sound Readers
- Zoom Lenses, etc.

Visit S.O.S. Booth No. 1
S.M.P.T.E. Convention

S.O.S.

PHOTO-CINE-OPTICS, INC.

formerly S.O.S. CINEMA SUPPLY CORP.
602 West 52nd St., N.Y. 19—Plozo 7-0440
Western Branch: 6331 Holly'd Blvd.,
Hollywood, Calif.

Mr. Irwin R. Sheldon
Precision Cine Equipment Corp.
928-930 East 51st Street
Brooklyn 3, N. Y.

11

Mr. A. J. Briglia
Quick-Set, Inc.
8121 N. Central Park
Skokie, Ill.

19, 20

Mr. Dominick J. Copono
S. O. S. Photo-Cine-Optics, Inc.
602 West 52nd Street
New York 19, N. Y.

1

Mr. T. Tonobe
Export Section
Shiba Electric Co., Ltd.
Hibiya-Koikon Bldg., 20, 2-chome
Uchisoiwoi-cho, Chiyoda-ku
Tokyo, Japon

27

Mr. David V. Hall
Photolomp Division
Sylvonio Electric Products, Inc.
730 Third Avenue
New York 17, N. Y.

35

Mr. Fred Emens
Wollensok Division
Revere Camero Co.
850 Hudson Avenue
Rochester 21, N. Y.

31

Mr. Walter Steuer
Zoomor, Inc.
Seo Cliff Rd.
Glen Cove, N. Y.

13

Neils Tuxen
N. A. Philips Corp.
100 East 42, NYC.

37

Al Nathanson
Camero Service Center
333 West 52, St., NYC.

33

George Vononi
Permacel, Inc.
New Brunswick, N. J.

48

George Youghn
Time Automoted Mfg. Co.
Woodside, N. Y.

49

Allen Processors
Milford, Conn.

50

ip

PROJECTIONISTS PREFER ETHYLOID

Film Cement For
BEST RESULTS
Available from
Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

3 NEW CAMERA MART ACCESSORIES

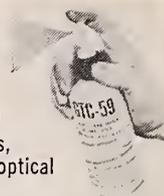
NEW GTC-59

LENS CLEANER & PROTECTOR

- Anti-Fog
- Anti-Static

Ideal for lenses, cameras, condensers, reflectors, optical equipment, etc.

6 oz. can with Spray Applicator \$1.65 each
Case of 12/\$1.00 each



Liqui-tape LIQUID

INSULATING TAPE

Just Brush it on Those
Hard-To-Tape Places

Designed for use in electrical installations, maintenance and repair. Prevents shorts, shocks.

2 oz. Bottle \$1.65 each Case of 12/\$1.00 each

contact

Restores,
Quiets,
Lubricates

Completely safe for sound projectors, amplifiers, studio recording equipment and editing equipment. Non-inflammable. Used for all gummy parts — instantly cleans and deposits a hard bonded dry lubricant.

2 oz. Bottle \$1.00 each Case of 12/75c each



Write for complete literature. All Prices F.O.B. N. Y.

the **CAMERA MART** inc.
1845 BROADWAY (at 60th St.)
NEW YORK 23, N.Y. • Plaza 7-6977 •

SPICES NOT HOLDING?

Film breaks are costly.
Play safe by using

JEFRONA

All-purpose CEMENT

Has greater adhesive qualities. Don't take our word for it. Send for FREE sample and judge for yourself.

**Camera Equipment
Company, Inc.**

Visit SMPTE Booth—#5

315 W. 43rd St. New York 36, N.Y.
JUdson 6-1420

6510 Sonta Monico Blvd., Los Angeles
51 E. 10th Ave., Hialeah, Flo.

SMPTE Studies Wide Range Of Technical Projection Subjects

A wide range of motion picture and television technical topics will be discussed when scientists and engineers meet this spring at the Traymore Hotel in Atlantic City, N. J., April 21-26, for the 93rd semiannual convention of the Society of Motion Picture and Television Engineers.

The format of the meeting is based on these subject areas, handled by these topic chairmen:

"Application of Motion Pictures and Television to Education" under O. S. Knudsen of Iowa State University.

"Current Trends in Laboratory

Practice" under John J. Kowalak of Movielab, Inc., New York.

"Instrumentation and High-Speed Photography" under Morton Sultanoff of Ballistic Research Laboratories, Aberdeen, Md.

"New Instrumentation in Television" under R. L. Pointer of American Broadcasting Co., New York.

"New Technology of 8mm Commercial Motion Pictures" under Dr. C. Loren Graham, Eastman Kodak Company, Rochester, N. Y.

"Recent Motion Picture and Television Developments in Outer Space Technology" under H. M. Gurin, RCA Astro-Electronic Division Princeton, N. J.

The program will open April 22, with a session of papers in the area of film processing and laboratory developments. The next session will cover 8mm and 16mm technical and engineering developments.

Motion pictures and television in outer space and instrumentation and high-speed photography comprise three sessions on Tuesday. Three television sessions on Wednesday and Thursday cover circuit development: color and monochrome TV, and automation; and motion pictures for television, and video tape. Beginning Thursday evening and finishing on Friday are three sessions on motion pictures and television in education.

ip

**Miss M. B. Reilly to
Head W. J. German**

NEW YORK — Miss M. B. Reilly, associated with Jules Brulatour and the sale of Eastman Kodak raw film since 1913, has been elected president of W. J. German, Inc., as the suc-

cessor to the late William J. German who died on the West Coast last month.

Miss Reilly, who is Mrs. James F. Burns in private life, served as executive secretary of the German company. Her entrance into the raw film business preceded that of German by nine years, German having left Kodak in 1922 to join the Brulatour organization. In 1952 she and German joined to form the German
(Continued on Page 15)

the only
guaranteed
**scratch
removal
process**

for 16 and 35 mm Prints

- Originals
- Negatives

RAPIDWELD for scrotched film: We remove scrotches and obrosions from both sides of film, restore flexibility, repair oll improper splices, and apply our exclusive protective coating.

8mm Service Now Available

"The Film Doctors"
rapid Film Technique Inc.

37-02 27th St., L.I.C. 1, N. Y.

STillwell 6-4600

New Life For Old Film

Long Life For New Film

Want
More Profits?

SELL LOCAL ADVERTISERS

**SLIDES
SLIDES
SLIDES**

Send
for complete
information

NATIONAL STUDIOS
42 West 48 Street, NYC

You want to project
a good picture?

Install a
Hurley Screen

HURLEY SCREEN CO., INC.

96-17 Northern Blvd.

Corona 68, New York

See your theatre supply dealer

CREATE THE RIGHT MOOD EVERY TIME WITH THE

Major Mood Music Library

MAJOR offers you o full thirty-five hours of mood music for titles, bridges, backgrounds.

Write for Free Catalogue

THOMAS J. VALENTINO, INC.

Established 1932

150 West 46th Street CI 6-4675 New York 36, N. Y.

PROJECTED HIGHLIGHTS

By Ray Gallo

The 93rd SMPTE convention and Spring Equipment Exhibit now going on at the Hotel Traymore in Atlantic City, N. J., displays some unusual motion pictures, highspeed photography and television instrumentation for conventional and "outer space" uses. Nearly every conceivable invention has been utilized first for military purposes—now we use these same techniques to make civilian amusements more perfect and enjoyable. For instance, take the telephone, the radio, the phonograph and the latest, television. Once they served the needs of our national defense in World Wars I and II and in between skirmishes, and now all have been combined to make film and tape recording an integral part of our sound and sight development to record data and to serve our generation in developing a better appreciation of music and photography as part of our American culture. All this and more is well displayed in 8mm - 16mm - 35mm - 70mm equipment at the SMPTE exhibit of commercial and military systems now available to all branches of amusement. The dedicated scientist and engineer who works quietly in the laboratory has made this all possible, and this week was an active member of the SMPTE, his work is on display and speaks for itself. Among the many exhibitors are firms such as Animation Equipment Corp., leaders in the field of animations instruments; Arriflex Corp. of America, distributors of the Siemens & Halske West German 16/16 single and double sound system projector; Camera Equipment Co., headquarter and distributors of a complete line of production, laboratory and studio equipment; S. O. S. Photo-Cine Optics, Inc., America's department store of motion picture and television equipment for all branches of the arts; Camera Mart Inc., sponsors of the Annual Film Editing Workshop Seminar and equipment rental firm. And there are many other interesting displays. More than 60 booths will exhibit domestic and foreign and U. S. government developments. Jack H. Freeman, sales vice president of Radiant Manufacturing Corp. just appointed Charles R. Horwitz, formerly with Graflex, district manager of the Chicago projection screen firm. Nicholas Reisini, present head of Cinerama, another U. S. government development that has given the American motion picture industry a real "shot in the arm" received a "Congressional Record" tribute by Senator Humphrey for his public spiritedness. To demonstrate how America produces top high-grade furniture of the Italian and French Provincial style, the New York State Association of Projectionists will take a tour through Jamestown, New York, furniture plants during their 50th anniversary convention in May. William J. Reddick of the W. J. German Inc. Eastman Film Sales Agency, has been elevated to the post of vice president.

Reddick has been one of the important working members of the SMPTE since 1952. Word comes from Ray Brian, business agent of the Peoria and Pekin, Illinois local #434 of the IATSE, projectionist unit, that he has received an invitation to make available some of his "antique projectors" as permanent exhibits for the new Hollywood Museum. This is the outfit being sponsored by leaders of the motion picture industry. Arthur Knight is the curator. Cinerama, Cinemascope, Todd-AO and many other systems have made wide screen projection extremely popular—the screen in Constitution Hall, the National Geographic Society, in Washington, D. C. measures 23 feet wide by 18 feet, 8 inches high. It provides a throw of about 160 feet for lectures, utilizing both 16mm black and color, 35mm film, color and slides. If any member of the SMPTE has a book or literature that explains how sound motion pictures are made and projected, it would help William M. Burt, Director of Film Equipment Exchange at the Dept. of the Army at Valley Forge General Hospital, prepare lectures for his post projectionists. In fact, any films on the subject would be very welcome. You can address Mr. Burt at Phoenixville, Pa. c/o MEDFV-PT. Another person very much interested in receiving catalogs and data on all types of motion picture equipment is Jean Audie Fabius fo Port Au Prince in Haiti. He is learning the business and can be reached by mail c/o P. O. Box 1124. Recordak, another new Eastman product is the world's fastest microfilmer. It is specially designed for high speed recording of continuous forms produced by modern computers in high volume. New product releases which have come to our attention recently are the "Edling Teachers Console" for group reading and the "Keystone View" both audio-visual equipment. The former is designed by Staples-Hoppmann, Inc. of Alexandria, Va. and the latter by Mast Development Co. of Davenport, Iowa. Dennis Kealey of Reevesound Co., (one of the many units developed by Hazard Reeves, and now headed by Boyce Nemic, former executive secretary of SMPTE) should be complemented for his wonderful work as exhibit chairman at the current SMPTE convention. The job was so well done that an upper section exhibit had to be added for extra displays. Nathan D. Golden, who is retiring this month as Director of the Scientific Photographic and Business Equipment Division of the Defense Services Administration, U. S. Dept. of Commerce, is one of the best known and liked Washington officials who has served the motion picture industry interests for so many years and will be missed by SMPTE members who worked with him so well—Good Luck, Nate, on your future plans. Besides General Electric, Sylvania will make the theatre screen type of television soon. In fact, plans are now being formulated to install theatre TV screens from coast to coast in selected key spots as a counter move against pay-TV in the home. So far, the many toll-TV systems tried out for home subscribers have not been very successful, but to offset any possible "real threat" theatres will now compete to control their "friendly enemy."

IP

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine  *Carbons*

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart

HEY: 'LET'S TWIST'!

Yes, That Easy to Use—No Tools Needed
Just Twist The Stub In & Out . . .
NO GRINDING—NO DIRT



IF YOU ARE NOT USING The
"Little Miser" Carbon Saver
YOU are losing several Hundred Dollars
Each Year!

4 Sizes 9-10-11m.m. \$3.00 Each
13.6m.m. \$4.50 Each

ORDER Now—Start Saving Money \$\$
(We Suggest 3 In Each Projection Room)

LOU WALTERS

Sales & Service Co.
MOTION PICTURE EQUIPMENT
EV 8-1550
4207 Lawnview Ave. Dallas 27, Texas

W. J. GERMAN

from page 13

company which was successor to J. E. Brulattour, Inc.

The company also announced the election of Morris H. Bergreen, a board member and general counsel, to the post of senior vice president.

It is understood that Eastman Kodak will take over sales and distribution of raw film from the W. J. German company Jan. 1, 1964, but the German organization will continue to administer its other holdings and enterprises.

Norelco Projector Gets Academy Award

SANTA MONICA, CALIF. — The Norelco Universal 70/35mm. projector received one of the special awards from the Academy of Motion Picture Arts and Sciences in recognition of outstanding technical achievement for the showing of the newer wide gauge films. It is the first such award in the projection field since 1959.

Accepting a plaque for the North American Philips Co. was Fred J. Pfeiff, technical manager of the motion picture equipment department of the firm. Mr. Pfeiff has been closely associated with the development of the 70/35 mm. projection system since it first became available in 1955. Originally designed and developed through the joint efforts of the American Optical Co. and Philips, this projector introduced the 70mm. Todd-AO process — a 1957 Academy Award winner—into movie theatres. Jan Kotte of Norelco was commended as the original designer of this equipment.

Today there are more than 150 installations of the Norelco Universal 70/35 projector in 35 states, Canada and other countries.

In receiving the award, Pfeiff stressed that motion picture audiences the world over are enjoying greater clarity and better quality of screen images with less eye strain, thanks to the wider films and the award-winning Norelco projection equipment.

And there are important benefits to the exhibitor, Pfeiff pointed out, explaining that a single 70mm. print has been played for as many as 1600 runs, film damage is greatly reduced, and the Norelco 70/35 Projector may be converted in minutes for either 70 mm. or 35mm. operation, providing the theatre owner with greater versatility in presenting the latest films.

North American Philips Company, Inc. also produces the new Norelco 35mm. Pulse-Lite shutterless projec-

tor for smaller theatres, a 35mm. projector for arc lamp operation, as well as professional 16 mm. equipment.

Built primarily for 70mm. with the added convenience of 35mm., the Norelco Universal 70/35 Projector enables audiences to see easily the tiniest photographic details in such current films as "Lawrence of Arabia," "Mutiny on the Bounty," the forthcoming "Cleopatra," and many more now in production. **ip**

— THE ENEMY —

HEAT

A 10 DEGREE REDUCTION
IN HEAT WILL TRIPLE
TRANSFORMER LIFE.
ARC AND SOUND SYSTEM
POWER SUPPLIES RUN
COOLER. A MODEL TO
REPLACE ANY BULB.

Write

BROWN ELECTRONICS
1717 South St., ALLENTOWN, PA.

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

LaVezzi

**THE VERY
FINEST
IN
PROJECTOR
PARTS**

LaVezzi **MACHINE WORKS**
4635 WEST LAKE ST., CHICAGO, ILLINOIS

Century Announces JJ-2 Model to Project 70/35mm films

NEW YORK—Century Projector Corp. has announced a new American-made universal projector for projection of 70 and 35 mm films.

The new projector is called the Century JJ-2, and according to distribution vice president Frank E. Cahill Jr., is unique in design with film traps and film gates with direct coupling to the mechanism and optical sound reproducer with a Poly "V" motor drive belt to the projector main drive shaft.

Both the film trap and gate can be easily removed for changing, inspection and cleaning without disturbing any other units.

The Century designed water-cell and aperture plate are positioned in the projector so the film is as close to the aperture plate as desired for sharper focus all around the edges. It is also possible to "set" the film gate to provide a soft edge aperture. With these new film traps and film gates it is possible to run both 70mm and 35mm films with ever-so-light

tensions for better overall in-focus picture. Film tensions can be easily adjusted and set to the desired positions for optimum screen results.

A less complicated method has been engineered into the Century JJ-2 for changing from the standard 24 frames per second to 30 frame speed.

Conversion kits are available to adapt 3-D Sync projection if and when needed.

Century's features are incorporated in Century JJ-2 models such as: double rear shutters; water-cells; separate 70/35mm Ampex magnetic clusters; less gears and other Century refinements. **iP**

New Theatre Opens In New York

Walter Reade-Sterling, Inc., has opened a new theatre, the Continental in Forest Hills, N. Y. in the populous and fast-growing Borough of Queens.

Architect John J. McNamara designed the new deluxe 600-seat motion picture theatre. The Continental is of split-level construction, is believed to be the first theatre in the U. S. with its own roof-top parking, and has a permanent art gallery for the exhibition of works by Queens artists.

The Continental opened March 21 and it will operate on a first-run policy. Its inaugural attraction was the screen version of "The Balcony" starring Shelley Winters, Peter Falk and Lee Grant. Incidentally, The Continental shared the world premiere of "The Balcony" with 20 other theatres in the greater New York area.

Capital Motion Supply Corp., of New York, supplied and installed the specialized theatre equipment, consisting of two Century projectors complete with full Century transistorized sound equipment; Peerless Magnarc arc lamps, Kneisley silicon rectifiers, two sets of Bausch & Lomb lenses, and Neumade rewind equipment. **iP**

NEW ENTRY...

Kinoshita offers the 70/35 mm Japanese Projector in U. S.

NEW YORK — Kinoshita & Co., Ltd., USA will distribute in the United States the Japanese projection and sound equipment made by the Nichion Co., Ltd., Tokyo and Osaka.

The Pherex Crown-S 70/35mm projection equipment was shown in the New York office of the Kinoshita company. The Nichion company's managing director Nakama explained the projector.

The all purpose projector comes with a 70/35 head machine, water and air cooling; magnetic soundhead; 35mm conversion kit; Phirex optical soundhead with drive motor; two 70 mm film pressure band; two 35mm pressure band; exiter lamp; upper magazine; lower magazine; 70/35 reel; Super Prominar 70, 70mm projection lens. Phirex pedestal.

The Nichion company makes a Cineron Xenon lamp equipment in 5kw and 4kw power, and the makers said a life of 1,500 hours for 5kw is expected. **iP**

DO YOU BUY

Heat-Reducing Reflectors

ON PRICE OR COST?

TUFCOLD 2-YEAR COATING GUARANTEED FIRST SURFACE DICHROIC REFLECTORS

They're a bargain because everything an ordinary reflector does TUFCOLD does better and longer. That's why they're worth more yet actually

COST 43% LESS

based on life expectancy. So, since your old reflectors, by wasting power, carbons, and light, cost more than new TUFCOLDS, replace them now.

THE STRONG ELECTRIC CORPORATION
31 City Park Avenue • Toledo 1, Ohio



New Film Equipment At SMPTE Meeting

Demonstrations of new camera, lighting projection, editing and TV equipment will hold the stage at the April 21 morning session of the semi-annual convention of the Society of Motion Picture and Television Engineers at the Traymore, Atlantic City, April 21-26.

Eight engineering committees will meet during the convention. Committees have been appointed by Dr. Deane R. White, associate director of du Pont's Photo Products research laboratory, who is SMPTE engineering vice-president. Dr. White and SMPTE Staff Engineer Alex E. Alden arranged the schedule of meetings.

Committee chairmen are:

Laboratory Practice, William D. Hedden. Vive-President. Calvin Productions, Inc., Kansas City; television, William T. Wintringham, Bell Telephone Laboratories, Murray Hill, N. J.; 16mm and 8mm motion pictures, Robert G. Herbst, superintendent of Engineering Laboratories, Bell & Howell Co., Chicago; color, Dr. LeRoy M. Dearing, Studio City, Calif.; film projection practice: C. E. Heppberger, National Carbon Co., Chicago; sound, J. L. Pettus, RCA, Burbank, Calif.; instrumentation and high-speed photography, Morton Sultanoff, Terminal Ballistics Laboratory, Aberdeen Proving Ground, Md.; film dimensions, Walter C. Brandsma, E. I. du Pont de Nemours & Co., Inc., Parlin, N. J.

Also meeting during the week will be committees planning subsequent convention papers programs, the board of editors of SMPTE's Journal, an administrative committees.

NEW YORK — SOS Photo-Cine-Optics, Inc. announces that Alan C. Macauley and Jan T. Macauley together recently acquired approximately 53% of the outstanding common stock of the company. Eight years ago, the Macauleys opened an office in Hollywood and became the first representatives for SOS in the 13 western states. Prior to 1955, the Macauleys were actively engaged in the motion picture production business.

Alan Macauley has become a director of the company and its new president, Joseph A. Tanney, who has been president of SOS since its founding 37 years ago, has become chairman of the board. The other new officers of the company are: Dominick J. Capano, vice president and general

manager; William H. Allen, engineering vice president and secretary; and Jan T. Macauley, treasurer. Mr. Capano and Mr. Allen have each been with the company for over 25 years. Claude C. Pitts has been engaged as sales engineer with headquarters in the Hollywood office.

S. O. S. Shows Auricon Camera Improvements

NEW YORK — Two new improvements for the Auricon Camera have been announced by S.O.S. Photo Cine Optics. These are balanced cine-voice conversion and an improved transisto-sound amplifier with an exclusive built-in limiter. They will be demonstrated at the SMPTE Convention.

Levine, Mage Constructing New York "Intimate" Theatre

NEW YORK—Joseph E. Levine, president of Embassy Picture, in association with James J. Mage, film producer and exhibitor, are constructing an intimate theatre on 57th St. near Fifth Ave.

The name will be Festival Theatre, and it will seat 600 patrons. The Festival is scheduled to open June 15, with the American Premiere of Fillini's "8 $\frac{1}{2}$ ", a Joseph E. Levine

presentation and an Embassy release.

Simon B. Zelnik, New York architect, has designed the Festival Theatre, which is in an existing building.

The facade will be of colored Duranodic aluminum, with a "flower-box" arrangement projecting from the building above the lobby entrance, to make it blend with the rich-flowing architecture of the building it occupies.

BACK NUMBERS, ANYONE?

Homer Neal, Jr., of Columbus, Ohio, an IP subscriber for 16 years, has a two-foot stack of back numbers he wishes to sell. Interested persons should contact Neal direct. His letter to IP follows:

"Until a few months ago I was a subscriber to IP continuously since 1945, except for a while in 1951. Your magazine has served me well and I value it. Now that I no longer have a need for it, I know that this two-foot stack has value to others. Would you be kind enough to mention in IP that I would like to sell these for a reasonable offer?"

"Best wishes and kindest regards,"

HOMER NEAL, Jr. (386)
867 Wainwright Drive
Columbus 24, Ohio

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

- *True high-fidelity, distortion free.
- *Increased reliability, less maintenance.
- *Low installation cost, minimum space needs.
- *No vacuum tubes, no photoelectric cells.

***and the only American-made 70 mm 35**

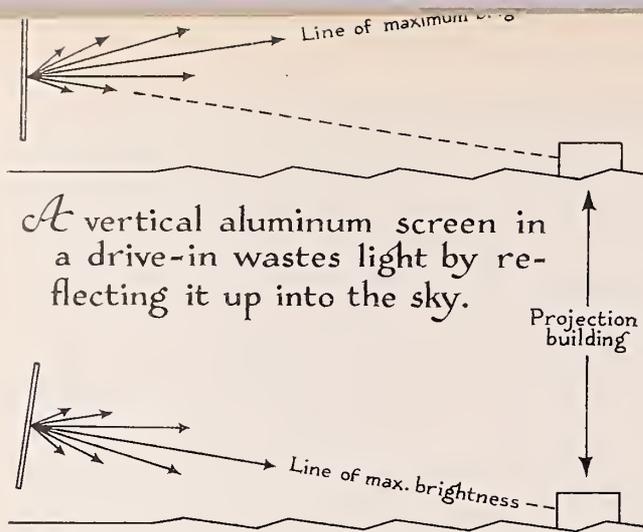
theatre projection systems

SEE
YOUR CENTURY
DEALER

... for bigger, brighter projection.

CENTURY PROJECTOR CORP.

New York 19, N. Y.



A vertical aluminum screen in a drive-in wastes light by reflecting it up into the sky.

For maximum picture brightness, an aluminum screen should be tilted to face the projection axis squarely.

Drive-In Projection . . . from page 6

tilted, of course), the corresponding maximum widths are 60 and 70 feet. Just imagine indoor projection quality on a drive-in screen! It is easily possible to have brilliantly lighted pictures in the smaller drive-ins and to fill these theatres every night with satisfied patrons.

Although we have implicitly specified the use of modern projection mechanisms, modern "fast" lamps, and coated "fast" lenses for drive-in use in order to achieve satisfactory light levels, we have purposely avoided being too specific or dogmatic.

Slight departures from optimum lamp or lens speed can usually be compensated by the use of projector shutters having the blades trimmed especially for drive-in use, a small increase in arc current, the elimination of light-wasting heat filters in favor of cold mirrors, the elimination of projector-port glasses, the use of a more highly reflecting or slightly directional screen surface, etc.

Lumen and Lamp Calculations

The lumens of projector light output required for any particular footlambert light level (e.g. 4.5 or 10 footlamberts) may be easily calculated when the width of the projected picture and the reflectance of the screen are known. A safe figure for the reflectance of a good white-painted matte screen is 0.85, and that for the on-axis reflectance of an aluminum screen is 1.5. (These correspond to reflectivities of 85% and 150%, respectively.)

For the reflectance or gain of an unusual screen paint or surface, consult the manufacturer of the material.

The "screen area" (in square feet) needed in the following formula is found by multiplying the width of the projected picture by three-fourths of the width of the projected picture. This gives the projected-picture area on the basis of the standard Academy 35-mm aperture (0.600" x 0.825"), and should be used in this formula even though a widescreen aperture is used in actual projection. The reason for this is simply that lamp lumen ratings are nearly always specified on the basis of the Academy aperture. To repeat, just ignore the fact that you are using a widescreen aperture, and carry through the lumen calculation on the basis of the standard Academy aperture, as directed.

$$\text{Lumens} = \frac{\text{Area} \times \text{Desired footlamberts}}{\text{Screen reflectance}}$$

When you have thus calculated the required projector light output in lumens for the desired footlambert brightness level, you are ready to select an arc lamp, carbon trim, and amperage to supply this number of lumens. But note that the lamp and carbon screen-lumen ratings published by manufacturers and trade papers are for projectors *without any shutter* (that is, not running), whereas the above formula gives the number of lumens *with the shutter running*. Screen brightness standards always specify that the projector be running, but without film, when the light is measured.

Therefore, to correlate the lumen result you get by using the above formula with manufacturers' screen-lumen ratings, multiply your result by 2. This is valid because the average projector shutter halves the amount of light reaching the screen—a shutter transmission of 50%.

Lamp, carbon trim, and arc-current light output data in lumens are furnished by the Strong Electric Corp., 87 City Park Ave., Toledo 1, Ohio for lamps of their own manufacture, by the National Carbon Co., 30 East 42nd St., New York 17, N. Y. (Bulletin No. 3), and by the very complete and trustworthy tables in the article titled "Screen Light Requirements in Modern Projection, Part I" in IP for June 1959. Consult any or all of these sources, but reject all suspicious or unverified advertising claims.

Example Shows How Simple It Is

Suppose that you are operating in a small drive-in having a 60 ft. white-painted screen of about 0.85 reflectance. (a) How many lumens of light (projector running without film) are needed to give the drive-in minimum of 4½ footlamberts of brightness? (b) What lamps, carbon trims, and currents will serve to give this screen brightness?

The area of this 60-ft. screen (on the basis of the Academy aperture, as explained above) is 60 x (0.75 x 60) = 60 x 45 = 2,700 square feet. Therefore:

$$\begin{aligned} \text{Lumens} &= \frac{2,700 \times 4.5}{0.85} \\ &= 12,150/0.85 = 14,294 \text{ lumens} \end{aligned}$$

(a) This result may be "rounded off" to 14,000 lumens. Because lamp and carbon light outputs are measured without the projector shutter running, we should select a carbon-trim and current combination rated at approximately twice 14,000 lumens, that is, 28,000 lumens.

(b) Consulting any of the available trustworthy lamp and carbon tables, we find that 28,000 lumens (approximately) are supplied by (1) an 18-inch mirror lamp burning 11-mm regular positives at 120 amps., (2) by an 18-inch mirror lamp burning 10-mm Hitex positives at 125 amps., or (3) by an 18-inch mirror lamp burning 13.6-mm regular positives at 145 amps. The projection lens should be coated and of f/1.9—f/1.7 speed.

The accompanying table gives suggested carbon sizes (regular carbons only except for blown arcs) and currents which, burned in modern large-mirror lamps used with projectors having f/1.9 or f/1.7 coated lenses, will give 4½ and 10 footlamberts of brightness on 85% white and 150% aluminum screens. This table is intended to be only suggestive, but may nevertheless be used as a trustworthy guide in the correction of the serious lighting deficiencies which prevail in far too many of the nation's drive-in theatres. Because no account was taken of side-to-center screen light distribution in the computation of this table, it favors a slightly brighter-than-minimum-standard light level at the center of the screen, which is all to the good. **IP**

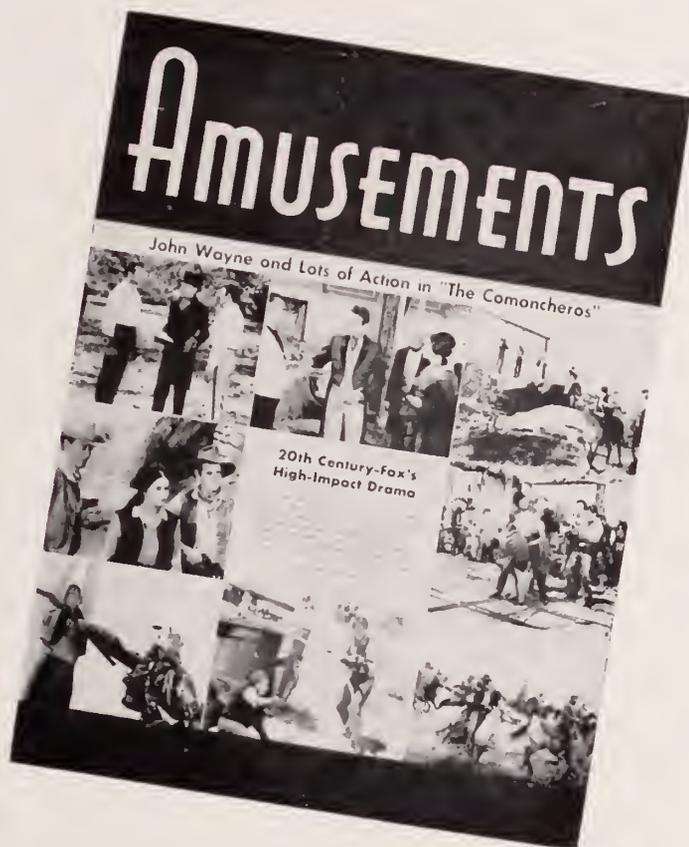
(TO BE CONTINUED)

America's First and Oldest Motion Picture Trade Journal

Established 1914

- GREATER AMUSEMENTS -

News about the motion picture industry, new products and new methods, for exhibitors and projectionists alike.



GREATER AMUSEMENTS supplies an every-theatre audience to the nation's motion picture industry, features equipment, theatre projection and film servicing products of interest to the projectionist who wants to keep up with the general news of the industry.

YOU NEED only one publication to inform you about the other side of the theatre picture — for \$3 a year, 26 issues, plus a special introductory rate to subscribers to International Projectionist.

PUBLICATION OFFICE

1645 Hennepin Avenue
Minneapolis 3, Minn.
FE. 2-8401

NEW YORK OFFICE

Suite 410
545 Fifth Avenue
New York 17, N.Y.
MU. 8-7746

WEST COAST OFFICE

1206 N. Orange Grove
Hollywood, Calif.

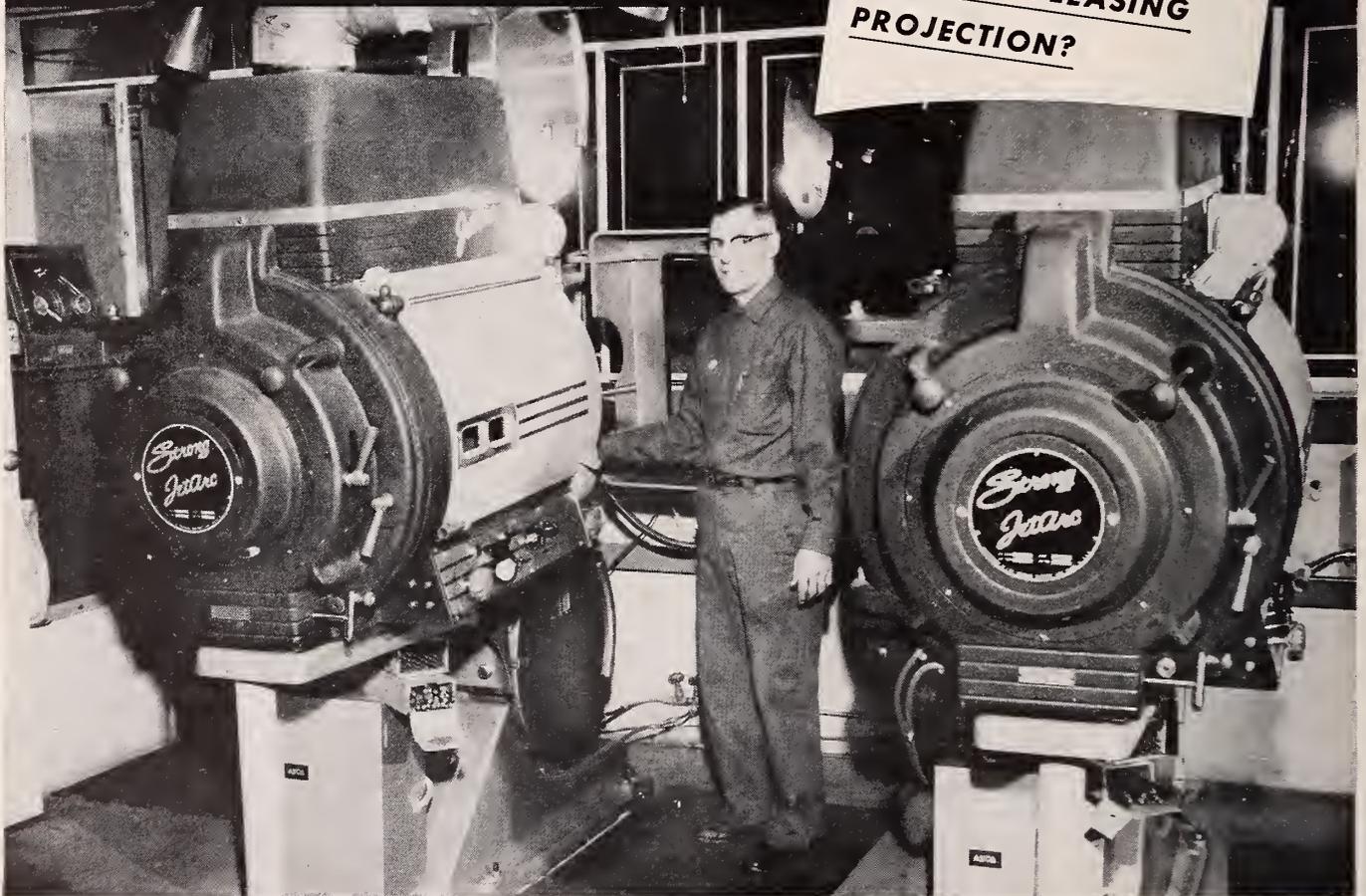
how to sell admissions by "sight"

—of course you make
sure that you have a,

Clean House
Air Conditioning
Comfortable Seating
An Attractive Front
Good Carpeting
Courteous Employees

—but what are you doing
about THE PRODUCT
YOU SELL . . .

MODERN, PLEASING
PROJECTION?



Which projection lamps should you be using? It depends on several factors—size and type of screen, length of throw, size and shape of the viewing area.

The complete line of Strong projection arc lamps includes the

one that exactly matches your requirements—the one that will project ever-so-much brighter pictures in your theatre. Your patrons will SEE the difference.

WRITE FOR LITERATURE

THE *Strong* ELECTRIC CORPORATION

31 CITY PARK AVENUE

• TOLEDO 1, OHIO

"The World's Largest Manufacturer of Projection Arc Lamps"

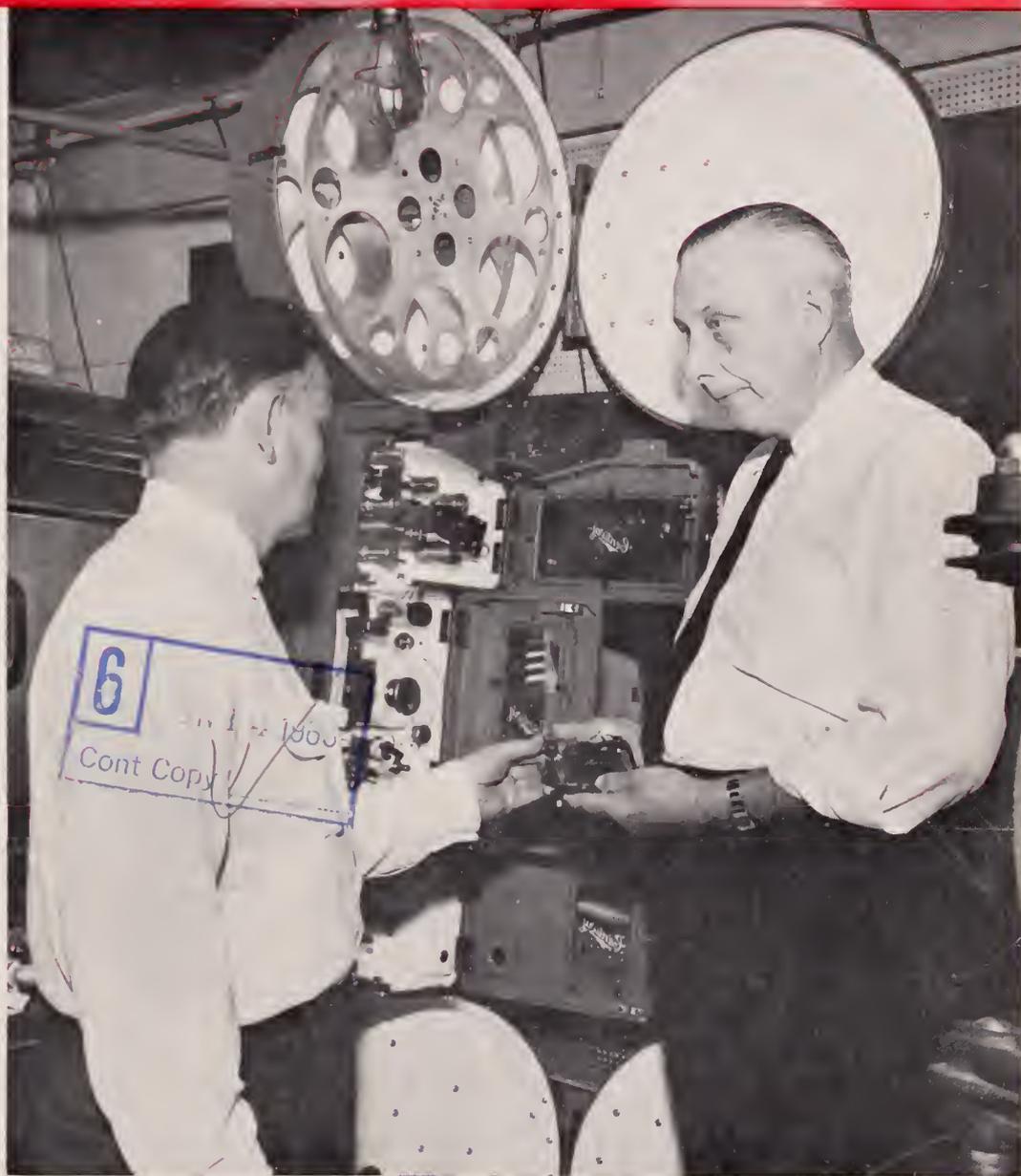
INTERNATIONAL PROJECTIONIST

**Drive-ins
Deserve
Good
Sound**

**Europe's most
luxurious theatre**

**MPAA SCREENING
ROOM HAS
EVERYTHING**

J. Al Pratt, MPO Local 224 of Washington, D.C., discusses the operation of his Century Projector Corp. 70/35mm projector with J. William Garcia, also of the Washington IATSE local. Story on page 10.



MAY

1963

VOLUME 38

NUMBER 5

40c A COPY

\$3.00 A YEAR

Library of Congress
Order Division (0368X)
Washington 25, D.C.



A Scene From America's Projector Carbon Center...



Pyrometric cones accurately check baking cycles

“This sure-fire test is one of the ways we know a projector carbon is perfectly baked”

—says JIM HOYNES
National Carbon Sales Engineer

This photo isn't an abstract rendering of an artist's idea. It's a picture of one of the many important steps in projector carbon production at our Fostoria, Ohio, plant.



Jim Hoynes

These three-sided figures are called pyrometric cones. Because they react in a predetermined way to high temperatures, we use them to help tell us exactly when NATIONAL projector carbons have reached the end of their baking cycle.

When one cone is leaning and the other is sagging, we know it's time to remove the pro-

jector carbon material from the baking furnaces for cutting and further processing.

Every step of the baking cycle, of course, is constantly watched over by standard heat checking instruments, such as thermocouples and highly sensitive optical devices.

In the manufacture of top quality projector carbons it is very important to know the precise moment they reach the peak point in baking. That's why at Fostoria we take every precaution in *quality control* to provide theatres with perfectly baked carbons. Only the finest quality can give movie audiences the finest screen lighting—indoors or outdoors.

Contact
Mr. National Carbon



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.
In Canada: Union Carbide Canada Limited, Toronto

PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 May, 1963 No. 5

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Good Sound for Drive-Ins	4
By ROBERT A. MITCHELL	
The Cover Story	10
Exhibitors Must Remodel	12
Core-Lite Evaluations	13
New Century Projector	14

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

Craftsman Taken for Granted

The projection booth houses the most expensive theatre equipment, and the projectionist rules over this costly inventory.

The theatre owner or the house manager have not the skills to adjust and clean the booth equipment. That's up to the projectionist. The good craftsman treats his machines like a baby, because he knows he is in charge of costly machines, and that dust grinds down his delicate parts in his equipment.

Electrical contacts get dirty, so he cleans them.

The lamp reflectors get pitted and grimy and the lamphouse must be cleaned.

And the same goes for the sound system with its electrical contacts.

The booth craftsman has the responsibility for the inventory of spare parts and outside service, if needed to repair the equipment under his care.

To insure proper and smooth operation, all projectors should be kept clean and well lubricated and in proper adjustment. Cleaning should be carried out as a daily routine. Otherwise the hardening of lubricating oils under the heat of the projection lamp will bake onto any surface, and that is difficult to remove.

The modern projector requires very few adjustments, but the daily routines of the boothmen are an important chore. They include the timing of the shutter, focusing the lens, proper tension of the film path and other parts of the projector.

The condition of the projector and soundhead sprocket teeth should be carefully inspected at frequent intervals, and if there is any visible undercutting of a small notch at the base on the contact side of the teeth, the sprocket should be replaced, as any teeth considerably reduced in width at their base will cause an unsteady picture and will damage the sprocket holes in the film.

The lamp optical surfaces should be kept clean and a regular routine before the day's program begins is a must. Feed relay contact points should be checked regularly, and cleaned with fine sandpaper if any sparking is visible. Persistent arcing across the relay points is the warning sign that the resistor bridging has deteriorated and should be replaced. If the relay contact is faulty then noise gets in the sound system. This calls for cleaning the relay points and adjusting the tension, and in extreme cases for installation of filter condensers connected with either across the points or from each point to ground. All moving parts of the lamphouse should be carefully lubricated.

Rectifiers of the bulb type requires these procedures: keep the rectifier clean and dry, clean the bulb and socket contacts periodically with 00 sandpaper, keep all connections tight, pre-test all spare bulbs.

The soundheads must be kept clean, and the face of the photocell must be optically clean; any oil should be thoroughly cleaned off or it will attack the rubber insulation of the photocell wiring.

Those are a few fundamentals which projectionists well know, they are cited here because the theatre owner or the house manager does not have the skills and know-how that the projectionist has to know about this complex machinery before he goes on the job.

(Continued on Page 9)



Good Sound for Drive-ins

By Robert A. Mitchell

THE PARAMOUNT CONSIDERATION in motion-picture projection is the quality of the picture itself—its brightness, uniformity and color of illumination, clarity of focus, reproduction of photographic contrasts, and rock-steadiness. The movies are primarily a visual art; and the picture on the screen is what the public pays for at the boxoffice. Nevertheless, the quality of the sound reproduction must in no wise be relegated to second place, for sound and picture go together to create a life-like illusion and to tell a story in audiovisual terms. Bad sound reminds the audience that it is only looking at a picture.

There are important technical differences between the reproduction of sound in a drive-in, with its hundreds or thousands of separate speakers, and the production of high-fidelity sound in a conventional theatre. The management of an indoor theatre need consider only one "focal point" of sound reproduction, namely, the stage-speaker installation which provides the sound for every patron in the house. The system of amplifiers is built up to match a speaker assembly having a power capacity and sound-radiating characteristic best

suitable to the size and acoustic properties of that particular auditorium.

Adequate Sound Power Essential

A drive-in theatre must not only have amplifiers of sufficient power output to provide an adequately strong sound signal to all of its many hundreds of individual in-car speakers, but should also have a reserve power which will minimize the "power robbing" effects of accidental variations in electrical load. Such variations are certain to occur when the speaker volume controls are of the simple rheostat, rather than the constant-impedance potentiometer type.

The in-car speakers purchased for drive-in use should be large enough to give an acceptably strong reproduction of the low-frequency bass tones in the sound. In no case should the cone of the speaker be under 4 inches in diameter: 5-inch cones are recommended, though the quality of the sound reproduction by a speaker does not depend on the size of the cone alone. It should always be remembered that the smallest, cheapest speakers require more watts of power from the amplifiers to give the same volume of sound, that they usually give "tinny," distorted sound, and that they are constructed in such a way that it is impossible to re-cone or otherwise repair them. Speakers of good quality are more economical in the long run, and certainly satisfy the patrons in a way that cheap speakers can never do.

Assuming an average consumption of 0.25 watt by each speaker and associated matching transformer (measured at 1000 cycles, 90 per cent soundtrack modulation), the following amplifier power outputs should be provided for drive-ins of various sizes:

- 400-car theatres, 100 watts.
- 500-car theatres, 125 watts.
- 600-car theatres, 150 watts.
- 800-car theatres, 200 watts.
- 1000-car theatres, 250 watts.
- 1200-car theatres, 300 watts.
- 1500-car theatres, 375 watts.
- 2000-car theatres, 500 watts.

In addition to the amplifiers needed to supply the minimum required audio power, there should be at least one stand-by amplifier of 25 watts output for emergency use. An amplifier of this size is large enough to serve 100 cars (1 to 4 ramps) in the event of amplifier breakdown.

Each drive-in speaker is powered through a matching transformer usually located in the junction box on the speaker post. Accidental short circuits in the speakers or their connecting cords cannot, therefore, render other speakers on the same ramp inoperative.

Leeway in Impedance Matching

The way the speaker-matching transformers are interconnected depends upon the impedances of their primary (input) windings and upon the output impedance of the

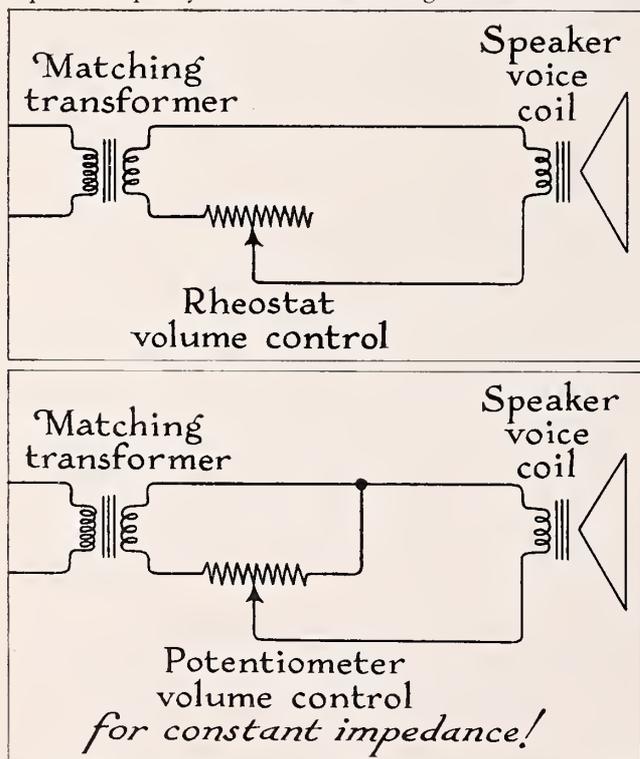


FIG. 3—A potentiometer is preferred to a simple rheostat for an in-car speaker volume control because of its constant impedance and load on the sound amplifier regardless of volume setting.

power amplifier serving them. The total impedance of a number of individual "loads" is greater than the individual impedances when they are connected in series, less when they are connected in parallel.

For the maximum transfer of power, the two impedances, source and load, must be of equal ohmic value. If the "load resistance" has a value (ohms) substantially lower than the impedance of the source, the current (amperes) flowing through the circuit will be relatively great, but the load voltage drop will be small. Electrical power in watts is found by multiplying amps. by volts; and in a case like this (low voltage, high amperage), the watts of power expended in the load resistance will be small.

On the other hand, if the load resistance has an ohmic value substantially higher than the impedance of the source, the voltage drop across it will be great, but the amount of current able to force its way through the high resistance will be small. Here we have a case of high voltage and low amperage; and the mathematical product of amps. *times* volts *equals* watts will again be small.

When the ohmic resistances are equal, however, the watts of power obtained by multiplying the voltage drop across the load by the current in the circuit will be at a maximum. Matched impedances accordingly permit the maximum transfer of power. Nevertheless, quite a bit of leeway in the match of ohmic values is allowable. One impedance may have a resistance (ohms) as low as one-half that of the other, or as high as twice that of the other, and the power loss through mismatch will amount to only about 10 per cent. This is well below the maximum power variation which can be detected in sound reproduction by the human ear.

Bad mismatches between sound-circuit components have a much more serious effect than the mere loss of audio power, however. The impedance of transformer coils and the voice coils of speakers varies with the frequency of the audio signal. When we say, for example, that a certain speaker has an impedance of 6 ohms, we mean that the voice coil of the speaker has a resistance of 6 ohms to AC at a frequency of 1000 cycles per second. The resistance will be less than 6 ohms at lower frequencies, and higher than 6 ohms at higher frequencies. Now, if a speaker or its matching transformer is improperly matched to the output transformer of the amplifier, the frequency characteristics of the system will be altered. The result is distorted, unnatural sound.

It is generally believed that the human ear is unable to detect harmonic distortions in sound reproduction amounting to less than 5 per cent of the total power output. Distortion is much reduced in certain amplifier circuits by the use of deliberate impedance mismatching! For example, it has been found that second-harmonic distortion is greatly reduced by making the impedance of a load resistance about twice as great as the plate resistance of the tube supplying it.

By a thoughtful choice of impedances and by the use of degenerative feedback, modern theatre amplifiers have an overall distortion factor of less than 2 or 3 per cent. A drive-in theatre absolutely requires amplifiers of the same high quality as those used in indoor theatres.

Speakers Weak Link in Chain

Drive-in sound seldom equals the high quality of good indoor-theatre sound even when the very best amplifiers are used. As in all sound systems from the

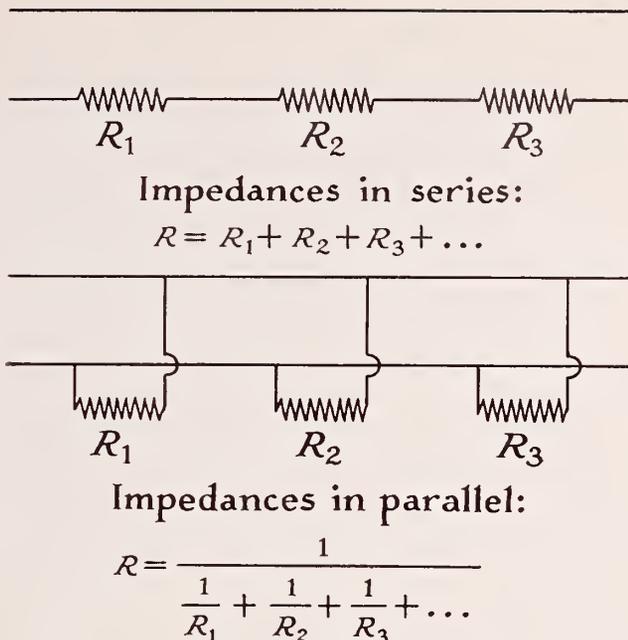


FIG. 1—When impedances (resistors, transformer windings, speaker voice coils, etc.) are connected in series, the total impedance in ohms is the simple sum of the individual impedances. When connected in parallel, however, the ohmic values of individual impedances are each divided into 1, the quotients added, and the sum divided into 1. Thus three 25-ohm resistors in series have a total impedance of $25 + 25 + 25 = 75$ ohms; in parallel, $1/(1/25 + 1/25 + 1/25) = 1/0.12 = 8.33$ ohms.

mightiest public-address system to the smallest home "hi-fi." the speaker, itself, is the weakest link in the chain of sound components. Even when the amplifiers introduce no perceptible distortion in the reproduction, the sound may have a slightly unnatural quality. This is due entirely to distortions arising in the speaker. Because a loudspeaker is a mechanical device as well as an electrical one, it is extremely difficult to design one which perfectly translates the fluctuating sound-signal currents into air-pressure waves.

It is therefore unfair to expect an "unbaffled" drive-in speaker having a 4-, 5-, or 6-inch cone, and no separate "woofer," or low-frequency unit, to equal the sound-reproducing quality of a large and carefully engineered indoor-theatre speaker assembly. But in spite of these unavoidable physical limitations, we have a right to expect acceptably good sound in the drive-in theatre.

In-car speakers should be specially designed and constructed for drive-in use. Cheaply priced speakers "adapted" from units originally designed for small radio sets or phonographs are unsatisfactory in almost every respect. Drive-in speakers should be completely waterproof in order to resist the effects of the rain and damp weather to which they will be exposed. They must also be reasonably heat-resistant—the summer sun is sometimes hot enough to fry an egg! And last but not least is ruggedness. In-car speaker units must hold up under the rough usage that the rank and file of the public accords to property not its own.

Spare Speakers and Amplifiers

Prospective purchasers of in-car speakers should make certain that the units they intend to buy have *constant electrical impedance* regardless of the setting

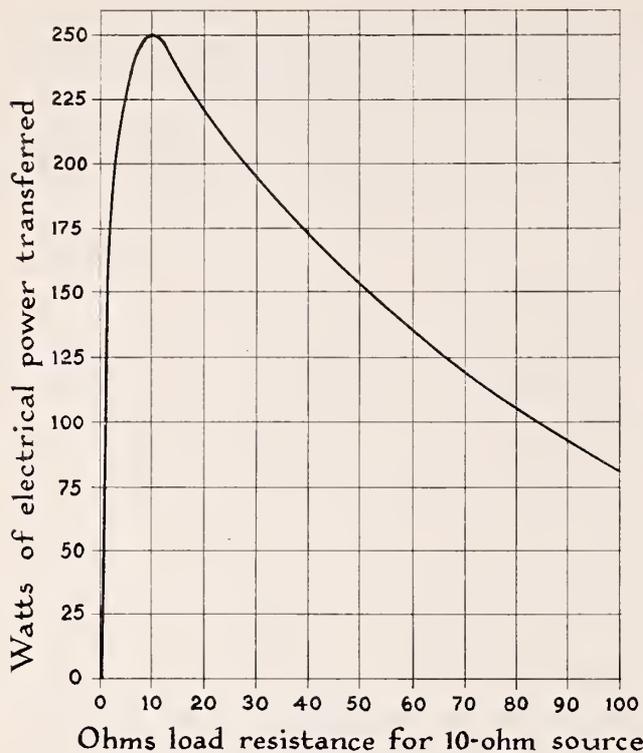


FIG. 2—This graph reveals that the maximum transfer of electrical power (watts) is achieved when “source” and “load” impedances are the same. It is here assumed that the source impedance is 10 ohms; the number of watts developed when different load resistors are used may be read from the curve. Thus a 10-ohm load resistor gives a maximum power of 250 watts; both 5-ohm and 20-ohm loads (one-half and twice the source impedance, respectively,) give 221.77 watts.

of the volume control. In other words, the volume control should be of the potentiometer, not the simple rheostat, type. If a simple dead-end reostat is used, the load on the amplifiers will increase with the number of speakers turned up loud, thus causing annoying variations in system output and, worse, in the frequency characteristics of the system.

No matter how much is done to prevent it, a number of speakers are damaged and stolen every season. Deliberate theft cannot be prevented if the larceny-minded patron brings along a pair of wire cutters. Accidental severance of speaker cords can nevertheless be minimized by using waterproof coiled cord instead of the ordinary flexible cord which may loop down and catch on automobile bumpers and door handles.

A number of spare in-car speakers are an absolute necessity to avoid losing parking spaces when something goes wrong with speakers previously installed. To play it safe, there should be at least one spare speaker for every hundred speaker posts. The projectionist must also have a spare speaker known to be in perfect working order for his own use in checking ramp and junction-box circuits—this in addition to the permanently installed projection-room monitor speaker.

We do not believe that it is desirable to complicate the sound wiring to the extent of having a separate on-off switch for each and every ramp, together with loading resistors to preserve system impedance; but it is certainly necessary to provide switching for each individual power amplifier.

The most convenient arrangement is a plug-in switchboard having one heavy-duty plug for the output term-

inals of each amplifier. If, for example, there are four amplifiers, there must be four output plugs, each supplying audio power to one-fourth of the drive-in. The plug arrangement permits very rapid replacement of an ailing amplifier with an emergency stand-by amplifier of the same type and power output. (Two other plugs must also be provided for each power amplifier, one for the current which operates the amplifier, and the other for the sound input from the preceding driver or voltage-gain stage.)

Even though the plug-in arrangement is preferable for drive-ins in which all the equipment is removed at the end of the season and re-installed at the opening of the next one, permanently wired emergency amplifiers connected through a main switchboard are recommended both for indoor theatres and for those drive-ins in southern climates which operate the year around.

The presence of a spare power amplifier in good working condition does much to reduce the projectionist's worries, to prevent ticket refunds because of sound loss, and to allow repairs to the sound system to be made in a careful, unhurried manner in the daytime instead of under stress and the pressure of time while a show is in progress.

Sound Service Indispensable

The services of a good sound-maintenance organization are a “must” because the projectionist, already burdened with the duties involved in his work, cannot rightly be expected to jeopardize the condition of films and equipment or the presentation of the show to “double” as a sound engineer. Sensitive electrical adjustments in amplifier circuitry, the correction of noise and distortions arising from electrical, optical, or mechanical causes, and the balancing of amplifier outputs are not normally a part of the projectionist's job.

It is nevertheless quite proper for the projectionist to familiarize himself with the types of vacuum tubes used in his system, and with the locations of their sockets in the rectifier and amplifier units. A full complement of all rectifier and amplifier tubes, together with soundhead photocells and exciting lamps, should be stored in the supply cabinets ready for instant use. And do not forget spare fuses!

It is very doubtful that frequent or routine sandpapering or burnishing of vacuum-tube prongs is at all necessary. The prongs of tubes are made of a plated alloy which does not corrode. If the prongs are wiped clean when the tubes are inserted into their sockets, and if the socket contacts are sufficiently tight to begin with, the amplifier tubes can be left alone during the season—except, of course, for the testing and replacement of the few tubes which may go bad or be suspected of defects.

If at any time the tubes are removed from an amplifier chassis for the purpose of cleaning it, cover the prong holes of the tube sockets with strips of masking tape or “Scotch” tape to prevent dust and dirt from going inside the chassis through the holes.

Big Power Tubes Have Shortest Life

Transistorized preamplifiers and voltage-gain “drivers” eliminate tube troubles and filament (“A”) circuits from the first two stages of the system, and also reduce hum and distortion due to “microphonic” and gassy tubes.

The power amplifiers, on the other hand, usually employ vacuum tubes to provide the audio power (watts) required by a large number of in-car speakers. Power-gain tubes are larger and more expensive than voltage-gain tubes, and they get rather hot in operation. They are more likely to deteriorate and cause distortion than

are the voltage-gain tubes. But the faint bluish glow sometimes seen in power tubes, and which flickers with the varying level of the sound being reproduced, is entirely normal and does not necessarily indicate excessive "gassiness."

Except for the replacement of noisy volume-control potentiometers, damaged in-car speakers cannot ordinarily be repaired in the theatre, but must be sent to a company specializing in speaker re-coning. (Write to the manufacturer or to his distributor for advice *before* you need work done!) A torn or punctured cone mended with a patch of adhesive tape cut from a plastic Band-Aid will work temporarily, but it may distort the sound by weakening certain frequencies and overemphasizing others.

All speaker-post junction boxes should be brushed out clean at the beginning of the season when the speakers are connected, and again whenever damaged speakers are replaced. A weatherproof junction box of responsible manufacturer is not likely to admit enough dust during the 3-to-5-month drive-in season to require mid-season cleaning. Naturally, a "spot check" is a good idea after a sandstorm or a spell of high winds which may stir up clouds of dust!

120 V Dangerous in Junction Boxes

Most junction boxes are fitted with small lights which permit the patron to locate the speakers easily for removal and replacement on the hangers. Some boxes also have additional lamps for signalling concession attendants. All of these lamps are ideally supplied by a 2-wire system completely independent of the sound circuitry, but in practice it is usual to have

a common-ground 3-wire system. One of the three wires is the "live" power wire for the post lamps, the second is for the sound, and is connected to the speaker transformers, while the third wire is the common ground shared by both the lights and speakers.

It is recommended that 30-volt post lamps be used when the 3-wire system is employed. A pressure of 120 volts presents a hazard which would become positively dangerous in the event that the "earthed" ground becomes accidentally disconnected or electrically weakened. A patron handling a speaker case or other conductor connected to the common-ground wire might then receive a shock, or be seriously injured if he happens to be standing on wet earth.

It is undeniably a time-consuming job to check all of the speakers in a 1000-or-2000-car drive-in. Such a check cannot be made every day without the help of a special crew; but we do suggest that such a check be made once a week, if possible, and all defective speakers replaced from the stock of spares. Phonograph records of good quality can be played in the projection building to furnish sound during the time it takes to inspect the speakers.

The care and servicing of the projector soundhead units is, of course, exactly the same in a drive-in as in a conventional theatre. The soundheads may need more frequent cleaning because of the presence of gritty dust in the air; but in-drafts which sweep dust-laden air over the projectors can be minimized by using ground and polished optical glass in the projector ports, and a good grade of plate glass in the observation ports. **ip**

Ashcraft PROVED BY TEST...BY FAR THE BEST

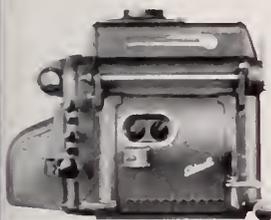
Arc Lamps and Rectifiers for Every Projector...for Every Theatre...The World's Finest

HERE ARE THE FACTS



SUPER CINEX . . . The masterpiece of the most experienced projection lamp designer. No other lamp has even remotely approached its perfection from every point of view—mechanically, electrically, optically, hydraulically or its fine air-conditioned system. Its durability and stamina have been proved. More and more fine theatres and drive-ins are re-equipping with Ashcraft Super Cinex daily due to their fine reputation for perfect screen light and service. Current range with 13.6 mm carbon, 125-165 amperes.

CINEX 35/70 SPECIAL . . . The Great of the Ashcraft Arc Lamps is a modified Super Cinex. Like the Super Cinex no third element or relay lens is necessary regardless whether 35 mm or 70 mm film is being projected. Uses a 13.6 mm high intensity positive carbon at current ranges between 125 and 140 amperes.



CORE-LITE . . . the latest and most phenomenal producer of white light at lowest possible operating cost in the family of Great Ashcraft Arc Lamps. Same arc burner and arc controls as the SUPER-CINEX. Same quality and built-in reliability. The lamp is optically designed to give greater white light distribution at less cost for carbons and electricity. There is none better—anywhere! 70-110 amp.

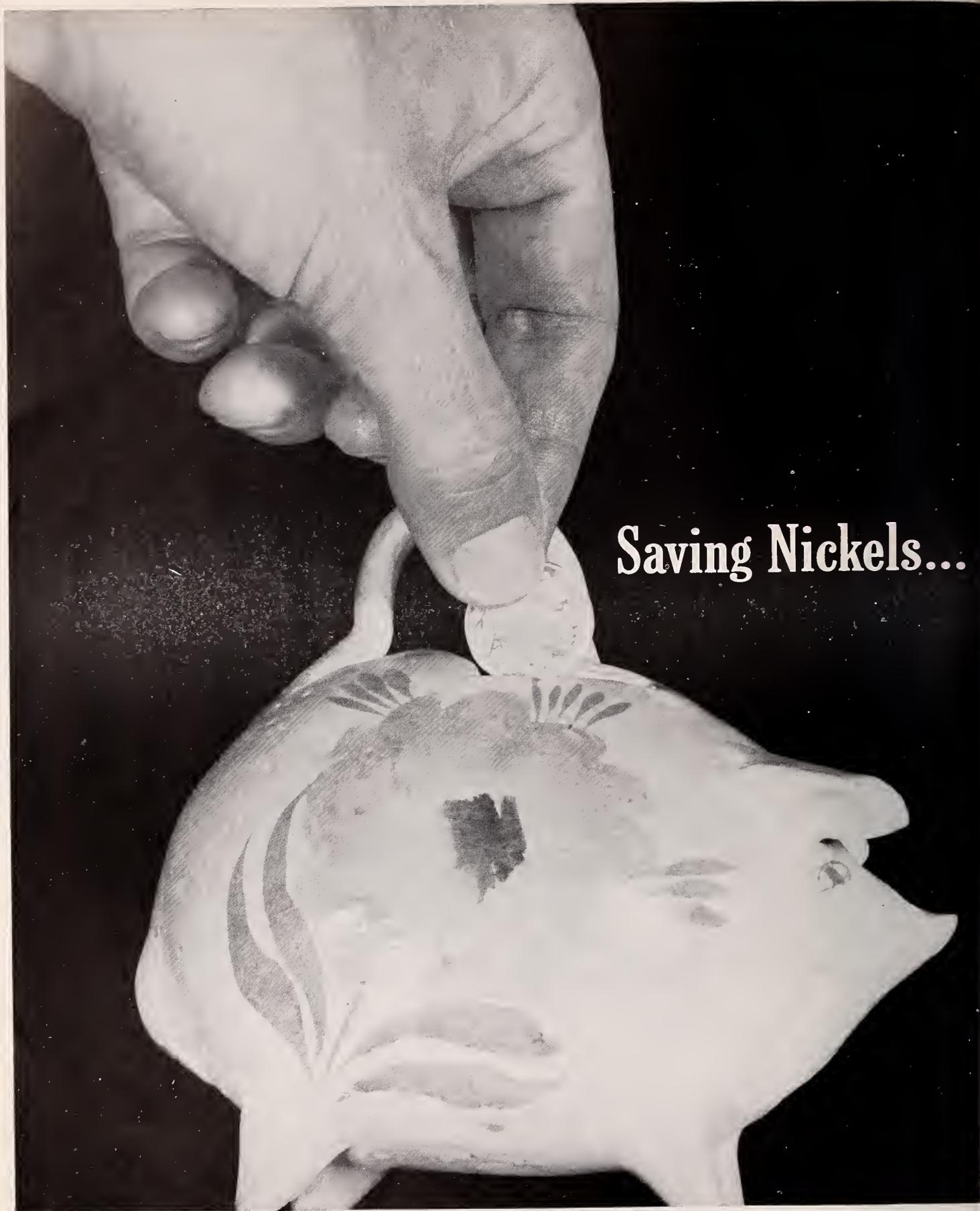
RECTIFIER . . . THE SPECIAL CORE-LITE 12 PHASE HIGH REACTANCE RECTIFIER

. . . designed for the requirements of the Core-Lite lamp, this rectifier will give the best results. Low reactance 6 phase rectifiers should not be used. Certain motor generators, but not all, are acceptable. The special Core-Lite S/1212 rectifier will give you long, excellent service with an absolute minimum of expense. Other Ashcraft rectifiers available for every power need. The cost is no more than for inferior rectifiers.



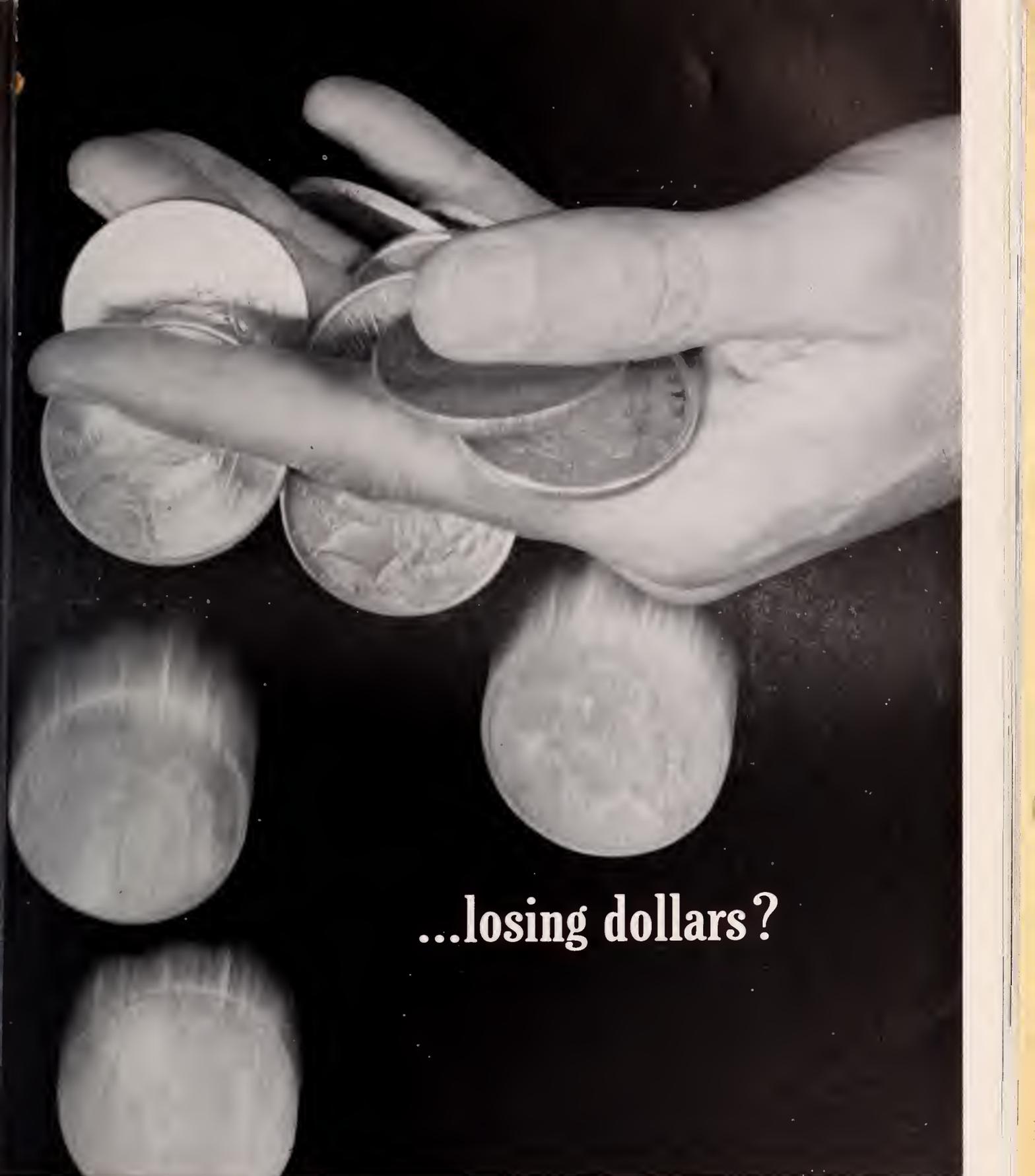
SOLD EVERYWHERE IN THE UNITED STATES BY LEADING RECOGNIZED THEATRE SUPPLY DEALERS

A. S. ASHCRAFT MFG. CO., INC. • 36-32 38th STREET • LONG ISLAND CITY 1, N.Y.



Saving Nickels...

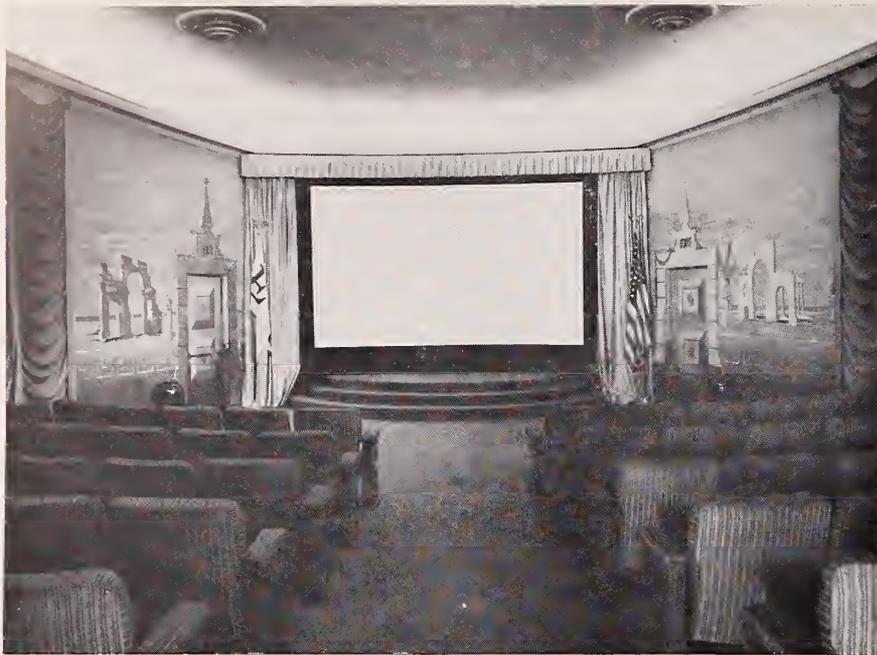
FRANKLY, YOU'RE DOING JUST THAT, if you're buying top-quality negatives—and "economizing" on prints. Fact is: to do its job, a crisp, clear negative must have top-quality prints. Otherwise, your message falls flat and you've wasted negative and print costs. Moral: Go Eastman *all* the way—negative and print-stock. And in the case of questions — production, processing, projection — always get in touch with Eastman Technical Service.



...losing dollars?

For further information, please write or phone: Motion Picture Film Department,
EASTMAN KODAK COMPANY, Rochester 4, N. Y. Or—for the purchase of film:
W. J. German, Inc. Agents for the sale and distribution of EASTMAN Professional
Film for Motion Pictures and TV, Fort Lee, N.J., Chicago, Ill., Hollywood, Calif.





The Cover Story:

Century Projectors at MPAA

This classically beautiful private screening room is in the offices of the Motion Picture Association of America in Washington, where under Eric Johnston the American motion picture industry is represented to the world, and where many pictures are evaluated as to their effect, and chances of success, in the world market. The projection room is equipped with Century Projector Corp.'s 70/35 projector, staffed by the MPO Local 224 gentlemen featured on the front cover. This screening room entertains the leaders of the motion picture industry, government officials, as well as diplomats from all over the world.

The Motion Picture Association of America, Inc.'s screening room in Washington, D. C. is one of the outstanding screening rooms in the world—in fact, those who have visited this exquisite room come away with the feeling that they have enjoyed America's pastime (movies) in the atmosphere of a beautiful living room.

As for motion picture presentation facilities, the MPAA projection booth has everything from 16mm to 70mm equipment.

The new Century American-made 70/35mm projectors as well as the Century multiple 6-4-1 channel All-Transistor sound equipment was supplied and installed by H. C. Dusman of the firm of J. F. Dusman Co. of Baltimore, Md., established in 1912. The Dusman Co. has been a Century dealer for over 35 years. In addition to the 70/35mm equipment, auxiliary interlocks for 3D or separate sound heads were installed, which makes this room unique in every respect.

J. Al Pratt, consulting projection engineer, member of Local 224 MPO, was in direct charge of the installation completed March 15, 1963. **iP**



J. Al Pratt, member of Local 224 M.P.O. congratulating H. C. Dusman of J. F. Dusman Co., Century's Baltimore dealer who sold and installed the Century 70/35mm projectors and the All-Transistor 6-4-1 channel sound equipment.

EDITORIAL

from page 3

The projectionist in the smaller and late-run theatres has to struggle with damaged film, because the exchanges don't carefully inspect the film that goes out to theatres.

The craftsman in run-down theatres struggles with worn-out projectors, lamp houses and sound systems.

It's a fine tribute to the projectionist that many film theatre patrons see tolerable pictures, and that's due to the craftsman's skills and know-how about wet-nursing these worn-out projectors, lamps, sound system and rectifiers. **iP**



Ernest Lang, secretary of Local 306 and treasurer of the Projectionist Square Club, New York, was presented with a Gold Card by the Club recently. Photo shows Mr. Lang, Harry Apsel, president of Projectionist Square Club, presenting the Gold Card to Lang; Steve D'Inzillo and Harry Garfman, Local 306 business agents for New York and Brooklyn, and Izzy Schwartz, secretary of Projectionists Square Club.



Investment Opportunity

You are looking at a part of your employee benefit program. It's part of your neighbors', too. And your suppliers' and your customers' and your competitors'. It is there for all Americans to enjoy.

A healthy economy is a bulwark of the freedom it symbolizes—and of *our* freedom to enjoy it.

American businessmen like you can protect the investment you have in this benefit program by promoting the Treasury's Payroll Savings Plan for U.S. Savings Bonds. It makes for a strong America and a sound America. And it engenders a sense of thrift and independence and conservation that helps us all to fathom the real significance

of monuments like that set in the beautiful Black Hills.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the most precious of America's natural resources. In the vastnesses of its mountains and plains and coasts that offer physical and spiritual recreation to us and our children. You are investing in the heritage and the future of America. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U.S. Savings Bonds Division, Washington 25, D.C.



in your plant...promote the **PAYROLL SAVINGS PLAN** for U.S. SAVINGS BONDS



The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

INTERNATIONAL PROJECTIONIST

Breaking Mirrors? It can't happen with

HEYER-SHULTZ

UNBREAKABLE METAL REFLECTORS

TOP SCREEN ILLUMINATION	5 YEAR GUARANTEE
WILL NOT PIT OR TARNISH	FACTORY REFINISHING SERVICE

See Your Theatre Supply Dealer **HEYER-SHULTZ, Inc.** Manufactured by Cedar Grove, N. J.

CONSTANT FLIGHT . . . Exhibitors Must Remodel Theatres, Walters Says

DALLAS—Lou Walters of Lou Walters Sales & Service here, constantly emphasizes the need for many exhibitors to remodel and refurbish their theatres and install new equipment.

"You have to spend money to make money," Walters said. "How many times have we heard this? Yet, we do not heed this good advice. We hear exhibitors complain every day about bad business, when they could help themselves considerably at the box-office.

"A great deal of the equipment most theatres are using is old, worn-out and obsolete. This not only is true in the projection room, but the seats and carpets as well, and the general appearance of the theatre is run-down.

"There is nothing wrong with most good pictures but that better projection would add to the boxoffice take. Pictures that are poorly projected with obsolete equipment don't do the theatre any good. The customers soon find a theatre with up-to-date and modern equipment."

There is no question, Walters said, that 70mm pictures are the best projection. "The sooner the theatre owners realize this and equip the projection room with 70mm projectors, the sooner they will reap the benefits. We know the producers have, in many cases, put the same picture on 35mm prints, but this is partly the fault of the theatre owner for not

How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise—how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes—transistors—gas discharge tubes—klystrons—traveling wave amplifiers—and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects—these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota
Please send me a copy of "Electrical Noise"
by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State



Lou Walters

having equipped his theatre or theatres to run 70mm prints."

"There is," he said. "a difference in the two projected pictures and there is also a difference in good projection and better projection. Many advantages are to be had in the installation of 70mm equipment for the indoor theatre such as magnetic sound reproduction which is considered the best and, too, he gets the benefit of the surround speakers. There is also a big advantage for the drive-in theatres with their large screens and long throw. That advantage is light, which is so badly needed in the drive-in theatre. The 70mm projectors will improve the projection not only in increased light but also with a sharper and steadier picture."

Walters also says it is possible now because of recent changes of the loan rules in the Small Business Administration enabling motion picture theatres to get low interest money simply by applying to their local bank, which will handle all necessary application paper work for them. With this money, they can then re-equip and refurbish their theatres.

Walters Sales & Service last year moved to a new location, 4207 Lawnview Ave., Dallas 27. The company, he said, has received dealer appointments from every manufacturer to

which it has applied, including Norleco, Strong and Diamond carbon.

IP

Brightness Gains for Philadelphia Theatre

PHILADELPHIA—Evaluations of a recent installation of the C. S. Ashcraft Manufacturing Co.'s Core-Lite Lamps in the Stanley Warner circuit's Logan Theatre here showed marked screen brightness gains, said Henry Eberle, the circuit's chief sound engineer, Philadelphia zone.

The new lamps were installed by the Stanley Warner Service Dept., and are being sold throughout the country by National Theatre Supply Co.

Eberle said readings indicated an average increase of 20% more light on the theatre's 16.8 ft. by 38 ft. screen. A gain of 35% in side lighting was recorded.

In addition to the increased screen brightness, Eberle said the lamps cost less to operate than the ones that were removed. He said carbon consumption records kept by Logan projectionist William Singer (IATSE Local 307), show a 25% savings on carbon costs, despite the fact that the Core Lite uses larger carbons than the Super Powers, which were removed.

The Core-Lites are being operated on 80 amperes of current supplied by motor generator.

Carbon trims used are 11mm x 17 $\frac{1}{2}$ " positive rotating and 5 16 x 9" negative, and have yielded an operating cost-per-hour figure of 26c. This compares to a 31c cost-per-hour figure for the old lamps.

Suggested current range for the Core-Lite is 75 to 110 amperes.

Eberle said the 80 ampere operating level had proven highly satisfactory for the Logan's requirements.

The theatre is equipped with Simplex projectors using Kollmorgan 4.5" back-up lenses and Kollmorgan F 1.9's up front for CinemaScope. Bausch & Lomb F/1.8's are used for standard 35mm presentations. Screen brightness increases cited apply to the C-Scope setup.

Eberle said the Core-Lites met all the claims of Ashcraft and NTS, and were well suited for a medium-sized theatre such as the Logan.

Ashcraft attributes the absence of brown and blue rays with Core-Lite to the lamps ability to completely cover the aperture with pure white light only. Magnification of the carbon core makes possible the high percentage of white light distribution and the elimination of brown, yellow, and red rays of the hard rim or shell of the carbon.

IP

PROJECTIONISTS PREFER ETHYLOID

Film Cement For BEST RESULTS Available from Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

HEY: "LET'S TWIST"!

Yes, That Easy to Use—No Tools Needed
Just Twist The Stub In & Out . . .
NO GRINDING—NO DIRT



IF YOU ARE NOT USING The "Little Miser" Carbon Saver YOU are losing several Hundred Dollars Each Year!
4 Sizes 9-10-11m.m. \$3.00 Each
13.6m.m. \$4.50 Each

ORDER Now—Start Saving Money \$\$
(We Suggest 3 In Each Projection Room)

LOU WALTERS

Sales & Service Co.
MOTION PICTURE EQUIPMENT
EV 8-1550
4207 Lawnview Ave. Dallas 27, Texas

Vallex for
CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES
VALLEN, Inc.
AKRON 4, OHIO

— THE ENEMY — HEAT

A 10 DEGREE REDUCTION
IN HEAT WILL TRIPLE
TRANSFORMER LIFE.
ARC AND SOUND SYSTEM
POWER SUPPLIES RUN
COOLER. A MODEL TO
REPLACE ANY BULB.

Write

BROWN ELECTRONICS
1717 South St., ALLENTOWN, PA.

DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSORFF CARBON CORP. East McKeesport, Pa

CHRISTIE
SINCE 1929

XENON
& XENON MERCURY ARC LAMP
D-C POWER SUPPLIES

4.5 - 180 amp
11.5 - 65 vdc
1% Reg & Ripple

150 - 5000 watt
MIL & RFI Specs
Silicon

From Stock:
Various Ratings
and Styles



Also 200 other Models of Power Supplies and Battery Chargers. Write for Catalog.

CHRISTIE ELECTRIC CORP.
3416 W. 67th St., Los Angeles 43, Calif.

Norelco
p r o j e c t i o n
e q u i p m e n t

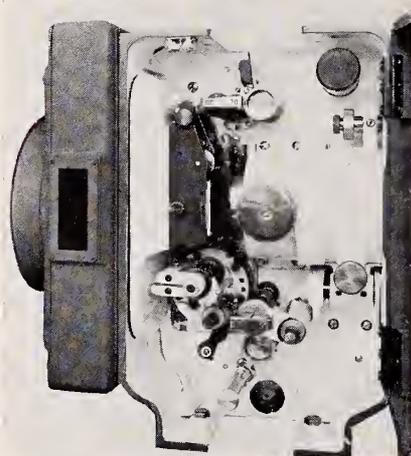
Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

NEW CENTURY 70/35 PROJECTOR

A new model 70/35 projector has been announced by the Century Projector Corp., New York. A further development of the Century JJ-Z, it has been designed, according to Frank E. Cahill, Jr., vice president in charge of distribution, to embody all that is desired by American standards as well as by experienced American projectionists and service engineers. Features of the new projector cited in the announcement are unique designs of the film traps and film gates (70mm and 35mm), and the direct coupling of the mechanism and the optical sound reproducer in conjunction with a poly "V" motor drive belt to the projector main drive shaft.

Accompanying photographs show the new mechanism as well as the new 70mm film trap, the new curved film gate and the 70mm sprocket pad as-



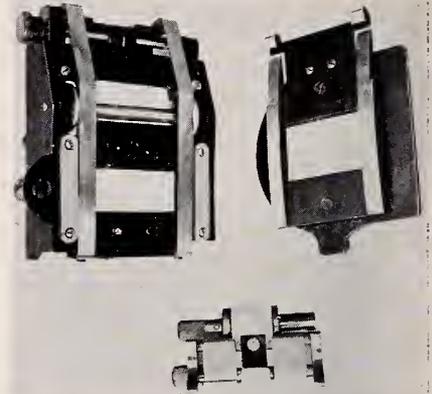
Century JJ-2 mechanism with new 70mm trap and gate mounted.

sembly. Both the film trap and gate can be easily and quickly removed from the projector for inspection, cleaning and changing to 35mm, without disturbing any other units. The new projector has been tested in actual theatre operation by competent projectionists.

The film gate has solid hardened, polished heavy-duty steel runners for longer life. The Century-designed watercell and aperture plate are positioned in the projector to allow the film to come as close to the aperture plate as desired for sharp focus all

around the edges. It is also possible to "set" the film gate to provide a soft edge aperture focus if so desired.

These same designs are also incorporated in the 35mm film trap and film gate for sharper pictures, less film wear and for fast and easy



The 70mm film trap, gate and (bottom) intermittent pad assembly.

removal from the projector when changing to 70mm films. With these new film traps and film gates, it is possible to run both 70mm and 35mm films with extremely light tensions (feather touch); even with buckled films, tensions are held to a minimum, it is pointed out. Film tensions can be readily adjusted and set to desired positions for optimum screen results.

In addition, a method has been engineered into these projectors for changing from the standard 24 frames per second to 30-frame speed without extra motor or change of parts. Transfer is made by slipping the new multiple "V" belt over to the proper pulley, which is already mounted in place.

Provisions also have been included to adapt 3-D synchronous projection and synchronized separate sound reproducers if needed. Conversion kits are available.

The new design retains such Century features as double rear shutters, watercells, dual purpose sprockets (70mm-35mm) and pad roller arms, separate 70mm and 35mm Ampex magnetic clusters, simplified threading, unit construction of vertical and shutter shaft assemblies; absence of oil baths except for the intermittent movement, and separate 7/16 and 5/16 magazine spindles for all reels.

ip

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine **ORLUX** **Carbons**

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me _____ copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$ _____

NAME

ADDRESS

CITY ZONE STATE

\$6.00

per copy
including postage

**WHY PAY 25%
MORE FOR
PROJECTION
LAMPS AND
RECTIFIERS?**

SAVE BIG MONEY

PROOF:

(See any published list prices of all makes)

on

Strong

**LOW CURRENT • HIGH INTENSITY
PROJECTION LAMPS
AND BI-POWR RECTIFIER**

**YOU GET MORE LIGHT
AND RADICALLY CUT
OPERATING COSTS**

Here's why:

- ★ Burns a 20-inch (not just a 17½") black 11 mm. positive carbon at 85 amperes, consuming only 7 inches per hour, insuring 2½ hours' operation at only 15.7c per hour. Projects about
10% MORE SNOW WHITE LIGHT
than lamps burning 8 mm. copper coated carbons at 70 amperes, which costs 23c per hour.
- ★ OBTAINS SCREEN UNIFORMITIES OF UP TO 100%
- ★ FULL 18-INCH DIAMETER REFLECTOR.
An Optical System Acknowledged To Have No Peer In Efficiency.
- ★ Both positive and negative drive motors are Bodine geared head—the finest. Each motor has a separate feed control.

See Your Independent Theatre
Supply Dealer Today or send for
details on this complete booth
equipment.

BY FAR THE LOWEST IN COST
and having every desirable
feature, is

WORTH MANY TIMES THE PRICE

The *Strong*

ELECTRIC CORPORATION

31 City Park Avenue

• Toledo 1, Ohio

**The World's Largest Manufacturer
of Carbon Arc Lamps**

ALWAYS FIRST

with new and efficient developments.

INTERNATIONAL PROJECTIONIST



Testing in the XeTRON Division of Carbons, Inc.; Story on Page 4

Library of Congress
Order Division (0368X)
Washington 25, D.C.

JUNE

1963

VOLUME 38

NUMBER 6

40c A COPY



\$3.00 A YEAR

**WHY PAY 25%
MORE FOR
PROJECTION
LAMPS AND
RECTIFIERS?**

SAVE BIG MONEY

PROOF:

(See any published list prices of all makes)

on

Strong

**LOW CURRENT • HIGH INTENSITY
PROJECTION LAMPS
AND BI-POWR RECTIFIER**

**YOU GET MORE LIGHT
AND RADICALLY CUT
OPERATING COSTS**

Here's why:

- ★ Burns a 20-inch (not just a 17½") black 11 mm. positive carbon at 85 amperes, consuming only 7 inches per hour, insuring 2½ hours' operation at only 15.7c per hour. Projects about **10% MORE SNOW WHITE LIGHT** than lamps burning 8 mm. copper coated carbons at 70 amperes, which costs 23c per hour.
- ★ OBTAINS SCREEN UNIFORMITIES OF UP TO 100%
- ★ FULL 18-INCH DIAMETER REFLECTOR. An Optical System Acknowledged To Have No Peer In Efficiency.
- ★ Both positive and negative drive motors are Bodine geared head—the finest. Each motor has a separate feed control.

BY FAR THE LOWEST IN COST
and having every desirable
feature, is

WORTH MANY TIMES THE PRICE

The *Strong*

ELECTRIC CORPORATION

31 City Park Avenue • Toledo 1, Ohio

**The World's Largest Manufacturer
of Carbon Arc Lamps
ALWAYS FIRST
with new and efficient developments.**

PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38

June, 1963

No. 6

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

XeTRON Lamp System	4
Xenon Projection Lamps By ROBERT A. MITCHELL	6
New South Carolina Theatre	12
London's Empire Theatre	17
News Notes—Technical Hints—Miscellaneous Notes	

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

CLEAN EQUIPMENT MINIMIZES TROUBLE

The clean equipment minimizes extra work, as the projection craftsman well knows!

Electrical devices, unlike wine, do not improve with age. One of the essentials of electrical circuits is to maintain the flow of electrical energy in the circuits, and if permitted to stray by dust or dirt, only trouble will result.

Only a routine cleaning of the electrical contacts can avoid extraneous interferences in the sound system. A surge of noise at the inopportune time will ruin the finest picture, and the same holds good for faulty projection.

If the craftsman has years of experience, he knows that dirt or dust allowed to collect on his equipment means trouble ahead, and wasted time at an inconvenient time. The veteran craftsman is not a philanthropist. He can be selfish, knowing that such painstaking methods for cleaning his equipment means he doesn't have to work so hard at servicing dirty machines.

Atmosphere and Oxidation

Atmosphere attacks the terminals, causes oxidation, and oxidized terminals mean poor contacts. Unboxed tubes kept on the shelves for months should be cleaned, else when the tubes are placed into the socket the contact is poor between the tube and socket prongs.

The veteran projectionist has a routine check-up of all of his equipment, including a check of sound amplifiers, sound heads, corrosion on all switches, all tubes (they do not leave any doubtful tube in service), lenses, lamp reflectors, condensers and fuses, and many other parts of his machines. He'll tightly close the oil cans so atmospheric moisture can't condense in the lubricant (many cases of rusting equipment are traced to that condensed in open oil cans).

And he can't take chances on fire, from time to time he'll inspect the film cabinet to make sure it is still in A-1 condition, and he will periodically inspect the rectifiers, generators or other apparatus located outside the booth.

Dust Deteriorates

The usual thing is a painted floor in the projection room, and when the paint is worn to the point that walking on the floor will scuff concrete dust into the equipment, the projectionist has an insurmountable task. The effect of dust upon electrical apparatus is of greater importance at the seashore, where the atmosphere is very moist.

The new and older large installations, carry all wires through conduit, but in many cases with open wiring the wires develop puncture due to moisture absorption.

The projectionist cannot coordinate electrical disturbance with dirty equipment. The projectionist should take a firm stand with the exhibitor or the manager if dust gets in the booth. He is powerless to keep the equipment clean. And why should the exhibitor permit dust and dirt on his own equipment—assuming his projectionist cleans the equipment regularly?

XeTRON:

Lorraine Carbon Enters Xenon Lamp Field



Frank H. Riffle, general manager of the XeTRON Division of Carbons, Inc., points out the simplicity of the pushbutton starting device of the XeTRON CX unit, designed main-theatres' 35mm, 16mm and 8mm operations. The unit has a 40 watt lamp-house.

Carbons, Inc. announces the launching of its XeTRON Division as its entry into the Xenon light field.

This will be in addition to the Lorraine Arc Carbon Division which supplies the "Orlux" arc carbons to the motion picture industry; "Actina" carbons to the graphic arts industry, and "Solar" carbons to the environmental sciences industry.

The XeTRON Division will be built around the sale of Xenon short arc bulbs, highly efficient XeTRON lamp-houses, XeTRON silicon power supplies and associated items.

Heading up the XeTRON Division as technical director and general manager will be Frank H. Riffle, a veteran of 35 years in theatre projection and sound work. Mr. Riffle is

a professional registered engineer whose experience includes 20 years with ERPI and Altec Service, eight years as chief engineer with Motiograph, Inc. and three years as field engineer with Carbons, Inc. He is an active member in the Society of Motion Picture and Television Engineers, as well as IATSE Local 163.

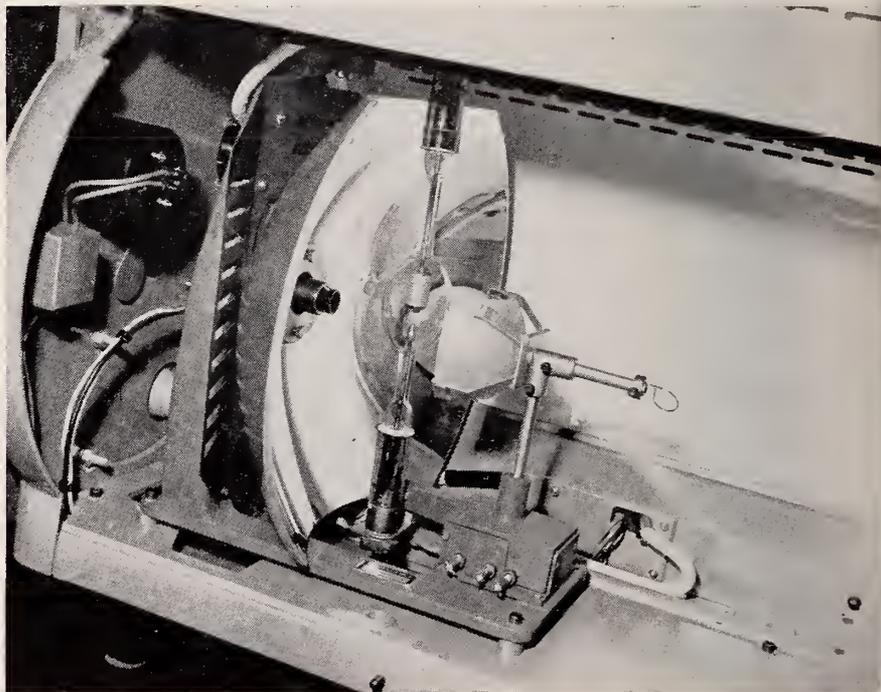
Edward Lachman, president of Carbons, Inc. said recently: "The growing interest in Xenon as a new source for motion picture projection and other applications cannot be ignored. During the past years we have watched carefully the development of the enclosed-short arc and have seen it improved through the use of patented features to a point where it is a very reliable high quality light source suitable for color as well as black and white projection, in the range of 1 to 2 kilowatts. For the present time, needless to say, for the

large theatre or drive-in, the carbon arc remains still unmatched and cannot be replaced.

"Our laboratories in France and Italy have cooperated to develop these advances in this Xenon field. The lamp-houses and the enclosed short arcs have been proven and are now used the world over. Originally there may have been some deficiencies in the spectral output but by careful lamp and optic design this was corrected and/or changed to match the color quality of the high intensity carbon arc lamp.

"We feel that the XeTRON lamp-house can meet the very exacting requirements for screen brightness and color demanded by the studios of Hollywood and a great number of theatres in America.

"Therefore, Carbons, Inc. through its new XeTRON Division, proudly



An inside view of the new unit

ON THE COVER:

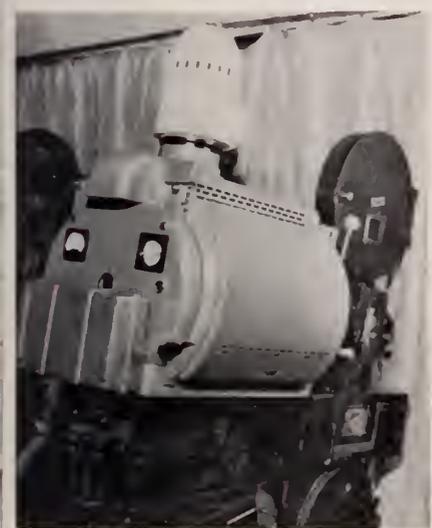
Gathered in front of the new lamp are chief projectionist Charles Bachert of the State Theatre, Boonton, N.J., a member of IATSE Local 502, Frank Riffle, Lorraine

Carbon engineer and general manager of the XeTRON Division, and Edward Lachman, president of Carbons, Inc., Boonton, N.J. Several of the other illustrations were taken in the experimental and test laboratories of the division in the State Theatre.

Frank Riffle Heads New Division; Will Distribute Cinemeccanica Lamp

announces that it is the distributor for the XeTRON lamphouses, manufactured by Cinemeccanica of Milan, Italy.

"These lamphouses will be available in two basic sizes. The XeTRON CX unit will use a 450 watt Xenon bulb and is destined for the 16mm and 8mm projection. The larger



The lamphouse closed

XeTRON lamphouses are designed for 900, 1600 or 2500 watt Xenon bulbs, and can be used with screen sizes up to 40 feet wide. Specially designed, patented front surface "cold" reflectors are standard equipment. The coating is "super hard" and withstands repeated cleaning without losing its characteristics.

"XeTRON is also happy to announce that they have been selected by the Christie Electric Co. of Los Angeles, as the exclusive distributor for their power supplies for those fields in which the XeTRON Division is primarily concerned."

The XeTRONPOWER units use Silicon rectifiers. They have the proper volt-ampere characteristics, current ripple and the 1% RMS or less, current regulation as specified for proper Xenon operation. These features provide XeTRON equipment users with maximum protection as far as trouble-free, low cost operation is concerned.

Mr. Lachman said the same type of customer service by field techni-

cians supplied by Lorraine Carbons, will be available from the XeTRON Division.

For those not familiar with the Xenon short arc and its characteristics, the following information may be helpful.

The Xenon bulb consists of a quartz envelope containing two tungsten electrodes in an atmosphere of Xenon gas.

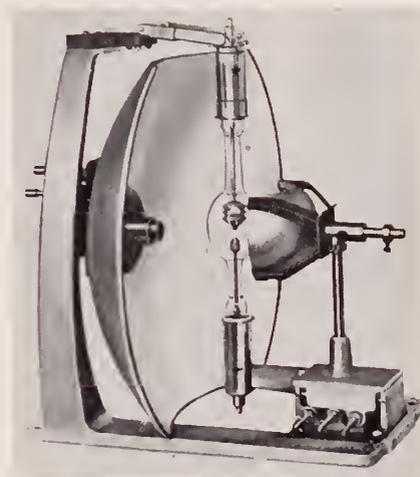
Some of the important characteristics are outlined:

1. Average color temperature is 6,000 degrees Kelvin, which is considered best for motion picture projection.
2. Color remains unchanged even when input power is varied over a wide range.
3. Maximum arc stability.
4. Constant light output over rated average life when bulb is operated according to specifications.

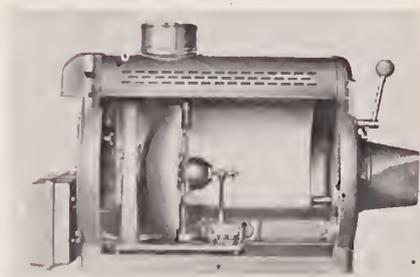
The bulbs must be operated from direct current with the proper polarity. The power supplies are designed especially for the Xenon operation and must meet several requirements, such as:

- (a) Proper no load voltage.
- (b) Satisfactory voltage regulation to reduce arc voltage to proper operating level after arc is established.
- (c) Low current ripple to prevent damage to Xenon bulb and give a flicker-free picture.
- (d) Provide a fine type of current control in order to adjust the bulb current to the needed value.

The current design of the power supply is of utmost importance to a successful Xenon operation, such as Christie's, otherwise it can reduce bulb life considerably and create several hazards to a normal operation. Due to electrode spacing and pressure of Xenon gas inside the bulb, a certain procedure should be followed to start the arc. When the start button is depressed a high voltage of high frequency of 40,000 volts is developed and applied across the bulb electrodes for a fraction of a second. This ionizes the gas in the bulb and reduces the resistance of the gap. If the power supply, no load voltage, is sufficient, current will flow between the electrodes and establish an arc. Due to the regulation characteristics of the power supply, the arc voltage will immediately



Operating details of the Cinemeccanica lamp are shown here, with the lamp in place in front of the reflector, and the entire lamphouse.



drop to the proper operating level.

While the ignition voltage is very high, it is of such a nature that it is not considered hazardous when normal precautions are employed. It is similar to the spark from an automobile ignition system or the fly-back voltage in a television receiver. In normal operation, full protection is provided to avoid unpleasant reaction.

For the first time a real "push button" operation is available for a high intensity type light. About two seconds after the arc is established it settles down to a high degree of stability and needs no further attention.

It appears that the "Xenon Age" is approaching and we feel sure that many people will be amazed with the results being obtained and with the potential that exists in this field. **IP**

XENON

Projection Lamps

PART I CHARACTERISTICS AND BASIC PRINCIPLES

By ROBERT A. MITCHELL

PROFESSIONALLY ALERT, the projection craft is always intrigued by new technical developments which show real promise of improving the presentation of motion pictures. Exhibitors, by and large, do not evince an interest until the innovations have been adequately tested by actual use for a long period of time. The xenon "short-arc" projection lamp is just such a development. Although new, it has already proved its worth by years of gratifyingly satisfactory use in theatres. Its use is rapidly expanding.

Introduced in Germany nearly 10 years ago, the xenon lamp quickly won acceptance as an adequate, and in some respects superior, substitute for the smaller carbon-arc lamps burning relatively low currents. When substituted for the low-intensity carbon arcs which were still used in many European theatres a few years ago, the superiority of xenon lighting was impressively apparent. The push-button ease of operation, the constant color temperature of its daylight-white light, and the absence of moving parts together with its cleanliness and

THE NAME "XENON" COMES from the Greek word *xenos*, meaning "stranger." This refers to the rarity of xenon gas in nature, for the xenon short arc is no longer a stranger in the projection room. Clean and easy to operate, this novel source of dependable daylight-white projection light has proved its worth by actual use over a period of years, and is now the preferred illuminant in studio and laboratory preview rooms and in many of the smaller theatres.

This, the first of two articles on xenon, explains the basic spectrophotometric principles of gaseous-discharge light sources. Though xenon cannot compete in light output with high-intensity carbon arcs burning more than 55 amperes (12,500 screen lumens without shutter under standard conditions), it represents a distinct improvement over the smaller "simplified" HI arc lamp, which it may one day replace.

operating economy also commended the xenon lamp as a more-than-adequate substitute for the smallest "simplified" high-intensity mirror lamps burning 7-mm positive carbons.

Carbon Arcs for Large Screens

Even though the advantages of the xenon lamp over the very smallest carbon arcs are obvious, it must be borne in mind that there is not now, and probably never will be, any substitute for the high-intensity carbon arc for the larger screens. It is possible that the intrinsic brightness of the xenon light source will be somewhat increased in the future, but there appears to be a definite limit as to the feasible maximum luminosity of a light source which already has the maximum radiating area permissible for optical projection — a fan-shaped "flame" of ionized gas enclosed in a quartz-glass bulb.

In the present state of the art, therefore, the xenon lamp offers its marvelous advantages only to those theatres where the screen is small enough to be adequately illuminated with Suprex carbon arcs burning *no more* than 55 amperes. Theatres requiring from 60 to 80 amps. in Suprex lamps, or 75 or more amps. in rotating-positive lamps, must retain the high-intensity carbon arc.

The excellence of the xenon lamp in its rather more modest range of luminous outputs nevertheless merits the greatest attention. The projectionist, in particular, should familiarize himself with the picture-illuminating and operating characteristics of this new light source. If his theatre has a matte screen of 0.85 reflectance no wider than 27 feet, or a pearl or low-gain aluminum screen of 1.5 reflectance no wider than 35 feet, the possibility that he may one day be operating on xenon equipment most assuredly exists! Xenon lamps are easier to operate than carbon arcs.

Xenon a True Arc

All of the different illuminants heretofore used for the projection of motion pictures in theatres derive their light from brilliantly incandescent solids. In the old-fashioned limelight, a solid "pin" of quicklime is heated



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says SID MORLEY
National Carbon Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at National Carbon's plant in Fostoria, Ohio, projector carbons move on to an automatic resistance test, where a direct reading instrument measures in ohms-

per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, National Carbon utilizes today's most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!

Contact
Mr. National Carbon



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.

In Canada: Union Carbide Canada Limited, Toronto

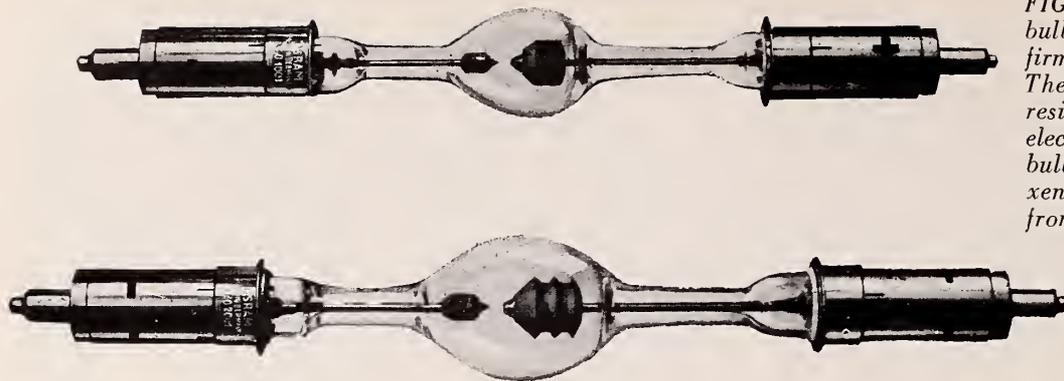


FIG. 1—Two sizes of xenon bulb manufactured by the firm of Osram in Germany. The bulbs are made of heat-resistant quartz, the metal electrodes of tungsten. The bulbs are filled with pure xenon gas at a pressure of from 8 to 10 atmospheres.

to incandescence by an oxyacetylene flame which, by itself, is only feebly luminous in spite of its high temperature. The "mazda" light bulb used in small projectors emits its radiation from a solid tungsten-wire filament heated to incandescence by an electric current.

The low-intensity carbon arc produces its light from the white-hot tip of a solid carbon rod heated, like an incandescent-bulb filament, by the passage of electricity. The solid carbon does indeed slowly vaporize and burn away, but the "arc" of current-conducting gas between the tips of the two carbons, although luminous, is much less bright than the glowing positive crater. Even the high-intensity arc is a solid emitter. Some of its light comes from the solid carbon of the crater, but most comes from a cloud of electrically excited cerium oxide particles suspended in a film of carbon gas covering the crater floor. Inasmuch as the low-intensity crater light is yellowish, and the high-intensity cerium light is bluish, varying the electrical load varies the color of the high-intensity carbon arc.

The xenon light source, on the other hand, is a true gaseous-discharge type of illuminant, and "arc light" in the true sense of the term. All of the radiation is emitted from an arc of glowing gas between the two metal electrodes, not from the electrodes, themselves.



FIG 2—The spectrum of mercury vapor consists of bright colored lines on a dark background. The three most intense lines are bluish violet, yellowish green, and yellow. If the pressure of the vapor is greatly increased, the lines broaden to give a more satisfactory light for illuminating purposes. Nevertheless, the absence of red rays in mercury light causes all red objects illuminated by it to appear dark brown or black in color. This diagram is for illustrative purposes only: there is no mercury in a xenon bulb.

Common Discharge Lamps Colored

Most of the common gaseous-discharge illuminants, such as the neon-type tubes used for illuminated signs, are manifestly unsuitable for projection purposes. First, they are not sufficiently concentrated (low luminosity per unit area), and hence cannot be focused to a small, intensely bright "spot" by mirrors or lenses. Second, they emit a strange sort of light which usually appears more or less colored and which, when analyzed with a spectroscope, is seen to consist only of a few intensely colored "emission lines" (Separate wavelengths of light) on an otherwise dark spectral background.

The mercury-vapor lamp used for blueprinting is another common example of an electric gaseous-discharge light source. Electricity passes through mercury vapor and excites the mercury atoms into emitting radiation. The light of a mercury-vapor lamp has a ghastly greenish white color, but this is not its worst feature as an illuminant. It makes most colored objects illuminated by it look horribly discolored and blackish.

The discoloring effect of mercury-vapor light is due to the absence in its spectrum of all but a very few colors. The mercury spectrum consists chiefly of only three bright colored lines on a black background — yellow, yellowish green, and bluish violet. (The strong ultraviolet lines, useful in a few special applications, are invisible.) In mercury light, all objects which are bright blue, bluish green, orange, or flesh-colored appear gray or brown; and all red objects look black for the simple reason that mercury light is almost completely devoid of red rays!

An improvement in both the illuminating intensity and visual quality of mercury light results when the pressure of the electricity-conducting vapor, or gas, is greatly increased. Not only does the mercury-vapor tube then give more light, but the spectral emission lines (yellow, green, and violet) widen into relatively broad bands which include more colors. The light then has a less ghostly appearance and gives a somewhat better (though still very far from perfect) rendition of colored objects illuminated by it.

This is why the mercury vapor in modern street-illuminating lamps and in the "pulsed-light" tube for shutterless motion-picture projectors is excited under high pressure. But even so, the extreme weakness of the red region of the mercury spectrum and the absence of pure blue are serious handicaps from the visual point of view. The light from a high-pressure mercury bulb may have a daylight-white appearance, but it is spectrally too selective to behave in a natural manner as an illuminant. This is true even when cadmium has been added to the mercury to supply the missing red wavelengths, or rubidium and cesium to supply both red and blue.

The mercury arc and its spectrum have been described here only to clarify the basic spectro-colorimetric prob-

lems peculiar to gaseous-discharge light sources. That the xenon arc is free from the energy-distribution limitations of the mercury arc will soon be apparent. *No mercury is used in the xenon lamp.*

Xenon Satisfactory for Projection

Xenon is an invisible, heavy, odorless, non-poisonous, non-combustible, and very rare gas of the helium family of chemically inert elements (helium, neon, argon, krypton, xenon, radon); and it, too, emits light when excited by the passage of electricity. And as is the case with mercury vapor, the emission lines of xenon are broadened and improved for illuminating purposes by pressurizing the gas.

However, there are very important differences between xenon light and mercury light—differences which serve to impress us with the very satisfactory visual quality of the light emitted by pressurized xenon gas when an electric current of the proper voltage characteristics is passed through it.

Unlike mercury light, which has only three bright emission lines, xenon light has a large number of lines evenly distributed throughout the entire visible spectrum. And when the xenon gas is placed under pressure, the lines broaden and merge into one another to form a *continuous spectrum* containing all of the colors associated with the different wavelengths of light from 700 millimicrons (deep red) to 400 millimicrons (intense violet). None are missing. The result is a daylight-white light of continuous energy distribution which is visually pleasing and gives a completely natural rendition of the colors recorded on dye-image color films.

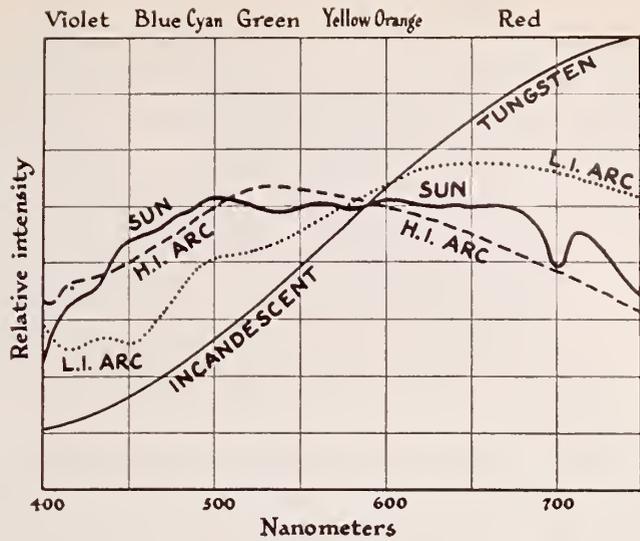


FIG. 3 — Spectrophotometric curves in the visible spectrum of average noon sunlight, the high-intensity and low-intensity carbon arcs, and the tungsten-filament (mazda) lamp. The weakness of mazda illumination in the short-wave end of the spectrum (violet to blue) results in a distinctly yellowish light.

such as Eastman Color, Technicolor, Gevacolor, Agfacolor, Ferraniacolor, etc.

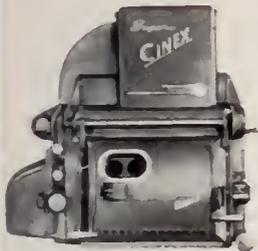
Quality of "White": Color Temperature

The ideal color-quality of illumination for motion-

Ashcraft PROVED BY TEST...BY FAR THE BEST

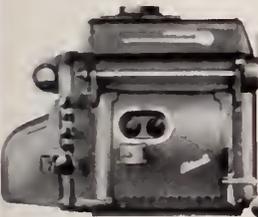
Arc Lamps and Rectifiers for Every Projector...for Every Theatre...The World's Finest

HERE ARE THE FACTS



SUPER CINEX . . . The masterpiece of the most experienced projection lamp designer. No other lamp has even remotely approached its perfection from every point of view—mechanically, electrically, optically, hydraulically or its fine air-conditioned system. Its durability and stamina have been proved. More and more fine theatres and drive-ins are re-equipping with Ashcraft Super Cinex doily due to their fine reputation for perfect screen light and service. Current range with 13.6 mm carbon, 125-165 amperes.

CINEX 35/70 SPECIAL . . . The Great of the Ashcraft Arc Lamps is a modified Super Cinex. Like the Super Cinex no third element or relay lens is necessary regardless whether 35 mm or 70 mm film is being projected. Uses a 13.6 mm high intensity positive carbon of current ranges between 125 and 140 amperes.



CORE-LITE . . . the latest and most phenomenal producer of white light of lowest possible operating cost in the family of Great Ashcraft Arc Lamps. Some arc burner and arc controls of the SUPER-CINEX. Some quality and built-in reliability. The lamp is optically designed to give greater white light distribution at less cost for carbons and electricity. There is none better—anywhere! 70-110 amp.

RECTIFIER . . . THE SPECIAL CORE-LITE 12 PHASE HIGH REACTANCE RECTIFIER . . .

designed for the requirements of the Core-Lite lamp, this rectifier will give the best results. Low reactance 6 phase rectifiers should not be used. Certain motor generators, but not all, are acceptable. The special Core-Lite S/1212 rectifier will give you long, excellent service with an absolute minimum of expense. Other Ashcraft rectifiers available for every power need. The cost is no more than for inferior rectifiers.



SOLD EVERYWHERE IN THE UNITED STATES BY LEADING RECOGNIZED THEATRE SUPPLY DEALERS

C. S. ASHCRAFT MFG. CO., INC. • 36-32 38th STREET • LONG ISLAND CITY 1, N.Y.

picture projection is ordinarily described as "daylight white." An illuminant will give this quality of light when it emits all visible wavelengths about equally. If the light is weak in the shortwave end of the spectrum (violet, blueviolet, blue), it will be yellowish in color. If weak in the longwave end (red scarlet, orange), the light will be bluish. If weak at both ends, the middle green and yellow rays will preponderate, and the light will look greenish. Less frequently, the middle part of the spectrum may be weak. In this case, the preponderance of red and violet rays will impart a purplish or pinkish color to the light.

For the purpose of measuring light, particularly with reference to its color, scientists have agreed upon three standard illuminants designated as Source A, Source B, and Source C. Source A is amber-yellow tungsten-lamp illumination. Source B is direct noon sunlight. Source C, the one we are most interested in, is diffused daylight (direct sunlight plus blue skylight). Compared with lamplight, Source C illumination has a bluish cast, but it is actually the near-neutral whiteness of skylight on a heavily overcast day.

Unless they are perceptibly purplish, pinkish, or greenish, illuminants may also be rated on the basis of the temperature to which a perfectly absorbing "Planckian-type radiator" must be heated to match them in color. Thus the light of a candle flame may be said to have a "color temperature" of 3,015° Fahrenheit, or 1,657° Centigrade; and because the glowing carbon particles in a candle flame actually have this high temperature, carbon may be said to be a near-perfect Planckian radiator.

In practice, color temperatures are specified on the absolute, or Kelvin, thermometer scale, which is the same as the Centigrade plus 273 degrees. In the example above, 3,015° F = 1,657° C = 1,930° K. Zero on the Kelvin scale is particularly significant: it is the temperature at which all heat vanishes—the absolute and unsurpassable cold. (0° K = -273° C = -460° F.)

It can readily be understood that reddish and yellowish light sources have lower color temperatures than pure white and bluish white sources. The standard tungsten mazda lamp (Source A), for example, has a color temperature of 2,854° K, while a 1000-watt mazda projection lamp has a color temperature of about 3,200° K,

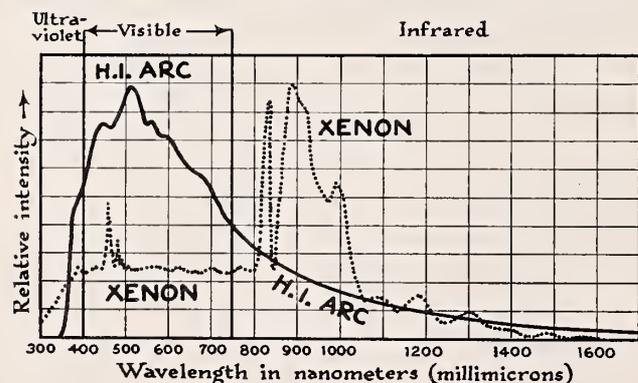


FIG. 4 — Ultraviolet, visible, and infrared energy distribution for the high-intensity carbon arc and the xenon short-arc bulb (dotted line). The energy distribution of xenon light is continuous and nearly level in the visible spectrum. Xenon light is therefore daylight-white in color and very satisfactory for the correct rendition of the colors in color-film prints.

and hence emits a somewhat whiter light. Nevertheless, the "white" light of a mazda projection bulb is definitely yellowish in comparison with direct noon sunlight (Source B = 4,870°) or diffused daylight (Source C = 6,740°). The color temperature of clear blue sky is said to be about 25,000°, while an "infinitely hot" body would emit a light just perceptibly bluer than the clear blue sky. (Even this is far from a "saturated" spectrum blue!)

Color Temperatures of Carbon Arcs

The color temperature of the low-intensity carbon is 3,900°, which is, in fact, the actual temperature of solid carbon heated to the temperature at which it vaporizes. (3,900° K = 3,600° C = 6,800° F in round figures.) The LI carbon arc is thus whiter than a tungsten-filament bulb, though slightly yellowish in comparison with the high-intensity carbon arc or with daylight.

Except for solid carbons, tungsten-lamp filaments, and other Planckian radiators, color temperature has no connection with the actual temperature of light sources. Thus clear blue sky, which has the enormously high color temperature of 25,000°, is actually freezing cold! But a lump of matter heated to a temperature of 25,000° (as in certain stars) would have exactly the same bluish color.

Unlike the low-intensity arc, the high-intensity carbon arc does not obey Planck's rule. It is a non-Planckian radiator. The actual temperature of the crater of a HI positive carbon is the same as that of the crater of a LI positive carbon (3,900°), but the color temperature of a HI arc is quite a bit higher than that of a LI arc. This means that the HI carbon arc gives a less yellowish, or "whiter," light than the LI carbon arc does. The blue-white component of the light of a high-intensity carbon arc comes mainly from cerium atoms in an electrically excited state.

As a matter of fact, the pure white light of a properly operated HI carbon arc is similar to direct sunlight (color temperature about 5,000°) both in appearance and in spectral energy distribution—no empty "gaps" or sharp emission "peaks" in the spectrum. This makes the HI carbon arc very satisfactory for color-film projection. Unfortunately, however, two important operating factors familiar to all projectionists militate against the achievement of an invariably constant color temperature for HI carbon-arc screen illumination.

Color Temperature of HI Arc Varies

One of these carbon-arc operating factors is *electrical load*. If HI carbons are burned at the minimum recommended currents, the color temperature may be as low as 4,500°. This represents a distinctly yellowish light, and only just a bit "whiter" than LI arc radiation. On the other hand, HI carbons burned at the maximum recommended currents emit a blue-white light of about 6,500° in color temperature. This is substantially the same as diffused daylight (Source C) in color.

Readers of IP may recall that we have always recommended that HI positives be burned at, or very close to, their maximum current ratings in order to obtain this snow-white daylight quality of light on the screen. The picture will also be brighter, the screen illumination more uniformly distributed, and the reproduction of color films more vivid and lifelike.

The second carbon-arc factor affecting the color temperature of the light on the screen is *arc focus*. If the positive crater advances too far toward the mirror, the light will become brownish—a very low color temperature. If the crater recedes too far away from the

(Continued on Page 16)

MPAA Officials Praise Century Projection Booth

WASHINGTON — Following the installation of the Century projection booth for the Motion Picture Association of America's screening room here, MPAA officials expressed their satisfaction with the installation, detailed in the May, 1963, issue of IP.

Kenneth Clark, executive vice president of MPAA, disclosed his satisfaction with the Century-equipped projection booth in a letter to Frank E. Cahill, Jr. of Century:

"It's the talk of the town . . . the Century-equipped projection booth in our screening room.

"Now, with this marvelous new installation, we can show everything from 16mm to 70mm. The transistorized sound system is also perfect.

"A top U. S. Government official who attended a screening here the other night came out smiling and said:

"If this is how it is in theatres, I'm becoming a movie fan again. It's almost like attending a live stage show, only better in many respects. I realize now how much I've been missing from passing up too many motion pictures."

"When theatres have equipment such as you have installed for us, I am sure it will lure back customers who have, as our friend said, been passing up too many movies.

"We are delighted with it all."

The Motion Picture Association of America, Inc.'s screening room in Washington, D.C. is one of the outstanding screening rooms in the world—in fact, those who have visited this exquisite room come away with the feeling that they have enjoyed America's pastime (movies) in the atmosphere of a beautiful living room.

As for motion picture presentation facilities, the MPAA projection booth has everything from 16mm to 70mm equipment.

The new Century American-made 70/35mm projectors as well as the Century multiple 6-4-1 channel All-Transistor sound equipment was supplied and installed by H. C. Dusman of the firm of J. F. Dusman Co. of Baltimore, Md., established in 1912. The Dusman Co. has been a Century dealer for over 35 years. In addition to the 70/35mm equipment, auxiliary interlocks for 3D or separate sound heads were installed, which makes

J. Al Pratt, consulting projection engineer, member of Local 224 MPO, was in direct charge of the installation completed March 15, 1963.

IF YOU ARE NOT USING THE "LITTLE MISER" CARBON SAVER YOU ARE LOSING SEVERAL HUNDRED DOLLARS EACH YEAR

Just twist the stud in and out
No grinding—No dirt

4 sizes, 9-10-11mm, \$3.00 ea.
13.6mm, \$4.50 ea.



Past paid when check is sent with order.

NEW

AN ILLUMINATED SCREW DRIVER

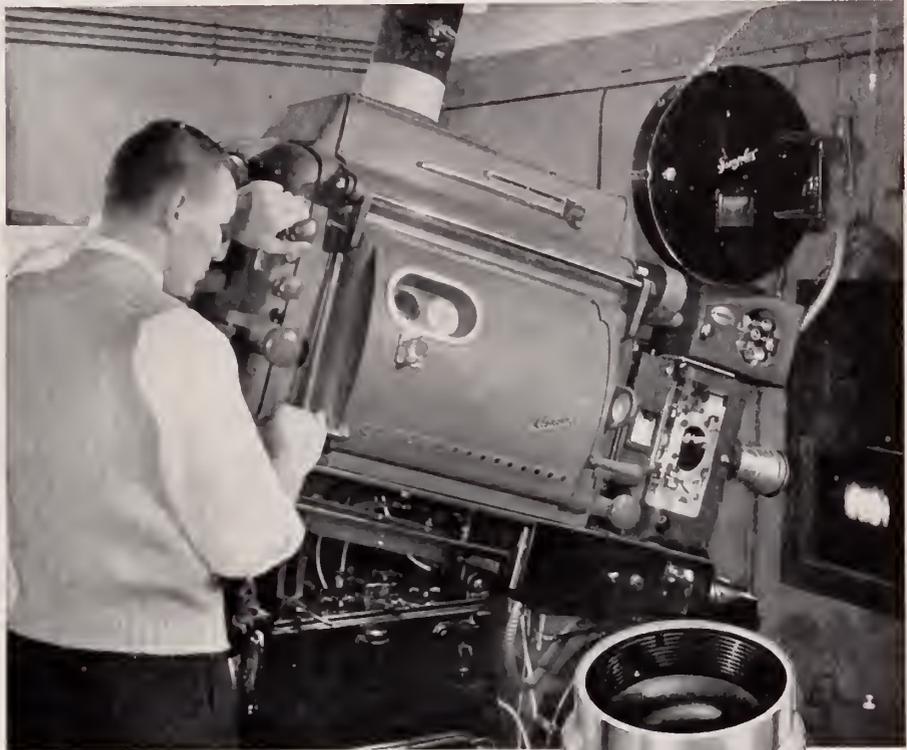


for working on speaker past after dark . . . complete with 4 driver bits; two sizes flat head and Phillips head and two No. 135 batteries, \$3.35 each.

LOU WALTERS

Sales and Service Co.

4207 Lawnview Ave., Dallas 27, Texas
Phone EV 8-1550



CRYSTAL CLARITY IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. Crystal clarity of projection on the screen—the whole screen—is typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

- Fastest lens speeds
- Crystal clarity
- Wire sharp contrast
- Wide range of focal lengths
- Sealed construction



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS



Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.

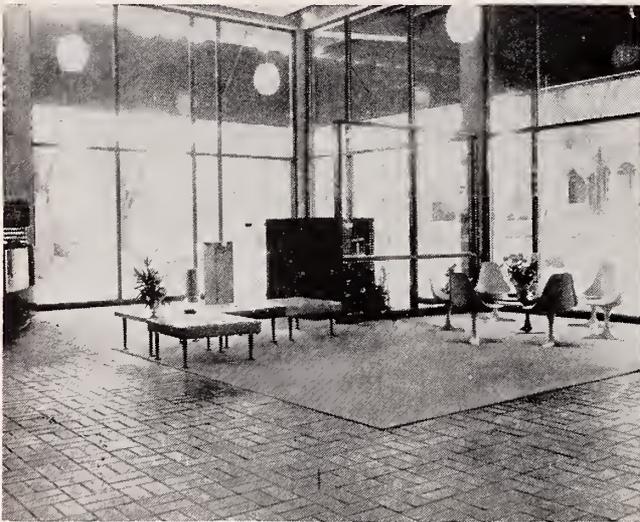


THE CINEMA THEATRE



LOBBY CONCESSION AREA

Well-Chosen Location, Top-Flight Projection Equipment Pay Off for South Carolina Theatre



LOBBY LOUNGE AREA



AUDITORIUM AND STAGE

Stewart & Everett Theatres, Charlotte, N. C., has a new, modernistic theatre in Rock Hill, S. C., the Cinema Theatre.

Charles H. Wheatley & Associates, architects in Charlotte, designed and supervised the construction of the theatre. The architects were given freedom by Stewart & Everett to give

expression to "something new and different, yet incorporating in the design the proved principles conducive to good theatre operation and good presentation."

The Cinema Theatre has a fine location on Oakland Avenue, which is a thoroughfare bringing traffic into Rock Hill from the more popu-

lous outlying area. It's one block from Winthrop College, a South Carolina State girls' college with an enrollment of 2,100 students. Rock Hill has a population of 30,000 and a drawing radius of approximately 60,000.

All equipment, both sound and

<ul style="list-style-type: none"> • BRIGHTER LIGHT • LONGER BURNING • SHARPER PICTURE <p>Free Test Samples</p>	 <p>CARBONS INC., BOONTON, N. J.</p>	<ul style="list-style-type: none"> • STEADIER LIGHT • LESS ATTENTION • PERFECT COLOR BALANCE <p>Free Carbon Chart</p>
---	---	---

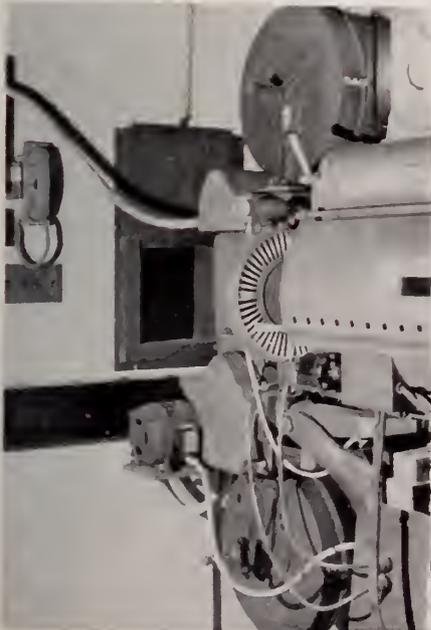


Double 84 inch relay racks for stereo pre-amplifier and controls, No. 2, and No. 3 amplifier channels to stage speakers, and output selector panel. On the right is the optical stereo selective monitor and input controls to the optical power amplifier.

projection and intercommunication system was installed by Carolina Sound Equipment Service, Charlotte, under the direction of the firm's engineer, R. W. Ramsey, and John L. Shaver, Jr., assistant to Ramsey.

The Cinema Theatre has a seating capacity of 600. The cost of the building was \$133,500, exclusive of land. The cost of the equipment was approximately \$40,000.

The exterior was constructed of glass, ceramic tile, brick and concrete, with the main sign and marquee built in Plexiglas with Wagner glass



Rear of right projector assembly wiring and booth intercommunication and house lighting control. (No horizontal conduit runs.)

THE VERY FINEST



IN PROJECTOR PARTS

The ultimate in precision, long life and dependability—they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.

LaVezzi MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
SINCE 1908 TELEPHONE—AREA 312—ES 8-1636



How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise—how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes—transistors—gas discharge tubes—klystrons—traveling wave amplifiers—and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects—these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included,

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota
Please send me a copy of "Electrical Noise"
by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State

MODERNIZE
POWER UNITS

No burned contacts, cooler operation, smoother current with BE silicon rectifiers. A model to replace any bulb type.

One year guarantee

BROWN ELECTRONICS

1717 South St., ALLENTOWN, PA.

**PROJECTIONISTS
PREFER
ETHYLOID**

Film Cement For
BEST RESULTS

Available from
Supply dealers

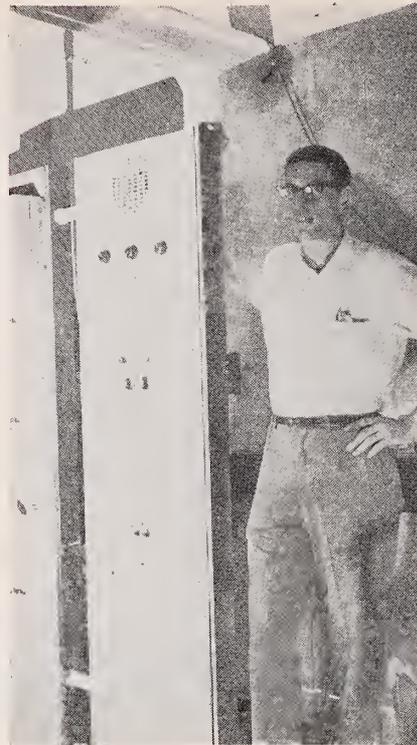
FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.



Edward L. Taylor of Rock Hill, S. C. is the projectionist, with 10 years operating experience since the service. He was formerly employed as projectionist at the Stevenson Theatre, Rock Hill, S. C.

panels and letter frames, and Wagner's changable letters.

The accompanying illustrations show the design of the front; lobby with its oval refreshment counter, and the auditorium with its Ideal chairs, and its carpeted aisles.

The projection room is 18 by 20 feet, with ceiling height 10 ft. It is completely fireproof, of finished block wall and cement. Floors and walls sealed and painted.

Projection, sound and arc lamp equipment include: Century CC projectors with Century R5 reproducers. Magna-Sync penthouse reproducers for stereo. Lamps are Peerless Magna-Arc and 65 amperes D. C. power supply is from ventilated Strong vertical selenium rectifiers.

Circuitry of the equipment is composite but conventional, with improvement modifications added by Carolina Sound Equipment Service, who designed, engineered, and supervised installation of all booth equipment at the Cinema. This includes all projection and sound equipment, theatre intercommunication System, close-in screen curtain controls, automatic screen masking, remote controls, and "High Fidelity Ceiling Surround" speakers.

Century W5-17 optical and Cen-

tury-Altec stereo magnetic four channel sound amplifiers, sold by Standard Theatre Supply Co., are being used in two 84 in. rack mountings. Special sound control pre-amplifiers and switching panels custom designed by Carolina Sound Equipment Service permit operation of front stage public address and "Sound Reinforcing" facility through the optical sound amplifier channel and the ceiling "surround" speakers.

A booth microphone also is provided for use in paging or making announcements to the audience through the "surround" auditorium speakers. This reinforcement and its PA function works very well with minimum acoustic feedback when cardioid directional microphones are used. Special loading switches are provided to transfer the output of the optical amplifier from the center stage speaker channel to the ceiling "surround" speakers since these are also used as fourth track effects channel from stereo-magnetic film operation.

The optical amplifier rack is provided with a selective channel stereo-optical - PA output monitor with level control.

Special input selector switch is provided to permit use of the Century



CHRISTIE
SINCE 1929®

XENON

& XENON MERCURY ARC LAMP
D-C POWER SUPPLIES

4.5 - 180 amp
11.5 - 65 vdc
1% Reg & Ripple

150 - 5000 watt
MIL & RFI Specs
Silicon

From Stock:
Various Ratings
and Styles



Also 200 other Models of Power Supplies and Battery Chargers. Write for Catalog.

CHRISTIE ELECTRIC CORP.

34123 W. 67th St., Los Angeles 43, Calif.

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

- (1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me _____ copy (copies of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$

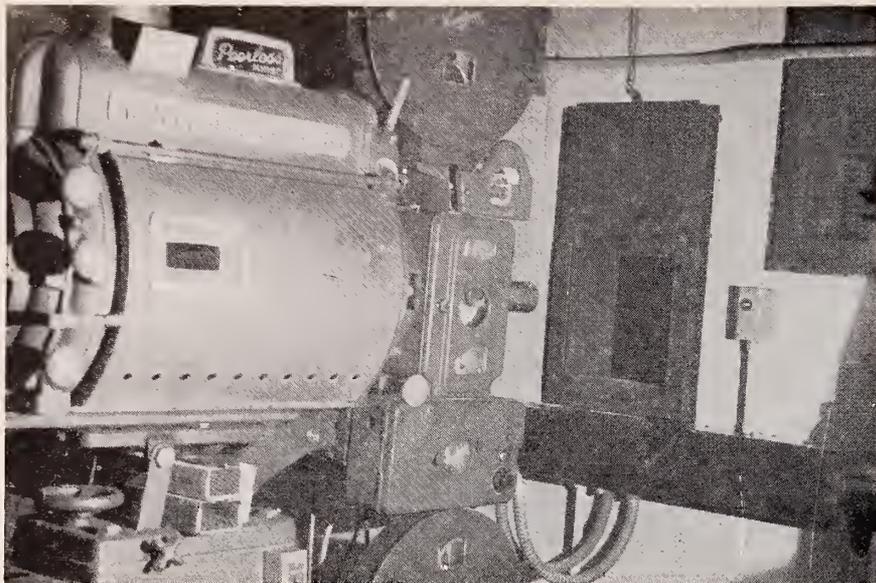
NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

\$6.00

per copy
including postage



Booth Left Projector Assembly with Sound and Control wiring Channel Box Method shown.

W5-17 optical amplifier with mono-aural phonograph input, pre-amplifier PA input, mixer or FM radio and the fourth channel stereo magnetic pre-amplifier switcher. Normal function of the Amplifier is optical sound from number 2 stage center speaker.

Stereo-phono record player reproduction (2 channel) is used for inter-

mission or incidental music recordings. A novel and enhanced reproduction effect is secured from stereo recorded records through use of the number 2 stage channel speaker for the number 1 channel stereo and the Hi Fi flush ceiling "surround" speakers for the number 2 stereo-phono channel. The public is very cognizant of the improvement in sound reproduction quality, often question-

ing whether recordings heard are from tape or film.

The Cinema Theatre auditorium has some "live" acoustic resonant tendencies at voice fundamental frequencies due to the absence of drape or wall fabric materials on side and rear walls or ceiling.

Acoustic plaster is used over the rear curved auditorium cement wall.

The ceiling consists of eleven tilted panels in three large sections. These panels consist of steel angle iron frames and metal lath, covered with acoustic plaster. They are spaced from and suspended by steel wire and anchor bolts from the pre-cast concrete ceiling beams and cement beam stems. This spacing and "tilt" installation provides a variable acoustic pocket but with negligible surface absorption. The side walls to ceiling consist of perforated and corrugated aluminum over fiberglass insulation, decorative as well as fireproof. Resonant damping so acoustically desirable to securing intimate screen presence from stage speaker reproduction is minor, but the decorative effect and new commercial materials design is modern and unique. Indirect auditorium lighting is provided around ceiling panels and is best controlled using conventional Mazda multi-colored tungsten lighting strips and motorized dimmer. **IP**

XENON Projection Lamps

Continued from Page 10

mirror, the light will become bluish—an excessively high color temperature. In either case, the light will become annoyingly dim.

Xenon Arc Always Daylight-White

The xenon arc is free from both these causes of color change. It emits light having a constant color temperature of about 7,000° regardless of current changes, which affect only the brightness of the emitted light. There are no variations in color over the emitting area (the xenon arc *between* the two tungsten electrodes), and there is no burn-away of electrodes to introduce disturbances in the optical focus.

Though smooth and continuous, the spectrum of the high-pressure xenon discharge reveals a moderate emission peak in the blue; but the spectrum has no dark gaps; and the blue peak introduces no perceptible visual effects or distortion of the colors in color prints.

The invisible portions of the xenon-lamp spectrum produce unimportant physical effects. Xenon radiation is proportionately richer in ultraviolet radiation than is the HI carbon arc, and quartz transmits ultraviolet rather freely. Ultraviolet rays act upon the oxygen of the air to produce ozone, a gas which is perceptible to the projectionist by its chlorine-like, but not unpleasant, odor. Ozone does no harm in the small quantities produced by projection light sources.

Just beyond the red end of the visible spectrum

of xenon we find a rather large energy peak. This is in the infrared region. Infrared rays contribute nothing to the luminance of a light source, but increase the heating effect of its radiation. The xenon infrared peak is nevertheless neither intense enough nor broad enough to require use of heat filters where these would not be required by other considerations. Lumen for lumen, xenon radiation is a trifle more heat-producing than HI carbon-arc radiation, rather cooler than LI arc radiation, and considerably cooler than tungsten-filament radiation.

Its color temperature of 7,000° K makes xenon light an extremely close match for diffused daylight or Standard Source C. The match is probably exact after the xenon light has passed through film, lenses, and port glass, and undergone reflection from the screen surface as well as from the silvered lamphouse mirrors, all of them elements which tend to yellow the light and thereby lower the color temperature. It is interesting to note that diffused daylight (approximately 6,500° K) has been chosen as the standard white for both black-and-white and color TV picture tubes.

The physical structure and operation of the xenon short-arc bulb will be described next month—mighty important considerations for the thousands of projectionists who may soon be called upon to operate this clean, convenient, and very pleasing light source.

(To Be Concluded)



The grand foyer retains the sweep of the old Empire Theatre promenade, and features curved sales counter for soft drinks, confections and cigarettes.



The projection room with two Philips 70-35 mm projectors, fitted with Ashcraft Super Cinex arcs, a Philips FP7, and a Westrex transistorized sound system.

MGM's New Empire Theatre in London Occupies a Famous Site in Leicester Square

LONDON, ENGLAND—Only the outside walls remain of the Metro-Goldwyn-Mayer old Empire Theatre in Leicester Square, and the new Empire Theatre on this famous site is advertised as the most luxurious cinema in Europe. It opened in late December with "Jumbo" the attraction.

The new Empire shares the building space with the Mecca Ballroom, with the theatre above the ballroom—the cinema is a few steps from the street level.

The architect had to design the

theatre within a theatre, leaving the existing structure without altering it. Any interference with the foundations on Lisle Street and Leicester Place would have affected the stability of the retaining walls.

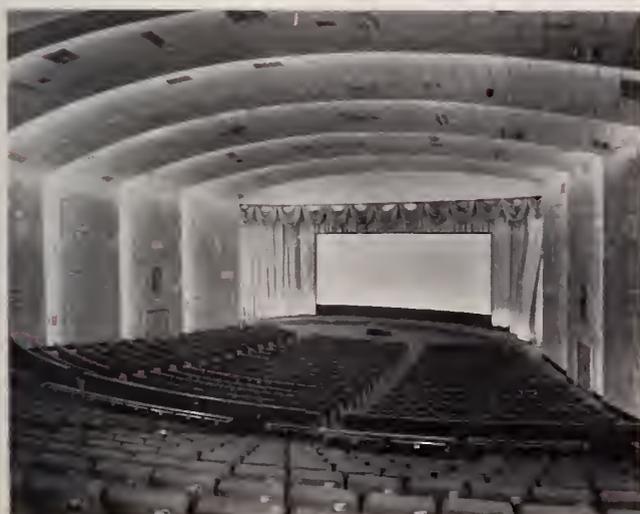
The heating and air conditioning equipment is in the sub-basement, and above this is the Mecca Ballroom, which operates many ballrooms in London, North Ireland and Scotland.

The new Empire has a seating capacity of 1,330 seats, whereas the old Empire could accommodate 3,500. In other words, the new theatre is in

step with the today's economy in the industry.

The old Empire's gilt columns, classic freizes and ornate ceiling are all gone. In what was originally the circle of the old theatre is a new luxuriously modern cinema, with the finest in projection and sound, the latest type of super-comfort seating and generous leg room throughout.

Construction of the auditorium floor is insulated so that it excludes any noise from the dancing in the ballroom, below the auditorium. Its base is a slab of concrete five inches



A rear view of the auditorium from the stage showing the concealed lighting and the projection booth, designed in consultation with IP columnist Stanley Perry.



A view of the auditorium, which now seats 1,330 people—the old Empire could accommodate 3,500—in modern decor with its ceiling and walls of plaster tile.

thick, steel girders form walls separating the auditorium and the grand foyer.

The lobby contains four cashiers booths, faced with blue Belge marble, along the left-hand wall. The vestibule contains two short flights of stairs across its full width. Up the stairs the patrons get a view of the grand foyer. The grand foyer is 130 feet long and features a curbing refreshment counter where ice cream, confectionery, soft drinks and cigarettes are sold. It's decorated in modern style and preserves the large promenade of the old Empire.

The auditorium is the stadium type with 642 seats in the ground floor and 688 chairs in the stadium. The auditorium is fan-shaped and like the Radio City Music Hall—which pioneered the lighting design—the concealed lighting spreads to the six facets in a rainbow of colors by the 18 three-color circuits.

Seating is staggered. The American Seating Co.'s lounge chairs are

installed. The seats are installed at a distance of three feet back-to-back.

The auditorium color scheme is mink and gold. The contour curtain—it will operate electrically to any pre-determined shape—is gold. The curtain has 15 vertical lines, so it can raise, tableau or drape. The vertical lines are controlled by 15 separate motors operated from the projection room.

Stanley Perry, who is M-G-M projection supervisor, and well known to IP readers because of his contributions to this journal, has designed a projection room which is roomy. Perry, who had charge of the booth when the old Empire opened in 1928, is the only person from the original staff still with the theatre.

The new Empire's projection room accommodates two Philips 35-70 mm projectors, a Philips FP7 projector, a spotlight, Westrex sound and the usual accessories.

The Philips 35-70 mm projectors are mounted with arc lamps by Ashcraft Manufacturing Co., Super Cinex running at 135A. The water supply is taken from the mains, but Ashcraft water-coolers are provided for stand-by supply.

The Westrex sound system picks up its signals from the magnetic heads, but for optical sound a Westrex photo-transistor is installed. A pre-amplifier and line amplifier are fully transistorized. A knob on the operating side of the pre-amplifier gives change-over between the six-track, four-track and optical sound.

Four picture sizes: the wide-screen picture, with a ratio of 1.75 to 1, measures 40 ft. by 23 ft.; the Cinema-Scope ratio is 2.32 to 1, the picture measuring 50 ft. by 21 ft. 6 in.; Panavision ratio is 2.7 to 1, and the screen size is 64 ft. by 23 ft. 6 in.; Todd-AO

the actual ratio is 2.21 to 1, the picture measuring 60 ft. by 27 ft.

The screen, a Perlux, measures 63 ft. by 30 ft.

Alongside the projection room is the rectifier room. It contains four Hewittic silicon rectifiers, all operating from 415V three-phase supply. At the end of the projection room is a compact control system for the house and stage lighting.

Other Westrex equipment installed in the new Empire includes two stage amplification systems, record playing system feeding to 18 loudspeakers in the foyer, and a manager's announcement system. **iP**

Demand Reported for Ashcraft Core-Lite Lamp

Since the first installation of Ashcraft Core-Lite arc lamps and rectifiers was made in the Palace theatre in Orange, N. J., eight other theatre owners located in the New York sales area have installed them, or have signed orders for them, the National Theatre Supply Co. reports:

Cinema I, New York City; Central theatre, Cedarhurst, N. Y.; Stanley-Warner Theatres, New York; Strand Theatre, Astoria, New York City; Plainfield theatre, Edison Township, N. J.; Turnpike theatre, East Brunswick, N. J.; Walter Reade-Sterling's Barclay Farms theatre, Cherry Hill, N. J., and a new Skouras Theatre at Closter, N. J.

Interested theatre owners were invited to visit theatres where tests were conducted.

The report states that in a comparative test recently conducted at Charles Moss' Central theatre in Cedarhurst, between a Core-Lite lamp burning an 11mm x 17½" black rotating positive carbon, and a lamp burning a 9mm x 14" copper-coated positive carbon, the Core-Lite gave notably uniform light distribution despite the necessity to use projection lenses of 3½-inch E. F. for Cinema-Scope, and 2½-inch lenses for standard because of a 47-ft. picture at 90 ft. throw.

Foot-lambert readings were taken by Larry Orthner of the C. S. Ashcraft Manufacturing Co.; Milton Berk, supervisor of projection of B. S. Moss Theatres; and Allen Smith of National Theatre Supply. According to the readings reported, the Core-Lite developed an increase of 61% in side lighting over the lamp burning the 9mm copper-coated carbon. Core-Lite distribution was 81% compared with 53%. **iP**



DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSBORFF CARBON CORP. East McKeesport, Pa.



INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State



**The right bait
is worth
a sharp hook**

Today's audiences respond to technical quality in showmanship . . . quality that starts with sharp negatives and sharp prints. So, go Eastman all the way—negative and print stock. And always give the laboratory time to do its job right. Most important, if you have questions—production, processing, and projection—always get in touch with Eastman Technical Service. For more information on this subject, write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.**, Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.



CARBONS, INC.

Thru Lorraine Arc Carbons, distributors of

"ORLUX" arc carbons to the Motion Picture Industry

"ACTINA" carbons to the Graphic Arts Industry

"SOLAR" carbons to the Environmental Sciences Industry

Proudly Announces the Formation of its New



* Employing the newest scientific breakthrough in improved light source for projection, XENON!

LAMPHOUSES 450, 900, 1600, 2500 watts

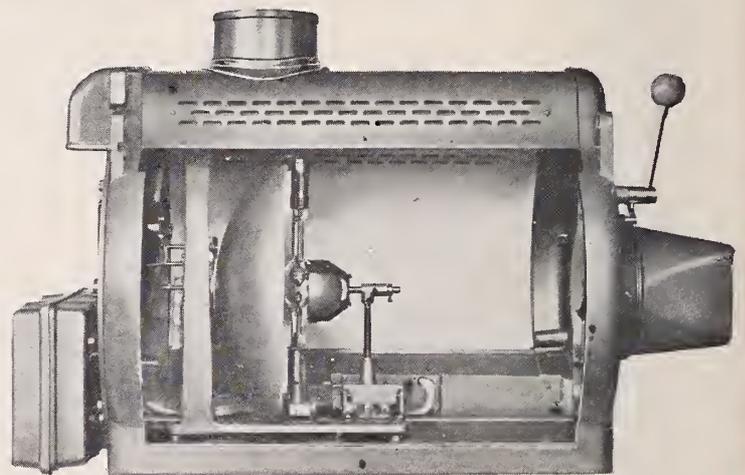
XeTRON

by "Cinemeccanica" of Milan, Italy, outstanding motion picture equipment manufacturer.

Silicon POWER SUPPLIES

XeTRON

by Christie Electric Corp., manufacturers of the finest in power supply equipment.



XeTRON Lamphouse, complete with associated optics, heat transmitting hard, front-coated 16" reflector, auxiliary mirror and starting devices.

This advanced "XENON Age" development makes possible a degree of light brilliance, reliability and performance heretofore unknown.

Exclusive patented features including color correction and balanced optics in the XeTRON lamphouses make it possible to duplicate the Kelvin temperature of the high intensity carbon arc in the 450 to 2500 watt range.

The large lamphouse can be used with 900 watt, 1600 watt and 2500 watt lamps and are recommended for picture widths up to 45 feet. (2500W).

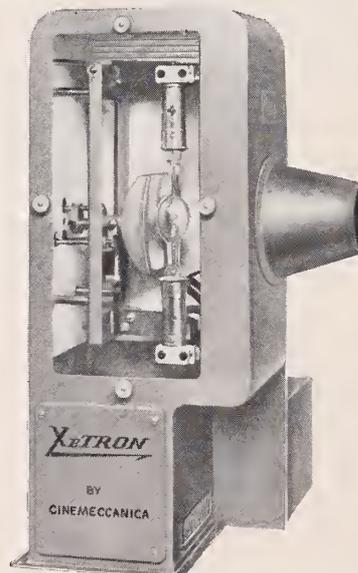
The XeTRON CX lamphouse stands alone in its field as a very compact, highly efficient unit designed especially for the small art theatre or screening room. It will also replace the 750 and 1000 watt incandescent type lamps in studio, laboratory and processing applications. It can deliver up to three times the illumination of the 750 - 1000 watt incandescent bulbs and with a Kelvin temperature comparable with that of the high intensity carbon arc.

The reputable, unique Lorraine Carbons Customer service by Field Technicians will be available in this new XeTRON Division.

Literature on Request.
Franchise dealerships available.

XeTRON

A division of CARBONS, Inc. Boonton, N. J.



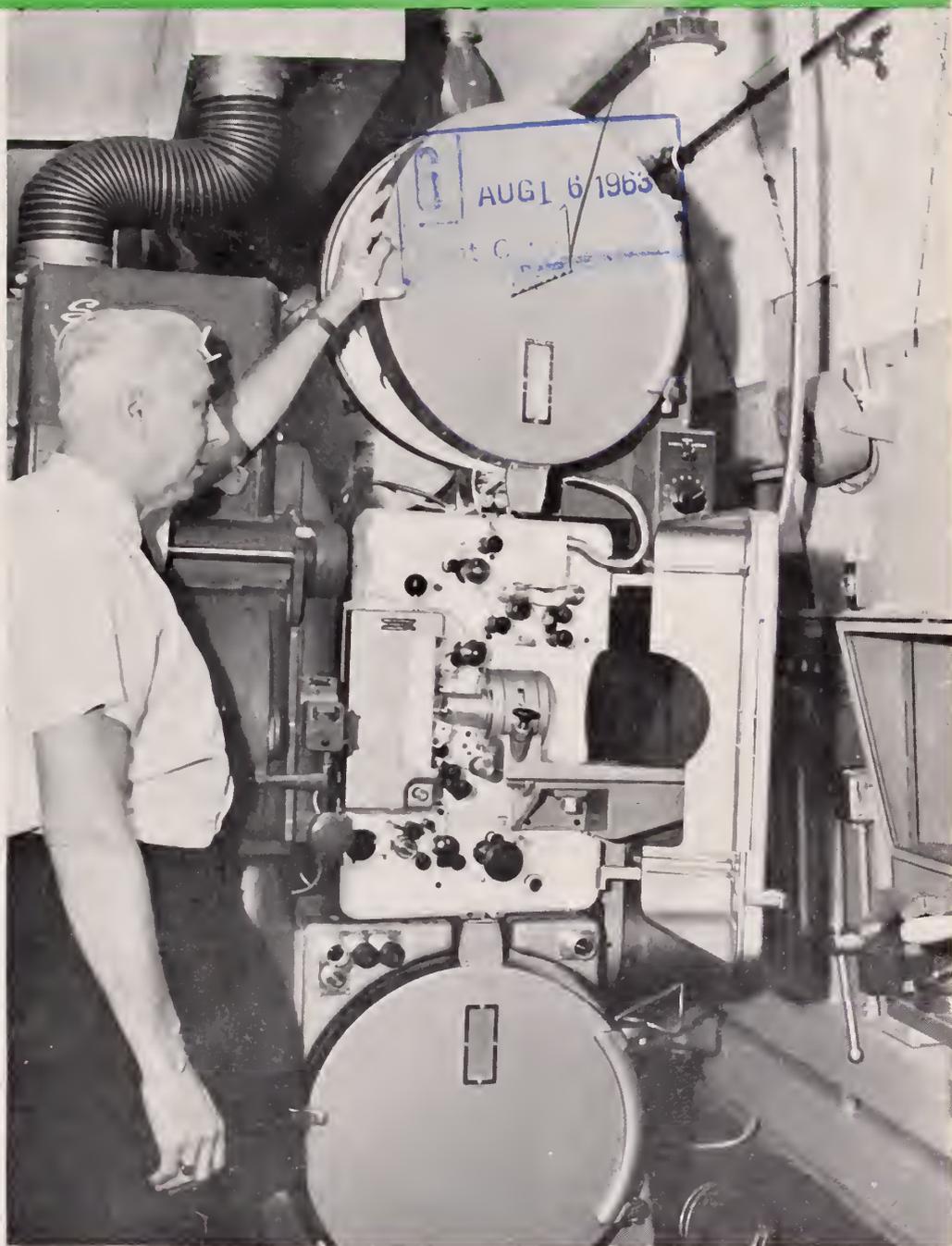
XeTRON CX lamphouse with 450 watt bulb. Equipped with 5" reflector and diffuser. Will replace 750-1000 watt incandescent lamps and provide three times the light flow with Kelvin temperature similar to that of the high intensity carbon arc.



XeTRON Silicon Power Supplies are built by Christie Electric Corp., meet the exacting requirements of the Xenon bulb manufacturer. This assures full value from the bulb warranty. The normal bulb life is extended by hundreds of hours due to design to meet Xenon bulb requirements. Other operational characteristics such as low current ripple, proper no load voltage and current control facilities are provided.



INTERNATIONAL PROJECTIONIST



George Kleiser, Projectionist, is shown with one of the Norelco Universal 70/35mm Projectors in the projection room of the Cheltenham Theatre, Philadelphia, Pa.

The Cheltenham, a 1,200 seat shopping center house, is one of some 20 Stanley Warner theatres now equipped with Norelco 70/35mm projectors. Chief projectionist at the Cheltenham is William Braunewell. Story on page 11.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

JULY

1963

VOLUME 38

NUMBER 7

40c A COPY



\$3.00 A YEAR

A Scene From America's Projector Carbon Center...



X-ray reveals breaks and voids in positive projector carbon cores

“The x-ray eyes of our inspectors are your assurance of perfect projector carbon cores”

—says **VERYL JOHNSON**
National Carbon Sales Engineer

You can't judge a movie by its title. And you can't judge a projector carbon solely from the outside. That's why carbon inspectors in our plant in Fostoria, Ohio, test every carbon *from the inside out* — with modern x-ray equipment. As an extra safeguard, our inspectors are paid a premium for every imperfect carbon they reject and scrap.



Veryl Johnson

Shown above is our x-ray room, through which all positive carbons must pass on a belt containing from 6 to 20 carbons, depending on size. The assignment is to weed out carbons with voids or

breaks in their *rare earth cores* — the key to uninterrupted burning and maximum light quality.

As a further inspection safeguard, operators of this x-ray equipment stay keen and alert by changing off *every 30 minutes!*

Quality manufacturing and precision testing are only a part of the “National” projector carbon story. For 45 years National Carbon Company has provided the motion picture theatre industry with unsurpassed technical service.

Our Sales Engineers are equipped with, and are specialists in using, today's most modern test devices for assuring *more screen light per projector carbon dollar!*

Contact
Mr National Carbon



“National” and “Union Carbide” are registered trade-marks for products of
NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.
In Canada, Union Carbide Canada Limited, Toronto



INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38

July, 1963

No. 7

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Xenon Projection Lamps	4
By ROBERT A. MITCHELL Letters to the Editor	8
Cinerama Single-Lens System	10
Norelco's Improved Projector	11
The Piggy-Back Coronet	13

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



1

MONTHLY CHAT

THE EXHIBITORS' FALSE ECONOMY

Many exhibitors have hesitancy on ordering new supplies for the projection room. They dubiously look on the projectionist's request for new items for the booth and doubt whether the supplies are really necessary.

It's a form of false economy, and so far as economy is concerned it does not matter at all. Whether the supplies are carbons or fuses or bulbs, even if they are not in the quantities requested or an excess the surplus will be used anyhow.

The same consideration applies with needed repairs. Nothing is gained by postponing them except the trifling benefit that can result from spending the same money next month.

In the case of needed repairs, the advantage is in doing it now, lest the machine break down in the middle of show, which will embarrass the management and the theatre, too, but the damage that will be done to the machine, might be by far the most costly.

Exhibitors Not Technical-Minded

Most exhibitors and theatre managers are not too technical-minded. The exhibitor and the manager must remember that the projectionist in their theatre is a skilled mechanic, and he has the know-how about the machines he cares for. If he recommends that supplies or needed repairs, he doesn't do it for his convenience or waste money for the theatre.

Another false economy is found in making temporary or inadequate repairs to the machines in the projection booth. That kind of penny-pinching defeats itself. For the repair has to be done over again. This is another example of false economy in that it will cost for two jobs of repairing instead of one.

Buying any equipment or supply item that will not stand up well in service, is another example of false economy. Buying any piece of equipment so expensive to maintain, or that will require overtime or service fees because of inadequate accessibility, is another.

The Paradox of Improvements

Another is the common reluctance to spend money for improvements while business is bad. In fact with good business the improvements aren't needed. In the long run, the purpose of improvements when business is poor is to bring more patrons and make business better.

Many of the country's theatres, particularly the small town neighborhood houses, have worn-out projectors, lamps and other equipment that should be in a museum. The poor projectionist has to call on his ingenuity to keep the show running night after night. It requires a great deal of technical know-how to keep these museum pieces running.

Frank Cooley

XENON Projection Lamps

PART 2 CARE AND OPERATION

By ROBERT A. MITCHELL

AS EXPLAINED in the first installment of this article, the high-intensity carbon arc reigns supreme for the projection of motion pictures on large screens. It has the highest intrinsic brilliance of any man-made illuminant, and is optically the most efficient because of its concentrated radiating area. Nevertheless, the xenon short-arc bulb is a very attractive substitute for the smaller "simplified" high-intensity carbon arc, and it has unique advantages which have already proved valuable in theatre use.

The outstanding advantages of xenon lamps are push-button ease of operation (no arc to "strike," no trimming of the lamp with carbons, no optical variations, no dirty ash to soil the lamphouse), an unvarying daylight-white color of the light, a continuous, equal-energy type of spectrum ideal for the projection of color films, a constant

FAMILIARITY WITH the operating characteristics of the new xenon projection lamp may soon prove to be a valuable part of the projectionist's armamentarium of technical knowledge. This, the concluding installment of a two-part article, sets forth the basic principles and "do's and don't's" of xenon lamp operation.

The carbon arc is still the undisputed monarch of motion-picture projection on screens having a width of 28 feet and more (85% matte surface), but the convenient and easy-to-operate xenon lamp has amply demonstrated its value on matte screens up to 27 feet wide (and on wider directional screens) in many European theatres and American preview rooms.

The incipient new wave of prosperity in the motion-picture industry bids fair to sweep the revolutionary new xenon lamp into thousands of American theatres where the unavoidable screen-light discolorations and variable output of the smaller "simplified" HI arc lamps are rightly considered incompatible with the high pictorial quality of modern black-and-white and color prints. So herewith a practical introduction to xenon!

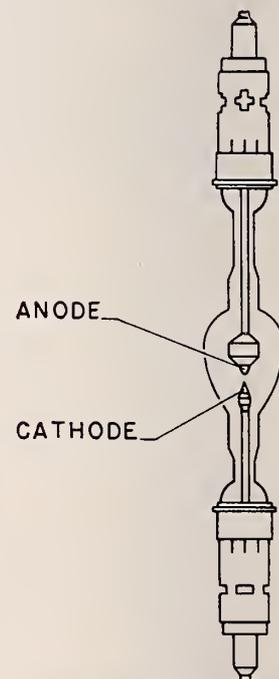


FIG 1 — Anatomy of the xenon gas-discharge bulb. Note that the anode (positive electrode) is positioned above the cathode (negative electrode) when the bulb is installed in the lamphouse.

color temperature regardless of electrical load, no troublesome moving parts, absolute cleanliness, and an overall operating cost the same or less than that of simplified HI carbon arcs of equivalent luminous output.

Outputs of Xenon and Carbon Arcs

It was stated in Part I that xenon lamps are suitable for use only in those theatres where carbon-arc lamps burning no more than about 55 amps. are powerful enough to provide a screen brightness of not less than the standard minimum of 10 footlamberts with the projector shutter running. Exact light values are given in the accompanying two tables.

Table 1 lists the maximum widths of two common types of screen for 10 footlamberts (*with the shutter*) when simplified HI arc lamps burning up to 60 amps. are used. In conformity with the customary way of rating



IS THIS SCREEN YOURS —OR YOUR COMPETITOR'S?

Only 1 in 20 Drive-Ins, (perhaps your competitor) has even the minimum screen illumination (4.5 foot lamberts at the center of the screen with a standard width aperture and the shutter running, measured from a midpoint on the ramp center line), recommended by The Society of Motion Picture & Television Engineers.

Which of these projection lamps will properly illuminate YOUR screen?

Here's a guide:

<u>PICTURE WIDTH</u>	<u>PROJECTION ARC</u>
50 FOOT _____	14" REFLECTOR—65 AMPERES.
60 FOOT _____	18" REFLECTOR—11 MM LOW CURRENT RANGE.
70 FOOT _____	18" REFLECTOR—11 MM HI CURRENT RANGE OR 13.6 MM LOW CURRENT RANGE.
80 FOOT _____	18" REFLECTOR—13.6 MM HI CURRENT RANGE.
90 FOOT _____	21" REFLECTOR—BLOWN ARC LOW RANGE.
100 FOOT AND UP _____	21" REFLECTOR—BLOWN ARC HI RANGE.

IF YOU'RE FED UP—

with a dismal boxoffice, brighten it up by brightening up your screen. The theatres with inadequate screen lighting are the theatres with the anemic boxoffices.

Strong's complete line of lamps, includes one which will project the brighter, patron-pleasing pictures in your theatre. Discuss your needs with your equipment dealer now.

FOR LITERATURE WRITE—

THE *Strong* ELECTRIC CORPORATION

31 CITY PARK AVENUE

TOLEDO 1, OHIO



A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

the luminous powers of lamps, the lumen values indicate the light flux from the projector *without the shutter*. (Divide by 2 to find the approximate value with the shutter running.)

Table 2 supplies similar data for the three models of xenon projection lamp equipment produced by the Strong Electric Corporation of Toledo, Ohio.

**TABLE 1
SIMPLIFIED HI CARBON-ARC LAMPS**

			Carbon Trim			
			Amps			
			Lumens			
			(No shutter)			
			Screen Width for 10 Footlamberts			
			85% Matte			
			150% Directional			
7	mm-6	mm	40	7,000	20'	26'
7	mm-6	mm	42	8,600	22'	29'
7	mm-6	mm	46	10,000	24'	32'
7	mm-6	mm	50	11,700	26'	34'
7½	mm-6	½mm	55	12,500	27'	35'
8	mm-7	mm	60	13,100	28'	36'

**TABLE 2
XENON LAMPS**

Xenon Bulb Wattage			
Lumens			
(No shutter)			
Screen Width for 10 Footlamberts			
85% Matte			
150% Directional			
900 W	4,500	16'	21'
1600 W	9,000	23'	30'
2500 W	12,500	27'	35'

A comparison of these two tables serves to show that the highest-powered xenon projection lamp (the 2500-W model) is equivalent to a Superex-type lamp burning a hypothetical 7½ mm - 6½ mm carbon trim at 55 amps. to give 12,500 screen lumens without the projector shutter running. This is why we say that theatres needing more than 55 amps. of arc current for adequate screen illumination must make use of high-intensity carbon arcs.

Xenon lamps have already proved popular in hundreds of the smaller theatres in Europe and in dozens of preview rooms in the United States. Their use in American theatres has only just begun, and with extremely gratifying results from the point of view of all concerned—the moviegoer, the projectionist, and the theatre owner. And once again we must point out the fact that color films are seen at their best when projected by pure daylight-white xenon light. The xenon lamp is undoubtedly very desirable for the critical visual evaluation of color prints in studio and laboratory projection rooms because of the freedom from color-temperature changes of this light source.

Anatomy of Xenon Bulb

The structure of the xenon short-arc bulb is simplicity, itself. The transparent "envelope" is made of fused quartz, a material which is more resistant to the softening effects of heat than ordinary glass, and much less likely to crack from sudden temperature changes. Even so, it is plain commonsense to protect the bulb by preventing down-drafts and rain from entering the lamphouse through ventilating pipes.

The two cone-shaped electrodes inside the strong quartz envelope are made of pure tungsten, a silvery-gray metal which has a very high melting point. The larger electrode is the positive one (*anode*), and is positioned above the smaller negative electrode (*cathode*) when the bulb is installed in the lamphouse.

The bulb is filled with the chemically inert gas xenon under a pressure of from 8 to 10 times that of the atmosphere. The pressure increases to 20 or 30 atmospheres when the bulb is in operation. Any increase in the current at which the bulb is burned increases the temperature, and hence the pressure of the gas inside it.

Xenon, itself is a very rare constituent of the air (1 cubic foot of xenon in 15,000,000 cu. ft. of air), and is obtained by the fractional distillation of liquefied air. This is the only way to get it because xenon, like its sister elements of the helium family, forms no chemical compounds whatever.

Igniting the Xenon Bulb

The flamelike arc in a xenon bulb is started by a high-voltage discharge which breaks down the electrical resistance of the gas and establishes a conducting path between the two tungsten electrodes. The source of momentary high voltage (20,000 - 30,000 volts) is an "igniter" device consisting of an induction coil and capacitors, and is usually installed as a compact unit inside the lamphouse to keep the high-voltage leads as short as possible.

Once a conducting path has been established by the high-voltage spark (applied for only a fraction of a second), the regular current supply for the lamp takes over. This is ordinarily a rectifier designed to furnish an initial voltage of 60 to 75 volts to establish a direct-current discharge. The arc thus established, the voltage spontaneously drops to the normal operating value of 20 to 30 volts in a current range of 30 to 70 amperes, de-

(Please turn to page 16)

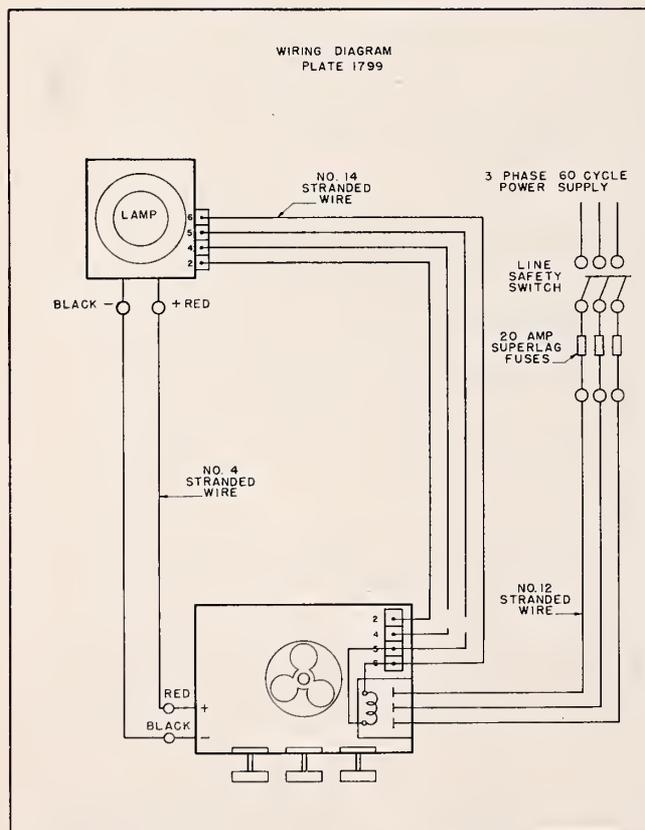


FIG. 2—Wiring schematic for a xenon projection lamp powered by a 3-phase rectifier.



WILL ROGERS TOUR — Ned Depinet (left), president of Will Rogers Memorial Hospital and O'Donnell Memorial Laboratories, exchanges greetings with Richard F. Walsh, international president of IATSE, during a tour of the hospital and laboratories at Saranac Lake, N. Y. During the meeting Walsh was appointed chairman of the executive committee and reelected to his post as chairman of the board of directors. **IP**

E. A. ROSENBLATT

Edward A. Rosenblatt 52, of Sherbrook Drive, Charlotte, N. C., died in late spring in a local hospital. "Eddie" as he was well known to motion picture exhibitors and projectionists and his many friends throughout the two Carolinas, was a sound engineer and assisted many independent exhibitors to achieve good operation during the period when television was making its strongest debut in the Carolinas.

Loved by all who knew him or ever had dealings with him. "Ed" began to diversify in business about 1959 and established with his associates a manufacturers agency distributing parking gates and municipal fire and police department technical equipment, a business in which he was very successful. In addition to his mother, survivors include his wife, Mary Nell Rosenblatt; two sons, James Ashley and John Edward at home. His wife, Mary Nell has long been associated with the Carolina and Atlanta "Wompis" and heartfelt sympathy by the industry is graciously extended. R.W.R. **IP**

H. A. HARTMAN DIES

Harry A. Hartman, 70, retired theatre engineer for the Wil-Kin Theatre Corp. for many years and traveling engineer for theatres in the Carolinas for the past 20 years, died recently at his home at 1100 Andover Road, Charlotte, N. C. Mr. Hartman made many friends in the Carolinas during the early transition to sound and Cinemascope motion pictures and his many friends express sympathy to his surviving family. R.W.R. **IP**

You Get More For Your Money

WITH

IBIGAWA CINEMA CARBONS



It Will Brighten Up Your Screen At The Least Cost

●
**MAKE YOUR OWN TEST
AT OUR EXPENSE**

SEND FOR FREE SAMPLE

●
WRITE FOR DETAIL FOLDER
NOSAWA & CO., LTD. Sole U. S. A. Agent
180 Madison Ave., New York 16, N. Y.

●
IBIGAWA ELECTRIC INDUSTRY CO.; LTD.
Manufacturer — Japan

**NOTICE: WE WELCOME INQUIRIES FOR
TERRITORIES FROM SUPPLIERS AND
DISTRIBUTORS.**

LETTERS TO THE EDITOR

For a second time I find myself tempted to contribute something to IP of a nostalgic rather than scientific nature. (See WHO REMEMBERS WHEN? in IP for September 1959, page 20). However my recent acquisition of an old Powers 6-B mechanism as a museum piece brought to mind a most amusing incident of the silent days which I cannot resist passing along.

In the early 20's I served for a time as projectionist (they called me "that operator" then) for a mid-western college where movies, open to the general public, were run each week-end in the gymnasium. The projectors consisted of a pair of used Powers, with hand-fed AC arcs energized by one Bell and Howell compensator. (One arc had to be turned off as the other was struck, a procedure which gave a nice fading effect on changeovers.

The "projection room" which was located at and partially over the edge of a small gallery at one side of the gymnasium, was an asbestos board enclosure with holes sawed out, more

or less rectangular in shape, for projection and observation.

Drop fire-shutters were conspicuous by their absence. "Ventilation" was provided by the simple expedient of leaving the door open so that "fresh" air from the audience would flow in through the open ports.

Now this little incident that I am about to recount couldn't possibly have happened had it not been for a series of existing conditions to all intents and purposes completely unrelated. (Note: Those of the younger generation who never ran a Powers projector will either have to use the imagination or refer to the early editions of Richardson's Handbook of Projection to visualize some of the action.) Here, then, were the existing conditions:

1. There was no glass in the ports.
2. There was a shelf extending from just below the mechanism of each projector to the bottom of its port, forming a convenient place for tools, oil can, etc., but when the ensuing events took place there was

nothing on the shelf of the right-hand projector.

3. The Powers mechanism (we oldsters will recall) had two removable plates on the front. One carried the lens mount, and a smaller one below bore the patent information. I had removed the latter to facilitate cleaning inside the mechanism.

4. The Powers mechanism had a "loop-setter." Again, for the younger generation, let me explain that this device consisted of a roller between the intermittent and take-up sprockets around and clearing which the lower film loop was formed. If the lower loop became lost, the tightening of the film lifted the roller which in turn threw the take-up sprocket out of gear until a new loop formed. The re-forming loop permitted the roller to drop back to its normal position thus starting the take-up sprocket again. "The whole train of operation is automatic — its results instantaneous." (Richardson's 4th Edition Handbook of Projection, page 649. Instruction No. 40.)

Now for the action. One evening when the first show was well along and I was threading the left projector, an unearthly scream sounded from the audience. I thought little of this, however, since the feature was a mystery melodrama and there was a large sprinkling of youngsters in the audience. But all of a sudden an usher rushed into the booth shouting: "Stop the show, quick!" Not being unduly excitable I asked him: "How Come?," since I had a good picture on the screen and the machinery sounded normal. He got as far as: "A woman . . ." when another scream hit the air. Coincidentally my eye caught a strip of film gliding snake-like from the open mechanism of the right-hand projector along my empty tool-shelf and out the open port.

Instantly I flipped the dowser, shut off the motor, and rushed out to the edge of the gallery and looked over. By this time the house lights had been turned on and all eyes were focused on two dear old ladies who were sitting under the gallery just below the right-hand projector port. They were petrified with fright, with virtually a hundred feet of nitrate film entwined about their necks and arms with more draped over their laps and on down around the floor!

I rushed down and extricated the ladies, tried to calm them down, apologized for the annoyance, cleaned up the film and then went back upstairs to see what had actually happened. Then I discovered that the loop-setter had been activated and then become stuck, thus immobiliz-

**Rub It!
Scrub It!
Boil It!
Freeze It!**

Just try to scratch or destroy the harder than glass front coating of a

TUFCOLD

FLAKE AND PEEL-PROOF

**FIRST SURFACE
COLD REFLECTOR**

—then you'll see why it's

Guaranteed 2 Years

—TWICE AS LONG against coating deterioration



Replace your old reflectors now

THE *Strong* ELECTRIC CORPORATION

CITY PARK AVENUE TOLEDO 1, OHIO

ing the take-up sprocket while permitting the film to run off the intermittent sprocket, and, because of the shelf, the lack of a front plate, and the open port, to continue on out and downward.

This was one occasion when two members of an audience certainly got the feel of the picture.

*Wm. G. Blanchard
Department of Audio Visual
Education
Claremont Graduate School
Claremont, California*

There are lots of old-timers in the projection game that had experiences such as this, and we think it's pleasant reading about them. We thank Mr. Blanchard and offer this column for others' reminiscences.
Ed. **IP**

Spirit of 1-7-7-6 At 25-30 Club

The Spirit of '76 prevailed at the final meeting of the summer for the 25-30 Club at the Hotel Claridge in New York. Good will toward all was the keynote of the speeches, short and inspiring.

To an assemblage well aware of a troubled world, the speakers stressed their gratitude to the projectionists for a minimum of labor, health and political worries. "For this we should be thankful," declared president William C. Anderson.

Abraham Kalmus, returning from a world-tour of camera wonders, was honored. His work was looked upon as a credit to all. Little else to do by way of appreciation but for Abe and Bea Kalmus to throw a party, which they did. As Morris J. Rotker pointed out, "It does us all good to see the smiling faces of the boys as they entered this room."

"How much better it is to hear the wisecracks our members heard on the way to the meeting than sly digs and unpleasant rumors," added Mr. Rotker, the recording secretary. And in good humor the champ moocher, name kept secret, who borrows cigarettes, brought hearty laughter. All but the man's name was revealed, although it didn't mean anything because his theatre was mentioned and his own laughter was loudest.

The second Thursday in January, 1964, was avowed for the announced big annual event at a New York hotel. **IP**

IA Takes Firm Stand On Uninspected Film

The following letter has been sent to all IATSE Operators and Mixed locals. Film Exchanges, General Managers and the Minister of Travel Publicity for the Province of Ontario in Canada by the International vice president A. L. Pat Travers in his capacity as business manager of Toronto Operators Local 173:

"The condition of film being shipped to theatres has, over the past years, become progressively worse. This is understandable, as the inspecting personnel has been reduced considerably.

"Appeals to the distributors, while being recognized, have not produced the desired results. The director, Theatres Branch, has apparently withdrawn from film exchange supervision, which has certainly not helped.

"The projectionist, usually working alone since the reduction of booth personnel, and with ever increasing responsibilities, does not have the time to repair film which should be received in good condition from the supplier.

"A motion has therefore been passed by Local 173, Toronto Motion Picture Projectionists Union, at

a regular meeting: "That film will be run as received from the exchange or repaired on an overtime hourly basis charged to the theatre." This rule will become effective at once."

IP

Strong Electric Has New Brochure on Rectifier Models, Uses

A new brochure on rectifiers for use as power supply for projection arc lamps has been made available by The Strong Electric Corp. Featured is the Bi-Powr silicon stack transformer-rectifier for use with two lamps, now available in four ratings: 60-85 ampere/35-45 volts, 75-105 ampere / 48-61 volts, 90-135 ampere / 56-70 volts, and 120-160 ampere / 58-75 volts.

The Bi-Powr employs two silicon stack assemblies, one for each output. The life expectancy is greatly lengthened due to the fact that there is no "aging" of the elements. Since there is no aging, there can be no unbalance in the units, and hence, no flicker on the screen caused by unbalance in power supply.

A copy of the brochure will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo I. Ohio. **IP**

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity,
distortion free.

*Low installation cost,
minimum space needs.

*Increased reliability,
less maintenance.

*No vacuum tubes, no
photoelectric cells.

***and the only American-made 70 mm 35
theatre projection systems**

SEE
YOUR CENTURY
DEALER

... for bigger, brighter projection.

CENTURY PROJECTOR CORP.

New York 19, N. Y.

Specialists in Light Projection
CARBONS, INC.

through
Lorraine Arc Carbons
division

PRESENT THEIR NEW



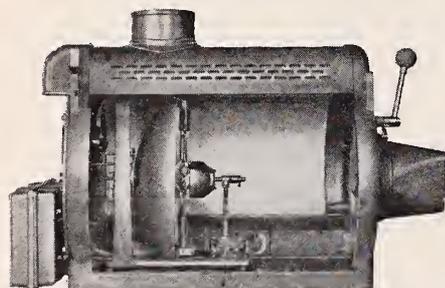
employing the compact Zenon Arc!
featuring

XeTRON LAMPHOUSES

by Cimeneccanico of Milon, Italy,
leading motion picture equipment mfgs.

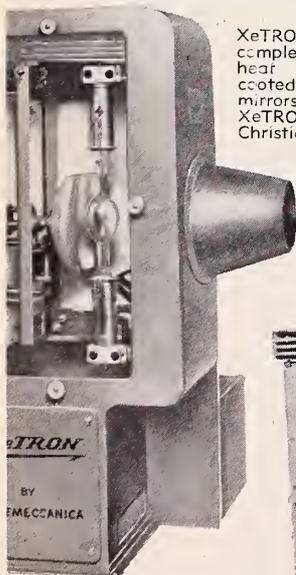
XeTRON POWER SUPPLIES

by Christie Electric Corp., makers of
the finest power supply units.



XeTRON Lamphouse with 450 watt bulb. Equipped with 5" reflector and diffuser. Replaces 750-1,000 watt incandescent lamps and provides three times the light flow with Kelvin temperature, similar to hi intensity carbon arc.

XeTRON 1600/2500 Lamphouse complete with associated optics, heat transmitting, hard, front-coated 16" reflector, auxiliary mirrors and starting devices. XeTRON Silicon Power Supply by Christie Electric Corp.



XeTRON Lamphouse with 450 watt bulb. Equipped with 5" reflector and diffuser. Replaces 750-1,000 watt incandescent lamps and provides three times the light flow with Kelvin temperature, similar to hi intensity carbon arc.

Literature on Request
Franchise Dealerships Available

XeTRON

division of **CARBONS, Inc.** Boonton, N. J.

New Cinerama Single-Lens Projection System Unveiled

Cinerama, Inc. has developed a revolutionary new single-lens system for the exhibition of motion pictures in the Cinerama process. It has been announced by Nicolas Reisini, president and board chairman of the company.

The new system was developed by the Cinerama Camera Corp., a wholly-owned subsidiary of Cinerama, Inc., working in close conjunction with Tom Conroy, Cinerama's vice president in charge of production.

The dramatic Cinerama effect, heretofore obtained only by the use of three projectors, can now be achieved by the use of a single projector. The system in effect consists of four interlocking elements - the newly created lens, a special printer and associated optics, the single projector resulting from the Company's intensive research and development, and the famous and unique deeply curved Cinerama screen.

The new system was demonstrated at a screening of selected footage of "It's a Mad, Mad, Mad, Mad World," held at Cinerama's Hollywood Studio for representatives of the press and the exhibition industry. The comedy spectacular, produced by Stanley Kramer in Panavision and Technicolor for United Artists Corp., will have its world premiere on Nov. 7 in Hollywood at the new Cinerama Dome Theatre, built by Pacific Theatres Corp.

Mr. Reisini, president of Cinerama, and Arthur Krim, president of United Artists, were present with Mr. Kramer and Mr. Conroy at the screening.

Mr. Reisini commented: "The results which you have seen demonstrate the latest achievement in Cinerama exhibition. Cinerama's research and development has always been directed not only towards exhibition, but production as well. We are pleased to announce that in the early part of next year we will have ready an equally revolutionary Cinerama single-lens camera and production system. It will then be possible for the first time for motion pictures to be produced and exhibited in a single-lens Cinerama system."

Mr. Kramer explained how he had filmed the picture in Panavision and Technicolor, after which the 65mm. negative was printed into Cinerama proportions, so that it can be viewed on a cinerama arc of 146 degrees



SINGLE LENS — Stanley Kramer (right), producer of the comedy spectacular, "It's A Mad, Mad, Mad, Mad World," joins two Cinerama executives in examining various lens components. Tom Conroy, (center), Cinerama's v p for production, and Gerhart Lessman, Cinerama's research director (left), worked together with the research and development staff of the Cinerama Camera Corp. to produce the new Cinerama single-lens projection system.

horizontally, and 55 degrees vertically, and an aspect ratio of 2.6 to 1. Thus, the special optical treatment adapted the film to the deeply curved wide-angle Cinerama screen. Mr. Kramer noted that the screening completely fulfilled all expectations as to the ability of the new single lens system to project the specially-processed negative of his motion picture with the full scope and sense of participation that is so much a part of the Cinerama exhibition. **IP**

Lou Seiber Heads Baltimore MPO

BALTIMORE, MD. — Lou Seiber was elected president of the Local 181. Motion Picture Operators, IATSE, at a recent special election.

William Tange, Sr., is first vice president, Bernard Terry second vice president and Norman Marks third vice president.

Maurice Rushworth is business agent and Thomas P. Finn, Sr., financial secretary. Recording secretary is Irving Whitehill, and trustees are Ralph W. Rushworth, Chester Towers and Roland Bruscup. LeRoy Goldbloom and Ned Isbeck are the wage scale committee and Hal Braswell is sergeant at arms. Messrs. Seiber, Whitehill and Maurice Rushworth are delegates to the AFL-CIO. **IP**

Norelco Introduces Improved 70/35mm Projector, The Model AAll Universal

NEW YORK—The North American Philips Co., has announced the development of a new, improved 70/35mm motion picture projector to be known as the Norelco Model AAll Universal 70/35 projector. This projector provides many new features that have been added to the popular and highly successful equipment first introduced for the Todd-AO system in 1955.

Orders for the new projectors have been accepted by theatre supply dealers in all parts of the U. S. In fact, installations of the new Model AAll 70/35's are in process in Pittsburgh, Pa.; Portland, Oregon; San Juan, Puerto Rico and Poughkeepsie, N. Y.

In a joint announcement from Niels Turén, general manager of Norelco's motion picture equipment division, and Fred Pfeiff, technical manager, it was stated that more than 18 important technical improvements have been incorporated into the equipment

by the famed engineering section of the North American Philips Co. Among them are: New dual split 70/35 magazine shafts which eliminates need for theatres to purchase special 35mm reels with 70mm flanges; new non-glare plexiglass observation window in projector door; new threading guards on magnetic shield and idler roller; new improved intermittent assembly; new oil vapor leak protection; new dowser assembly; simplified built-in water cooling circuit; heavier main drive gear set; new single motor drive; new 2-speed clutch; new reduced torque motor; new 4-pole motor start contactor; optional optical pre-ampli-

fier; new easy installation lower compartment door; new cast aluminum lamphouse bracket with adjustable slide for easy alignment of lamp; new spiral gear take-up drive; new graphite impregnated nylon idler and pad rollers; and a pre-wired magnetic cluster block.

The increasing amount of 70mm product in release and in production, plus exceptionally large boxoffice grosses these pictures have experienced, heralds a bright future for 70mm projection. Norelco states. With over 150 theatres in the U. S., and some 300 others throughout the world equipped with Norelco 70/35's, Norelco's experience in this field is extensive. In April of this year, the Academy of Motion Picture Arts and Sciences presented a special award for outstanding technical achievement to the North American Philips Company for the design and engineering of the Norelco Universal 70/35mm motion picture projector. (See story.)

Previous Projector Wins Academy Award

The Norelco Universal 70/35 mm. projector received one of the special awards from the Academy of Motion Picture Arts and Sciences in recognition of outstanding technical achievement for the showing of the newer wide gauge films. It is the first such award in the projection field since 1959.

Accepting a plaque for the North American Philips Co. was Fred J. Pfeiff, technical manager of the motion picture equipment department of the firm. Mr. Pfeiff has been closely associated with the development of the 70/35 mm. projection system since it first became available in 1955. Originally designed and developed through the joint efforts of the American Optical Co. and Philips, this projector introduced the 70 mm. Todd-AO process—a 1957 Academy Award winner—into movie theatres. Jan Kotte of Norelco is to be commended as the original designer of this equipment.

Today there are more than 450 installations of the Norelco Universal 70/35 Projector in 35 states, Canada and other countries.

In receiving the award, Mr. Pfeiff stressed that motion picture audi-

ences the world over are enjoying greater clarity and better quality of screen images with less eye strain, thanks to the wider films and the award-winning Norelco projection equipment.

And there are important benefits to the exhibitor, Pfeiff pointed out, explaining that a single 70 mm. print has been played for as many as 1600 runs, film damage is greatly reduced, and the Norelco 70/35 projector may be converted in minutes for either 70 mm. or 35 mm. operation, providing the theatre owner with greater versatility in presenting the latest films.

North American Philips Company, Inc. also produces the new Norelco 25 mm. Pulse-Lite shutterless projector for smaller theatres, a 35 mm. projector for arc lamp operation, as well as professional 16 mm. equipment.

Built primarily for 70 mm. with the added convenience of 35 mm., the Norelco Universal 70/35 projector enables audiences to see easily the tiniest photographic details in such current films as "Lawrence of Arabia", "Mutiny on the Bounty", "Cleopatra", and many more now in production. **IP**



by the famed engineering section of the North American Philips Co. Among them are: New dual split 70/35 magazine shafts which eliminates need for theatres to purchase special 35mm reels with 70mm flanges; new non-glare plexiglass observation window in projector door; new threading guards on magnetic shield and idler roller; new improved intermittent assembly; new oil vapor leak protection; new dowser assembly; simplified built-in water cooling circuit; heavier main drive gear set; new single motor drive; new 2-speed clutch; new reduced torque motor; new 4-pole motor start contactor; optional optical pre-ampli-



NORELCO Wins Academy Award — Fred J. Pfeiff, technical manager of the motion picture equipment department of Norelco, proudly holds award received at the 35th Annual Academy Awards. The Technical Award was presented to Mr. Pfeiff for his firm's development of the Norelco Universal 70/35 mm. projector, an innovation in the showing of wide gauge films.

Breaking Mirrors? It can't happen with

HEYER-SHULTZ
UNBREAKABLE METAL REFLECTORS

TOP SCREEN ILLUMINATION	5 YEAR GUARANTEE
WILL NOT PIT OR TARNISH	FACTORY REFINISHING SERVICE

See Your Theatre Supply Dealer **HEYER-SHULTZ, Inc.** Manufactured by Cedar Grove, N. J.

Ibigawa Theatre Carbons Introduced To U.S. Market

NEW YORK—Projection carbons which have been in use in Japan and internationally for many years have been introduced to the U. S. market through the import agents here, Nosawa & Co., Ltd., 180 Madison Ave., New York 16, N. Y. Telephone is LE 2-1198.

Produced by the Ibigawa Electric Industry Co., Ltd., Ogaki, Japan, the Ibigawa carbons are said to provide brilliance, steadiness and correct color balance, thus affording excellent projection light with economy. High intensity AC and DC carbons are available, the latter in non-rotating or rotating positive type. Brochures from the agents here describe trims and lengths available. Carbons for spotlight and studio lamps are also available.

Ibigawa cinema carbons were granted the Ohkouchi commemorative award in 1958 because of the production methods used. **IP**

SPECIAL RATES

On group subscriptions to IP for IATSE Locals and audio-visual groups. Write for details.

How electrical noise is produced . . . calculated . . . measured . . . controlled



Here are the basic facts about electrical noise — how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

ELECTRICAL NOISE

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes — transistors — gas discharge tubes — klystrons — traveling wave amplifiers — and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects — these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

INTERNATIONAL PROJECTIONIST

Post Office Box 6174

Minneapolis 24, Minnesota

Please send me a copy of "Electrical Noise" by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State



GIVE UP? — If you like guessing games, we'll give you three tries at identifying these weird-looking triangles. Or if you give up easily, as we do, here's the answer — they are pyrometric cones used for telling exactly when a batch of motion picture projector carbons is ready to leave the oven after the baking cycle. They are but one of the quality control techniques used by National Carbon Co., division of Union Carbide Corp., to produce projector carbons that provide motion picture audiences with today's finest screen light. Two of the heat-sensitive cones are placed in every baking furnace, and when one is leaning and one sagging, as shown, the proper temperature has been reached and the projector carbons are removed for further processing.



The facade of the twin theatres. The upper wall is faced in wide alternate stripes of black and white.

New York — The Baronet and the Coronet Theatres occupy a single building on Third Ave. at 59th St. Both theatres share a facade which rises to a height of 68 ft., but they have different entrances at street level.

The cost was \$1,500,000 when the Walter Reade-Sterling Group remodeled the Baronet and put a twin theatre above it.

Instead of entrance doors the Coronet has an "air curtain" which gives an unobstructed view of the vestibule and lobby. Through the marquee soffit warm air is blown at high velocity, passing continuously, to form an air barrier to prevent the infiltration of cold air in the wintertime.

The Coronet's seating capacity is 598, larger than the Baronet which has 418 seats. The Coronet is equipped with Century 35mm projectors with Ashcraft Cinex lamps, Century's transistorized sound system, Ashcraft rectifiers and stereophonic surround horns.

CAMERA VIEWS OF THE PIGGY-BACK CORONET



Vestibule with steps to the Coronet's lobby and gallery.



Coronet lobby with its escalator leading to the auditorium, features the Proscenium Gallery where paintings and sculptures are exhibited and sold.



The Coronet's auditorium, like its twin, the Baronet, is a stadium-type theatre. Walls are blue perforated aluminum. The curtain is gold and blue.



Rear view of the auditorium, showing the projection room.

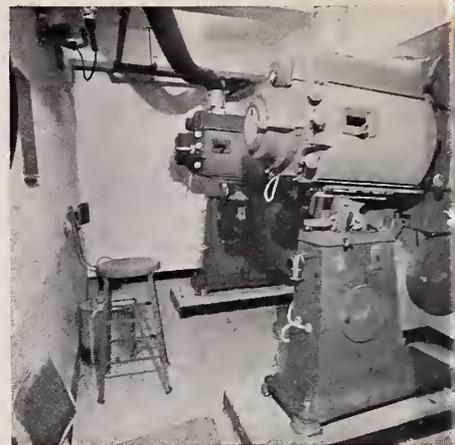
New York's Festival Theatre So Luxurious It Includes Private Art Gallery

Showman Joseph E. Levine celebrated "New York is a Summer Festival" by opening his new Festival Theatre, 57th St., just west of Fifth Ave., recently with Federico Fellini's "8 1/2" as the inaugural attraction.

Built in the former location of the Milgrim store, the Festival Theatre will hold just under 600 seats. Described as the most luxurious of inti-

mate cinemas in New York, it boasts the largest, most elaborate lounge space of any East Side theatre. In addition to an upstairs gallery lounge with windows facing 57th Street, the theatre will have a downstairs coffee lounge running the entire length of the building.

Designer of the Festival Theatre is Simon B. Zelnik, New York architect. A unique marquee fronts the new cinema. Blending in with the rich-flowing architecture of the existing building will be a flower-box arrangement, projecting from the building



Projection equipment in booth of Festival Theatre.

at the apex of the exclusive department-store, office-building and residential area uptown.

According to Zelnik, a veritable engineering "miracle" was required to transform the store space into a cinema. Six supporting columns were removed from the structure and replaced with transverse beams, without occasioning any settlement in the stories above.

Paintings covering a span of five centuries and representing a value in excess of \$100,000 are on display in the lounge.

**PROJECTIONISTS
PREFER
ETHYLOID**
Film Cement For
BEST RESULTS
Available from
Supply dealers
FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

SUPPLIERS FOR FESTIVAL THEATRE

Architect Simon B. Zelnik
Steel Work Irvington Steel & Iron
Consulting Engineer Strobel &
Rongved
General Contractor Jenkin Con-
tracting Co.
Electrical Charles Hyman
Heating & Air Cond. Weathermatic
Corp.
Acoustical Work Jacobson & Co.
Inc.
Seating Joe Hornstein Inc.
Sign Interstate Neon Sign Co.
Terrazzo V. Foscatto, Inc.
Plumbing L. Parhman & Sons, Inc.
Store Front E. K. Anderton
Decorator Mrs. Ellen McCluskey

ASHCRAFT

e q u i p m e n t

Available from
leading theatre supply
dealers

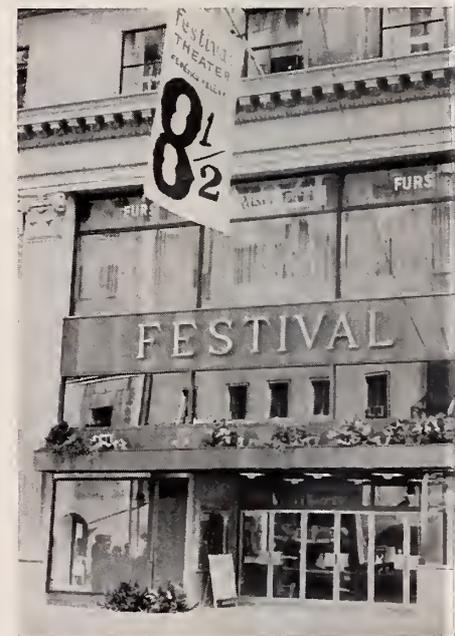
North American Philips Co., Inc.
Motion Picture Equipment Division

100 E. 42nd St., New York 17, N.Y.

above the lobby entrance, made of a new material, Duranodic aluminum, providing fixed, weather-proofed metallic colors. The facade will also be of colored Duranodic aluminum.

Byzantine glass mosaics and etched terrazzo will grace the lobby area, inside. The two lounges, with decor designed to enhance the living-room comfort of patrons, will be an integrated part of the theatre's architecture. Featured in the downstairs lounge will be two separate areas, decorated respectively in French and Italian motifs. Special areas in the lounges will be devoted to coffee bars, picture galleries, and seating.

The Festival Theatre will be located



Front of Festival Theatre, 6 West 57th St., New York City.

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine ORLUX Carbons

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart



Top:
Downstairs lounge of Festival Theatre, running whole length of theatre, and containing art display valued at \$100,000.

Center:
View of upstairs gallery-lounge of Festival Theatre, with windows opening out on 57th Street.

Bottom:
Auditorium of Festival Theatre, viewed from screen toward balcony.

ip

Valley for
CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES
VALLEN, Inc.
AKRON 4, OHIO

MODERNIZE
POWER UNITS

No burned contacts, cooler operation, smoother current with BE silicon rectifiers. A model to replace any bulb type.

One year guarantee

BROWN ELECTRONICS
1717 South St., ALLENTOWN, PA.

DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSORFF CARBON CORP. East McKeesport, Pa.

IF YOU ARE NOT USING THE "LITTLE MISER" CARBON SAVER YOU ARE LOSING SEVERAL HUNDRED DOLLARS EACH YEAR

Just twist the stud in and out
No grinding—No dirt
4 sizes, 9-10-11mm, \$3.00 ea.
13.6mm, \$4.50 ea.



NEW
AN ILLUMINATED SCREW DRIVER



for working on speaker past after dark... complete with 4 driver bits; two sizes flat head and Phillips head and two No. 135 batteries, \$3.35 each.

LOU WALTERS

Sales and Service Co.
4207 Lawnview Ave., Dallas 27, Texas
Phone EV 8-1550

Post paid when check is sent with order.

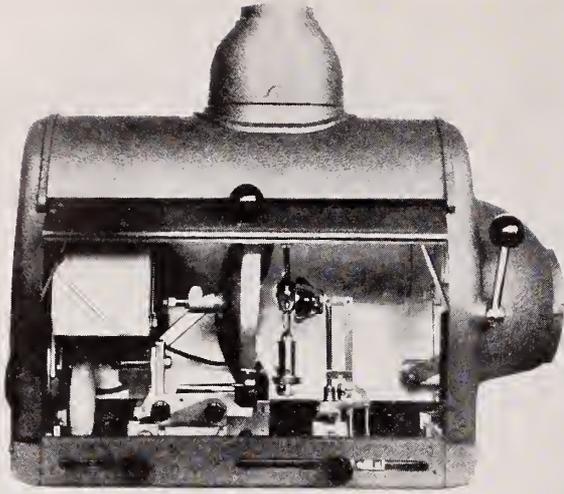


FIG. 3—A xenon lamp of European manufacture (Zeiss Ikon). The square metal box seen in the rear of the lamphouse contains the high-voltage igniter unit which starts the xenon bulb burning.

XENON

from page 6

pending upon the size and rating of the particular xenon bulb used.

The xenon arc, itself, is a blue-white, intensely bright flame-like arc which "fans out" from a brilliant gas ball close to the tip of the lower (negative) electrode — the cathode. The lamp is provided with an auxiliary spherical mirror which superimposes a reversed image of the fan-shaped flame upon the actual flame, thus effecting great uniformity of the screen illumination.

Power Requirements for Xenon

Xenon bulbs normally have an extremely long useful life, and are seldom discarded before blackening of the quartz bulb, caused by slow evaporation of the tungsten electrodes, requires too great an increase in arc current to maintain the initial high light output.

It should especially be remembered that AC ripple pulsations in the DC supplied to a xenon bulb shorten its life by "atomizing" the tungsten cathode and increasing the length of the arc. A longer arc increases the operating voltage which, in turn, increases the thermal stress and hastens breakdown. It is generally believed that an operating voltage much in excess of 30 volts is unsafe, and indicates that the bulb should be replaced with a new one.

The "ripple content" of the direct current supplied to a xenon bulb should never exceed 17% of the maximum DC voltage, otherwise bulb life will be materially shortened. Certain old-style carbon-arc rectifiers are therefore unsuitable for xenon operation. Then, too, a current source for xenon lamps should have voltage characteristics which impress the required 60 - 75 volts upon the bulb after the initial high-voltage discharge, then automatically dropping to the normal operating voltage of 20 - 30 volts when normal current is being consumed.

A low ripple content and the proper voltage characteristics are the two imperative reasons why rectifiers for xenon lamps should be specifically designed for the job. The Strong Electric Corporation of Toledo manufactures excellent silicon-diode rectifiers for xenon operation. However, motor-generator sets having a terminal voltage of 60 to 80 or so volts may also be used after certain

changes have been made in the ballast rheostats. Consult the manufacturer of the xenon lamps before making these changes.

Two Mirrors in Lamphouse

The xenon lamphouse, itself, is very similar to the lamphouses designed for reflector-type carbon arcs, except that it is mechanically simpler. There are no motors, crater-positioning devices, or carbon-feeding mechanisms. But unlike all carbon-arc lamps except the "blown arc," which has a cylindrical flame, the xenon lamp employs a small spherical-surfaced "backing mirror" to intercept and utilize the light which would otherwise be wasted. By forming an inverted image of the xenon arc upon the actual arc inside the bulb, the auxiliary mirror practically doubles the screen illumination and gives it greater uniformity. Correct optical adjustment of this mirror is very important.

The large main reflector functions exactly like the elliptical mirror in a carbon-arc lamphouse. It intercepts the light from the xenon arc (plus the light from the image superposed upon it by the auxiliary mirror) and focuses it as an intensely bright "spot" upon the film aperture.

Certain European manufacturers of xenon lamp equipment place a "honeycomb" relay condenser, consisting of two reticulated pressed-glass lenses, in the cone of the lamphouse. The intention is to insure a high degree of screen-light uniformity. We know that honeycomb condensers cause a loss of light amounting to nearly 20%; and reports have come to us that they are hard to clean and are liable to cracking. American-made xenon lamps attain a uniformly distributed maximum screen light without the use of troublesome honeycomb condensers.

Xenon-Lamp Safety Precautions

The high pressure of the gas in xenon bulbs demands a strict observance of safety precautions. If carelessly or accidentally broken, xenon bulbs explode and throw sharp fragments of quartz glass in all directions. This is why xenon bulbs are encased in a removable protective shell of tough plastic. The shell must be left on while the bulb is being installed in the lamphouse, and not removed until the cables are connected to the two bulb terminals (upper one positive, lower one negative).

In addition to the plastic shell for the bulb, a protective face mask is supplied by the lamp manufacturer (obtainable as Part No. 76181 from the Strong Electric Corp.). *The projectionist shall not fail to wear the protective mask when handling the bulb and when opening the lamphouse!* Even though accidental breakage of xenon bulbs rarely occurs, the possibility of losing an eye through an explosion should provide sufficient incentive to guard against carelessness and *wear the face mask when handling, installing, adjusting, inspecting, and removing xenon bulbs.*

The face mask shall be worn while cleaning the xenon bulb and the lamphouse mirrors. Never touch the quartz envelope, as fingerprints will burn in and dull the bulb. If fingerprints are made, the bulb should be cleaned with chemically pure methyl ("wood") alcohol.

Wear the face mask and replace the plastic protective shell on the xenon bulb when cleaning the lamphouse or using tools which might conceivably break the bulb.

When removing the bulb from the lamphouse, put the face mask on before opening the door. Encase the bulb in its protective shell before disconnecting the terminal cables. *Discarded xenon bulbs should be wrapped in*

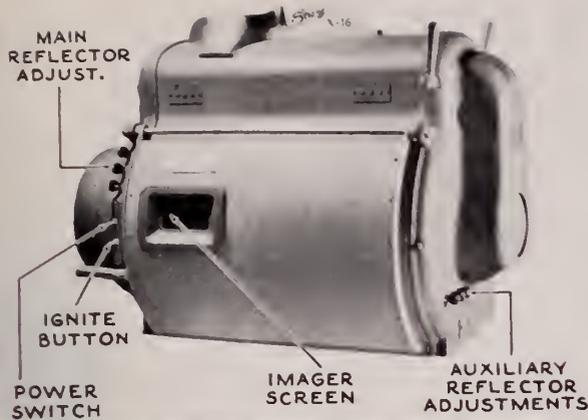


FIG. 4—Convenient arrangement of the simple controls of the Strong X-16 xenon lamp. The accompanying text explains the use of these controls.

several layers of canvas or heavy cloth and smashed with a hammer before being deposited in the trash can.

Simple Servicing, Cleaning

Never open the lamphouse when the xenon bulb is in operation! Wait at least ten minutes for the bulb to cool before opening the door. The purpose of this precaution is to prevent cracking and explosive destruction of the bulb from the chilling effects of drafts. For the same reason, the ventilating system must be arranged so that down-drafts cannot force their way into the lamphouse. The ventilating requirements of the xenon lamp are modest, inasmuch as the xenon bulb, unlike a carbon arc, generates no gases to be expelled.

Once a xenon lamp has been connected to a suitable rectifier, power-supply problems seldom arise. There are no electro-mechanical feed mechanisms to go wrong. The quench spark gap of the high-voltage igniter unit may need adjustment or replacement after long periods of use, but there are no moving parts in the xenon lamp aside from the expected mirror-adjusting controls. No lubrication of the lamp is needed. There are no carbon-core ashes to soil the lamphouse, hence cleaning is an exceptionally easy chore. The large main reflector and the small auxiliary mirror ordinarily require no cleaning beyond a fortnightly wiping with a clean, soft, dry cloth.

Adjustment of Mirrors

Detailed instructions for "lining up" 900-, 1600-, and 2500-watt xenon lamps are given in the Strong operating manuals for these lamps. Initial alignment of the xenon lamphouse is best accomplished with the aid of a special aligning tool supplied by the lamp manufacturer.

The three control knobs for the main reflector are located on the operating side of the lamphouse at the rear; the three for the auxiliary reflector are at the front of the lamphouse. So critical is the adjustment of the auxiliary mirror that its controls should be locked in place once the adjustment has been made.

The large main reflector is adjusted first. To prevent the appearance of confusing patterns of light on the screen, the optical effect of the auxiliary mirror is eliminated by moving this smaller mirror toward the front of the lamphouse.

The xenon bulb is switched on and the light centered on the screen with the main-mirror horizontal and vertical

adjusting knobs, then focused with the focus knob to obtain the smallest "V" pattern of light. After this is done, the auxiliary mirror is returned to its normal position, and its optical adjustment effected by means of the horizontal, vertical, and focus knobs for this mirror, as described below.

Optical adjustment of the auxiliary mirror is very critical and must be performed with great care. The horizontal and vertical controls are adjusted until the bright "cathode spots" are aligned vertically, one above the other, on the imager screen in the side door of the lamphouse. The two bright spots should be about 1/8 inch apart on this little screen, and care should be taken not to focus the bright spot of the cathode directly upon the tip of the anode. To do so will overheat the anode and harm the xenon bulb.

This done, further adjustments of the auxiliary mirror are made by observing the projected light on the theatre screen. After giving a finishing touch to the auxiliary-mirror horizontal adjustment, if necessary, the auxiliary-mirror focus knob is adjusted to obtain the brightest pattern of light on the screen. This will be superimposed upon the "V" pattern formed by the main reflector. To "disentangle" the two patterns, it is advisable to run through the focal position of the auxiliary mirror a few times before a fine adjustment is made.

After these patterns of light from the main and auxiliary reflectors are obtained, the last step in the adjustment of the reflectors is to turn the auxiliary-reflector focus knob one-half turn to the right, and the main-reflector focus knob two turns to the right—that is to say, in a clockwise direction. This will then provide a screen light of utmost uniformity, and all is in readiness for the projection of pictures.

Pushbutton Starting

Actual operation of the xenon lamp is simplicity itself. There are two switches directly beneath the three main-reflector adjusting knobs. One is the rectifier-relay ON—OFF switch for the power. This is turned on first. Then the igniter button is pressed for not more than half a second. There will be a distinct buzzing sound, and the xenon bulb will light up. What could be easier?

Because of the slow evaporation of tungsten from the hot electrodes, the quartz envelope of a xenon bulb gradually darkens—just the same as with an ordinary tungsten-filament Mazda lamp. To maintain a constant high light output, therefore, the current is gradually increased by small increments at the rectifier. When the current has been boosted to a stated maximal value, after many months or even a year or so of service, the bulb must be replaced.

Too high a current destroys the tip of the tungsten cathode and dangerously increases the pressure of the gas inside the bulb. Xenon lamp equipments manufactured by the Strong Electric Corp. have a running-time meter which shows the time in hours that the xenon bulb has been burned. The running-time meter is conveniently located on the back of the lamphouse beside an ammeter which shows at what current the lamp is operating.

Imbalance in the light outputs of xenon-equipped projectors is corrected by increasing the current of the dimmer lamp, decreasing the current of the brighter lamp, or by a combination of both measures.

All things considered, the xenon lamp is a welcome boon to projection in theatres which formerly found the smaller simplified high-intensity carbon arcs adequate for satisfactory screen brightness. It is designed to produce an ideal light for motion-picture projection and to provide long periods of service with an absolute minimum of attention.

IP

Another Wide-Screen Process - - Now It's "Dimension 150"

Todd-AO and Dimension 150 have combined forces to furnish motion picture producers with all of the finest features of wide screen motion picture processes according to an announcement from George P. Skouras, president of the Todd-AO Corp. and Dr. R. Vetter and Professor Carl Williams, developers of the new Dimension 150 process.

Dimension 150 was developed by Dr. Vetter and Professor Williams, members of the faculty of the University of California at Los Angeles as a process that requires the use of only one camera and can be projected with a single projector on all screens, including the most deeply curved screen, without distortion.

The Dimension 150 system includes the use of numerous wide angle lens up to a 150-degree bugeye lens which will give producers the widest camera range ever developed in the history of motion picture-making.

In addition, pictures produced in Todd-AO or Dimension 150 will offer to producers and exhibitors the facility and flexibility of presentation without incurring conversion costs in theatres currently equipped for 70 mm. projection on deeply curved screens used in several existing processes.

Dr. Vetter and Professor Williams, who specialize in audio-visual education at UCLA, have concluded the development of Dimension 150 and have patents pending on the process.

Arrangements are being made to present the process and demonstrate its possibilities, flexibility and economics to members of the motion picture industry within the near future.

Negotiations have been concluded

with Louis de Rochemont for the production of three films in Dimension 150, one of which will be "All The World's A Stage," a large-scale spectacle-drama based on the real life of a famous Broadway-Hollywood personality. **iP**

New Strong Rectifier Operates 2 Arc Lamps From Single Supply

One of the first installations of the new Strong Bi-Powr silicon stack rectifier is that of the Astro Theatre, Omaha, Nebr., shown with Richard



Smith operating. This new type rectifier was developed for the operation of two projection arc lamps off of a single power supply. It employs two silicon stack assemblies, one for each output. The life expectancy of the equipment is greatly lengthened due to the fact that there is "no aging." Hence there can be no unbalance in the units and no flicker on the screen caused by unbalance in power supply.

The Bi-Powr is designed for operation on 220V 50/60 cycle three phase AC and is available in four ratings:

60-85/ 60-85 ampere/ 35-45 volts;
75-105/ 75-105 ampere/ 48-61 volts;
90-135/ 90-135 ampere/ 56-70 volts;
and 120-160/ 120-160 ampere/ 58-75 volts.

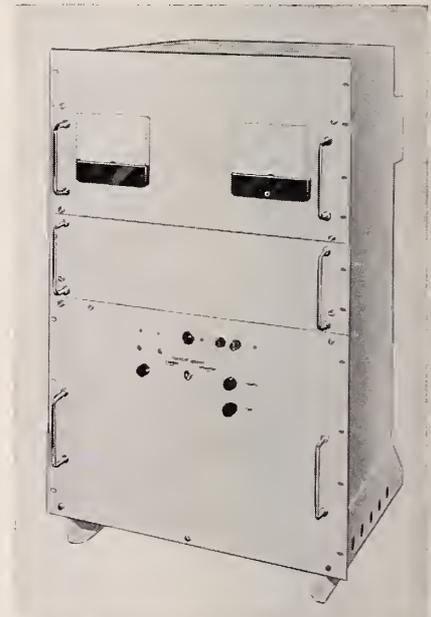
A novel "Lo-Strike" feature associated with each output on the 90-135 and 120-160 ampere models protects the silicon stacks from overload and prevents the destruction of the carbon crater upon striking the arc. An exclusive automatic reset permits immediate restriking in the event that the arc is not established on first strike.

Literature may be obtained by addressing the Strong Electric Corp., 31 City Park Ave., Toledo 1, Ohio. **iP**

Christie Electric Features New Xenon Power Supplies

Christie Electric Corp. is featuring a new line of xenon arc lamp power supplies, said to be ideally suited for such applications as solar simulators, data display systems, flight simulators and star tracking systems.

These extremely versatile units may be used equally well with xenon or mercury xenon lamps (inset) and feature automatic current regulation and



extremely low current ripple. Each unit is designed to work with two or more lamp sizes. Output characteristic may be adjusted for operation of all lamps.

Further information may be obtained by writing Christie Electric Corp., 3410 W. 67th St., Los Angeles 43, Calif. **iP**



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

» **AUTHORITATIVE**
 » **COMPREHENSIVE**
 » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
 Post Office Box 6174
 Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

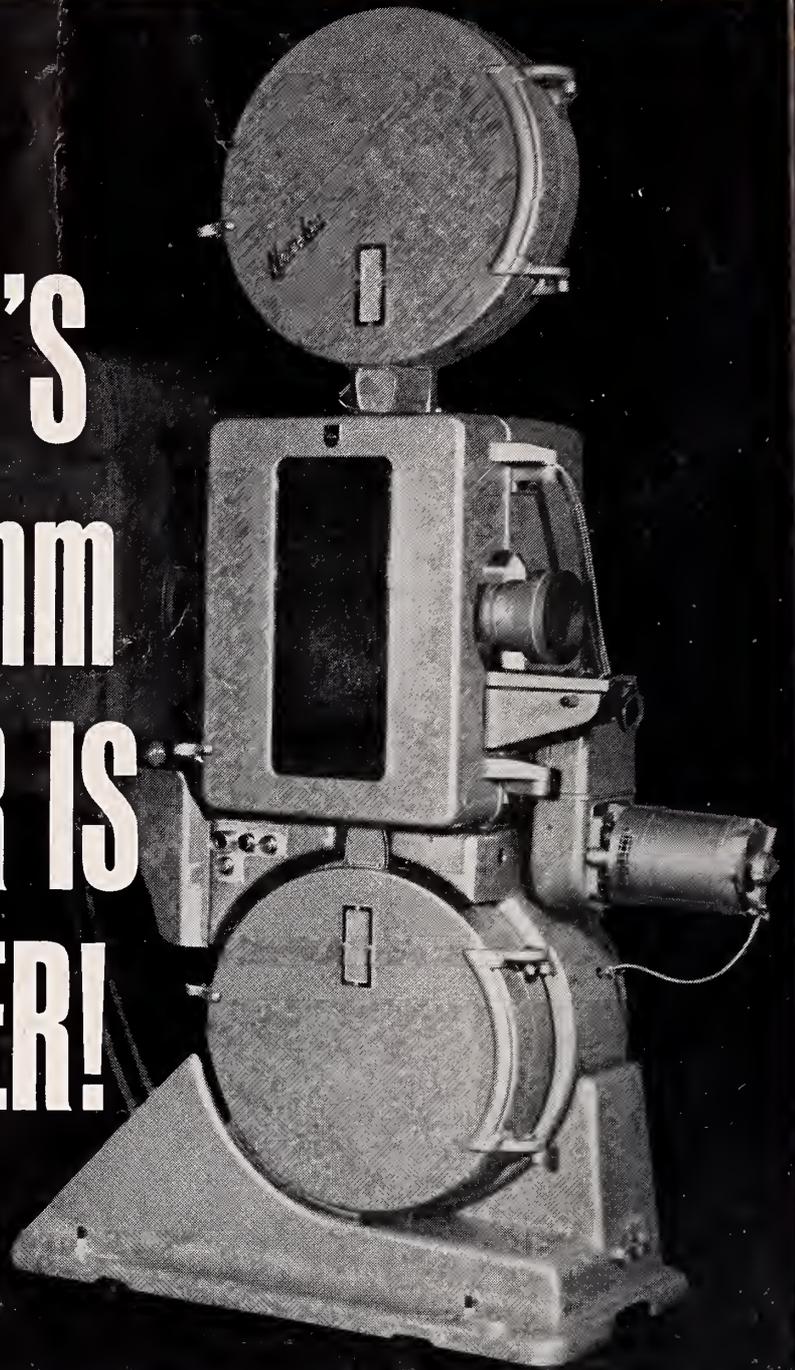
CITY ZONE STATE

NEW PRICE

\$7⁰⁰

per copy
 including postage

NOW... THE WORLD'S FINEST 70mm PROJECTOR IS EVEN BETTER!



presenting the NEW *Norelco*[®] AA II UNIVERSAL 70/35

Leave it to famed Norelco engineering to take a projector that has just received an Academy Award for design and engineering... and improve it!

That's right...the new Norelco AA II 70/35 projector has 18 major technical improvements including: new dual-split magazine shafts that eliminate need for special 35mm reels with 70mm flanges; new intermittent assembly; new single motor dual drive; new adjustable lamphouse bracket for moving lamp without realignment; new threading guards; new oil vapor leak protection; new reduced torque motor; and others.

Most of today's top boxoffice attractions are 70mm releases. Even more are coming. By equipping with Norelco AA II 70/35's you'll be able to show them in all their spectacular brilliance and cash in on their tremendous drawing power. What's more, in a quick 4-minute changeover, you also have the most modern, rugged and trouble-free 35mm mechanism!

No matter how you look at it...for today and tomorrow, Norelco AA II 70/35 projectors are your wisest investment. Get all the facts from your theatre supply dealer or write Norelco today.

The Academy of Motion Picture Arts and Sciences presented this award for outstanding achievement to the North American Philips Company for the design and engineering of the Norelco Universal 70/35mm motion picture projector.



INTERNATIONAL PROJECTIONIST



During the National Carbon tour, the Star-Lite Drive-In in Fastaria, Ohio, owned by Virgil P. Fau, was visited. Left to right in the photo are Phil H. Freeman, sales manager for arc carbon products, National Carbon Co. division of Union Carbide Corp.; E. A. Bowen, local sales manager for the division; Carl E. Shart, local 267 IATSE, Tiffin, Ohio, and J. W. (Bill) Casby, marketing manager for arc carbon products. Story begins on page 8.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

AUGUST

1963

VOLUME 38

NUMBER 8

40c A COPY



\$3.00 A YEAR



Investment Opportunity

The hand holding the hammer will someday make products for you.

Long years of training will have to go into making those chubby fingers productive. Much care, much love, much planning and money.

But no matter how lean and hard and skillful they become, it will signify little if the fruits of their skill are produced in anything but a free society.

You have an investment in those hands. To protect your investment, you can join with other leading American businessmen to promote the Treasury's Payroll Savings Plan for United States Savings Bonds. The Treasury Department's Plan works for soundness in

our economy, strength in our defenses, and thriftiness and self-reliance in our thinking.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the hands of tomorrow's tool makers and tool users. You are investing in America's next generation of machine operators, mechanics, metal workers—in all of America's skilled labor force. You are investing in America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U.S. Savings Bonds Division, Washington 25, D.C.



in your plant...promote the PAYROLL SAVINGS PLAN for U.S. SAVINGS BONDS



The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

INTERNATIONAL PROJECTIONIST

PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 August, 1963 No. 8

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
Notional Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murroyhill 7-7746
(Area Code 212)

IN THIS ISSUE

Film Shrinkage, Frame Registration By ROBERT A. MITCHELL	4
National Carbon Tour	8
History of the Carbon	8
Screen Design Developments	17

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dowson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



1

MONTHLY CHAT

WHY NOT TRY BOOTH SHOWMANSHIP

The low dollar volume at the boxoffice in movie theatres all around the country is the prime worry of the film industry.

The exhibitor says "give 'em a big picture and the public will buy tickets." And that checks out when the movie attraction catches the fancy of the mass public in this country and abroad, for the "big picture" grosses more millions today than ever in the past.

But the men with investments in theatre properties might well ask themselves "what are we doing about the situation of complete dependence on the people who make films?"

IP would like to suggest that the theatre owner would give a try at Booth Showmanship. Since its pretty plain that there are millions of people who attend the movies infrequently (for instance when the "big picture" comes along) and certainly not for the reason that they don't have the admission price—according to Washington the income is at an all-time high.

Booth Showmanship is a good presentation of all pictures the theatre presents to the patrons. A picture that is bright from margin to margin of the bigger screens.

The booth craftsmen's skill is at an all-time high and is capable of Booth Showmanship if only the theatre owner would give him a chance with the modern tools of his craft.

Available are high standard projectors, sound systems, light sources, power converters and necessary booth accessories

With many theatres in deplorable out-moded and well-worn projection equipment many industry men place the blame on the low-dollar volume at disappointing grosses of good pictures, not necessarily with the automatic drawing-power, right at the theatre whose projection equipment is not up to modern standard and whose unattractive surroundings don't invite the public to the patrons of the house.

To meet present-day standards all pictures, even the newsreel presented at movie theatres should be bright, with good distribution, and color rendition.

Many a theatre has too large screens for the light source being used. This stems from the neglect when the theatre put in a large screen without stepping up the light source. There are cases when screen area was more than doubled using existing lamps. Naturally, the screen illumination was reduced radically, the projectionists, the patrons of the house, noted the dimness when they saw a black and white film especially, when the low-key and night scenes, with color film dim at the margins.

The equipment dealer is the best source for the theatre owner to get good advice to upgrading, at minimum cost, his booth equipment.

According to informed equipment men, more than 55% of the arc lamps in theatres in this country are more than 20 years old. And the projector manufacturers say the same thing holds for projectors.

During the last decade a lot of improvements in techniques have gone into the motion picture, particularly by the equipment manufacturers and the film makers.

For all of the know-how of the production men, with their costly pictures, not every film attraction turns

(Please turn to page 18)



FILM SHRINKAGE AND FRAME REGISTRATION

By ROBERT A. MITCHELL

IMPROVEMENT in the rocksteadiness of theatre motion pictures during the past few decades is due in great measure to improvements in the aging characteristics of the film, itself.

Other refinements in the art which have exerted a decidedly beneficial effect upon the quality of professional projection include more accurate camera and projector intermittents, improvements in film processing and printing, the use of film stock perforated by the manufacturer instead of by the studios and laboratories, and a better understanding of optimum storage conditions for all the different types of film stock in use.

As far as theatre-release positive film stock is concerned, the substitution of high-acetyl acetate safety film for the relatively unstable and dangerous nitrate film formerly used has been a significant factor because of the relatively low and comparatively uniform shrinkage of triacetate base.

The film shrinkage problem still exists, of course, because all known cellulose-ester plastic materials shrink to some extent with time and upon exposure to varying conditions of heat and moisture. The film processor worries about the difficulties resulting from the stretching and shrinking of film in his developing and drying machines. The special-effects man is concerned about the rocksteady superposition of mask films. The color lab technician is likewise concerned with the registration of his three color separations, and in black-and-white work with the bad effects resulting from negative shrinkage. And the projectionist has anxieties of his own: variations in the normal shrinkage of the positive print films he

projects will cause unsteadiness of the pictures on the screen.

Film is Perforated Accurately

Assuming that all camera, printer, and projector units are correctly designed and maintained in top-notch operating condition, the accuracy with which the succeeding frames of a film are registered, one after another, is determined by the accuracy of the perforations punched in the margins of the film. Shrinkage of the film stock alters the "pitch," and if the shrinkage is irregular, the accuracy, of the perforations. When film shrinkage disturbs the accuracy of frame registration in printing or projection, the bad effects result directly from ensuing inaccuracies in the pitch of the perforations—the distance from the edge of one perforation to the corresponding edge of the succeeding one.

Film is perforated accurately by the manufacturer, the errors in pitch, if any, being well below the 0.00015-inch tolerance specified by the American standards for perforations in 35-mm motion-picture film stock. This statement probably applies to all the leading brands of film, European as well as American.

It would not be an easy job to discover any inaccuracies in the perforating job done by the film manufacturer, and would be impossible if the film samples had been processed, used, or stored for any length of time. Check-tests on perforation accuracy must be made on unprocessed raw stock immediately after it is perforated, and under the same conditions of temperature and humidity maintained in the perforating rooms. Such check-tests are made at frequent intervals by the film

manufacturer to insure a consistently high quality of product.

All film, even triacetate, swells in processing solutions and shrinks upon drying. More important, film normally swells when the moisture-content of the air is high, shrinks when it is low, and keeps on shrinking with the passage of time. Old or processed film can provide no clues whatever as to the accuracy of the perforating process.

Nitrate Film Shrank Severely

Certain samples of nitrate film of very ancient vintage reveal *apparent shrinkages* in excess of 1% in length, but we cannot be sure that the films in question really shrank so much—we do not know what the original perforation pitch may have been. But we do know that nitrate film shrank much more badly than modern triacetate stock, and in a more irregular manner.

The irregularity of shrinkage is easily discovered by projection with a mechanism specially modified to increase the length of film between the intermittent sprocket and the projector aperture, inasmuch as shrinkage registration errors add up algebraically, sometimes cancelling one another and sometimes stacking.

As all old-timers in the projection craft remember, nitrate film had undergone considerable improvement since the earliest days of the art. Although triacetate film is better in many ways, nitrate was pretty good stuff at the time acetate supplanted it. After five years of storage under good conditions of temperature and relative humidity (78° F and 60% RH), processed positives on the best nitrate stock shrank longitudinally about 0.6%. Ordinary projection use with repeated shipping and storage intervals under diverse conditions undoubtedly accelerated the shrinkage of nitrate and may have aggravated irregularities in the rate of shrinkage, but unless very old or much abused in use, nitrate theatre-release prints gave fairly good screen results.

It is doubtful, however, that the shrinkage characteristics of nitrate release stock would permit this type of film to be used with satisfactory results under modern conditions of high-intensity widescreen projection, or in large drive-in theatres. For these conditions triacetate stock is preferable.

Normal and Low-Shrinkage Acetate

Triacetate release-positive film, processed and stored at 78° F and 60% RH, shrinks only 0.1% in a 5-year period. Continued storage does not appear to result in appreciable additional shrinkage.

Triacetate negative stock shrinks less than 0.2% after 3 years of storage at 78° and 60% RH; and no further shrinkage normally occurs. The sharpness of modern color-film prints is largely due to the low shrinkage of triacetate negative, for large and irregular shrinkages in the separation masters, duplicate negatives, imbibition positives, etc. might result in misregistrations which would blur the images.

Special low-shrink base may not be quite tough enough to withstand the wear and tear and intense heating of the projection process, but it is now nearly always used for duplicating films as well as for camera negative stock to insure rocksteady photographic images in the final prints.

Since there are 16 frames per linear foot of standard 35-mm film, the frame pulldown distance amounts to three-quarters of an inch. And with 4 sprocket holes per frame, the standard perforation pitch must be one-quarter of three-quarters of an inch, namely, 0.1878" between corresponding edges of two adjacent perforations. In actual practice, however, a slightly smaller perforation pitch has been agreed upon and universally used.

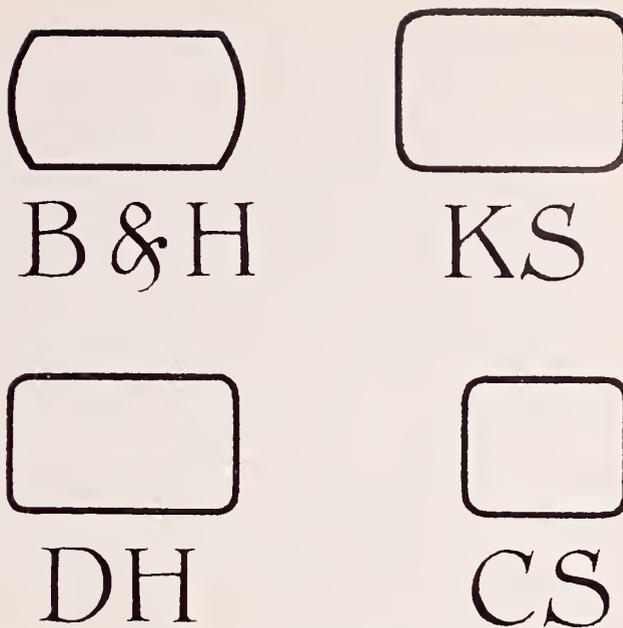


Fig. 1 — Shapes of film perforations in present-day use. The B & H (Bell & Howell) perforation, oldest of the four, is the preferred type of perf. for most negative film. It was also universally used for positive stock until the mid-1920's, and continued to be used for Technicolor prints until about 1950.

The KS (Kodak standard) rectangular perforation was devised by J. C. Jones of Eastman Kodak in 1923, and put into use almost at once for release-print stock. The improved wearing qualities of the KS perf. is due to the rounded corners; and the increased height (from 0.073 inch to 0.078 inch) eliminated the mechanical interference experienced with B & H perfs. in one make of projector.

The DH (Dubray-Howell) perforation was proposed in the early 1930's to provide a long-life perforation which could be used in precision step-printers designed for B & H perfs. The DH perf. was adopted for color prints in 1946, and resembles the KS perf. except for a height corresponding to that of the old B & H perf. The CS (CinemaScope) perforation is a reduced-width version of the DH perf. The use of CS-perforated prints requires the narrow-tooth sprockets now used almost everywhere.

This diagram and notes on perforations suggested by "Pin Registration" by A. C. Robertson, *JOURNAL OF THE SMPTE*, Feb. 1963.

"Long" and "Short" Pitches

The regular "long" pitch for the perforations punched in all positive stock and some negative and intermediate-film stocks is 0.1870". A special "short" pitch of 0.1866" is also available for negative films. Short-pitch negative gives optimum results in continuous-type printers having curved exposure gates to compensate for the average amount of negative shrinkage encountered in the days of nitrate film.

Although the maximum amount of shrinkage encountered in triacetate theatre-release prints is not very great, certainly not much greater than about 0.4%, projectionists have sometimes wondered whether this normal shrinkage is deleterious to the quality of the picture on the screen. The answer is definite: it is not harmful in any way and cannot be perceived on the screen so long as the amount of shrinkage, whatever it may be, is uniform. Neither will there be any mechanical difficulties in the running of the film. The 0.943"—and 0.945"—diameter intermittent sprockets in general

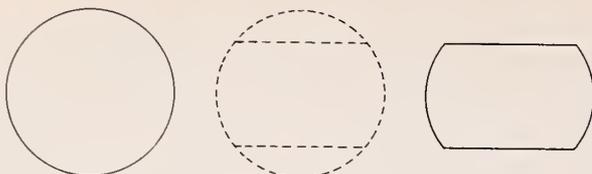


FIG. 2—Evolution of the B&H perf.
Old-style circular perforation → *B&H negative perforation*

use can accept film shrinkages up to 0.96% and 0.75%, respectively.

If, however, there are *variations in shrinkage*, sometimes greater and sometimes less than the mean value, the picture will weave vertically, or “dance,” in a random fashion. Variations in shrinkage result in corresponding irregularities in perforation pitch, and these, in turn, produce irregularities in frame registration even though the intermittent movement of the projector is functioning perfectly.

Picture-Jump Tolerance

It is ironic that severe demands of mechanical precision must be made of a material as pliant and dimensionally variable as plastic motion-picture film base. On the basis of accepted Geneva-intermittent tolerances, the permissible limit of frame misregistration is 0.0004” (a vertical “jump” of 1/5 inch on a 36-foot screen). This is, of course, nearly three times the allowable error in film perforating (0.00015”), but often below the shrinkage error over the 3 to 5 frames of film between the intermittent sprocket and the projector aperture.

To repeat: a uniform degree of shrinkage through substantially long lengths of film produces no visible effects on the screen. It does not cause the picture to be unsteady. The trouble is caused by frequent variations in shrinkage; *and the longer the length of film between the intermittent sprocket and the aperture, the more pronounced is the weaving of the picture from this cause.*

How Weave is Caused

The distance from a point in one frame of standard 35-mm film to the corresponding point in the succeeding frame is 4 times the perforation pitch. This amounts to a frame distance of 0.7480” in unshrunk long-pitch (0.1870”) positive stock. Assuming that the shrinkage in a certain release print varies in an irregular manner from 0.2% to 0.4%, the frame distance will vary from 0.7465” to 0.7450”. If there are 3 frames between the intermittent sprocket and the aperture, misregistration can be any amount up to the limiting value of 3 times the difference in frame distances, namely, 0.0045”, *fully 11 times* the intermittent-movement jump tolerance. If sprocket and aperture are separated by 5 frames, the misregistration can have any value up to 0.0075”, or *nearly 19 times* the jump tolerance.

The 0.2%—0.4% shrinkage variation employed here by way of illustration is not meant to suggest that variations of this magnitude are common. They are not. But it seems probable that smaller variations in shrinkage are frequently responsible for small-range picture weaving which cannot be accounted for by any known mechanical factors in the projector mechanism.

The print, however, is not always the culprit. Similar

picture-weaving effects may be produced by printing from badly shrunken negatives. The effect of severe negative shrinkage is easily distinguished when the printer used was of the “continuous” type in which the negative and positive raw stock are pulled continuously (without intermittent motion) past an exposure slit. In such a case the vertical dimension of the projected picture expands and contracts in an irregular manner to produce an unusual, but characteristic, weaving effect. A projector cannot give this peculiar effect.

Ancient nitrate negatives used for printing reissued “screen classics” and TV “late show” releases are the most likely to give unsteady images on the screen and a tremendous flutter in the accompanying optical-track reproduction.

Effect of Non-Uniform Conditions

Because the original structure and composition of film stock is absolutely uniform, and because film is always manufactured under uniform conditions of temperature and relative humidity, the finished product may be expected to undergo its normal shrinkage in a uniform manner. That it does so even in spite of very non-uniform conditions of subsequent treatment, storage, and use is indicated by the extreme rocksteadiness of most professionally produced motion pictures. It is the exceptions that particularly interest us.

As a matter of fact, the exceptional nature of shrinkage variations large enough to produce visible vertical dancing of the projected pictures leads us to look for differential effects in the conditions to which some, or perhaps most, theatre-release prints are subjected. It is well known that moisture and heat have the greatest effect upon the dimensions of cellulose-ester films, but release prints are also subjected to processing solutions, protective waxes or lacquers, film cleaning solvents, and the inevitable oil and grease which comes off the projectors.

It is believed that the normal gradual shrinkage of film is caused by the slow loss of plastic solvents from the base material. The loss of these substances is accelerated by heat and moisture. Short-term exposure of film to excessively dry or moist air produces changes which are reversed, with some degree of restoration of the film to its original physical condition, by long-term storage under the ideal temperature and humidity conditions which prevailed during its manufacture. Inasmuch as weeks or months of such storage make it out of the question for heavily booked release prints (periodically subjected to intense heat) these films may shrink rather rapidly and possibly in an irregular manner.

Projector Design Important

Contrary to popular belief, prolonged exposure of film to excessively moist air hastens shrinkage. So long as the air remains humid, the film swells slightly and remains pliant and soft, and the gelatine emulsion is then especially liable to destruction by the growth of molds. But when taken into normally dry air, the effects of solvent loss, apparently hastened by the moisture to which the film was previously exposed, begin to show up. The film will be found to have shrunk more than films of similar age not subjected to high humidities.

If variations in shrinkage cannot be entirely prevented by the most intelligent care which we are able to accord release prints, then it behooves the designers of motion picture projectors to position the intermittent sprocket as close below the film aperture as possible to minimize the shrinkage-variation weave of the projected pictures. A 2-frame sprocket-to-aperture film distance is entirely

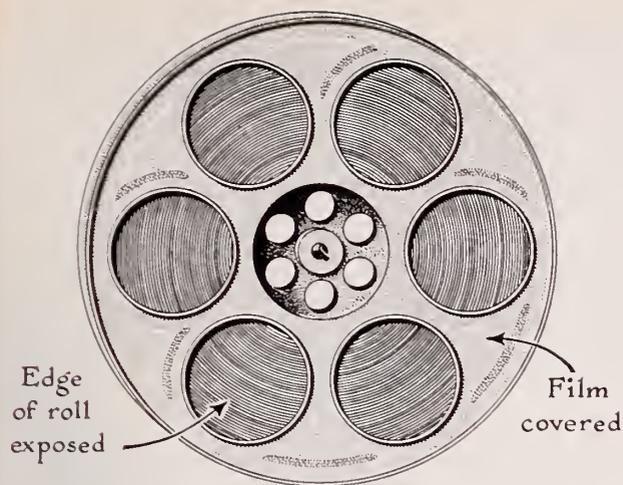


Fig. 3 — In exploring the possible causes of weave-producing variations in film shrinkage, the effect of the flange design of shipping reels is mentioned in the accompanying article. Is the film more quickly affected by humidity and heat where exposed by the large holes than where covered by the solid portions of the flanges? Other suggested causes of shrinkage variations are oil mottle on film, deposits of edge-wax, and uneven or careless rewinding of the film for shipment or storage.

feasible even though all presently used theatre projectors allow a longer length of film to exist between the sprocket and the aperture.

This suggestion is nothing new to the manufacturers of cameras, optical printers, and background projector heads. They wisely position their claw pulldowns and registration pins very close to the aperture, thus practically eliminating the annoying effects of any shrinkage variations which may be present in the films.

Possible Causes of Variation

It is possible that variations in the *tightness of the film* in a roll may induce irregularities in shrinkage by virtue of uneven mechanical strain. Stresses of this nature may be very significant during the natural aging-shrinking period in the life of the film. For this and other reasons the projectionist should make certain that his projector takeups and bench rewinders are properly aligned and wind up the film smoothly under reasonably uniform tension.

Film which has been roughly or irregularly rewound on hand rewinders (as during inspection and print repair) should never be stored or shipped out until after it has been smoothly rewound on a low-speed motorized machine having accurately aligned elements. The exchanges' suggestion that the reels of film be returned without rewinding after their last showing is a very good one, as projectors in good working order wind up the film very uniformly. Nevertheless, many projectionists refuse to use shipping reels in the projectors, admittedly a dangerous practice when the shipping reels are badly bent and battered out of shape. It is clearly the responsibility of the film exchanges to provide good reels.

It is also possible that the flanges of metal shipping reels permit a differential "conditioning" of film by exposing the edge of the roll to free circulation of air through the large holes in the flanges, and covering the edge of the roll under the solid sections. The writer personally believes that this could be a significant factor only when the reels of film are removed from the shipping cases in an unusually hot and humid ("quick-acting")

atmosphere. In any case, film should be wound on a core as a bare roll and placed in a metal can for long-term storage under the conditions recommended in the booklet "Storage and Preservation of Motion Picture Film" (Eastman Kodak Co., Rochester, N. Y., 50c).

Still another possibility is that variations in the distribution of projector oil, grease, lubricating wax, etc. adhering to the film is the cause of some shrinkage-variation in used release prints. Moisture presumably passes into the film more slowly through oil than when unobstructed. And if the film is subsequently cleaned with carbon tetrachloride, Freon compound, or methyl chloroform, possible extra loss of film solvents with the removed oil and dirt might conceivably alter the pattern of shrinkage variations. This is a matter worthy of study by film technologists because we know so little about the effects of oil, wax, and cleaning fluids on film shrinkage.

Booth "Treatment" of Film Tabu

Except for the cleaning of short rolls of trailers and announcement titles in the projection room with a pad of soft cloth moistened with film-cleaning fluid, no attempt should be made by the projectionist to undertake an extensive and tricky cleaning job which is the responsibility of the exchange supplying the print. Careless cleaning, with failure to renew the soiled pad frequently, may scratch and mottle the film. The Kodak booklet mentioned previously gives directions for cleaning film manually.

Never — and we mean *never!* — "humidify" or "steam-treat" motion-picture film! With the best of intentions a few misguided projectionists have been known to pass film through a steaming arrangement while rewinding it and to store the reels in bins having wet blotters or open pans of water. The idea, of course, is to "restore the moisture" expelled from the film during projection. These are not approved methods for "restoring moisture" even if that expedient were deemed desirable.

Treating film with steam will ruin it. Storing it in humidifiers or over water will hasten shrinkage, possibly shrink it irregularly if the film is put into a moist atmosphere while still warm from the projectors, spot the emulsion, and lay the film open to fungus attack.

Other Causes of Weave

Examination of picture quality in theatre after theatre indicates that sidesway originating in flat-gate projectors, especially in CinemaScope anamorphic projection, is a more serious matter than the very small amount of vertical unsteadiness which in most cases is visible only from a vantage point relatively close to the large theatre screen. Such unsteadiness is only rarely troublesome, but it would be best not to have any unsteadiness at all. Naturally, there is nothing the projectionist can do to correct matters when a jumping picture is *printed on the film*, as is sometimes the case with technically unpretentious pictures of foreign origin and with reissues printed from old negatives.

Although there is some evidence that shrinkage variations in well-worn prints is rather common, it would be a big mistake to assume that all random small-range vertical weavings of projected pictures are due to this cause alone. If the intermittent movement of the projector is in good condition, and the teeth of the sprocket unworn, similar effects can be produced by uneven gate tension, the wrong amount of gate tension, a loose intermittent-sprocket shoe, the bad practice of making excessively large upper and lower film loops, torn or badly abraded perforations, and an unsteady pedestal or support for the projector. **IP**

National Carbon Tour Shows Carbon Mfg. Technology

By Ray Gallo

We had the pleasure, recently, of taking a behind-the-scenes look at how arc carbons are made in America's only projector carbon plant, the Fostoria branch of National Carbon Co. (a division of Union Carbide Corp.)

With our hosts, J. W. (Bill) Cos-

by, marketing manager, and Philip H. Freeman, sales manager of the arc carbon products, we flew with a group of trade press editors and several key personnel executives from National Carbon Co. to Fostoria and Parma, Ohio in a Union Carbide

(Please turn to page 14)



ON THE NATIONAL CARBON TOUR are shown J. W. (Bill) Cosby, National Carbon marketing manager; C. J. Chapman, vice president of marketing for National Carbon; Ray Gallo, eastern representative for INTERNATIONAL PROJECTIONIST, and Philip H. Freeman, sales manager for carbon arc products.

The History Of The Carbon Arc

In the year 1801 an English scientist, Sir Humprey Davy, produced a brilliant light between two carbon rods connected to a high-voltage galvanic battery. He named his discovery "carbon arc." But because the galvanic battery was the only source of continuous electric current, any commercial exploitation of the brilliant source of radiant energy was precluded. Three-quarters of a century later, Charles F. Brush, with the invention of the power-driven dynamo, applied the carbon arc as an economically feasible source of illumination.

The high-intensity carbon arc in these days is so taken for granted as

a light source for screen illumination that little thought is given to what actually creates the light.

The National Carbon Co. (a division of the Union Carbide Corp.) was host to the trade press recently. The trade press representatives visited National Carbon's headquarters in Cleveland, to the Fostoria plant, where they manufacture the carbons, and Parma laboratory, a carbon arc research center.

The carbon arc is the preferred source of light for applications requiring extremely high brilliancy. It can produce the highest useful brightness

(Please turn to page 12)

National Carbon Company

Arc Carbon Development Personnel

- W. J. Spry, Development Manager, Fostoria Laboratory
 B. S. Physics, University of Rochester;
 Ph. D. Nuclear Physics, University of Rochester.
 Company Service—9 years.
 Research Physicist, Research Group Leader.
 Fields of Special Competence: Solid state physics—carbon and graphite technology.
 Member of American Physical Society.
 E. L. Piper, Division Manager for Product Development
 B. S. Physics, Case Institute of Technology;
 M. S. Physics, University of Illinois.
 Company Service—12 years.
 Research Physicist, Research Group Leader, Development Group Leader.
 Fields of Special Competence: Classical physics—carbon and graphite technology.
 Member of Cleveland Physics Society, Cleveland Astronomical Society.
 J. Weinard, Division Manager for Laboratory Services and Materials Evaluation
 Licencie-es-Science-Physique, University of Nancy, France; M. S. Physics, Ph. D. Physics, University of Saarbrucken, Germany.
 Company Service—7 years.
 Development Engineer, Development Group Leader.
 Fields of Special Competence: Atomic physics—spectroscopy and X-ray—carbon and graphite technology.
 Member American Optical Society, American Physical Society, Society of Applied spectroscopy. Committee Member of ASTM.
 W. R. Lauzau, Development Group Leader
 B. S. Chemistry, Niagara University; M. S. Chemistry, University of Toledo.
 Company Service—12 years.
 Development Engineer.
 Fields of Special Competence: Chemistry—carbon processing—high temperature compounds—arc carbons—optics.
 Member of Space Simulation Subcommittee of ASTM, American Chemical Society, American Institute of Chemists, American Ceramic Society.
 J. T. Cedargren, Development Engineer
 B. S. Mechanical Engineering, Ohio State University.
 Company Service—3 years.
 Design Engineer.
 Member of Ohio Society of Professional Engineers, Associate member of ASME.
 L. H. Matthews, Development Engineer
 B. S. Physics, Washington and Jefferson College.
 Company Service—1 year.
 Fields of Special Competence: Spectroscopy and X-ray.
 M. R. Riek, Development Engineer
 B. S. Chemical Engineering, Fenn College.
 Company Service—4 years.
 Fields of Special Competence: Illuminating carbons.
 W. W. Lozier, Consultant
 A. B. in Physics from DePauw; Ph. D. in Physics from University of Minnesota; additional studies at Princeton and Columbia.
 Fields of Special Competence: Arc and gas discharge phenomena—illuminating carbons—arc image furnace—re-entry studies.
 Member of American Physical Society, Society of Motion Picture & Television Engineers, Illuminating Engineering Society.

Marketing Personnel

- C. J. Chapman, Vice President, Marketing
 L. F. Granger, Advertising Manager
 J. W. Cosby, Marketing Manager, Arc Carbon Products
 P. H. Freeman, Sales Manager, Arc Carbon Products
 P. D. Ries, Manager, Engineering Services, Arc Carbon Products
 W. R. Kraft, Staff Assistant, Arc Carbon Products

Arc Carbon Product Sales Engineers

- W. T. Brenner
 R. D. Brissett
 E. A. Bowen
 C. W. Handley
 S. Morley, Jr.
 J. C. Naughton
 D. P. White
 C. E. Hoppberger
 V. B. Hoynes
 J. D. Johnson
 G. H. Mayer

From Union Carbide International Co.

- O. B. Rendahl, General Sales Manager, Carbon and Graphite Department
 R. Raya, Area Sales Manager
 M. R. Null, Senior Scientist

From J. M. Mathes Inc.

- Gordon Dille, Publicity Account Executive
 J. E. Jamison, Art Director
 D. T. Meade, Assistant Account Executive



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says **SID MORLEY**
National Carbon Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at National Carbon's plant in Fostoria, Ohio, projector carbons move on to an automatic resistance test, where a direct reading instrument measures in ohms-

per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, National Carbon utilizes today's most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!

Contact
Mr. National Carbon

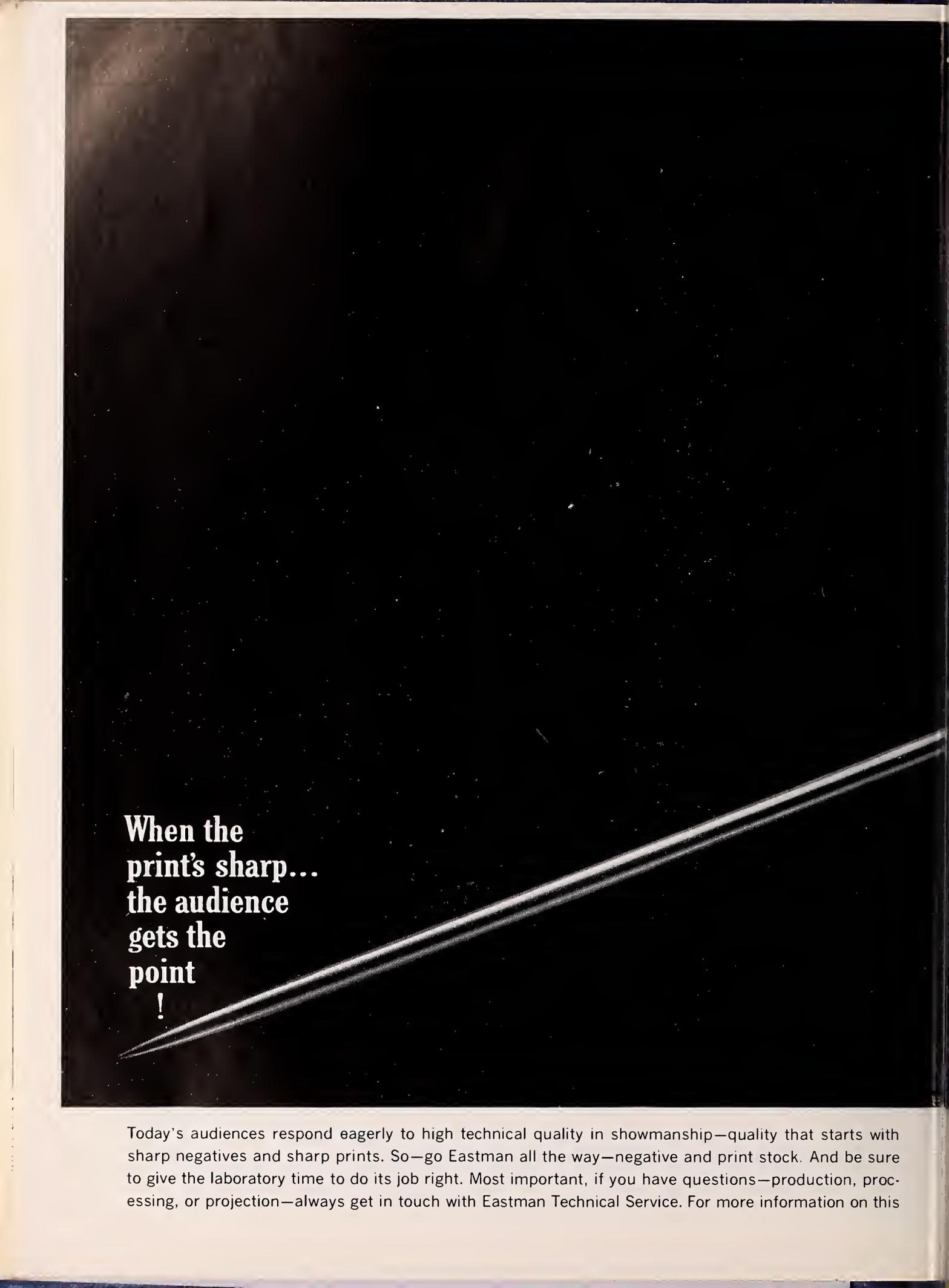


“National” and “Union Carbide” are registered trade-marks for products of
NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.

In Canada: Union Carbide Canada Limited, Toronto

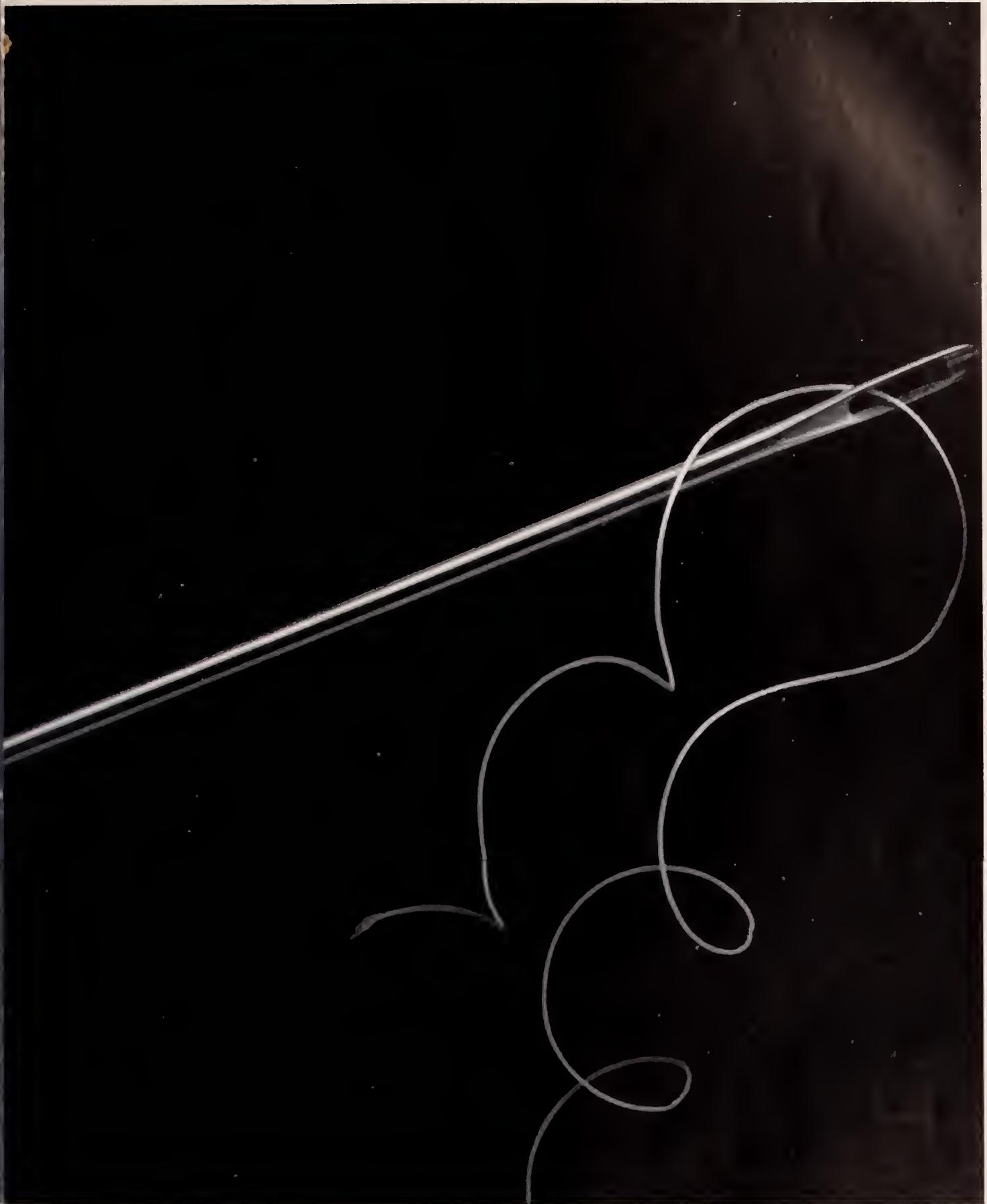




**When the
print's sharp...
the audience
gets the
point**

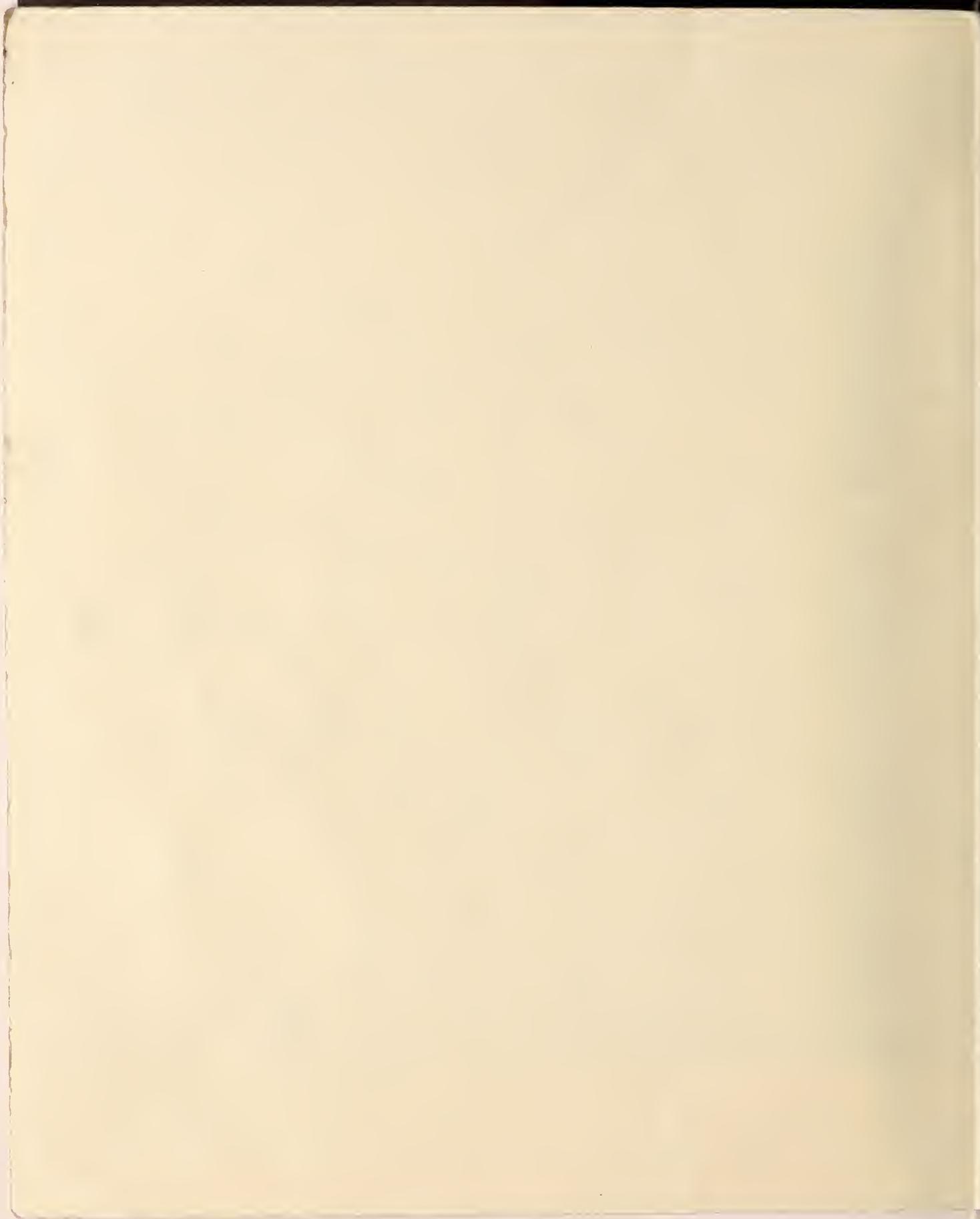
!

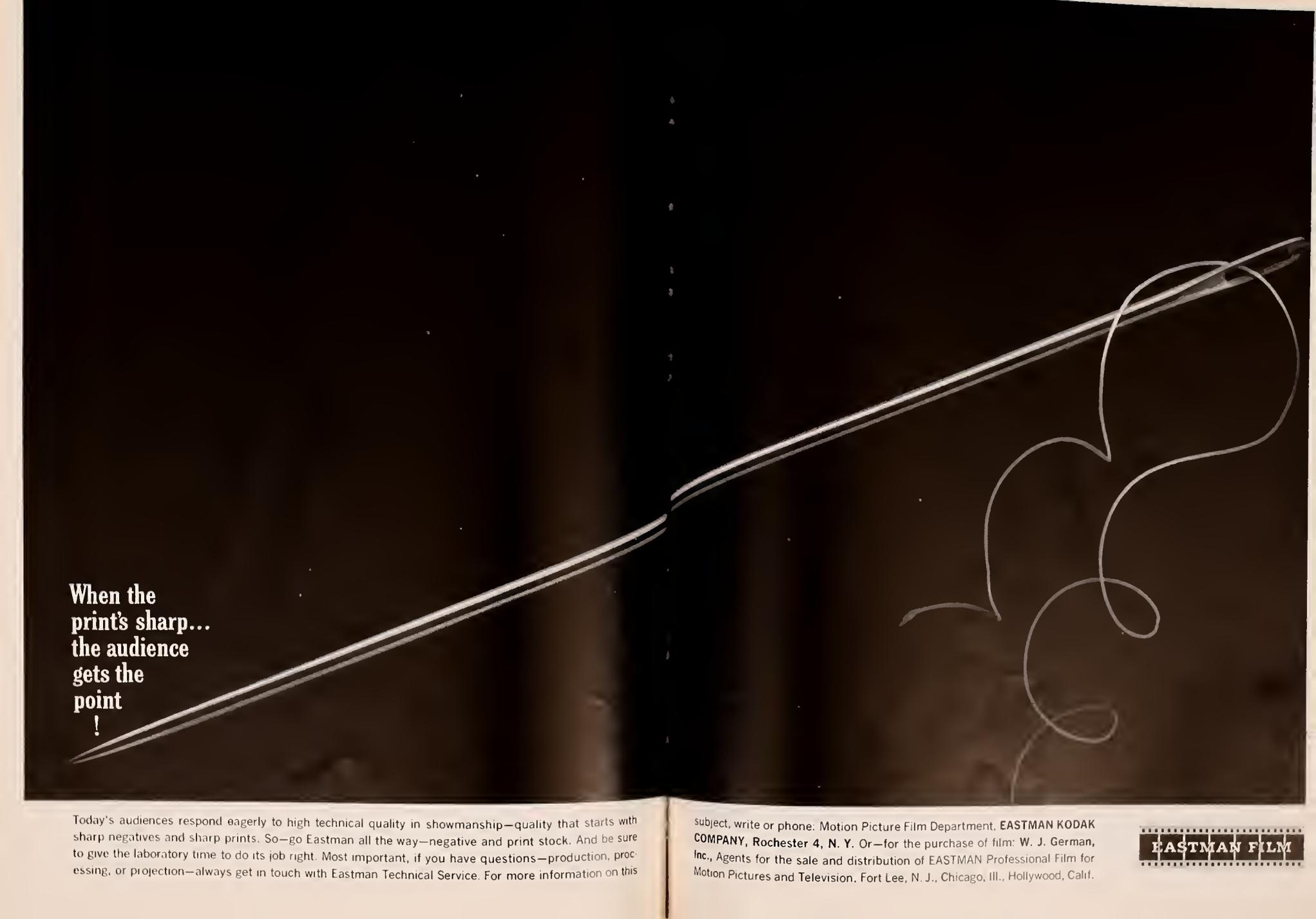
Today's audiences respond eagerly to high technical quality in showmanship—quality that starts with sharp negatives and sharp prints. So—go Eastman all the way—negative and print stock. And be sure to give the laboratory time to do its job right. Most important, if you have questions—production, processing, or projection—always get in touch with Eastman Technical Service. For more information on this



subject, write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.**, Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television. Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.







**When the
print's sharp...
the audience
gets the
point
!**

Today's audiences respond eagerly to high technical quality in showmanship—quality that starts with sharp negatives and sharp prints. So—go Eastman all the way—negative and print stock. And be sure to give the laboratory time to do its job right. Most important, if you have questions—production, processing, or projection—always get in touch with Eastman Technical Service. For more information on this

subject, write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.**, Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television. Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.

EASTMAN FILM



Extrusion of hollow arc carbon from a hydraulic press.



Arc carbons cut into lengths for further processing.



Hand placement of arc carbons into saggars for oven baking.



One of many visual inspections during arc carbon manufacture.

HISTORY *from page 8*
of any known artificial light source, and provides a color quality matching that of sunlight.

The brightness of the high-intensity arc results from a combination of high current density (resulting from a high concentration of electrons in the arc stream) and an atmosphere on the positive crater region that is rich in flame materials volatilized from the core in the positive carbon. As the carbon burns to form a crater, the core is exposed to the extreme arc temperatures in excess of 10,000 degrees F., approximately that of the sun's surface.

The Story of Fostoria Know-How

As is true of any quality product, the manufacture of arc carbons begins with careful selection and preparation of raw materials.

In the extrusion operation, carbon is squeezed out by the pressure of an hydraulic ram.

At the other end of the 70-foot run, lengths of carbon are cut and checked for size. This is but one of approximately 60 quality control inspections the arc carbons will undergo during their manufacture.

Loaded saggars are next placed in huge gas-fired baking ovens, and the lengthy baking cycle begins. A temperature in excess of 1800 degrees F. is reached, which fully "bakes" the carbons.

The longer lengths of carbon are then cut to more nearly their finished size, and several more inspections are made, including a visual check. Also very important is the straightness of the arc carbon, and every one is passed under an accurately-positioned guage, with those that are only a few thousandths of an inch out of alignment rejected.

The carbons are then baked again briefly to set the core material, and the positive carbons undergo X-ray examination that detects any core flaws.

As part of its continuing technical service to motion picture exhibitors, National Carbon also evaluates other light sources that are introduced from time to time and reports its findings. The carbon arc, however, continues to outperform all other sources of screen illumination, and still holds the greatest promise as the most brilliant light source of the future.

The Parma Research Story

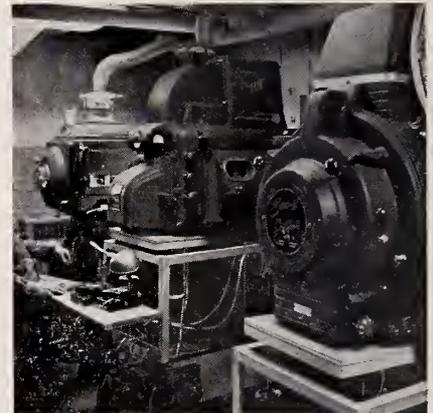
To project motion pictures, or to illuminate motion picture studios, it is necessary to collect the light emitted by the carbon arc and project it where needed. Research devoted to improving the process requires study



A close check of arc carbon diameter prior to further processing.



All arc carbons must pass stringent straightness tests.



Projection booth is operated to test carbons under actual theatre conditions.



Recording spectroradiometer automatically measures and charts color spectrum.

of the arc itself and of the optical system used to project the light. Thus there are facilities at the Parma research laboratory of National Carbon to measure the brightness and color of the arc crater, as well as for projecting motion pictures in a theatre-size auditorium to test the complete system under normal operating conditions.

In measuring the color of a carbon arc, light from the crater is received on a diffusing plate in front of the slit of a recording spectro-radiometer. Light enters the slit, and a grating inside separates the component colors of the white light that enters. The instrument automatically measures the amount of each color present and records the figures on a chart that shows the amount of energy present at each wavelength throughout the visible spectrum. The light meters seen in the background measure the intensity of the projected beam to determine the distribution efficiency of a lamp's optical system as well as the overall light output.

History of the Carbon Arc

In the earliest days of the motion picture industry, a light source was coupled to a projector for "screen projection for an audience of many people." The initial light source used a block of calcite, but it was soon replaced by the carbon arc. Through the years, technological advances in the art of motion picture production brought developments such as "talkies," adding a sound track to film and creating problems both of quiet studio lamps and of silent projection. The advent of color film increased film density, calling for a source of light to illuminate a scene and project an image through film with only one-tenth the speed of black-and-white film, while matching the color balance of the sun. Drive-in theatres were built with beam throws more than 100 feet long, and wide-screen systems increased lateral dimensions to as much as 150 feet. Even with all projected light passing through an aperture the size of a postage stamp, the high levels of screen brilliance were made possible by the carbon arc meeting these and other challenges. **IP**

Projectionist Develops New Device for Carbon-Saving

NEW YORK — The Master carbon saver has been developed by an IA projectionist "who spent 50 years in a projection booth." Distributed by Master Specialty Products, 200 West 72nd St., New York 23, N. Y., the carbon saver is also available at the-

atre supply dealers.

Decreasing present projection cost by decreasing carbon waste with the Master saver is claimed, allowing the projectionist to "relax with freedom from fear of show interruption or arc disturbance."

The carbon saver is made of high grade heat-resistant steel, containing no springs, screws, bolts, nuts or carbon grinding, the manufacturer states. The carbon is tapped into the carbon saver by "precision taper."

The carbon saver is made for

Suprex non-rotating arc lamps and also for the rotating type, designed to feed itself into the positive contacts. The Master carbon saver is available for delivery on the Strong high intensity rotating, Ashcraft Super Power rotating, Super Cinex, Core-Lite and Peerless Hy-Candescent rotating arc lamp. Suprex universal non-rotating type for high intensity. Sizes 6, 7, 8, 9mm for the Suprex type and 10, 11, 13.6 for the rotating lamp. \$3.50 each; 13.6mm, \$1.50 each. **IP**



HIGHEST SPEED IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. High light uniformity and less light loss on the screen—the whole screen—are typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

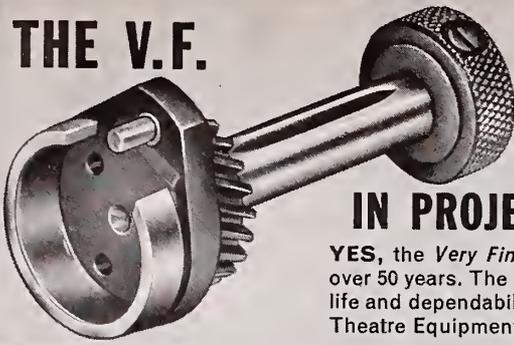
- Wire sharp contrast
- Uniform illumination
- Crystal clarity
- Wide range of focal lengths
- Sealed construction



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS

Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.

THE V.F.



SUPER
LaVezzi
SERVICE
REG. U.S. PAT. OFF.

IN PROJECTOR PARTS

YES, the *Very Finest* in Projector Parts for over 50 years. The ultimate in precision, long-life and dependability. Available through your Theatre Equipment Dealer.

LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—378-1636



NATIONAL CARBON

from page 8

plane. We spent a very pleasant and educational two days inspecting development and research laboratories.

This was the first tour of arc carbon production and processing techniques ever extended to the motion picture press. To this reporter the revelation was a very illuminating experience, and I, who has spent the greatest part of my career in the motion picture trade press industry, feel I have learned a great deal by it.

Basic research and work on the physics of carbon arc as a light source has become a "perfect science" with National Carbon Co.'s technical staff in Fostoria and Parma. In addition about 1,000 plant workers in the actual processing steps of making a studio or theatre arc carbon there are over 350 scientists engaged in research and development in the U. S. operation alone. Several other plants and laboratories in other parts of the country and overseas are engaged in various other by-product activities. In fact, Union Carbide Corp. and its many subsidiaries, including the international division, represent an operation employing nearly 150,000 people world wide. About 10% of this figure is engaged in arc carbon product activities used extensively in motion picture studios, laboratories, and theatres and by the photographic industry.

American "Know-How"

Is it any wonder then, that the motion picture public today looks to the American "know-how" of American motion picture product manufacturers to supply the best possible technical results in their screen attractions. As Bill Cosby, our co-host stated: "Ever since the motion picture industry's inception, National Carbon has been a leading supplier of arc carbons, and through the years it has played a major role in the advancement of

National Carbon Co.

Production Personnel

- C. E. Stollenmeyer, District Works Manager
- J. G. Kemp, Head, Product and Processes Control Laboratory
- M. J. Scharf, Assistant Head, P and P Control Laboratory
- R. F. Burden, Group Head, Control Engineering
- L. E. Wentzke, Assistant Plant Manager, Production

Development Personnel

- Dr. W. J. Spry, Development Manager, Fostoria Laboratory
- E. L. Piper, Division Manager for Product Development
- W. R. Lauzau, Development Leader

Research Personnel

- J. C. Bowman, Director of Research
- Dr. W. W. Lozier Assistant to the Director of Research

**How electrical noise is produced . . .
calculated . . . measured . . . controlled**



Here are the basic facts about electrical noise—how it originates in circuits . . . what terms describe it . . . how to measure it . . . how to design circuits to minimize its undesirable effects. The physical nature of the various sources of noise are clearly described, including such sources as thermal agitation or resistance noise . . . shot noise in vacuum tubes and semiconductor junctions . . . noise from spontaneous emission of electromagnetic radiation . . . and noise in gas discharges. This practical book also explains auxiliary mathematical techniques, and discusses the relation of signal and noise in various types of communication systems. For ease in use, the simple tuned circuit associated with a device for measuring average power is made the basic tool for analyzing noise.

**ELECTRICAL
NOISE**

270 pages, 6 x 9
105 illustrations
\$10.00

By **WILLIAM R. BENNETT**

Data Communications Consultant, Bell Telephone Laboratories, Inc.

CONTENTS

1. General Properties of Noise
2. Thermal Noise
3. Distribution of Magnitudes in Noise Sources
4. Noise in Vacuum Tubes
5. Noise in Semiconductors
6. Noise in Electromagnetic Radiation
7. Noise-generating Equipment
8. Noise Measurements and Techniques
9. Design of Low-noise Equipment
10. Application of Fourier Analysis to Noise Problems
11. Noise in Communication Systems

Each chapter in this helpful book begins in a simple, practical manner and works toward more complicated examples. For example, properties of thermal noise and its relation to black-body radiation are deduced from basic laws of thermodynamics and statistical mechanics. You also will find a clear treatment of elementary quantum mechanics in discussions of the maser and of noise in semiconductors. And, in describing noise properties of various devices, the book fills in your working background with basic facts on junction diodes—transistors—gas discharge tubes—klystrons—traveling wave amplifiers—and others. Both independent and dependent noise sources are analyzed.

In addition to the standard theory of noise figure and its significance, a treatment is given of the more comprehensive Haus-Adler theory of noise measure. Throughout, the book stresses the universality of noise-like phenomena. Noise formulas for diodes and transistors; noise generation to meet specifications; design of amplifiers for minimum noise effects—these and many other topics are covered. A comprehensive review of noise in the various methods of signal transmission such as amplitude modulation . . . frequency modulation . . . and the different kinds of pulse modulation is included.

INTERNATIONAL PROJECTIONIST

Post Office Box 6174

Minneapolis 24, Minnesota

Please send me a copy of "Electrical Noise" by William R. Bennett. (I enclose \$10.00.)

Name

Address

City & State

quality motion picture projection."

Of all the products used in the operation of a motion picture theatre, projection carbons are perhaps the most complex and least understood by the average exhibitor. In fact he often is reluctant to spend a few more cents for quality when it could mean the difference in a "perfect picture on the screen" and one that just misses.

Many times the proper size trim, along with the correct projection equipment can spell the difference between a successful theatre operation and one which is never profitable. After all, good carbons cost very little more than paper towels, and while both are necessary to theatre maintenance, you can never project a picture with paper towels. No matter how much a picture has cost to produce nor how perfect its photographic technique it must always be projected through an amperture that needs the finest steady screen illumination to reproduce all that went into the production. And with more color being utilized today we need to project more light on a larger screen.

Only the best will create the desire of people to go back into any motion picture theatre. Think more about this, Mr. Theatre-owner, and then listen a bit more to the expert advice of your projectionist when he suggests what to do "up in your booth." I wish you could have been with me on this tour for you would have been convinced that it pays to put "a better lighted picture" on your screen.

Inspection Tour Pictured

Elsewhere in this issue we report the inspection tour with photographs and the story of how carbons are made. A list of those who are in charge of the National Carbon devel-

opments and research and their technical backgrounds is being printed with this report.

Any authorized theatre equipment supplier with whom you deal on projection carbons can contact the National Carbon Company sales engineer in your area whenever a screen illumination problem arises in your theatre. The man with the modern test devices kit is always ready and willing to be of service to you. **IP**

Use of 8mm Sound On Upswing, Film Group Reports

Use of small format (8mm) sound motion pictures by business, industry and education appears to be on the upsurge.

A committee of 24 engineers and management personnel representing motion picture equipment manufacturers and users observed that in many quarters there is a substantial commitment to the present 8mm sound format. This commitment will probably continue and grow in the years ahead to meet many customer needs.

"The committee discussed the background from which its work is to be done, and we agreed that the work must stem from the present standardized 8mm system with magnetic sound record. Important commitments have been made to this system and undoubtedly will continue to be made in the years ahead. It is serving many customer needs today, and the committee believes that it will continue to serve such needs in the years ahead," Prof. Louis Forsdale, chairman of the SMPTE engineering committee, reported.

(Please turn to page 18)

Specialists in Light Projection

CARBONS, INC.

through

Lorraine Arc Carbons
division

PRESENT THEIR NEW



employing the compact Xenon Arc!

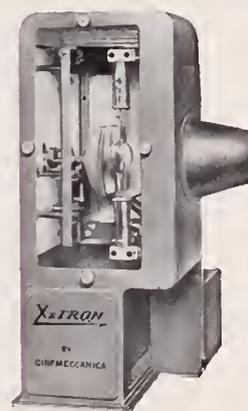
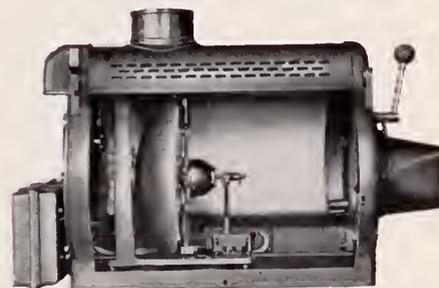
featuring

XETRON LAMPHOUSES

by Cinemeccanica of Milan, Italy, leading matian picture equipment mfgs.

XETRON POWER SUPPLIES

by Christie Electric Corp., makers of the finest power supply units.



XeTRON 900/1600 / 2500 Lamphouse complete with . . . associated optics, heat transmitting, hard front-coated 16" reflector, auxiliary mirrors and starting devices.



XETRON lamphouse with 450 watt bulb. Equipped with 5" reflector and diffuser. Replaces 750-1,000 watt incandescent lamps and provides three times the light flow with Kevin temperature, similar to hi intensity carbon arc.

XeTRON Silicon Power Supply by Christie Electric Corp. Full Warranty for Xenon compact arc bulbs 10B expected from Xetron Power Supplies by Christie Electric Corp.

Literature on Request
Franchise Dealerships Available

XETRON

division of CARBONS, Inc. Boonton, N. J.

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

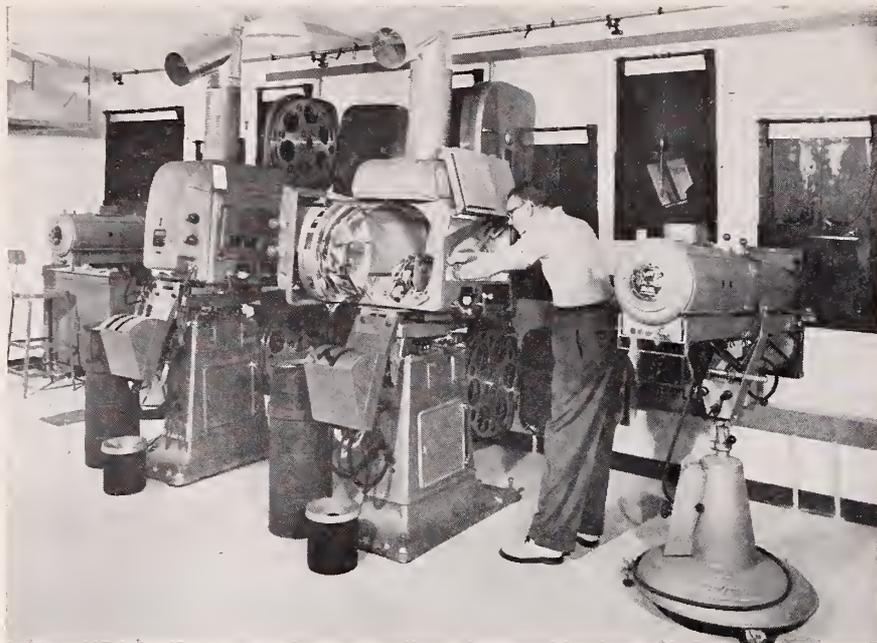
The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by

MASTER SPECIALTY PRODUCTS

200 West 72nd St., New York 23, N. Y.



Fred Warendorp, projectionist, is shown with the two Strong Constellation projection arc lamps and two Strong Trouper carbon arc follow spotlights installed in the new Mai Kai ("The World's Most Beautiful Theatre in Livonia") which opened recently in the Detroit suburb at Plymouth and Farmington Roads. Stage attractions and orchestra, as well as the screen-fare, were featured in advertising, as was the "giant screen" and direct radio broadcasts. Literature on this type of equipment will be sent to any reader addressing The Strong Electric Corp., 31 City Park Ave., Toledo 1, Ohio.

New Motion Picture Technique May Bring Complex Developments for Projectionists

European movie goers are being treated to a new "avant-garde" motion picture technique in which live actors play their roles side-by-side with their own or other actors' filmed images. It's of interest to the IA and projectionists generally because it shows how far their craft might progress in the years to come.

Frantisek Pilat, Czechoslovak Film Corp., Praha, Czechoslovakia, has described "Magic Lantern" ("Laterna Magica"), a new art entertainment form in which, for example, a living ballet dancer might dance with a film partner. According to Pilat, the actor's action is "inseparably combined with the motion picture," giving the impression that both are live performers.

Pilat also described "Polyecran," another new art form, which involves simultaneous exposure to the viewer of eight screens, each carrying a different image tied in with the central theme of the artistic presentation.

According to Pilat, "The new technology of wide-angle and panoramic motion pictures renders it impossible for the artists to use a quick composition of shots, large close-ups or rapid panning movements of the camera, i.e. to take advantage of the principal and specific means of motion picture art. Experience has shown, that the more the spectator is surrounded by the projection screen, the narrower is the choice of dramatic material, which can be reproduced with the aid of these new technical devices.

"In order to eliminate these disadvantages of wide-angle motion pictures, extensive experiments have been carried out by artists and technicians in Czechoslovakia in an effort to create a new type of film show by means of a simultaneous projection system employing projection screens, which, though variously arranged in space, are in direct connection with one another.

"The screens are of different size and differently inclined towards one another. On to those screens the picture from the film projectors or slide projectors is projected. The picture is accompanied by sound, which is reproduced over loudspeakers placed behind the various screens and also over loudspeakers suitably accommodated in the auditorium. The projected picture, which completely fills the spectator's field of view, creates inter-related impressions and their synthesis produces in the spectator's brain a unified image.

"To suit the action shown, one screen only is sometimes projected upon, the action spreading later gradually to further screens. At other occasions identical pictures are shown on several screens; sometimes the overall picture is on the main screen and the closeups on the flanking screens; black-and-white film is combined with colored film, static projection with film projection, etc.

"Numerous shows produced for 'Polyecran' have proved that it is an unusually adaptable means of expression for a new form of motion picture art. It has also been proved that the spectators, who number more than two million so far, have no difficulties in grasping the artist's aims and the structure of the action or story, even if it proceeds on a plurality of screens simultaneously." iP

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

**PROJECTIONISTS
PREFER
ETHYLOID**
Film Cement For
BEST RESULTS
Available from
Supply dealers
FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

New Screen Design Developments Allow Brighter, Cleaner Projection

Motion picture screens are better today than ever before in the history of the theatre. Not only has the reflecting surface been made brighter but with an increase in gain it has been possible to greatly improve side viewing conditions. Pearlescent pigments are responsible for increased efficiency. These pigments have been available in artificial form for many, many years and now there is available to manufacturers a natural pearl essence of unusually high purity. The lustre of this natural pearl surface not only increases initial brightness gained but the optical performance at wide viewing angles is of a high standard. The unique orientation of the pigments in the plastic mix accounts for this.

Also available on the market today is a surface that has anti-static qualities and which is claimed to repel the attraction of dust. The industry has recognized the dust problem for a long time. Even with the protection of a screen curtain, the picture image is nevertheless exposed all during operating hours to a large volume of air in motion. Dust-laden atmosphere accounts for an average light loss of 10 to 15 percent each year. This, together with normal oxidation, accounts for regular deterioration of the reflecting surface. Now, for the first time, the dust problem can be materially reduced and the efficiency of the reflecting surface maintained for a longer time.

Screen Brighteners

Projectionists everywhere have read with great interest the report of the Motion Picture Research Council on the problems of screen brightness in outdoor theatres. The fact that their investigation showed some 57% of all drive-in theatres surveyed had center screen brightness levels under three foot lamberts comes as no surprise. Indoor standards are 9 to 14 foot lamberts of reflected light, leaving most drive-in screens far short of what is considered a satisfactory level.

There are, however, one or two compensating factors which must be taken into consideration. Firstly, visual acuity, which in simple terms is

the ability of the human eye to perceive detail, increases as the size of the picture image increases. Therefore, the very large size of modern drive-ins is in itself a great help to the eye even though light is lacking. What is known as a satisfactory picture is the result—satisfactory in the sense that the public accepts the presentation without complaint. This should not deter anyone from trying to improve a situation that definitely needs improvement.

Secondly, the usual combination of arc light and a reflecting surface that creates light that is predominantly in the yellow-white part of the spectrum enables the human eye to respond well. Hardy and Perrin in their "Principles of Optics" show that the response curve of the eye is greatest in that portion of the spectrum between green and yellow. This means that the threshold of vision is greater in this area than it is say, for blue or red. It should be clear at this point that a properly designed reflecting surface is of the greatest importance. Fortunately, a pure white surface is perfect although its brightness gain leaves a lot to be desired. However, combining available reflecting surface with modern light sources permits the average drive-in to get by. This is really not enough. Effort is constantly being expended by many in the industry to improve the situation.

So far, reflecting surfaces of higher gain have made some progress but the problem requires a substantial expenditure of money. New surfaces have been planned but many cannot lick the problem of weathering, normal expansion and contraction and screen surfacings that are not uniformly applied and in perfect alignment, panel to panel, from side to side and from top to bottom. Applying higher gain panels on top of existing surfaces will, in most cases, make the new panels appear like a mosaic, simply because they cannot be perfectly aligned.

The most commonly used surface application is still white projection paint because of its comparative ease

of application and its reasonable cost. It can also be removed without too much difficulty when complete re-treatment is necessary. Until something practical comes along the drive-in exhibitor should look to the following: An adequate light source. An efficient optical system. Proper selection of aperture size. A clean and well maintained screen surface. Equipment to do a good job is readily available and supply dealers are prepared to improve conditions with the exhibitors desire to do so. **IP**

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

MODERNIZE POWER UNITS

No burned contacts, cooler operation, smoother current with BE silicon rectifiers. A model to replace any bulb type.

One year guarantee

BROWN ELECTRONICS

1717 South St., ALLENTOWN, PA.

- BRIGHTER LIGHT
- LONGER BURNING
- SHARPER PICTURE

Free Test Samples

Lorraine  Carbons

CARBONS INC., BOONTON, N. J.

- STEADIER LIGHT
- LESS ATTENTION
- PERFECT COLOR BALANCE

Free Carbon Chart



Norelco

p r o j e c t i o n
e q u i p m e n t

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

**IF YOU ARE NOT USING THE
"LITTLE MISER" CARBON SAVER
YOU ARE LOSING SEVERAL
HUNDRED DOLLARS EACH YEAR**

Just twist the stud in and out
No grinding—No dirt
4 sizes, 9-10-11mm, \$3.00 eo.
13.6mm, \$4.50 eo.



Post paid when check is sent with order.

8mm Sound

Other evidence was offered at the convention in support of the present format, which is basically the same as the long-time accepted configurations for amateur 8mm film. These findings include:

1. SMPTE revealed that the American Standards Assn. has accepted and will sponsor a society-written standard for 8mm sound film based upon the present widely accepted configurations.
2. A spokesman for the Fairchild Camera and Instrument Corp., one of the major domestic manufacturers of 8mm sound projectors, estimated that there are perhaps as many as 10,000 8mm sound projectors now in use.
3. Eyre Branch, of Noel Enterprises, Hartsdale, N. Y., reported in the findings of a survey he conducted for the society that there are presently 13 processing laboratories and 10 motion picture distributors in this country handling 8mm sound. One of these, the George Colburn Laboratory, Chicago, was reported to have nearly 60 clients using 8mm sound film. Colburn has processed and printed nearly 300 subjects for 8mm sound release. Typically, these films

from page 15

run from 10 to 15 minutes. Print orders have varied, with the smallest order for a single print and the largest for 1,266. Subject matter has similarly been varied, ranging from "how to bowl better" to "why to buy our bulldozer."

4. Several exhibits set up by manufacturers of lightweight, rear screen 8mm sound projectors demonstrated a wide variety of films, ranging from selling computers to training new car dealers in sales techniques. These exhibits drew wide attention and favorable comment.
5. Much of the conversation about 8 mm sound film centered around its extremely successful utilization by the Do-All Co. and the Ford Motor Co. Do-All a manufacturer of industrial machine tools, has more than 100 8mm sound projectors in the field with its sales representatives. The company has a special carrying case for the projector and the 23 product films they have produced. Salesmen can carry these dramatic illustrations of all their products on every call. Furthermore, films can be projected in normal room light on a screen set up right on the buyer's desk.

Ford has set up 1,000 rear screen 8mm sound projectors in dealer showrooms across the country. They supply dealers with periodic motion pictures of their new lines of automobiles. These films are often used in sales training as well as in direct sales.

The many technical sessions dedicated to discussions of small format films drew probably the largest and most vocal response from SMPTE convention delegates. **iP**

NEW

AN ILLUMINATED SCREW DRIVER



for working on speaker post after dark... complete with 4 driver bits; two sizes flat head and Phillips head and two No. 135 batteries, \$3.35 each.

LOU WALTERS

Sales and Service Co.
4207 Lawnview Ave., Dallas 27, Texas
Phone EV 8-1550

MONTHLY CHAT

(Continued from Page 3)

out to be a "must see picture, where the exhibitor can advertise he's "got it."

It takes a lot more to make theatre a profitable enterprise. Waiting for the "must see" picture the theatre owner could go broke.

So we suggest what we said before in this Monthly Chat. Give the projectionist crew the working tools to give high standard screen presentations and give a try to Booth Showmanship of which your craftsmen are willing and able to give. **iP**



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

» **AUTHORITATIVE**
 » **COMPREHENSIVE**
 » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
 Post Office Box 6174
 Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

CITY ZONE STATE

NEW PRICE

\$7.00

per copy including postage



IS THIS SCREEN YOURS —OR YOUR COMPETITOR'S?

Only 1 in 20 Drive-Ins, (perhaps your competitor) has even the minimum screen illumination (4.5 foot lamberts at the center of the screen with a standard width aperture and the shutter running, measured from a midpoint on the ramp center line), recommended by The Society of Motion Picture & Television Engineers.

Which of these projection lamps will properly illuminate YOUR screen?

Here's a guide:

<u>PICTURE WIDTH</u>	<u>PROJECTION ARC</u>
50 FOOT _____	14" REFLECTOR—65 AMPERES.
60 FOOT _____	18" REFLECTOR—11 MM LOW CURRENT RANGE.
70 FOOT _____	18" REFLECTOR—11 MM HI CURRENT RANGE OR 13.6 MM LOW CURRENT RANGE.
80 FOOT _____	18" REFLECTOR—13.6 MM HI CURRENT RANGE.
90 FOOT _____	21" REFLECTOR—BLOWN ARC LOW RANGE.
100 FOOT AND UP _____	21" REFLECTOR—BLOWN ARC HI RANGE.

IF YOU'RE FED UP—

with a dismal boxoffice, brighten it up by brightening up your screen. The theatres with inadequate screen lighting are the theatres with the anemic boxoffices.

Strong's complete line of lamps, includes one which will project the brighter, patron-pleasing pictures in your theatre. Discuss your needs with your equipment dealer now.

FOR LITERATURE WRITE—

THE *Strong* ELECTRIC CORPORATION

31 CITY PARK AVENUE

TOLEDO 1, OHIO



A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

INTERNATIONAL PROJECTIONIST

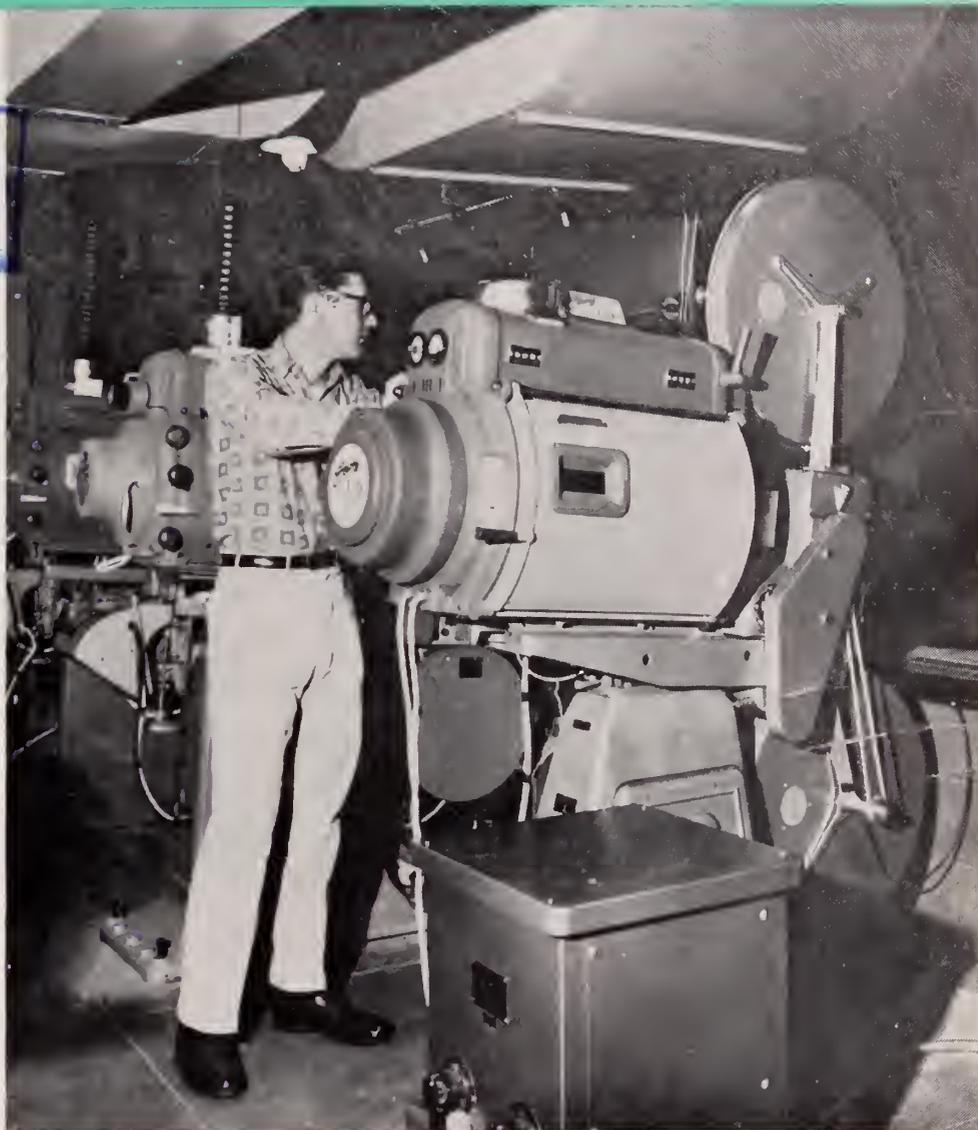
**The Plus in
Projection:
The Theatre**

5 OCT 15 1963
Sent Copy

M. P. - P. W.

**NEW PROJECTOR
DEVELOPMENTS**

**The Drive-In
Theatre
Revolution**



An example of the increased use of Xenon projection lamps by institutions of learning is that of the recent installation of a Strong 1600-watt lamp in Spaulding Auditorium of the new Hopkins Center, Dartmouth College, Hanover, N. H., where it is used on a Hortson projector. Shown with the Hortson 16mm projector, which has 5000-foot reels and magazines, is Paul Layton. Also shown in the booth are two 35mm projectors with carbon arc lamps.

SEPTEMBER

1963

VOLUME 38

NUMBER 9

40c A COPY



\$3.00 A YEAR

Order Division (0368X)
Washington 25, D.C.



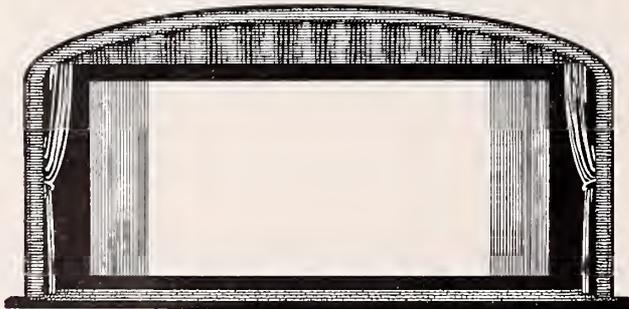
GLAMOURIZING THE SCREEN

PART 1

Movies Plus Glamour Equals Good Business!

By ROBERT A. MITCHELL

THERE IS MORE to a theatre screen than its obvious physical function of reflecting the projected picture to the eyes of the audience! The side of a white barn would be adequate for the projection of pictures if flat, bright, and free from blemish; indeed, it might well be a *better screen* and give a *better-looking picture* than is possible with the yellowed, seam-streaked, vandal-dented curved aluminum screens still retained in the Opera Houses and Bijous of a few back-woods towns! It goes without saying that a motion-picture screen should be physically satisfactory. But to be "good theatre" it must be more than just flat, bright, and unsoiled.



Two aspect ratios only are needed today for 35-mm and 70-mm film presentations. These are 2.35/1 or (2/1) for CinemaScope and 70-mm, and 1.75/1 for standard non-anamorphic 35-mm prints. The advantages of the 1.75/1 aspect ratio for regular prints are now so well established that there is no need to consider using any other.

The screen of an indoor theatre, unlike the side of a white barn or a drive-in screen, should have a distinctly theatrical setting in the midst of glamorous and colorfully beautiful stage appointments. Why? Beauty stimulates the imagination, and thus enhances the dramatic effect of the motion-picture attractions, which have also been created to stimulate the imagination. The moviegoer must be made to feel that the screen is not merely a white surface upon which patterns of light are thrown, but a sort of "window" through which a fascinating world of make-believe is seen and experienced. But first a few basic technical details which must be kept in mind.

It is now generally agreed that good projection results are obtainable only when the screen is matte white or pearl-coated (aluminum surfaces only for unusually long, narrow auditoriums), and is stretched perfectly flat *without curvature in any direction*.

Cinerama and other special processes specifically designed for a substantial amount of screen curvature are accepted, of course; but the picture-distorting curved screen, ill-advisedly forced upon exhibitors when the anamorphic widescreen process was introduced, is definitely tabu in theatres showing regular film releases, standard or anamorphic, 35-mm or 70-mm. Curved screens have no effect whatever upon "depth perception," and actually do nothing except spoil the appearance of the picture.

Two Aspect Ratios Only

The "battle of the aspect ratios" which began in full fury with the inception of panoramic movies in 1953 has now all but abated. The old 4:3-proportioned screen (an aperture-plate aspect ratio of 1.375/1) is practically out of the running for theatre use. Television uses it, and is welcome to it! It is too nearly square in shape for theatre



Chicago is famous for its beautiful theatres, among which are the Avalon, Chicago, and Capitol. Here is the truly gorgeous auditorium of the Capitol photographed in the days of the old conventional 1.375/1 ratio.

movies, and is distinctly unsatisfactory to patrons who have become accustomed to a more panoramic vista on the giant theatre screen.

The standard non-anamorphic 35-mm print gives the most pleasing picture at an aspect ratio of 1.75/1, using an aperture which measures 0.325 x 0.471 inch. This opinion is strongly backed by the thousands of projectionists who are already using the 1.75/1 ratio, and by dozens of producers who advocate its use for their non-anamorphic 35-mm releases. Even the older pictures, re-released from time to time, look better with this aspect ratio!

The 1.75/1 aspect ratio is wide enough to impart a panoramic visual impression, and yet sufficiently "conservative" to preserve good photographic acutance without excessive graininess, undue magnification of picture unsteadiness, loss of light, or loss of contrast. The higher aspect ratios formerly used in many theatres for standard prints—ratios as high as 1.85/1 and even 2/1—are going the way of the picture-ruining curved screen. To state the matter bluntly, a non-anamorphic 35-mm picture looks like hell at 2/1!

Even CinemaScope, itself, has undergone a reduction in aspect ratio. Originally 2.55/1, the addition of an optical soundtrack to the magnetic-track C'Scope print has reduced the ratio to 2.35/1. But even this is pretty big, and just about right for Technicolor epics featuring mobs of sword-wielding warriors and throngs of bosomy dancing-girls undulating in clouds of pink smoke.

Some theatres, however, are physically unable to accommodate the full CinemaScope aspect ratio of 2.35/1. The lower ratio of 2/1 must be used. This is not too bad; but wherever possible, the full ratio should be used in order to reproduce on the screen the visual composition planned by the director and captured on film by the cinematographer.

Aim for a Constant Picture Height!

The modern indoor-theatre screen, then, should be flat, white or pearl-surfaced, free from visible seams,

blemishes, and streaks of dirt, and capable of receiving two projected aspect ratios, namely, 2.35/1 (or 2/1) for CinemaScope anamorphic prints and 1.75/1 for standard non-anamorphic prints. No other ratios should be used—these two are best.

If 70-mm prints are also shown, the CinemaScope aspect ratio should be used for these, the 70-mm projector apertures being proportioned accordingly (that is, for either 2.35/1 or 2/1, whichever is used for C'Scope).

Now, here is something we consider very important. The proper lens focal lengths should be chosen to maintain a constant vertical dimension of the projected pictures. The standard 1.75/1 non-anamorphic picture and the CinemaScope 2.35/1 anamorphic picture should both have exactly the same aperture image height on the screen. The overall visual effect is good this way, and the need for movable top and bottom masking battens is thereby eliminated.

With a CinemaScope aspect ratio of either 2.35/1 or 2/1, and a standard-film aspect ratio of 1.75/1, the C'Scope prime lens should have a focal length (E.F.) 1.518 times that of the 1.75/1 standard-print lens, or as close as you can come to this with the usual 1/4-inch lens E. F. increments. Or, to state the matter conversely, the E. F. of the 1.75/1 standard-print lens should be 0.6587 times that of the C'Scope prime lens—again, as close as you can come.

It is comforting to realize that, even though the total screen light on a 1.75/1-ratio non-anamorphic picture is slightly less than on a C'Scope picture, the quality of the image is approximately the same—Sometimes better and sometimes worse, depending upon the photographic sharpness of the original negatives, the quality and adjustment of the anamorphic lenses used for C'Scope photography and projection, etc. Indeed, theatre patrons often have to look at the extreme sides of the picture, to see how far out they extend, to be able to distinguish standard from CinemaScope projection. And most patrons simply have no interest in these minor technical matters:

**A
HISTORY-MAKING
ADVANCE IN
PROJECTION LIGHTING
DESIGN!**

Great ideas in projection lighting invariably originate at Strong where engineering and craftsmanship have now produced the greatest lamp ever to bear the name—the first to feature everything desired by management and projectionist alike.

The *Strong*

FUTURA

The Futura presents a new concept in flexibility of projection lighting equipment: a powerful D.C. angle trim high intensity lamp that provides top light output

Series 93,000

**FOR ALL INDOOR THEATRES
WITH SCREENS UP TO 65 FEET
AND ALL DRIVE-INS
WITH SCREENS UP TO 120 FEET**

No lamp has ever been so beautiful, so crisply sleek outside, and embodied such an amazing collection of projection lighting advantages.

*The optical system matches the requirements of all projectors,
35mm or 70mm*

- • • • •
- Efficient utilization of standard 20-inch carbons, insures
- **MORE LIGHT PER CARBON DOLLAR**
- and permits projection of an extra reel per length of carbon.
- • • • •

A single knob controls the change from one film width to the other. A calibrated scale with a reference pointer permits precise reset of burner focus once the 35 and 70 mm positions are established. This simplicity is a Strong exclusive.

The Futura has a new type arc imager system which eliminates parallax, and is relocated for

**BIG 18-INCH FIRST SURFACE
TUF-COLD REFLECTORS**

**GREATER CONVENIENCE FOR
THE PROJECTIONIST**

developed by Strong and bearing a two-year sliding scale guarantee are provided on lamps operating above 95 amperes. Silvered reflectors are provided with lamps burning under 95 amperes.

There is a streamlined ammeter for reading the arc current, an automatic trimming light and insulator dowser system. Unit construction permits instant removal of components for cleaning and inspection.

- • • • •
- A 25% lower silhouette permits ready installation in low-ceilinged projection rooms.
- • • • •

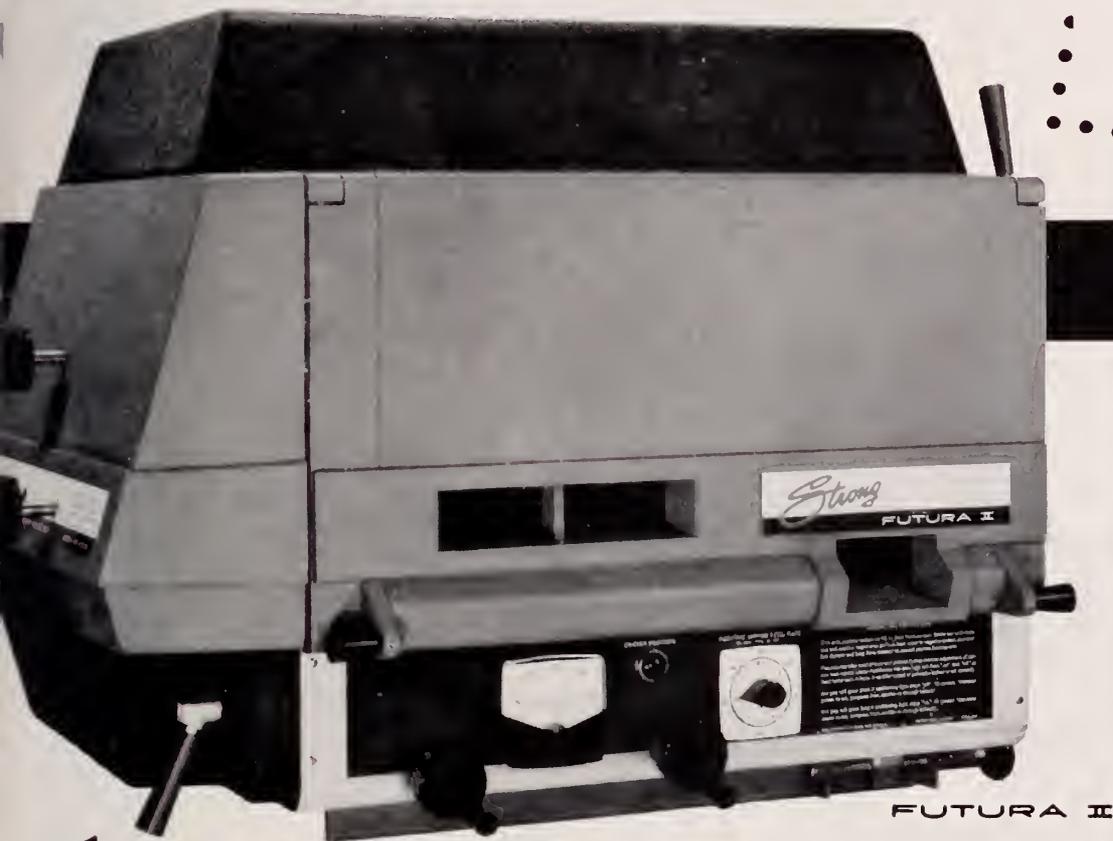
The Futura Comes in Three Ratings:

FUTURA I For economy of operation with 11mm carbon trim burning at 75 to 105 amperes.

FUTURA II with automatic crater positioner for 3.6mm carbon trim burning at 120 to 160 amperes.

FUTURA II with automatic crater positioner for 11mm carbon trim burning at 100 to 125 amperes.

Real value has been engineered into the Futura as you will discover on getting the price



The **FUTURA II**

is equipped with an

AUTOMATIC CRATER POSITIONER

which maintains constant a white screen light of stable intensity and color, evenly distributed over the entire screen area. A single adjustment controls both feeds and allows tailoring of the burning rate to the length of reels, permitting more efficient use of carbons. The positive can be burned at from 7 to 20 inches per hour.

Send Today for Brochure

The **FUTURA II**

is without question the most economical projection arc lamp for providing powerful screen illumination with utmost reliability. The standard 11mm carbon is burned efficiently at 75-105 amperes for both 35 and 70mm projection to result in the greatest amount of light ever delivered per carbon dollar.

THE Strong ELECTRIC CORPORATION
31 CITY PARK AVENUE · TOLEDO 1, OHIO

Projection Equipment At Europe's Photokina

By R. Howard Cricks,
Hon. FBKS, FRPS

Photokina, Europe's vast photographic exhibition held every two or three years at Cologne, Germany, is primarily devoted to photography and amateur cine. But there is quite a lot of equipment of interest to the film trade; besides odd pieces of equipment in the general sections, there was one hall, the farthest from the entrance, containing only professional cine equipment.

If one is to go by the projectors on show, the plain 35mm projector is a back number. Every projector firm showed a 70/35mm machine. Most widely used in Great Britain is the Philips; the Cinemeccanica is making headway. Enormous machines were shown by Zeiss-Ikon, Siemens, Bauer, FEDI and Pio Pion.

These machines differ chiefly in the difficulty of conversion from 70mm to 35mm. In the simplest, all that is needed is to change the gate runners, but most need also a change of the sprocket rollers. Some have a

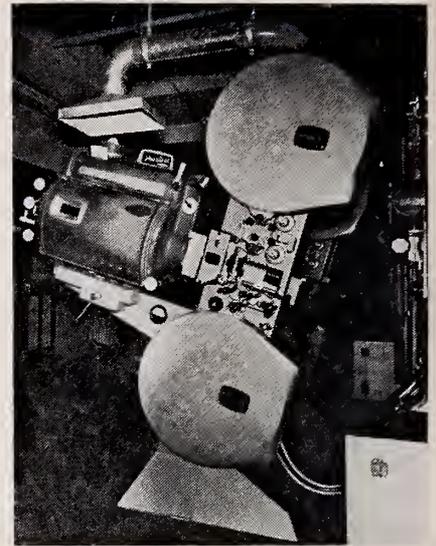
three-lens turret, for wide-screen, CinemaScope and 70mm respectively.

Most projectionists have forgotten what excellent effects we used to get on the Brenograph. A simple effects device was shown by Herceg Skobla of Vienna: a box like a shutter housing, containing sections of figured glass rotated by a small motor, and a hand-operated color wheel.

In Europe—more I believe than in America—automation and remote control are coming into use in the cinema. The reason is simply the shortage of skilled projectionists.

Pioneer system was Projectomatic—now handled by Rank Kalee; in this, by inserting pegs into a rotating drum every aspect of the program can be controlled completely automatically—opening music, screen curtains, house lights, starting of the program, change-overs, right up to the final shut-down.

An alternative I personally prefer is remote control. From a console in the auditorium the projectionist controls the whole of his equipment; be-



Philips FP20S projectors as installed in the ABC Cinema, Croydon, England. Identical in appearance are the other two Philips projectors recently introduced at the Photokina exposition, FP22S and FP25S.

ing in the midst of his audience, he can sense their reaction, making, I am sure, for better showmanship.

Several firms showed both systems: Philips, Zeiss-Ikon, Siemens, Bauer. A problem with such a system, however, is the striking and control of the arc. Projectomatic makes use of a metal pellet which is gripped between the carbon tips, and fuses when current is applied, striking the arc.

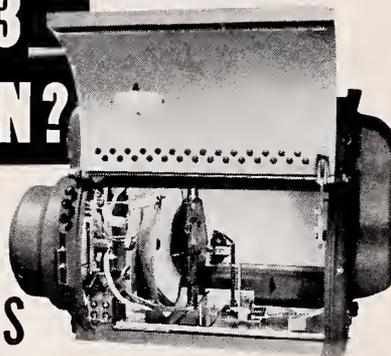
An alternative answer is to replace the arc by a light source needing no adjustment and the minimum of control. Increasingly used in the xenon lamp, which Osram and Philips showed in a range of sizes up to 2.5 kw—this is large enough for most cinemas, I have my own preference for the Philips pulsed discharge lamp, to be discussed later.

Projectors are used nowadays not only in cinemas, but for television. Several firms showed machines adapted for this purpose. Zeiss-Ikon, for instance, showed the Ernemann machines fitted with a vidicon, and geared to run at the European frame rate of 25 frames per second. (In America one doesn't realize how simple it is to run both film and TV at 25 frames, instead of having to convert a film frequency of 24 frames to a TV frequency of 30). For studio use the same machine was shown fitted with a 300 ft. non-rewind device.

But it was Philips of Holland (Norelco to you) whose exhibit was the most advanced. As usual, they had a complete auditorium in which to demonstrate the full range of their

CAN YOU MATCH ONE OF THESE 3 TO YOUR SCREEN?

Strong X-16 XENON ARC PROJECTION LAMPS

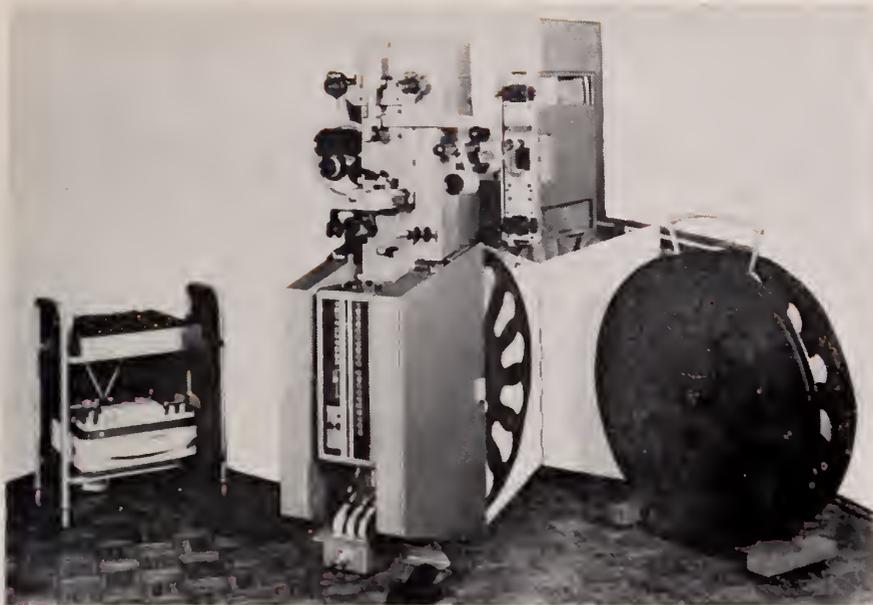


- 900-watt model for screens up to 23 feet wide (matte—Cinemascope Aperture)
or 28 feet wide (high gain—Cinemascope Aperture)
- 1600-watt model for screens up to 29 feet wide (matte—Cinemascope Aperture)
or 36 feet wide (high gain—Cinemascope Aperture)
- 2500-watt model for screens up to 35 feet wide (matte—Cinemascope Aperture)
or 43 feet wide (high gain—Cinemascope Aperture)

- Steady, flickerless, pure white light is independent of voltage variations of the power line supply.
- Extremely even distribution of light throughout the total screen area.
- "Push-Button repeatability" of intensity and color temperature.
- Excellent color film reproduction.
- Focus remains constant.
- Projects practically no heat to the film or aperture plate. No cooling required.
- Cleanliness assures maximum life for the projector.
- Simple operation. No moving parts in the light source.
- Maintenance and current costs are approximately the same as for carbon and current costs for operating a carbon arc lamp of equivalent light output.

Send for brochure. Demonstration in your theatre on request.

THE *Strong* ELECTRIC CORPORATION
31 CITY PARK AVENUE • TOLEDO 1, OHIO



The Philips Solo projector, demonstrated for the first time at Photokina. The giant-size reels are transported on the dolly at the right. On the left is the console which controls the complete functioning of the machine.

cine equipment. Most of it centered on the pulsed discharge lamp.

This tiny lamp—the size and shape of a clinical thermometer — in its original form consumes 800 watts, yet produces as much light as a 2 kw arc. It flashes 3 times per picture frame, instead of twice like the ordinary shutter. A demonstration showed the practical value of this. Two pictures were projected side by side, lit to exactly the same measured brightness of 27 foot-lamberts; on the left was an FP7 projector with arc, on the right the FP20S with pulsed lamp. At this high brightness level the arc-lit picture showed a very noticeable flicker, which was completely absent from the picture lit by discharge lamp.

The screen illumination from the 800-watt lamp is 500 lumens—low by U. S. standards, but adequate for most of our theatres. Now introduced is a more powerful lamp consuming 1000 watts; with an improved mirror system this gives a screen illumination of 9000 lumens. We saw a 70mm film projected on a 40 ft. screen, with excellent brightness. On this large screen, and in a small auditorium, the evenness of illumination from centre to edges was most noticeable.

IP

Three New Processes To Be Demonstrated For Large Screen

Three new large-screen color processes are due for demonstration soon: National General's Talaria, the Todd AO-Dimension 150 system and color Eidephor.

Theatre Network Television held a demonstration of color Eidephor, a theatre closed circuit, the result of years of development, at its technical center at Woodside, L. I. The demonstration was sponsored with TNT by CIBA Ltd., involved in Eidephor, and Philips of the Netherlands, which provides optical systems.

While the Eidephor demonstration will be on a 12x16-ft. screen, a TNT spokesman said the process is intended for large screen theatre TV.

Dimension 150 coupled with Todd AO had another demonstration for company executives in Santa Monica, Calif., and an exhibitor demonstration there is being scheduled.

The General Electric Talaria system, which will be used in the Theatre-Vision Color closed circuit theatre network, is planned for demonstration shortly on the West Coast and in New York.

IP

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

**PROJECTIONISTS
PREFER
ETHYLOID**

Film Cement For
BEST RESULTS

Available from
Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

MODERNIZE
POWER UNITS

No burned contacts, cooler operation, smoother current with BE silicon rectifiers. A model to replace any bulb type.

One year guarantee

BROWN ELECTRONICS
1717 South St., ALLENTOWN, PA.

CARBON ARCS FOR THE FINEST PROJECTION . . . XENON COMPACT ARC

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES
by Cinemeccanica by Christie

CARBONS, INC.

BOONTON, N. J.

Valley for
 CURTAIN CONTROLS,
 TRACKS and SPECIAL
 OPERATING DEVICES
VALLEN, Inc.
 AKRON 4, OHIO

Norelco
 p r o j e c t i o n
 e q u i p m e n t
 Available from
 leading theatre supply
 dealers
 North American Philips Co., Inc.
 Motion Picture Equipment Division
 100 E. 42nd St., New York 17, N.Y.

America's
 headquarters
 for all
 theatre equipment
 and
 supplies

National
 THEATRE SUPPLY COMPANY

New Strong Lamp said to be First To Fill Needs of All Indoor and Drive-In Theatres

What is said to be a new concept in projection lighting equipment, the first projection lamp to adequately fill the 35mm and 70mm needs of all indoor theatres with screens up to 65 ft. and drive-ins with screens up to 120 ft. has been announced by the Strong Electric Corp. Known as the Futura, this crisply sleek equipment is not only beautiful in design but encompasses, Strong officials say, the most projection lighting developments ever assembled within one lamphouse.

The optical system of this powerful direct current angle trim high intensity arc has been designed to match the requirements of all 35mm and 70mm projectors. A single knob moves the entire arc burning assembly in relation to the reflector focal point to make the change from 35 to 70mm or 70mm to 35mm projection.

A calibrated scale with reference pointer permits precise reset of burner focus once the 35mm and 70mm positions are established. This simplicity is exclusive with Strong.

The Futura comes in three ratings: Futura I for economy of operation with 11mm carbon trim burning at 75 to 105 amperes; the Futura II with automatic crater positioner for 13.6mm carbon trim burning at 120 to 160 amperes; and the Futura II with automatic crater positioner for 11mm carbon trim burning at 100 to 125 amperes.

Highly efficient utilization of the standard economical 20-in. length carbon insures more light per carbon dollar, and permits projection of an extra reel of 35 or 70mm films per length of carbon.

A big 18-in. diameter first surface Tuf-Cold reflector, developed by Strong and bearing a two year sliding scale guarantee is provided for use with those lamps burning at 95 amperes and above. Low aperture temperature assures perfect projection without the film damage and buckling which results in in-and-out of focus. Silvered reflectors are provided with those lamps burning less than 95 amperes. The mirror is integral with the rear lamphouse door and swings completely out of the way to facilitate retrimming, cleaning of the lamphouse, and maintenance of the reflector.

A constant curtain of forced cool air flows over both surfaces of the

reflector. This results in a uniform temperature over the entire reflector surface.

The self-contained centrifugal blower ventilating system cools the carbon feed mechanism and lamp base. A jet of air is employed to stabilize the arc.

For arc currents below 135 amperes a choice is offered of water cooled silver contacts or heavy duty long life air cooled positive carbon contacts. For currents above 135 amperes, water cooled contacts are provided.

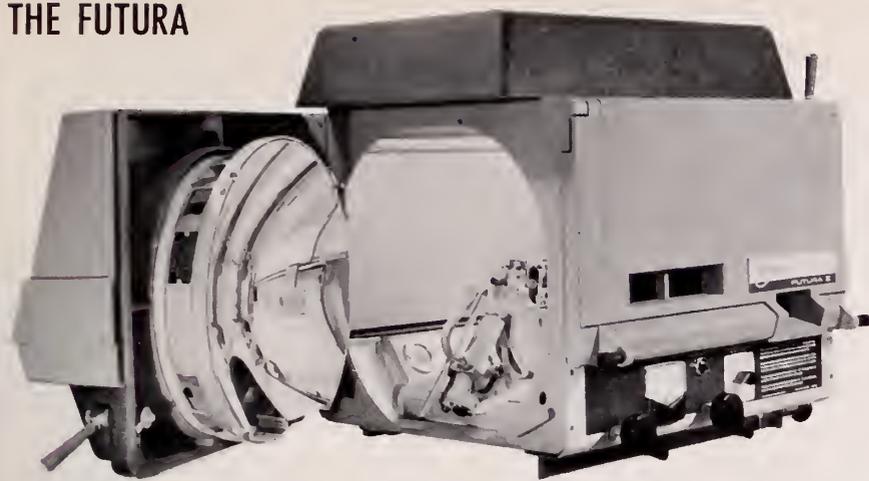
The Futura has a new type arc imager system, redesigned to eliminate parallax, and relocated for the full convenience of the projectionist. Other features include a streamlined ammeter for reading the current at the arc, an automatic trimming light and inside dowser system. Unit construction permits instant removal of the various components for cleaning and inspection.

The Futura is of streamlined design with a silhouette which is 25% lower than other lamps of the same class, permitting ready installation in low-ceilinged projection rooms.

The Futura I is without question the most economical projection arc lamp for providing powerful screen illumination with utmost reliability, the manufacturer states. The standard 11mm carbon is burned efficiently at 75-105 amperes for both 35 and 70mm projection, to result in the greatest amount of light ever delivered per carbon dollar.

The Futura II is equipped with an automatic crater positioner which operates over the complete range of the lamp. Once the burner has been focused to the reflector a constant white screen light of stable intensity and color, evenly distributed over the entire screen area, is automatically maintained. Spot focusing never disturbs the equilibrium of the arc since the electrode spacing is not disturbed. The correct position of the positive crater is automatically controlled by a sensing element which governs the speeds of the separate positive and negative Bodine geared head motors, advancing the carbons as consumed to maintain a uniform gap length. A single manual adjustment controls both carbon feeds and readily allows the burning rate to be tailored to the length of the reels so as to permit most efficient use of carbons. The

THE FUTURA



positive can be burned at from 7 to 20 inches per hour as desired.

The use of a single Bi-Power silicon stack transformer-rectifier is recommended as an ideal power supply for two Futura lamps.

Literature on the new Futura will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo 1, Ohio.

iP

Cinerama Develops Non-Louvered Screen

Cinerama has disclosed it is developing a new screen to eliminate the present louver system. The new development is planned for introduction in theatres after the current conversion to the new single lens process is completed.

The new screen will cover the same large viewing angle as the wide, multi-louvered screen now in use, but invisible miniature ribs will replace the louvers as part of a smooth surface. The present Cinerama screen characteristics will be maintained, but with increased efficiency, the developers claim.

iP

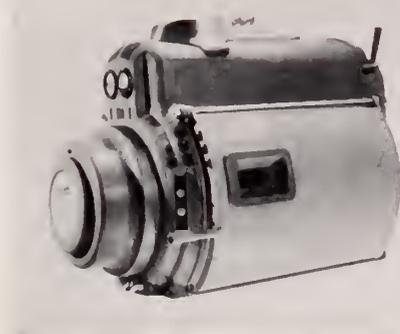
New 16mm Projector Uses Xenon Arc

A new light source for 16mm motion picture projection, a Xenon arc, has been announced by the Strong Electric Corp.

Known as the Strong X-16, the lamp is adaptable to such projectors as Eastman arc and incandescent, Norelco, Hortson, Bell and Howell, Victor, RCA, and Ampro. The light source utilizes tungsten electrodes to provide an arc in a Xenon gas atmosphere, totally enclosed in a quartz envelope. It has the advantages of providing a steady, flickerless, pure white light source with no discoloration and with extremely even distri-

bution of light over the total screen area. The spectral composition of the light, which is unaffected by voltage variations of the power line supply, results in excellent reproduction of color films.

The equipment, once aligned and focused, needs no further adjust-



ment. No moving parts are employed in the light source and no special cooling is required.

Four models are available: 450, 900, 1600 and 2500 watt. The igniter is built into the lamphouse and provides the proper starting or ignition voltage. The associated silicon diode transformer-rectifier is specially designed to provide the exact current characteristic and regulation capa-

bility for optimum operation of the light source.

Literature on the X-16 can be obtained by addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo 1, Ohio.

iP

Wilschke Joins EPRAD; Pioneer Sound Engineer

Elmer O. Wilschke, a pioneer in the motion picture industry has joined EPRAD, Inc., Toledo, Ohio manufacturer of communication, sound, heating and electronic equipment for theatres, hospitals and restaurants according to EPRAD president Al Boudouris.

Wilschke, one of the original ERPI engineers, served in various capacities in this country and abroad until the formation of Altec Service Corp., at which time he was eastern division manager.

iP

PROJECTIONISTS WANTED!

National Sound Service Co. will interview competent IATSE personnel for position as Field Service Men in theatrical and industrial field. Send letter to: Box 410, International Projectionist, 545 5th Ave., New York 17, N. Y.

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

IF YOU ARE NOT USING THE "LITTLE MISER" CARBON SAVER YOU ARE LOSING SEVERAL HUNDRED DOLLARS EACH YEAR

Just twist the stud in and out
No grinding—No dirt
4 sizes, 9-10-11mm, \$3.00 ea.
13.6mm, \$4.50 ea.



Post paid when check is sent with order.

NEW AN ILLUMINATED SCREW DRIVER



for working on speaker post after dark... complete with 4 driver bits; two sizes flat head and Phillips head and two No. 135 batteries, \$3.35 each.

LOU WALTERS

Sales and Service Co.
4207 Lawnview Ave., Dallas 27, Texas
Phone EV 8-1550

XeTRON Projector for 16mm Available As Modification Kit for JAN

The XeTRON division of Carbons, Inc. made its first official demonstration of a JAN projector modified for Xenon compact arc at the Chicago convention of N.A.V.A. and for the first time showed a big (9 ft. by 12 ft.) bright (12.5 F.C.) picture with the new XeTRON type JX Xenon 450 watt lamphouse. It is now possible for the modified projector to deliver three times as much screen brightness as can be obtained from a 16mm projector using a 1000 watt incandescent bulb, the company states.

The 450/JX lamphouse has been designed only for the "JAN" projector and meets the needed requirements for increased screen illumination. This JX unit is sold as a modification kit, complete with instructions for making the changes to improve the quality and intensity of the projected light. Other designs will be available in the near future for

use with other make professional, heavy duty type projectors.

Dimensions: JX is 14⁷/₈ in. high by 5³/₄ in. wide by 7⁷/₈ in. deep.

The 450/CX lamphouse can be used with many standard projectors now using carbon arc lamphouses, 16mm and 35mm, and will deliver up to three times greater illumination as will a standard 1000 watt incandescent bulb. The quality of light is said to be far superior and is similar in Kelvin temperature (5450° - 5800° K) to the high intensity carbon arc.

Both the JX and CX units are a "push-button" operation capable of delivering 2100 lumens (open shutter) of high intensity professional type light when properly utilized. They are self-contained with built-in ventilation system and require no exhaust stack; there is no ash or soot developed as products of combustion

since the Xenon gas and compact arc are enclosed in a quartz bulb.

Dimensions of the CX are 17¹/₄ in. high x 11¹/₄ in. wide x 1¹/₂ in. deep.

The power supplies are manufactured for XeTRON by Christie Electric Corp. of Los Angeles, said to be recognized as the foremost manufacturer of silicon power supplies. The XeTRON-Christie power supply is sold as an important adjunct to the CX and JX type Xenon units and is required if maximum light output and bulb life warranty is to be obtained.

Dimensions of the Christie unit is 13³/₈ in. high by 17⁷/₈ in. wide by 13 in. deep.

List prices are:

450 watt CX Lamphouse complete, less bulb	\$595
450 watt JX kit complete, less bulb	595
XeTRON-Christie silicon power supply	590
450 watt Xenon bulb	175

Dealer discounts are given on application. Address all inquiries to: XeTRON Divisions, Carbons, Inc. 400 Myrtle Avenue, Boonton, N. J.

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by

MASTER SPECIALTY PRODUCTS

200 West 72nd St., New York 23, N. Y.



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

Enter my subscription for

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

National Carbon Co. Changes Its Name

National Carbon Co. has changed its name. It is well known in the motion picture business, National Carbon Co. is a subsidiary of Union Carbide Corp. It is not as well known that some of the consumer products of Union Carbide were produced by

SMPTE Exhibit Nearly Sold Out

Only seven exhibit booths were still available late last week for the 94th Technical Conference of the Society of Motion Picture and Television Engineers, to be held at Hotel Somerset in Boston. The equipment exhibit will open Oct. 14-17.

subsidiaries of that company. It is for this reason, among others, that the parent corporation decided to change the names of all of its subsidiaries, to more closely identify with Union Carbide Corp.

Effective Sept. 1, National Carbon Co. became Union Carbide Corp., Carbon Products Division.

The product sold to theatres, are carbons which had simply been known as National Carbons, will continue to be known as National Carbons, but they will be produced by Union Carbide Corporation. Carbon Products Division. **IP**

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the **BEST** of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

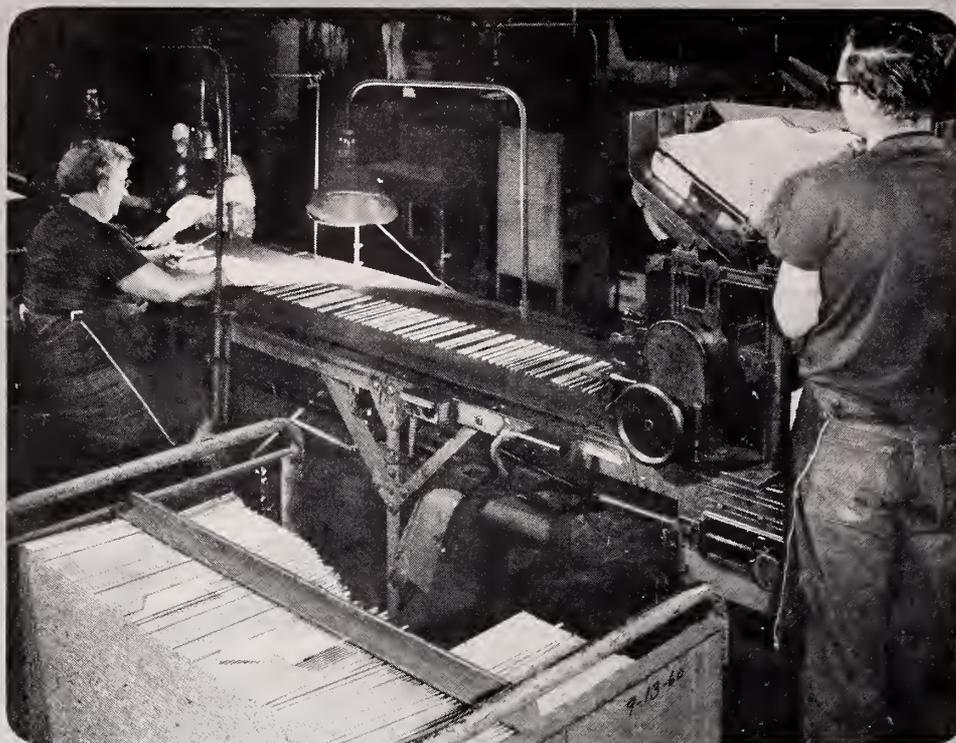
CITY ZONE STATE

NEW PRICE

\$7⁰⁰

per copy
including postage

A Scene From America's Projector Carbon Center...



Final inspection before packaging

**"Pre-packaging inspection...the last of
61 checks that keep our projector carbons tops!"**

—says JIM HOYNES
"National" Sales Engineer

From milling and blending of raw materials to packaging of the finished product, NATIONAL projector carbons must pass one of industry's widest and most rigid ranges of tests and inspections. They are outstanding for depth of quality control—from start to finish.



Jim Hoynes

The above view in our Fostoria, Ohio, arc carbon center shows inspection No. 61—a final overall check of each carbon before packaging for shipment to distributors.

During their many manufacturing and testing stages, NATIONAL projector carbons are

baked and re-baked at precisely-controlled temperatures. All dimensions and straightness of carbons must be within thousandths of an inch. Voids or breaks in rare earth cores are detected by x-ray. Sensitive instruments measure the thickness of copper coating to assure maximum current delivery and light quality on the screen.

All the way up the 61 steps to packaging, the dominant idea at Fostoria is to produce a carbon that gives both exhibitors and patrons *the best light for their money*.

Today, this sound policy is fast approaching its 50th Anniversary!

"National" is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue, New York, N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto



INTERNATIONAL PROJECTIONIST



Three members of IATSE Local No. 228 were present when the new Strong Futura projection arc lamps were installed in late August at the Jesse James Drive-In, Toledo, one of the 23 theatres of the Armstrong Circuit. Left to right are Harold Plumadore, project engineer of the Strong Electric Corp., Arthur Partis, business agent of Local 228, and Bill Dusseau, projectionist at the Jesse James. (See story on page 16.)



My place

SMPTE

Special Issue

**OCTOBER
VOLUME 38
40c A COPY**

**1963
NUMBER 10
\$3.00 A YEAR**



A Scene From America's Projector Carbon Center...



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says **SID MORLEY**
“National” Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at “America’s Projector Carbon Center” in Fostoria, Ohio, NATIONAL carbons move to an automatic resistance test, where a direct reading instrument

measures in ohms-per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, NATIONAL carbons are produced by today’s most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!



“National” is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 October, 1963 No. 10

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

- Masking the Modern Wide Screen 4
By ROBERT A. MITCHELL
- SMPTE Convention 10
- Strong Electric's Cover Story 16
- Photokina Projection 14

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



1

MONTHLY CHAT

THE SUPPLY DEALER IS ESSENTIAL

This journal has consistently urged the recognition due the established equipment dealers, who deserve far more prominence than is given them in the film industry, and the theatre branch in particular.

The theatre owner and dealers relations should be far better than they are now.

The reputable theatre equipment manufacturer picks and chooses his outlet around the country for the sale of his good product. So the exhibitor can be sure that the installation will be expertly done.

The booth craftsman should be buddies with the dealer. He should call on the dealer's store and chat awhile with the dealer. They make a living in the same business.

The dealer is up-to-date on the latest equipment. Maybe the projectionist could interest his theatre owner to buy that equipment. And just maybe the dealer can pass along tips that the projectionist could use profitably.

There's remodeling in the theatre industry in several parts of the country. So the film houses face a severe competition with the well-equipped theatres. After all, Americans have autos and they use them. If their neighborhood theatre is shabby and has bad projection and sound, they'll go to another theatre of their choice.

The established dealer is the best friend of the theatre owner and the booth craftsman in this business. He'll stack his reputation on the line when he recommends a piece of equipment. And he can be called back if the installation is faulty.

The manufacturers have put money on the line improving the theatre equipment with changes in film techniques — sound, CinemaScope, 70mm, Cinerama, lamps, screens, etc.

The dealers have kept up with the manufacturers by their solving the operation of the complex machines with their top quality installations.

Manufacturers and dealers are maintaining the theatre industry with up-to-date equipment necessary for the film theatres' survival.

The "house divided" in the film industry has lasted long enough, with exhibitors fighting the distributors and the other way around, and theatre owners' penny-pinching on equipment.

The theatre branch better go back to showmanship with improving their houses, advertising their forthcoming and current shows, courteous staff and good equipment so the booth craftsman has pride to work there.

The supply dealer is a service organization, to service the theatre. If the booth machines themselves were that necessary for the exhibitor the dealer would be out of the picture. The dealer has to sweat his own profits on the deal, while satisfying the customer with all the man-hours of skilled labor for installing and making the machine function properly as per the guarantee.

The theatre supply dealer is a mighty important ment looks for, is that there will exist such a wholesome attitude, servicing the equipment the dealer is essential to the theatre industry.

One of the most important improvements this department looks for, is that there will exist such a wholesome attitude within the industry, particularly by the theatre owners and projectionists, for even more cordial relations with the supply dealers and equipment manufacturers.



GLAMOURIZING THE SCREEN

PART 2

Masking The Modern Wide Screen

By ROBERT A. MITCHELL

EVEN THOUGH THIS WRITER personally favors the black-masked screen, there is much to be said for the "ultramodern" maskless screen and for the psycho-visual principles on which it is based. Such screens, including those fitted with illuminated borders, have been the subjects of experiment for many years; and at least some of the psychovisual principles underlying the maskless screen were well known and utilized photographically in the long-ago days of silent pictures.

The type of screen favored by the noted theatre architect Ben Schlanger, for instance, "dissolves" and extends the boundaries of the projected picture by being set into a close-fitting, bent-wall alcove painted white like the screen to reflect a pattern of light which blends softly with the edge of the picture. So instead of being bounded sharply by black masking, as is usual, the Schlanger screen provides an indefinite boundary of light which fades off into darkness in an ever-changing manner.

Vignetting by Photography

The device of vignetting the picture by means of a mash in front of the camera lens was frequently used in the days of silent films. This provided a soft, out-of-focus boundary to the picture *photographed on the film*, but without the varying light effects produced by the Schlanger screen setup. Also, the camera-vignetted image *restricted* the total area of the frame and resulted in a slightly smaller picture on the screen. The Schlanger screen, on the other hand, does not take any area away from the frame and gives, in addition, the impression of a larger screen.

The foregoing is not meant to imply that silent-film cameramen did a bad job with the tools at hand. Quite the contrary, they were an ingeniously "arty" lot, and succeeded admirably in their compositional aims. The purpose of camera vignetting was not to fool the eye into seeing a larger screen than was actually present, but to focus the attention of the audience upon the dramatic action at the center of the screen.

The circular mask was often used for the same purpose in the earliest days of the moviemaking art; and the "iris-in," "iris-out" beginnings and ending of scenes found in certain old movies suggested by

expansion and contraction of the frame that the drama is spotlighted in the middle of the screen.

Other old-time picture-vignetting tricks included the use of lenses having severe spherical aberration to soften detail near the edges, and diffusing lenses to cast an ethereal, luminous mist over the irrelevant detail surrounding the middle of the picture. The psychovisual suggestiveness of these devices was extremely effective. There is rarely anything similar to them in panoramic CinemaScope pictures, the chief shortcoming of which seems to be their inability to focus dramatic interest and involve the spectator in the picture emotionally. The characters depicted on the CinemaScope screen are often too "remote," and their dramatic conflicts too static, to affect the feelings of the audience the way the old-time movies did with apparent ease.

Black Screen Masking Desirable

Despite the invention of maskless screens of various types, we believe that black velour screen masking will continue to be used in 99 per cent of all theatres. Black masking has much to commend it. There is a visual neatness to the straight, sharp picture-framing boundaries it provides. Brought an inch or two into the picture area, it conceals aperture irregularities caused by small deposits of film dust. The straight vertical sides conceal the keystone caused by steep projection angles. Very important, the sharply defined black edges raise apparent picture brightness at the sides of the screen where, actually, it is somewhat lower than at the center of the screen. This gives an impression of uniform screen brightness, a very desirable condition.

Until about 1953, motion-picture screens had a width-height ratio of 4:3 (an aspect ratio of 1.333/1). This ratio was established in the first place by the early Edison-Dickson 35-mm film specifications;* and considering that the movies began to flower commercially by the turn of the century, the 4:3-proportioned screen enjoyed universal use for more than half a century.

When the soundtrack was added to the film in 1928, the incursion of the track by about a tenth of an

*The 35-mm silent-film frame was approximately one inch wide and three-quarters of an inch high.

inch into the silent-aperture picture area resulted in a square picture on the screen. No one liked a square-shaped picture. In order to rectify this defect, the so-called "proportional" aperture measuring 0.825 x 0.600 inch was laid down as the standard aperture for 35-mm sound-on-film prints. This represents an aspect ratio of 1.375 1, which, however, gives a 1.333 1-ratio picture on the screen at a moderate projection angle.

By interchanging apertures and lenses (as is done today for CinemaScope), standard silent prints and sound-on-film prints could be shown on the same screen at the same aspect ratio.

Remember Those Round Corners?

The very earliest movies were shown upon unmasked screens, ordinarily whitewashed plasterboard or painted canvas tacked to a wooden frame in the manner of an oil painting. As a result, the projected picture was framed by the edges of the film aperture in the projector gate. Forasmuch as the aperture usually had smoothly rounded corners, the 4:3-proportioned round-cornered rectangle was generally regarded as the proper "frame" for motion pictures.

When the advantages of velour screen masking came to be recognized, some projectionists and theatre managers went so far as to contrive rounded corners for the screen masking to match the image of the old-style film aperture. This was done in many theatres right up to the time when the wide screen permanently retired the proportional soundfilm aperture.

The persistence of rounded screen corners was due, not only to a conservative adherence to cinema tradition, but to definite visual-psychological advantages accruing from their use. First of all, a round-cornered picture looked good. It looked good for reasons which just suited the character of dramatic motion pictures.

The angular sharpness of square screen corners distract the eye from the central area of the screen where all significant dramatic action takes place. Round corners remove these four "points" of visual distraction and rest the eye. Square corners emphasize the sharply bounded nature of the rectangular screen no matter how large it may actually be. Round corners seem to cause the boundaries of the picture to fade from consciousness once interest has been established in the photoplay. This writer strongly advocated the round-corner screen in the days before wide screens came into vogue. See "Psychological Elements in Projection," *IP* for May 1949, p. 14 *et seq.*

Contradictory as it may seem, however, a round-cornered screen appears, at a glance, slightly smaller than a square-cornered one of the same size! This might be a disadvantage today.

It is possible to round the corners of a 1.75 1 aspect ratio wide screen with good effect and with an improvement in the appearance of the screen; but the use of the same screen for the even wider CinemaScope picture (2.35 1) makes this stratagem impractical.

Frame, Screen Sizes

As stated earlier in this article, it is advantageous to employ only two aspect ratios, 2.35 1 (or 2 1) for CScope and 70-mm prints, and 1.75 1 for standard non-anamorphic 35-mm prints. The screen should therefore be proportioned and masked at the outset for the large CScope aspect ratio after being stretched smooth and flat on a properly set up screen frame.

A screen frame should be one foot larger on the inside than the overall measurements of the screen, itself. This will allow 6 inches between each edge of the screen and the frame, which is the space required to permit

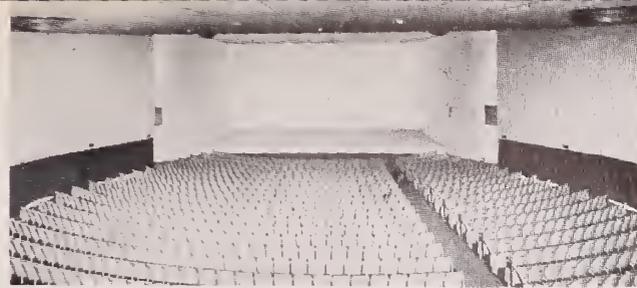


FIG. 1 — The Schlanger type of maskless screen in a theatre of ultramodern design (the Shoppers' Haven Cinema in Pompano Beach, Florida). The theory and advantages of the Schlanger screen are described in the accompanying text. Ben Schlanger is a noted theatre architect of long experience who has devoted much attention to sight lines and the "framing" of the projected picture.

proper lacing of the screen to the inside of the frame. Then, too, the screen, itself, should be one foot larger each way than the largest picture to be projected upon it—the CinemaScope or 70-mm picture. This allows sufficient space to accommodate the webbing and grommets on each edge of the screen.

Top and bottom screen-masking battens are best constructed of light-weight plywood boards of the proper width (1½ to 2 feet) and cleated at the joints with long iron straps having holes so that they may be fastened to the plywood sections with short wood screws.

The black velour should be applied smoothly to the front (uncleated) sides of the battens, wrapped over tightly, and tacked on the back. The masking battens thus prepared may be fastened to the screen frame by means of iron-strap brackets and screws or hung by their ends.

Extra care should be taken to insure that the edges are straight and level, and that a uniform picture height is maintained all along the width of the screen. The battens should be secured to the screen frame solidly, but not so "permanently" that they cannot be removed for later adjustment or for the installation of a new screen.

The side flats are usually considerably wider than the top and bottom battens. Light-weight plywood panels, firmly cleated, are satisfactory. Stout angle irons may

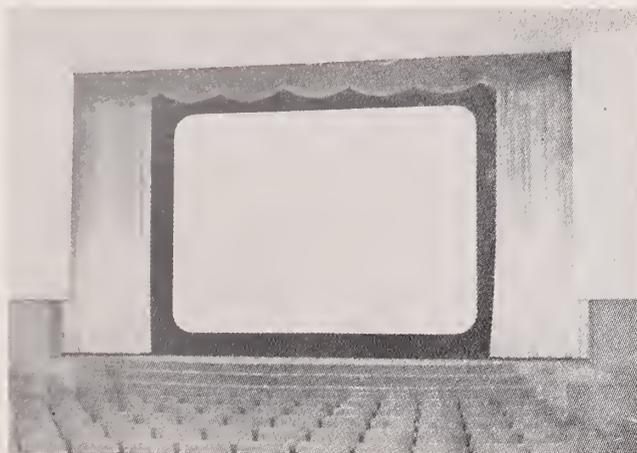


FIG. 2 — A round-cornered screen in the old conventional aspect ratio (1.375/1) photographed in the New Crest Theatre, Seattle, Washington, before conversion to widescreen aspect ratios. Although round screen corners are distinctly advantageous and pleasing in appearance for the conventional aspect ratio, they are not feasible for screens requiring movable side masking to accommodate both CinemaScope and the now established 1.75/1 widescreen aspect ratio.

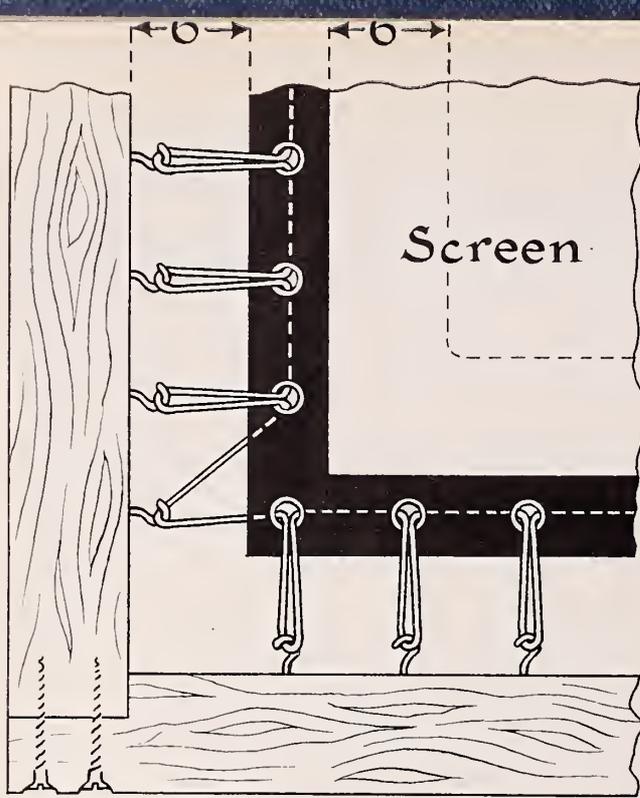


FIG. 3 — Corner portion of a screen, showing the method of lacing to the screen frame. This method is the best for stretching large theatre screens. Note that about 6 inches of space should be allowed between each edge of the screen and the inside edge of the screen frame. Also, a screen should be one foot larger each way than the largest picture to be projected upon it. This gives a 6-inch margin of safety all around the screen.

be attached to the outer edge of the screen frame to hold the panels in place, or they may be hung from the top. In any event, they should be readily removable for making desired adjustments in their position at the sides of the screen.

Discrepancies in Picture Heights

All four sides of the screen should be masked for the largest aspect ratio used. As stated, above, this will be the CinemaScope aspect ratio (2.35/1 or 2/1, whichever is chosen). But note that the height of the 1.75/1-ratio non-anamorphic image may turn out to be slightly greater or less than the height of the C'Scope image even with the most exact matching of lenses. This will probably be because sets of lenses can be matched only in $\frac{1}{4}$ -inch increments of focal length.

If such a small discrepancy in the heights of the two images is present, adjust the position of the top or bottom masking batten for a 1-inch image overlap, top and bottom, *with the aperture image of lesser height*. This will insure an image overlap with the other aperture—perhaps from 2 to 4 inches top and bottom.

Naturally, an undersize non-anamorphic widescreen aperture may be carefully enlarged by filing one horizontal edge to match the projected image height of the C'Scope aperture. This is admittedly a tricky job because it is so easy to file out too much or to file the edge crooked. Furthermore, attention should be paid to vertical centering. If the unfiled apertures are perfectly centered in relation to the projected image of the C'Scope apertures, then *both* the top *and* bottom edges will have to be filed out.

The side masking panels, as described, are not intended to be moved in and out to accommodate the

different widths of the two different aspect ratios. Their function is only to insure correct side masking for the CinemaScope or 70-mm picture. Movable black-velour side drapes should always be used as "sliding panels" to alter the width of the screen for the two different aspect ratios.

Movable Side Masking

The side-masking drapes should be motor-driven, have an automatic stop, and be controlled by the projectionist. He will open them up from the projection room when switching to CinemaScope; close them in when switching to regular projection.

It is important that the side-masking drapes be made of a black velour material similar to that used for the "fixed" screen masking, and heavily weighted with lead shot in their bottom hems to insure straight hanging at all times. The motor curtain stop should be adjusted so that the motor shuts off when the drapes have reached the point where they overlap on the sides of the non-anamorphic picture by about 2 inches. It is a good idea to regulate the speed of the drive for a rather slow rate of travel, thus preventing any possible swinging of the side-masking drapes.

Movable side masking can be a home-made affair, but it is better to purchase the masking drapes, overhead rigging, and electric curtain control with its relay ready made. Excellent setups expressly made for the purpose may be obtained from many theatre supply dealers and from such favorably regarded manufacturers as Vallen, Inc., Akron, Ohio.

Glamour Pays Off!

A properly centered, neatly masked screen set into a tastefully appointed proscenium is the principal point of interest in any motion-picture theatre. If the screen is a good one, reflecting a bright, uniformly lighted, undistorted picture to all seats in the auditorium, the presence of colorful draperies on the stage, overhead valances to conceal the striplights and the top of the screen frame, and some special decoration (even if it be but a vase of flowers at each foot of the proscenium arch), places the all-important screen in the truly *theatrical* setting it deserves.

The stage decor and color-effect lighting in a motion-picture theatre is really nothing more than "window dressing" for the screen. Even the overture and intermission music is a factor to be tied into the overall scheme. The beauty and glamour of the screen surroundings should be apparent the moment the grand drape opens, revealing the color-lighted title curtain. The audience should be pleased by what they see and delighted by the atmosphere of tasteful beauty. If they experience the warm satisfaction we wish them to have, they will come back again and again to enjoy our screen presentations.

The projectionist's first duty is the projection of a technically good image and the reproduction of technically good sound. This is, of course, just about the only duty he has in those garage-like modern theatres which possess all the glamour of an empty grain elevator! In the more conventional house, with its warmer, more comfortable atmosphere, the projectionist has a second duty, namely, the enchantment by means of his specialized skills and innate flair for showmanship of all the glamour that the quality of the screen attractions, the decor of the theatre, and the co-operation of the management will permit.

And when you get down to the root of the matter, what is showmanship but the art of making an audience happy?

iP



***“Nobody
wants
a turkey”***

Today's audiences know real class; aren't happy with less than the best—story, production, presentation. That's why it's so important that crisp, sparkling negatives have sharp, top-quality prints . . . why it pays to GO EASTMAN all the way—negative and print-stock—with plenty of time for the laboratory to do the job right. Remember, too: Call Eastman Technical Service in case of questions—production, processing, projection. For further information write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.

FOR COLOR . . .



THE VERY FINEST PROJECTOR PARTS

ARE MADE BY



There's nothing like them for precision manufacture, close inspection, efficiency in operation, dependability and long life. Obtainable from your Theatre Supply Dealer.



LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



Strong Electric Issues Brochure On Futura Lamps

A brochure on the new Futura projection arc lamps is now available from the Strong Electric Corp. It describes in detail this new lamp which fills the 35 and 70mm needs of all indoor theatres with screens up to 65 ft. and drive-ins with screens up to 120 ft.

The Futura comes in three ratings: Futura I for economy of operation with 11mm carbon trim burning at 75 to 105 amperes; and the Futura II with automatic crater positioner for 13.6mm carbon trim burning at 120 to 160 amperes or 11mm carbon trim burning at 100 to 125 amperes.

Utilization of the standard 20-inch length carbon permits projection of an extra reel of film per length of carbon. The optical system matches the requirements of all 35 and 70mm projectors. An exclusive is the simplicity of change from one film width to the other by the turning of a single knob.

A copy of the brochure will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Ave., Toledo, Ohio, 43601. **IP**

New Product Is Good Mixer

The newest "baby" in the SOS Tel-Amatic line is a two-position, transistorized mixer.

Though small and lightweight (2½"x3"x5" and less than a pound including cable and attached Cannon connector) the new mixer — Model MX-1 — will provide for two additional low-impedance microphone inputs. Designed especially to be used with Auricon Sound-on-Film Amplifiers, MX-1 can actually be used to advantage with Magnasync and other high-quality recording equipment.

It is easy to operate, plugging directly into the Phono Input of an Auricon, for example; uses low-noise RCA transistors and a self-contained 9 Volt battery.

For further information, inquiries should be made to either of the S.O.S. offices: East coast, 602 W. 52nd St., New York City 10019, or West coast, 6331 Hollywood Blvd., Hollywood, Calif. 90028, asking for details on the SOS Tel-Amatic Two-Position Transistorized Mixer Model MX-1.

IP



HIGHEST SPEED IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. High light uniformity and less light loss on the screen—the whole screen—are typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

- Wire sharp contrast
- Uniform illumination
- Crystal clarity
- Wide range of focal lengths
- Sealed construction



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS



Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.



Investment Opportunity

The hand holding the hammer will someday make products for you.

Long years of training will have to go into making those chubby fingers productive. Much care, much love, much planning and money.

But no matter how lean and hard and skillful they become, it will signify little if the fruits of their skill are produced in anything but a free society.

You have an investment in those hands. To protect your investment, you can join with other leading American businessmen to promote the Treasury's Payroll Savings Plan for United States Savings Bonds. The Treasury Department's Plan works for soundness in

our economy, strength in our defenses, and thriftiness and self-reliance in our thinking.

When you bring the Payroll Savings Plan into your plant—when you encourage your employees to enroll—you are investing in the hands of tomorrow's tool makers and tool users. You are investing in America's next generation of machine operators, mechanics, metal workers—in all of America's skilled labor force. You are investing in America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U.S. Savings Bonds Division, Washington 25, D.C.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

INTERNATIONAL PROJECTIONIST

SMPTE Studies Wide Range Of Technical Projection Subjects

BOSTON, MASS. — Latest equipment in the fields of motion pictures, television, photoinstrumentation and high-speed photography will be exhibited Oct. 14 - 17 during the 94th convention of the Society of Motion Picture and Television Engineers. The convention will be held at the Somerset Hotel here.

Included in the 2,000 persons who will view the exhibits will be commercial motion-picture producers, owners of processing laboratories, television engineers, medical researchers, persons involved in educational television, and space-research scientists.

The Society's Exhibit Award Committee will again present a plaque to the firm that has the most interesting and effective exhibit. The plaque for the best exhibit at the 93rd Convention in Atlantic City was won by the Photolamp Division of Sylvania Electric Products, Inc.

Morton Sultanoff, a physicist at Aberdeen Proving Ground, Md., has been named to receive this year's

E. I. du Pont Gold Medal Award.

The award, which recognizes outstanding contributions to the engineering phases of instrumentation and high-speed photography, was announced by SMPTE President Reid H. Ray. Chairman of the award committee was Carlos H. Elmer, an executive of Traid Corporation, Encino, California.

Mr. Sultanoff, who is chief of the detonation section at Aberdeen's Ballistics Research Laboratories, studied at Drexel Institute of Technology in Philadelphia, the University of Delaware, and at Johns Hopkins University. He is a Fellow of SMPTE and of the Society of Photographic Instrumentation Engineers, and in 1961 received SPIE's Robert Gordon Memorial Award. Mr. Sultanoff also holds the Superior Accomplishment Civil Service Award.

The technical sessions format for the 94th Semi-annual Technical Conference of the Society of Motion Picture and Television Engineers has been announced by program chair-

man Morton H. Read of Bay State Film Productions, Springfield, Mass.

The technical program will open Monday, Oct. 14, with papers on photography in medicine scheduled throughout the day and evening.

Papers on processing laboratory practice will be presented Tuesday morning, and those on 8mm and small-format will be read during the afternoon.

Wednesday morning will be devoted to papers and demonstrations of new equipment in the fields of motion pictures, television, instrumentation and high-speed photography. Papers in the subject area of sound recording will be presented Wednesday afternoon.

Instrumentation and high-speed photography will be the subject of papers to be presented all day Thursday. Concurrent sessions on motion pictures and television in education are scheduled for Thursday afternoon and evening.

The Semiannual Technical Conference will close Friday with the presentation of papers on television engineering development and on space technology.

Arthur C. Hardy, Emeritus Professor
(Please turn to page 15)

W. J. GERMAN, INC.

... agent for the sale and distribution of

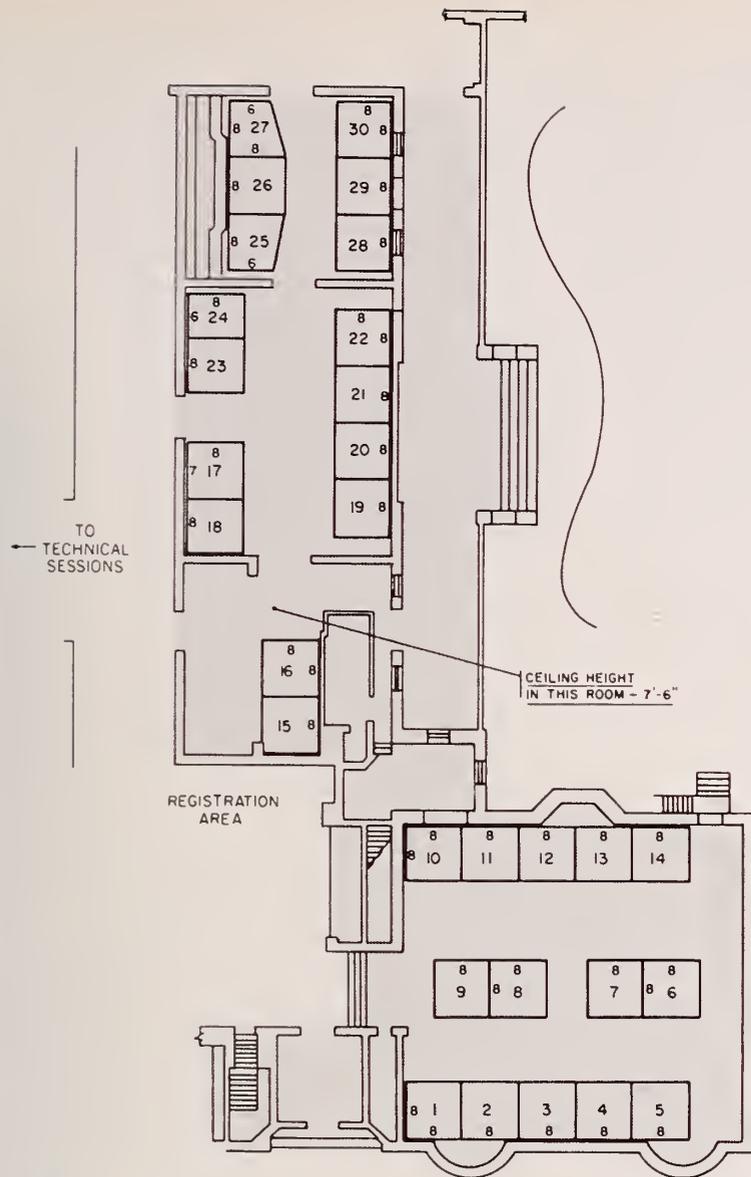
FORT LEE, N. J.
Jane Street
LONGacre 5-5978

CHICAGO, ILL.
6040 N. Pulaski Rd.
IRving 8-4064

HOLLYWOOD, CALIF.
6677 Santa Monica Blvd.
HOLlywood 4-6131

EASTMAN FILMS

that you should
specify for the
best of motion
picture and tele-
vision quality from
photography thru
release printing.



EXHIBITS

Campony H. F. Ormsbee Allen Products Inc. 986 Bridgeport Avenue Milford, Conn.	Booth 25	Campony Oliver E. Cain Flormon & Bobb, Inc. 68 West 45th Street New York 36, N.Y.	Booth 17 & 18
Victor James Arriflex Corp. of America 257 Park Avenue South New York, N.Y.	16	Ralph T. Jope Hi-Speed Equipment, Inc. 73 Pond Street Waltham, Mass.	5
Burt Grodin Camera Equipment Co. 315 West 43rd Street New York 36, N.Y.	6 & 7	Harry Teitelbaum Hollywood Film Co. 956 N. Seward Street Hollywood 38, California	1
John P. McCorthy Edgertan, Germeshousen & Grier, Inc. 160 Brookline Avenue Boston, Mass.	15	E. Werner Lipsner-Smith Corp. 3475 W. Touhy Avenue Chicago 45, Illinois	28
Gerord J. Moria Elgeet Optical Co. 303 Child Street Rochester, N.Y.	21	Wm Willette Ani-mation-Ox-berry Corp. 38 Hudson St. New Rochelle, N.Y.	2

Want
More Profits?

SELL LOCAL ADVERTISERS

**SLIDES
SLIDES
SLIDES**

Send
for complete
information

NATIONAL STUDIOS
42 West 48 Street, NYC

You want to project
a good picture?

Install a
Hurley Screen

HURLEY SCREEN CO., INC.

96-17 Northern Blvd.

Corona 68, New York

See your theatre supply dealer

Norelco

projection
equipment

Available from
leading theatre supply
dealers

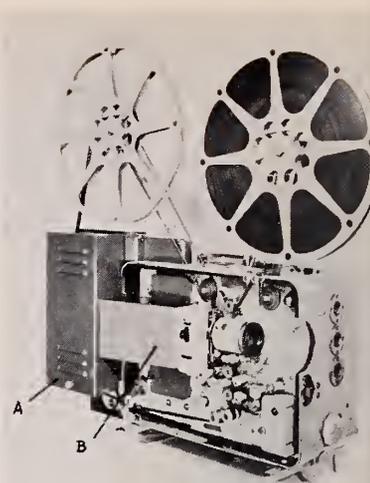
North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

PROJECTED HIGHLIGHTS

By Ray Gallo

The 94th SMPTE Technical Conference and Equipment Exhibit being held at the Somerset Hotel, Boston, Mass., certainly presents a series of new professional products for motion pictures and television—in fact, this 94th semi-annual convention, held in the city where the American dream of Democracy had its early beginning, offers many interesting sidelights. It introduced many new instrumentations for use in medicine such as medical photography devices and techniques. Some of these make it more accurate to probe into the human anatomy for known and unknown diseases. Stereocineradiography combines the four dimensions of space, time, sound and motion—a 4-D system. A miniature television camera for medical purposes (endoscopic examinations) along with laboratory practices, 8mm and 16mm recording, high-speed photography and educational motion picture and television engineering were added to the field of electronics. These and space technology, over the years, have given the world sound, motion and image for “better living.” The SMPTE talented members represent the real un-sung heroes of today’s industries. Yes, from the days of Marconi down to the

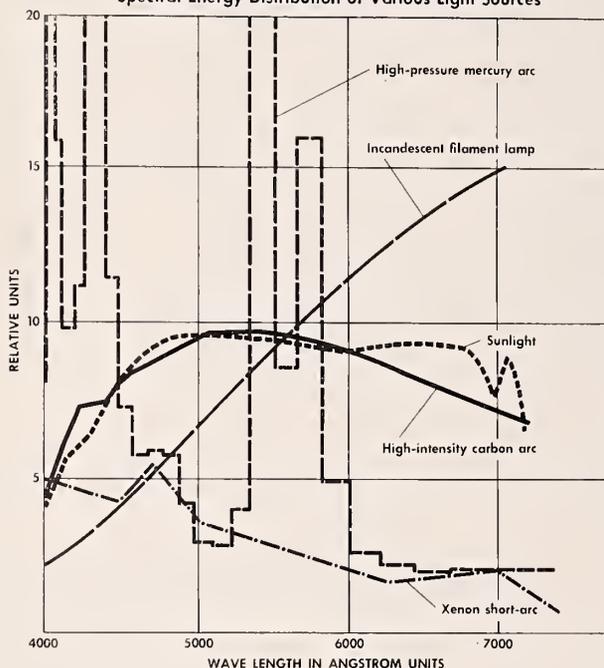
The XeTRON Division of Carbons, Inc. made its first official demonstration of a JAN projector modified for Xenon compact arc at the Chicago convention of N. A. V. A. and for the first time showed a big (9' x 12') bright (12.5 F.C.) picture with the new XeTRON type JX Xenon 450 watt lamphouse.



It is now possible for the modified projector to deliver three times as much brightness as can be obtained from a 16mm projector using a 1000 watt incandescent bulb.

The 450/JX lamphouse has been designed only for the “JAN” projector and meets the needed requirements for increased screen illumination. This JX unit is sold as a modification kit, complete with instructions for making the changes to improve the quality and intensity of the projected light. Other designs will be available in the near future for use with other make professional, heavy duty type 16mm projectors. JX is 14 $\frac{7}{8}$ in. high by 5 $\frac{3}{4}$ in. wide by 7 $\frac{7}{8}$ in. deep.

Spectral Energy Distribution of Various Light Sources



deForest photo-cell, some dedicated engineer, like any dedicated professional, has made our lives more pleasant and fulfilled by their inventions and scientific hardships. Speaking of hardships, this writer recently had the privilege of

inspecting the Union Carbide Corporation’s arc carbon division plants and laboratories, and, while engaged in the motion picture industry’s activities for the greater part of my adult life, even I had no conception of the tedious research and long hours of manufacturing processes it takes to fashion a projector carbon. The chart on this page shows a set of curves based on one of the sequences in the National Carbon technicolor film which demonstrates the spectral characteristics of various light sources. I’m sure Bill Cosby or Phil Freeman, both top executives of the arc carbon sales division, would be happy to arrange a free screening of this excellent short if you are interested to see it. Incidentally, right after this convention (Oct. 13-18) another very important Trade Show Exhibit will be on display at the Hotel Americana in New York from Oct. 28-31. There you will see the new Strong “Futura” projection lamp designed for both 35mm and 70mm exhibition, whether it is a conventional indoor or Drive-in type of theatre, and the new model AA11 Norelco Universal 70/35 projector that includes a dual split 17/35 magazine shaft to eliminate need for 35mm reels with 70mm flanges. You will also be able to see the Ashcraft arc lamp and the Century projector—an all-purpose 35mm and 70mm American made system with the transistor sound. In fact, there are over 50 firms, mostly American, that will demonstrate new theatre equipment at the TOA-TESMA-TEDA trade show. And don’t forget the Spring SMPTE convention, the 95th semi-annual technical and equipment exhibit conference to be held at the Hotel Ambassador in Los Angeles, April 12-17. **IP**

CARBON ARCS FOR THE FINEST PROJECTION . . . XENON COMPACT ARC

Lorraine Arc Carbons
division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical

XeTRON division

XeTRON LAMPHOUSES • XeTRON POWER SUPPLIES

by Cinemeccanica by Christie

CARBONS, INC. BOONTON, N. J.

Max Bloim
Cine 60 M.P. Equipment
630 Ninth Ave.
New York 36, N.Y.
Aristide Ippolito
Photo-Kinetics, Inc.
1624 Stillwell Ave.
Brax, N.Y.
B. Ingram
Heico, Inc.
Stroudsburg, Pa
H. Pilzer
Hudson Photographic Industries
Irvington, N.Y.
Robert H. Lawrence
L-W Photo, Inc.
15451 Cobrito Road
Van Nuys, California
Ruth Sheldon
Precision Laboratories
928-930 East 51st Street
Brooklyn, N.Y.
A. J. Briglia
Quick-Set, Inc.
8121 N. Central Park
Skokie, Illinois
Hy Shoffer
Smith's Photographics
269 Massachusetts Avenue
Boston, Mass.
David V. Holl
Sylvania Electric Products, Inc.
730 Third Avenue
New York 17, N.Y.
Robert King
Troid Corporation
17136 Ventura Blvd.
Encino, California
Walter Steuer
Zoomar Inc.
55 Sea Cliff Avenue
Glen Cove, N.Y.

13 **TUESDAY, October 15**
LABORATORY PRACTICE — Morning
Design of a 16mm Editing Machine;
Rapid Processing of a Panchromatic
Negative Film by a Viscous Manobath;
Method for Converting Subtractive
Timing and Color Balance Printing
Data to Additive Printing Settings;
Step Scale Metrics and Quantitative
Exposure Determination; Gevacolor
Position T953; Metro-Kalvar Motion-
Picture and Television Film; Techni-
scope; Comparison of Projected Im-
ages; Optical Effects.

10
4
11 **8MM AND SMALL-FORMAT FILM —**
Afternoon
Photographic Variable-Area Sound Re-
cording for 8mm; 8mm Variable-Area
Sound; Technical Program for 8mm
Educational Sound Film; 8mm Sound
—The Film in Education; 8mm Test
Film Report; 8mm Sound—Review of
Progress; Magnetic and/or Optical
Sound for 8mm Film; Challenge of
8mm Sound Film.

22
19 & 20
8 **PRESENTATION OF SOCIETY AWARDS**
—Evening
WEDNESDAY, October 16
EQUIPMENT PAPERS AND DEMON-
STRATIONS—Morning
New products described and demon-
strated by exhibitors.

14
3 **SOUND RECORDING—Afternoon**
Synthesis and Manipulation of Natur-
al Sounds in Electronic Music for
Films; 8mm High-Speed Magnetic
Multiple Sound Dubber; Cross Modu-
lation Distortion in Present Recording
Practice; Viscous Layer Processing of
Variable-Area Sound Negatives; New
Magnetic Film.

9
COCKTAIL PARTY, BANQUET AND
DANCE — Evening
THURSDAY, October 17
INSTRUMENTATION AND HIGH-
SPEED PHOTOGRAPHY — Morning
and Continued Concurrent Sessions.
Application of Focal Plane Shutter
Camera to Explosives Research; High-
Speed Studies of Fractures of Brittle
Materials; Laser Applications; Image
Enhancement Through Development of
Film — Photo-Optics Today and To-
morrow; Camera Mount for Missile
Tracking; Optical and Infrared
Masers.

MOTION PICTURES, TELEVISION AND
EDUCATION — Afternoon
Developments in School Television
Programming; Tele-Lecture; **Porlans
Francois** and the Training of Class-
room Teachers; Mabile Videotape
Production for Educational Television.

INSTRUMENTATION AND HIGH-
SPEED PHOTOGRAPHY—Afternoon
(Concurrent Session)
MOTION PICTURES, TELEVISION AND
EDUCATION—Evening
Instructional Television Overseas; Lo-
cation and Newsreel Motion-Picture
Equipment; Audio-Visual Devices; Ef-
fective Visual Presentations.

FRIDAY, October 18
TV ENGINEERING DEVELOPMENTS;
SPACE TECHNOLOGY
Developments of Electronic Special
Effects in Television; Subjective Eval-
uation of Broadcast TV Pictures;
Simplified Operating Practices for
Studio Cameras; Television Film Re-
corder for Field Sequential Color and
Standard Monochrome; Image-Orthicon
Operation; Secondary Electron Conduc-
tion in Low-Density Targets for Signal
Amplification and Storage in Camera
Tubes; Portable Television Tape Re-

Detailed Program SMPTE Convention

SUNDAY, October 13
REGISTRATION—10 a.m.-4 p.m.
BUFFET DINNER—5:30 p.m.

MONDAY, October 14
REGISTRATION—All Day

PHOTOGRAPHY IN MEDICINE —
Morning
Television and Cine Systems for Med-
ical Fluoroscopy; Television X-Ray
Image Storage Aparatus; Television
X-Ray Image Amplifier; Image Am-
plification and Television for Medical
Education; Research Documents for
Psychotherapy.

GET-TOGETHER LUNCHEON—Noon.
Guest Speaker: Gen. George W. God-
dard, Special Assistant to the President
of Itek Corp.

BUSINESS MEETING—Afternoon

PHOTOGRAPHY IN MEDICINE—
Afternoon
Stereocineradiography; Endoscopic Pho-
tography Through the Fiberscope; X-
Ray Time-Lapse Studies of Living
Bone; Time Lapse Studies of Living
Cells in Division; Advances in Polar-
ized Light Microscopy; Technical Prob-
lems in Endoscopic Cinematography,
Miniature Television Camera for En-
doscopic Purposes.

PHOTOGRAPHY IN MEDICINE—
Evening
National Institutes of Health Film:
"Microelectrophoresis: The Fabrica-
tion and Use of the Five-Barrel Micro-
electrode"; Cinegastroscopy; High-
Speed Photography of Eye Circulation.

DAMAGED FILM HOSPITAL



Why Junk DAMAGED FILM?

"The Film Doctors" (specialists in the science of film rejuvenation) can restore scratched, brittle, and worn film at a fraction of new print costs. Old, damaged 8, 16, 35mm film can be restored to original screening quality and its life can be prolonged indefinitely.

RAPIDWELD: restores damaged originals, negatives and prints.
RAPIDTREAT: completely protects and prolongs the life of new prints indefinitely
RAPID FILM SHIPPERS: vault storage, international distribution and inspection facilities.

Ask for Booklet Y-8

For complete details write:

**RAPID FILM
TECHNIQUE, INC.**
37-02 27 ST., L. I. C. 1, N. Y.
Stillwell 6-4600 • Est. 1940

You Name It... S.O.S. Has It!

Here, under one roof, on entire building devoted to all your needs for producing processing, recording, editing, lighting and showing motion picture films... and of **WORTH-WHILE SAVINGS IN PRICE!**

- Amplifiers
- Anomorphic Lenses
- Animation Stands, Titlers
- Arc Lamps
- Auricon Cameras
- Books, Technical
- Booms, Micro-phones
- Cameras, Professional
- Colortran Lights
- Dollies, Cranes, Tripods
- Drive-In Theatre Equipment
- Film Magazines
- Film Printers
- Film Cleaning Machines
- Film Cabinets
- Film Editing Equipmt.
- Film Lab Equipmt.
- Film Numbering Machines
- Film Processors
- Generators
- Hot Presses
- Lenses, All Sizes
- Lighting Equipmt.
- Marquee Letters
- Moviolo Editors
- Projection Equipmt.
- Projection Lamps
- Projector Mechanisms
- Rectifiers
- Reels, Cons, Film, Tape
- Reflectors
- Sound Cameras
- Soundheads
- Sound and Speaker Systems
- Stage Equipmnet
- Stripping Mochines
- Synchronizers, Splicers
- Technical Books
- Theatre Equipmt.
- Viewers, Sound Readers
- Zoom Lenses, etc.

Visit S.O.S. at Booths 23-24 at the Convention

S.O.S.
PHOTO-CINE-OPTICS, INC.
602 West 52nd St., N.Y.C. 10019.
Tel. PLozo 7-0440
Western Branch: 6331 Holly'd Blvd.,
Hollywood, Calif. 90028

3 NEW CAMERA MART ACCESSORIES

NEW GTC-59 LENS CLEANER & PROTECTOR

- Anti-Fog • Anti-Static

Ideal for lenses, cameras, condensers, reflectors, optical equipment, etc.

6 oz. can with Spray Applicator \$1.65 each
Case of 12/\$1.00 each



Liqui-Tape LIQUID INSULATING TAPE



Just Brush it on Those
Hard-To-Tape Places

Designed for use in electrical installations, maintenance and repair. Prevents shorts, shocks.

2 oz. Bottle \$1.65 each Case of 12/\$1.00 each

CONTACT

Restores,
Quiets,
Lubricates

Completely safe for sound projectors, amplifiers, studio recording equipment and editing equipment. Non-inflammable. Used for all gummy parts — instantly cleans and deposits a hard bonded dry lubricant.



2 oz. Bottle \$1.00 each Case of 12/75c each

Write for complete literature. All Prices F.O.B. N. Y.

the **CAMERA MART** inc.
1845 BROADWAY (at 60th St.)
NEW YORK 23, N.Y. • PLaza 7-6977 •

cord; Correction of Differential Phase Distortion in Color Video-Tape Recording; New Concept in Studio Lamps; Strotoscope II Television System; Surveyor Television Subsystem.

EXHIBITORS

Allen Products, Inc.
Arriflex Corp. of Americo
Comero Equipment Co.
Edgerton, Germeshusen & Grier
Elgeet Optical Co., Inc.
Flormon & Bobb, Inc.
Hi-Speed Equipment, Inc.
Hollywood Film Co.
L-W Photo Products, Inc.
Lipsner-Smith Corp.
Photolamp Div., Sylvonio Electric Products, Inc.
Precision Cine Equipment Corp.
Quick-Set, Inc.
S.O.S. Photo-Cine-Optics, Inc.
Smith's Photographics
Troid Corp.
Zoomor, Inc.

ASSOCIATION OF CINEMA LABORATORIES

The ACL will meet at The Somerset on Saturday, October 12, immediately preceding the SMPTE Technical Conference. The Equipment and Techniques Forum during the afternoon will be open to SMPTE members. There will be a special preview of the SMPTE Equipment Exhibit for ACL members at 10:30 a.m. Monday, October 14.

COMMITTEES

SMPTE Engineering Committees will meet during the Technical Conference — committee members will be notified by letter of the times and dates of their meetings. Editorial activities during the conference will include meetings of the Papers Committee, the Board of Editors and the Publications Advisory Committee.

LADIES' PROGRAM

Boston's many places of cultural and historical interest will keynote the Ladies' Program. There will be a full schedule of events to make this a delightful week for the wives.

IP

Projection Equipment At Europe's Photokina

By R. Howard Cricks,

Hon. FBKS, FRPS

The first portion of IPs report on Photokina, one of the world's largest projection shows, was carried in last month's issue. Continuing the discussion of new European projection equipment featured there, we must say something more about the Philips projectors.

We saw another application of the new lamp: a new projector—a slight modification of the FP20S—known as the FP22S, which uses two 1000-watt lamps. One is in the normal place just behind the gate; the other is at the side, and a mirror shutter three times per frame reflects its light into the aperture, which thus receives six flashes per frame. The light output is 15,000 lumens.

Yet another development is a new pulsator. The previous types are of course synchronized from the projector, running at 24 frames per second, and to smooth the 50 c/s of the European mains sufficiently to prevent flicker needs quite costly circuits. The new pulsator is synchronized with the 50 c/s mains; it operates in conjunction with the new FP25S projector, which is driven by a synchronous motor at 25 frames per second. The new pulsator is half the size and half the cost of the previous type.

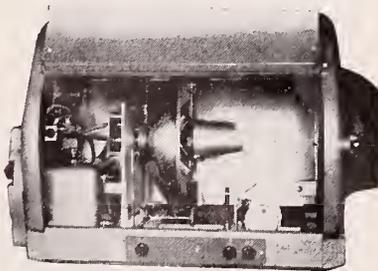
But the highlight of the Philips exhibit was the Solo projector. It is designed to carry 13,000 ft. reels, and as shown in the photograph, the magazines are positioned either side of the projector stand. A loaded spool is pretty weighty, so the spools are carried on the trolley shown, which is wheeled up to the magazine and the spool is slid on to the shaft. The foot-pedal shown serves to rewind after the complete reel has been shown (a fully auto-

(Please turn to page 18)



XENOSOL

THE REVOLUTIONARY XENON LIGHT SYSTEM
FOR SUPERIOR MOTION PICTURE PROJECTION



check these big zeiss-ikon
xenosol advantages:

- COLOR FIDELITY
- LOW CURRENT CONSUMPTION
- SUPERIOR QUALITY PROJECTION
- TROUBLE-FREE CLEAN OPERATION
- IMMEDIATE STARTING

ZEISS-IKON XENOSOL equipment—for new installations and existing carbon arc housings—is available in 900 watt, 1,600 watt and 2,500 watt sizes to fit every theatre's need.

For complete information: CINE ELECTRONIC SYSTEMS, INC.
225 East 46th Street, New York, New York. Phone: PLaza 8-1561

(from page 10)

sor of Optics and Photography at Massachusetts Institute of Technology, has been named to receive the 1963 Progress Medal Award of the Society of Motion Picture and Television Engineers.

The award, which recognizes outstanding technical contributions to the progress of motion-picture and television engineering, was announced by SMPTE President Reid H. Ray. Chairman of the award committee was Sidney P. Solow, vice president and general manager of Consolidated Film Industries, Hollywood.

Dr. Hardy, who completed a 41-year teaching career at MIT on his retirement in 1961, is probably best known for his pioneer work in motion-picture sound recording during the mid-1920's and his later work on the theory of color reproduction in the fields of photography, television, and the graphic arts. With F. H. Perrin he is the author of "The Principles of Optics," a standard reference in the field.

Henry N. Kozanowski, manager of television advanced development for Radio Corporation of America in Camden, N. J., will receive the 1963 David Sarnoff Gold Medal of the Society of Motion Picture and Television Engineers.

Robert L. Lamberts, research associate with Kodak Research Laboratories in Rochester, N. Y., has won the 1963 Journal Award of the Society of Motion Picture and Television Engineers.

SMPTE Editorial Vice-President Herbert E. Farmer announced the award, which recognizes the most outstanding technical paper published in the monthly *Journal of the SMPTE* during the preceding year.

The award committee, headed by H. Theodore Harding, motion-picture marketing manager for Du Pont in Wilmington, Del., also named two

honorable mention winners. They are Walter Bach, president of Bach Auricon, Inc., of Hollywood, and Dr. J. S. Courtney-Pratt, research physicist at Bell Telephone Laboratories, Murray Hill, N. J.

Mr. Lamberts' winning paper, "Application of Sine-Wave Techniques to Image Forming Systems," appeared in the September 1962 issue of the *Journal*. The paper discusses the derivation of spatial frequency—more properly called modulation transfer function—and illustrates the usefulness of modulation transfer function in evaluating optical and photographic systems.

New uses of photography and television in education will be outlined in technical papers. The topic chairman for the education papers is Hartford Gunn, Jr., general manager of WGBH-FM and TV, educational stations in Cambridge, Mass.

Among those persons scheduled to present papers are:

Theodore R. Conant, The Ford Foundation, New York. "New Developments in the Role and Scope of Instructional Television Overseas."

Michel Beilis, American Telephone and Telegraph Co., New York. "What is Tele-Lecture?"

Alan R. Stephenson, The 21-Inch Classroom, Watertown, Mass., "Developments in School Television Programming."

Russ Morash, WGBH, Cambridge, Mass., "Mobile Video-Tape Production for Educational Television."

Robert W. Cannaday, Jr., Modern Language Project, Boston. "Parlons Français and the Training of Non-specialist Classroom Teachers for Follow-up in French."

John A. Maurer, JM Developments, Inc., New York. "A Technical Program for 8mm Educational Sound Films."

OXBERRY

16mm HIGH SPEED INSPECTION PROJECTOR

Features:

- Rapid inspection at variable 50-140 ft/min.
- Optical rotating prism intermittent eliminates hazards of scratching or damaging film—reduces maintenance.
- Continuously projects 1 frame at a time, including perforations and sound track.
- Feed and take-up receives reels and cores.
- Direct intent light 13 ft-candles, with 17" x 23" image at 10 ft throw.

Available in 3 models

MODEL 70... Self supporting base type.

MODEL 71... Adapts to dry end of processing machine; film speed automatically synchronized with processor. 50-140 ft/min.

MODEL 72... Ultra high speed for research and special applications.

For further information, write to:

the animation equipment corp.

38 HUDSON STREET, NEW ROCHELLE, N.Y.

TELEPHONE: (914) NE 6-8138

OFFICES: HOLLYWOOD • LONDON

SPLICES NOT HOLDING?

Film breaks are costly.
Play safe by using

JEFRONA

All-purpose CEMENT

Has greater adhesive qualities. Don't take our word for it. Send for FREE sample and judge for yourself.

Camera Equipment Company, Inc.

Visit SMPTE Booth—#5

315 W. 43rd St. New York 36, N.Y.

Judson 6-1420

6510 Santa Monica Blvd., Los Angeles

51 E. 10th Ave., Hialeah, Fla.

ip

CREATE THE RIGHT MOOD EVERY TIME WITH THE

Major Mood Music Library

MAJOR offers you a full thirty-five hours of mood music for titles, bridges, backgrounds.

Write for Free Catalogue

THOMAS J. VALENTINO, INC.

Established 1932

150 West 46th Street CI 6-4675 New York 36, N. Y.

America's
headquarters
for all
theatre equipment
and
supplies

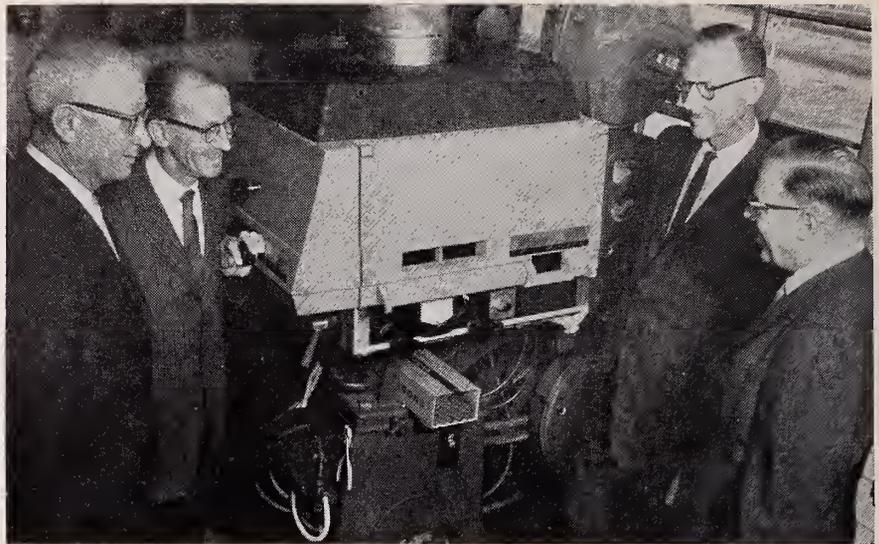


National
THEATRE SUPPLY COMPANY

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence

THE MOST POWERFUL HIGH INTENSITY CARBON ARC
SPOTLIGHTS

ARE MANUFACTURED BY
GENARCO INC.
97-00 B SUTPHIN BLVD.
Jamaica 35, N. Y. OL 8-5850
Ask for Illustrated Literature



Present at the installation of the new Strong Futura projection arc lamps in late August at the Jesse James Drive-In Theatre, Toledo, one of the 23 theatres of the Armstrong Circuit, were (left to right), William White, field representative of the Strong Electric Corp.; Clifford Callender, sales manager of the motion picture division of Strong; Arthur J. Hatch, president of the Strong Electric Corp., and Jack Armstrong, head of the Armstrong Circuit and president of National Allied.

Cover Story:
Strong Electric's "Futura"
Projection Lamp Shown to
Exhibitors at National Show

The new Futura projection arc lamp, unveiled in September, will be the feature of an exhibit by Strong Electric Corporation at the TOA - TESMA - TEDA - NAC trade show Oct. 28 - 31, Americana Hotel, New York City.

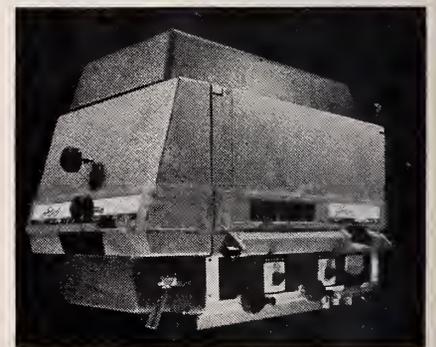
The Futura fills the 35 and 70mm needs of all indoor theatres with screens up to 65 ft. and drive-ins with screens up to 120 ft. The optical system of this powerful direct current angle trim high intensity arc has been designed to match the requirements of all 35mm and 70mm projectors. An exclusive with Strong is the simplicity of change from one film width to the other, the turning of a single knob. A calibrated scale with reference pointer permits precise reset of burner focus once the 35 and 70mm positions are established.

The Futura comes in three ratings: Futura I for economy of operation with 11mm carbon trim burning at 75 to 105 amperes; and the Futura II with automatic crater positioner for 13.6mm trim burning at 120 to 160 amperes or for 11mm carbon trim burning at 100 to 125 amperes.

Efficient utilization of the standard

economical 20-inch length carbon permits projection of an extra reel of film per length of carbon.

An 18-inch diameter first surface Tuf-Cold reflector, developed by Strong and bearing a two-year sliding scale guarantee is provided for use with lamps burning at 95 amperes and above. The resulting low aperture temperature assures perfect projection without the film damage and buckling which results in in-and-out



The Futura:

Strong Electric Company's new Futura projection arc lamp is available in three ratings for varied carbon trims and amperages.



An example of the brilliant image projected to a large drive-in theatre screen by the new Strong Futura projection arc lamp is shown in this unretouched photo made recently at the Jesse James, Toledo, one of the 23 theatres of the Armstrong circuit. All of the lighting around the concession building, turned on so as to illuminate the patrons' cars, had no appreciable effect on the powerful light projected to the screen.

of focus. Silvered reflectors are provided with lamps burning at less than 95 amperes.

The Futura has a new type convenient arc imager system, redesigned to eliminate parallex.

The Strong exhibit will also include the X-16 Xenon Projection lamp, new Bi-Powr silicon diode stack transformer-rectifier designed as a power source for the operation of two arc lamps, and Tuf-Cold reflectors. **ip**



DOUBLY PLEASED — Lloyd A. Turel, projectionist at the new Norwest Theatre, Detroit, appears to be doubly pleased with his position - pleased with his Strong Lo-Current projection arc lamps and pleased to have such an attractive boss, Dale Young Killen, manager.

Norelco To Show 360° Exhibit at World's Fair

A number of Norelco Pulse Lite projectors will be an integral part of a giant 360° motion picture exhibit at the forthcoming New York World's Fair. The exhibit will be shown on surround walls, broken by partitions so that about a thousand persons may stand in a sort of circular well to see the picture. The performance is expected to be of about 20 minutes duration. The building has been designed to accommodate another 1000 persons waiting for each performance and is intended to be a temporary one.

It will be demolished and re-erected somewhere else when the fair closes at the end of 1965.

One of the state exhibits will house the circularly projected picture system. **ip**

PROJECTIONISTS WANTED!

National Sound Service Co. will interview competent IATSE personnel for position as Field Service Men in theatrical and industrial field. Send letter to: Box 410, International Projectionist, 545 5th Ave., New York 17, N. Y.

PROJECTIONISTS PREFER ETHYLOID

Film Cement For BEST RESULTS Available from Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa

Breaking Mirrors? It can't happen with

HEYER-SHULTZ UNBREAKABLE METAL REFLECTORS

TOP SCREEN ILLUMINATION

5 YEAR GUARANTEE

WILL NOT PIT OR TARNISH

FACTORY REFINISHING SERVICE

See Your Theatre Supply Dealer

Manufactured by **HEYER-SHULTZ, Inc.** Cedar Grove, N. J.

Photokina

from page 14

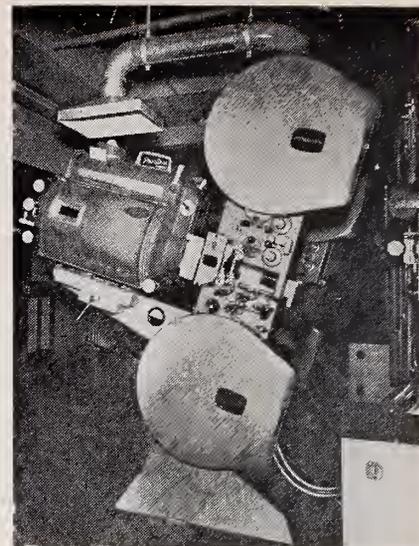
matic rewind was thought to be undesirable).

The Solo is designed to be operated from the auditorium console on the left of the picture. Everything is remotely controlled: start, stop, light brightness, sound volume, focus, racking, and even the 3-lens turret which operates in conjunction with a 3-way gate aperture.

A number of years ago André Debré showed me in Paris a prototype of an attachment for fitting to

an ordinary 35mm projector, and using the same illuminant, enabling 16mm films to be projected in the cinema. The latest development was shown at Photokina: a simple fitting which hinged to the existing projector, and was driven by either of two motors, for 16 and 24 frames per second respectively.

A new range of 16mm projectors was demonstrated by Associated Electrical Industries—formerly British Thomson-Houston, which made the



Philips FP20S projectors as installed in the ABC Cinema, Croydon, England. Identical in appearance are the other two Philips projectors recently introduced at the Photokina exposition, FP22S and FP25S.

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by

MASTER SPECIALTY PRODUCTS

200 West 72nd St., New York 23, N. Y.

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity,
distortion free.

*Low installation cost,
minimum space needs.

*Increased reliability,
less maintenance.

*No vacuum tubes, no
photoelectric cells.

***and the only American-made 70 mm 35
theatre projection systems**

SEE
YOUR CENTURY ... for bigger, brighter projection.
DEALER

CENTURY PROJECTOR CORP.

New York 19, N. Y.

first successful 16mm sound projector in Europe. It uses a relay optical system, which besides making efficient use of the light, enables the shutter to be placed at a cross-over point, so that it also works at maximum efficiency. It is available with optical and optical/magnetic sound. I saw a very attractive Japanese 16mm machine, the Elmo. It is completely self-contained, and uses a 1000-watt xenon lamp. It provides optical and magnetic sound.

A final point of interest, although not in the projection field: a camera running at the rate of 8,000,000 frames per second, and another capable of exposures down to 20 microsecond—one-fiftieth of a microsecond! The first is made by the British firm of Barr & Stroud, and the second, employing an image intensifier, by the German firm of Impuls-Physik. **iP**

Xenosol Reports Long Operating Bulb Hours

Cine Electronic Systems Inc., has announced the results of a series of in-theatre tests to determine the burning life of various Xenon lamps of their Xenosol System installations.

Amherst Theatre in Batavia, New York, now has over 2,877 operating hours on their 1,600 watt bulbs and still putting out with almost 100% light. Peter Becker reports they are still working fine and it looks like they are going to get a lot more hours, before they have to make any change. **iP**

» **AUTHORITATIVE**
 » **COMPREHENSIVE**
 » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5 1/2" x 8 1/2" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

★ Here is one of the most helpful works ever published for the motion picture projectionist. A handsomely bound and profusely illustrated compilation of the BEST of the Robert A. Mitchell articles that have appeared in "International Projectionist," revised, brought up to date.

★ The author covers clearly and thoroughly every aspect of motion picture projection, presenting his material in easily understood language—not too technical, yet technically accurate. The Manual is divided in 8 sections and contains 30 chapters — a valuable reference work no progressive projectionist should be without.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
 Post Office Box 6174
 Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

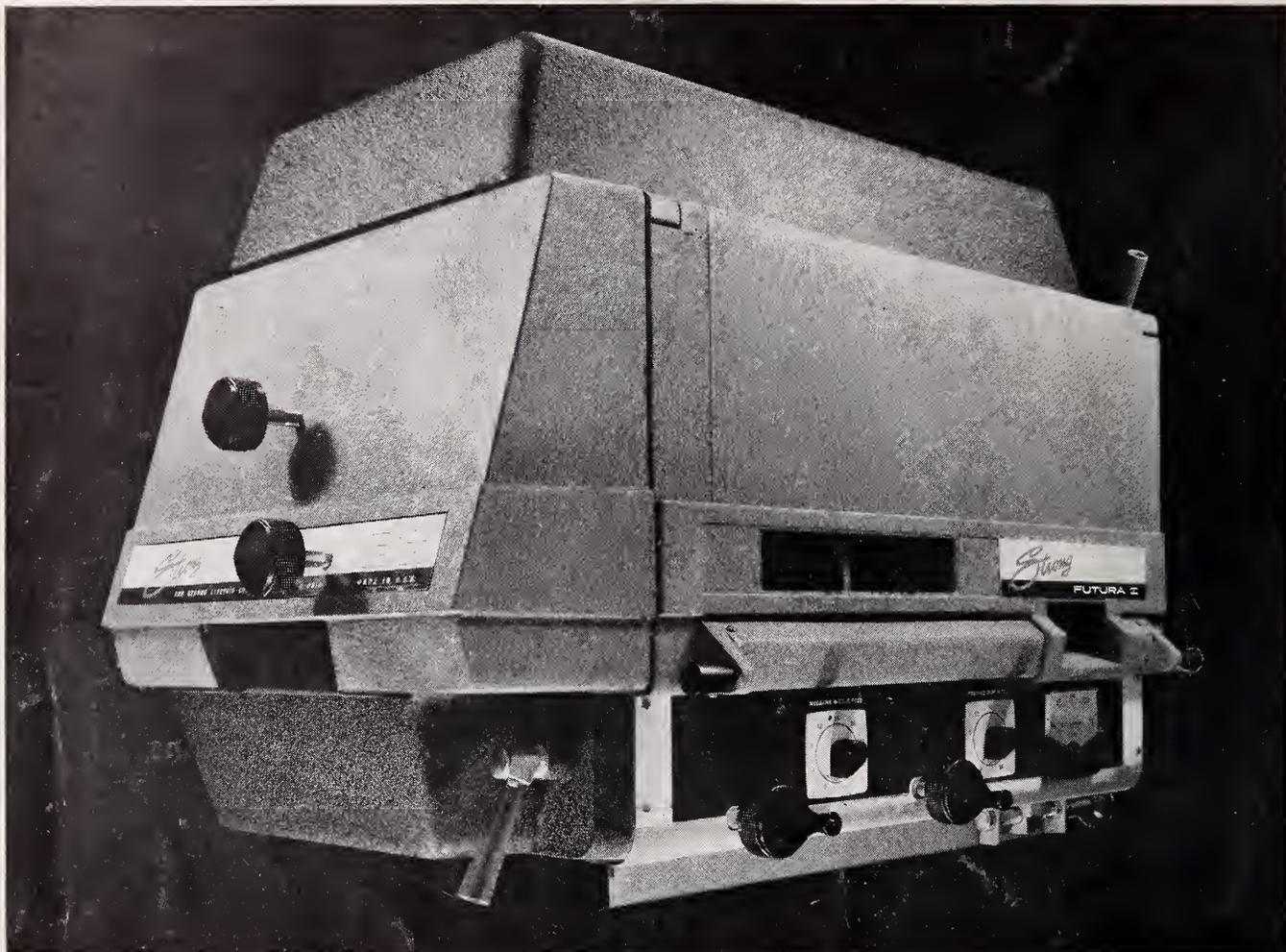
CITY ZONE STATE

NEW PRICE

\$7.00

per copy including postage

What projection lamp is so good looking and has so many beneficial advantages?



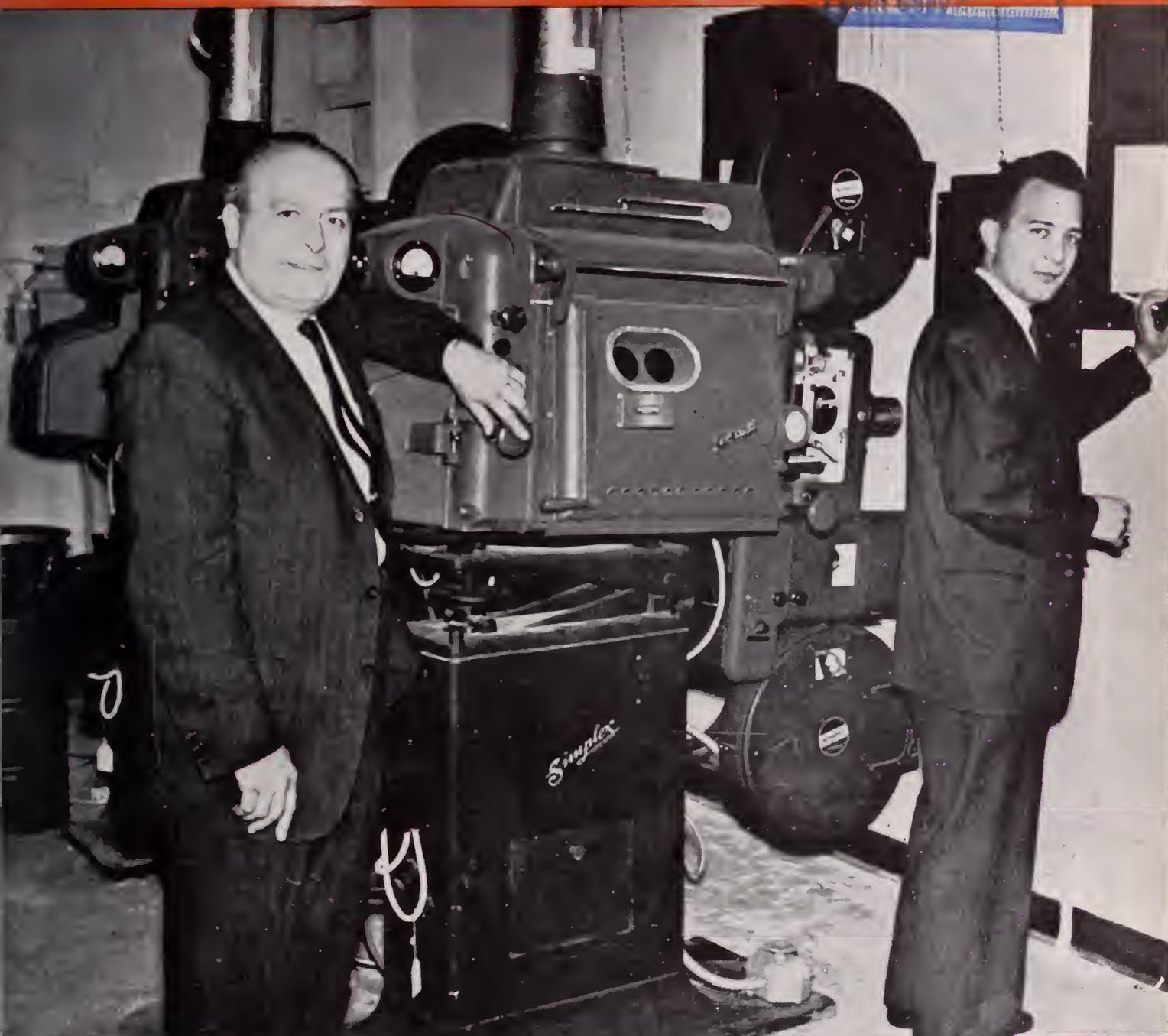
THE HISTORY-MAKING *Strong* FUTURA!

Fills the requirements of all indoor theatres with screens up to 65 feet and all drive-ins with screens up to 120 feet. Available in three ratings: **FUTURA 1** for economy of operation with 11mm carbon trim burning at 75-105 amperes, and the **FUTURA 11**, with automatic crater positioner for 13.6mm carbon trim burning at 120-160 amperes, or 11mm carbon trim burning at 100-125 amperes. The optical system matches the requirements of all projectors, 35mm or 70mm with simple interchangeability for either film width. 18-inch Strong TUF-COLD reflector for operation above 95 amperes, silvered reflectors for operation below 95 amperes. Burning economical 20-inch carbons, an extra reel can be projected per carbon length. The price? Surprisingly low. Send for brochure now—

The *Strong* Electric Corporation
31 City Park Avenue • Toledo 1, Ohio

INTERNATIONAL PROJECTIONIST

6 DEC 7 1963



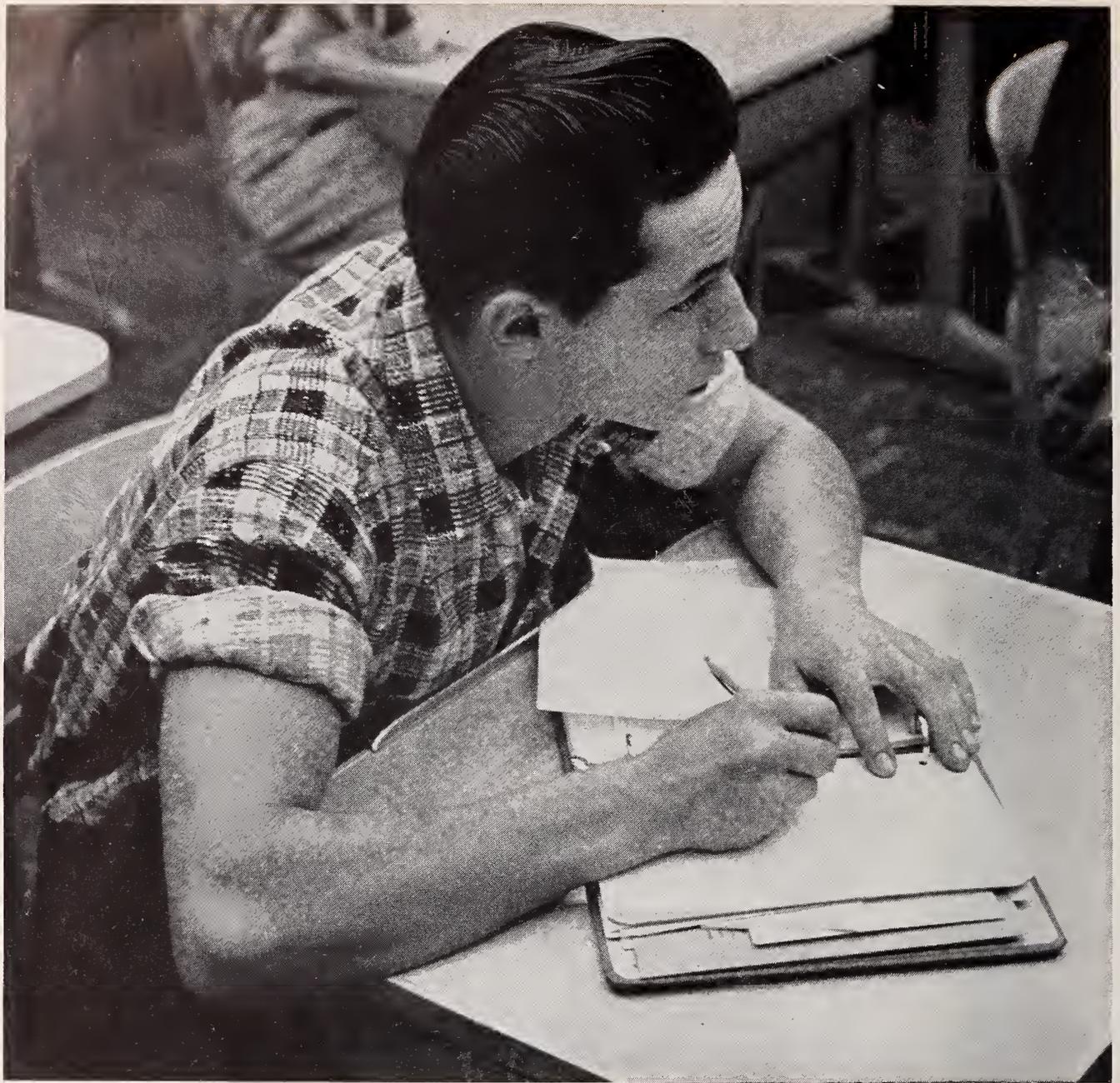
(See Story on Page 10)

NOVEMBER
VOLUME 38
40c A COPY

1963
NUMBER 11
\$3.00 A YEAR



Library of Congress
Order Division (0368X)
Washington 25, D.C.



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 November, 1963 No. 11

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

- Takeup Action Impartant 4
By ROBERT A. MITCHELL
- The Cover Story: 10
The Community Theatre
- Miami's Concord Theatre 12
- TEDA Developments 11

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



INTERNATIONAL PROJECTIONIST November, 1963

MONTHLY CHAT

SHORTAGE OF 70MM PRINTS

The exchanges around the country have not many 70mm prints — one, two or three, with the bulk of course 35mm prints.

The 70mm cost is five times more than the 35mm print. The basic print order is 250 on the 35mm prints, say these cost \$1,000, the same 70mm prints would cost \$5,000 to \$8,000. (70mm prints last longer than the 35mm prints.)

No wonder producers or distributors say that the average movie patron won't know the difference if 70mm or 35mm prints are projected on the screen.

Well, why bother to use 70mm prints on hard-ticket showings around capital cities of the country? Because the producers and distributors cash in the long-run and publicity on the big city's showings.

Holding Back The Industry

Nevertheless, the producers and distributors are holding back the film industry on getting 70mm prints around to their exchanges.

The theatre owners won't install 70/35mm projectors as the status quo lasts—they can't get 70mm prints for love or money. The exhibitor keeps worn-out and obsolete equipment, with expensive repairs, waiting for the change of scene in the film industry.

According to one equipment manufacturer, who has traveled the country several times, "this won't last long." He says the public is selective. The public listens to stereo on the radio, many families have their own hi-fi phonographs and they know what Cinerama, Todd-AO, and 70mm looks like on the screen.

Progress bound to come

Progress in the film industry is bound to come. But it will come only when the producers, distributors and exhibitors get together.

There are many shabby theatres in which the distributor's opulent show reaches the public; it is as important to the picture's sponsor as it is to the exhibitor.

The men with investments in theatre properties might well ask themselves what they are doing about this condition. Well, there's no theatremen of experience who does not know full well that it takes more than a picture to keep the film business prosperous.

The most serious factor about this situation is that the industry recognizes it, but chooses to argue back and forth between the exhibition branch and distribution branch.

Study the new processes

So the projectionist better study the new processes, such as the president and chairman of Cinerama, Inc., Nicolas Reisini, said in his financial report that Cinerama installations in theatres "should reach 200 by the end of 1963."

The movie theatre was once the leader in providing creature comforts. It is now trailing the retail establishments catering to the American consumer.

IP will hope that the well-traveled man is right about: "this won't last long."

IP

Takeup Action Important To Good Projection

By ROBERT A. MITCHELL

THE LOWER-MAGAZINE film takeup of projectors are only rarely a serious concern to projectionists. It is more or less assumed that, somehow, the film will wind up properly on the takeup reel. This assumption is not always warranted. We have found that incorrect and erratic takeup tension, together with worn holdback sprocket teeth, are frequent causes of print damage.

Some of the projectors made during the first decade of motion-picture projection — 1896 to 1906 — had no takeups at all! A large canvas bag was hung underneath the projector stand to catch the film as it issued from the machine. Without the bag, a full 1000 feet of dangerously inflammable nitrate film ran out onto the floor in a loose pile! It is not difficult to imagine the condition of the film after being scratched, trampled upon, and soiled by such rough treatment.

Principle of Film Takeup

The problem of designing a satisfactory and dependable film takeup was complicated by the variable rate at which the lower reel of a motion-picture machine must

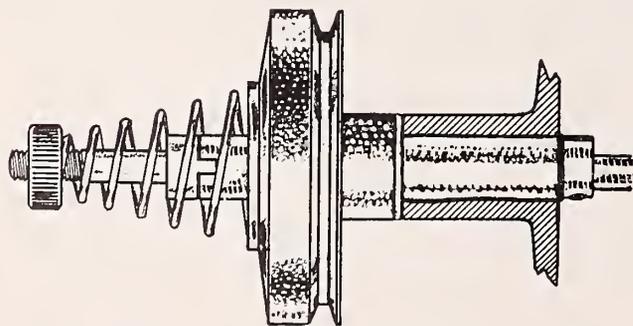


FIG. 1—Conventional type of takeup clutch assembly used in nearly all projectors. The drive pulley, run by a belt from a pulley in the soundhead, is not fastened directly to the takeup spindle, but runs freely on a steel sleeve. In the Simplex, the pulley turns a flange which communicates its rotation to the takeup spindle via a leather slip-disc which allows the reel to revolve more slowly as the film, fed to it from the holdback sprocket, retards its rotation. The tension of the coil-spring which couples the flange and friction disc is adjustable by means of a locknut near the end of the takeup spindle.

turn. It is obvious that the rotation of the reel must decrease in speed as the diameter of the film roll increases.

This problem was successfully solved in the motion-picture camera by devising a friction-clutch arrangement which allowed the takeup reel to be retarded in its rotation by the film itself. The tension of the clutch was adjusted so that the reel revolved at all times, but without placing undue strain on the film being fed to the reel.

The same type of friction-disc clutch was adapted for use on projectors at an early date; but whereas old-time movie cameras handled only relatively small and light-weight rolls of film (250 to 500 feet), projectors had a film capacity of 1000 feet, soon increased to 2000 feet in order that 2-reel "features" might be shown without an interruption for changing reels.

The principal difficulty encountered with projector film takeups was, and still is, the large difference in the diameter and weight of the film roll between the time that the showing of a reel has just begun and the time when nearly all of the film has been wound up at the end of the run. A 200-ft. roll of film wound on a 4-inch diameter core or reel hub, for example, has an outside diameter of 14 in. and a weight of approximately 9 lbs. — plus the weight of the empty reel.

The takeup unit must accordingly accommodate a large variation in the weight of reels of film and also be able to wind the film without fail at the end of the run while taking it up without undue strain in the sprocket holes at the beginning when the roll diameter is still small.

These difficulties have been aggravated in recent years by the use of 300-ft. 35-mm reels for half-hour TV programs, the increasing popularity of 4000-ft. reels for theatre use (originally introduced for the now defunct double-strip 3-D process), and 4000-ft. reels for 70-mm film (weighing about 36 lbs. when fully loaded). We hesitate to comment on the 13,000-ft. reels of the amazing Philips Solo projector except to express admiration of the engineering ingenuity responsible for the endless parade of cinematic wonders emanating from the Philips factories!

Except for special modifications involving separate motors for driving the takeups, the classical friction-disc clutch still remains standard equipment for transmitting rotary power to the takeup reel.

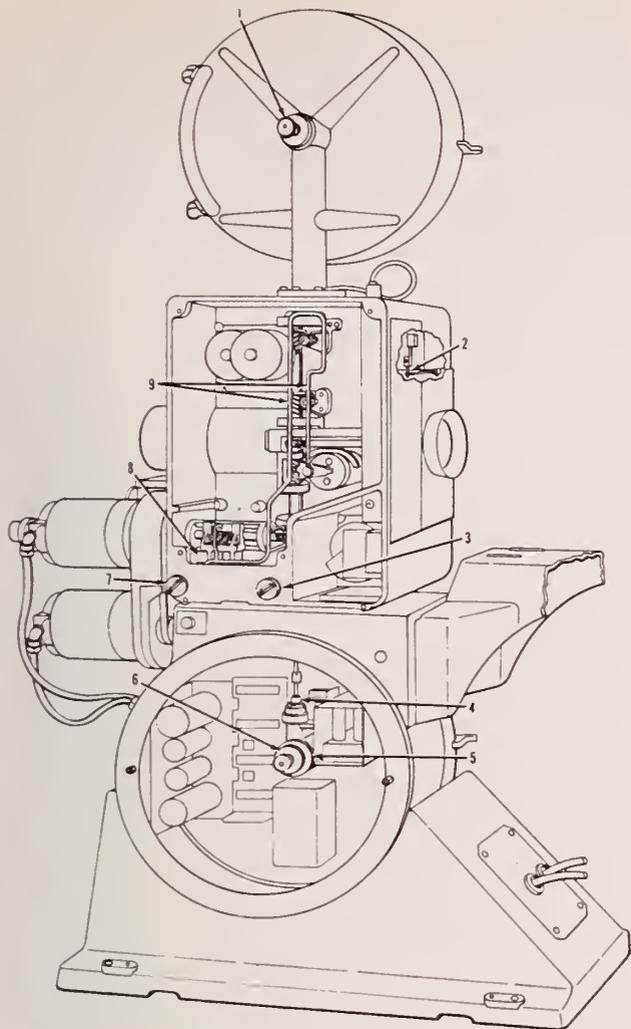


FIG. 3—The Philips Norelco 70/35-mm projector employs a drive shaft instead of a pulley-and-belt arrangement for driving the takeup friction clutch.

Construction of Takeup Unit

Fig. 1 shows the simple construction of a regular 35-mm projector takeup. A belt driven by a pulley in the projector mechanism or soundhead runs the drive pulley of the takeup at a constant speed. The reel shaft, or spindle, is not fastened directly to the drive pulley, however, but to a friction clutch which has the requisite degree of slippage. The clutch consists of two smooth-faced metal discs between which is a friction disc of leather, cork, or similar material.

With no film in the projector, the coupling is complete, and the takeup spindle revolves at the same speed as the pulley. But when film is being taken up on a reel, the film, fed at a constant rate from the holdback sprocket of the soundhead, *retards the rotation of the reel and causes the friction-disc and metal-flange clutch to slip while transmitting the rotary power.* The larger the diameter of the roll of film on the takeup reel, the more slowly the reel revolves, and the greater the friction-disc slippage.

The Simplex projector, like most others, employs a leather friction disc. The Motiograph, however, uses a cork-faced discs to provide the same result. Leather discs should be relatively free from oil to work satisfactorily; cork discs should be soaked in projector oil.

The speed at which the drive pulley of the takeup unit turns should be only *very slightly* greater than the speed

required by the smallest reel-hub diameter used in the lower magazine. The high rotational speed required for the 1¾-inch hub 1000 ft. reels (10 inches in outside diameter) places a great deal of tension on the film at the beginning, particularly when the tension spring of the takeup is adjusted to guarantee rotation of a fully loaded 2000-ft. reel. There is thus great danger that the teeth of the holdback sprocket will tear the perforations of the film at the commencement of a run when the diameter of the roll of film on the reel is small.

In order to minimize this danger of damaging expensive film footage, pulleys should be selected which impart just sufficient rotational speed to the takeup spindle to wind up the film on reels having 3½ or 4-inch hubs. When this is done, the projectionist should instruct his relief men never to use the small 10-inch (1000-ft.) shipping reels in the lower magazines. To disregard this precaution may result in a film jam-up or an ocean of loose film on the projection-room floor!

Takeup Power Drive

Most projectors have the old familiar pulley-and-belt transmission for the lower magazine film takeups. This type of transmission is capable of giving trouble-free service only so long as the belt remains tight and firmly coupled by a strong, properly inserted metal staple. Cheap belting may be satisfactory on grandmother's sewing machine, but it simply is not good enough — not reliable enough — for a motion-picture projector takeup.

If the leather takeup belt stretches, it will slip on the pulleys and cause the film to wind up unevenly — or even to pile up in the lower magazine, jam the projector, strip gears, and stop the show for the rest of the evening. And if the belt becomes so rotten that the coupling staple pulls out, the same dismaying result will ensure in an even shorter time!

A sprocket-and-chain transmission has been used

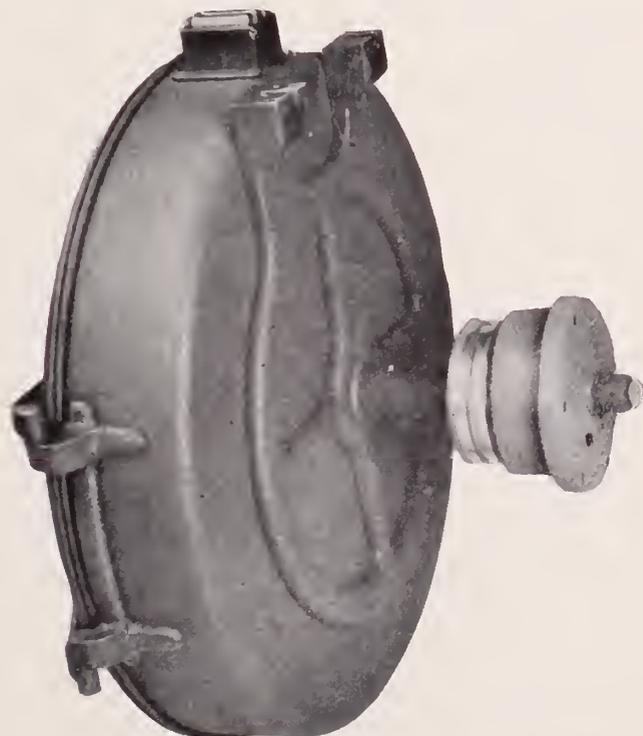


FIG. 2—The enclosed friction-disc clutch assembly of the Motiograph AA lower magazine takeup.

in the DeVry and, of course, in that "Old Reliable," the Western Electric (ERPI) universal projector base. Failure of chain takeup drives must indeed be very rare, inasmuch as this writer, who has seen just about everything that can go wrong in a projection room, has never heard of such a thing happening. It is only necessary to inspect the chain for worn or weak links every year or two, and to keep the chain and drive sprockets clean and lightly lubricated. Gear grease should be used on chains—grease heavy and sticky enough not to be thrown off when the machine is running.

Among the many modern features of the Philips Norelco 70 35-mm projector is the elimination of all takeup belts and chains. A vertical drive-shaft extends from the mechanism down into the lower-magazine compartment where the friction-disc clutch is located. A universal-shaft coupling insures smooth, vibrationless operation; and simple bevel gears transmit the rotation of the shaft to the clutch which is essentially the same as the type American projectionists are already familiar with in the Simplex and other popular machines, and which is adjusted for tension in the same way.

Individually Motorized Takeups

The Bauer U2 and Cinemeccanica Victoria-X 70 35-mm projectors employ separate drive motors for their takeups. (The two motors of the Philips Norelco are both for driving the projector, itself, one motor being used for a film speed of 30 frames per second, and the other for the standard 24-frames/sec. rate.) In the Bauer and Victoria, therefore, there is no mechanical connection between the picture-sound mechanism and the film takeup.

The Bauer has an unusual friction-clutch arrangement. It is designed so that the weight of the film roll, itself, determines the degree of coupling through the clutch—the more film on the lower reel, the greater the friction of the power-transmitting clutch. This is intended to ease the strain on the film at the beginning of the run, and yet insure fail-proof rotation of the heavy reel as the showing goes on. Several other manufacturers prefer simple arrangements.

The large lever visible in the photograph of the Bauer U2 takeup assembly (Fig. 6) must be inserted in one of the five bore-holes in such a way that the white line on the lever stands vertical. In order to guarantee non-retarded starting of the large heavy reels when switching the projector motor on, a relay switch magnet drawing its current supply from the 60-volt rectifier for the changeover is momentarily switched in while the projector motor speeds up. The "in-circuit time" of the magnet can be altered at the slotted brass pin on the delay relay. Although correctly set at the factory, adjustment of this device has sometimes been found necessary to prevent film breaks in the lower magazine.

Adjustment of the tension of the friction-disc clutches of both the Philips Norelco and the Cinemeccanica Victoria-X is completely orthodox, and similar to that of the familiar Simplex. (The Victoria utilizes a separate takeup drive motor, but the gearing is direct and simple.) A small amount of gear grease should be applied to the takeup drive gears of the Norelco once every three months.

Servicing Simplex-Type Takeups

The grimy, maladjusted takeup assemblies of older projectors are fortunately easily restored to top-notch condition. Even if a takeup unit looks okay on the surface, an overhaul is called for if the film winds up

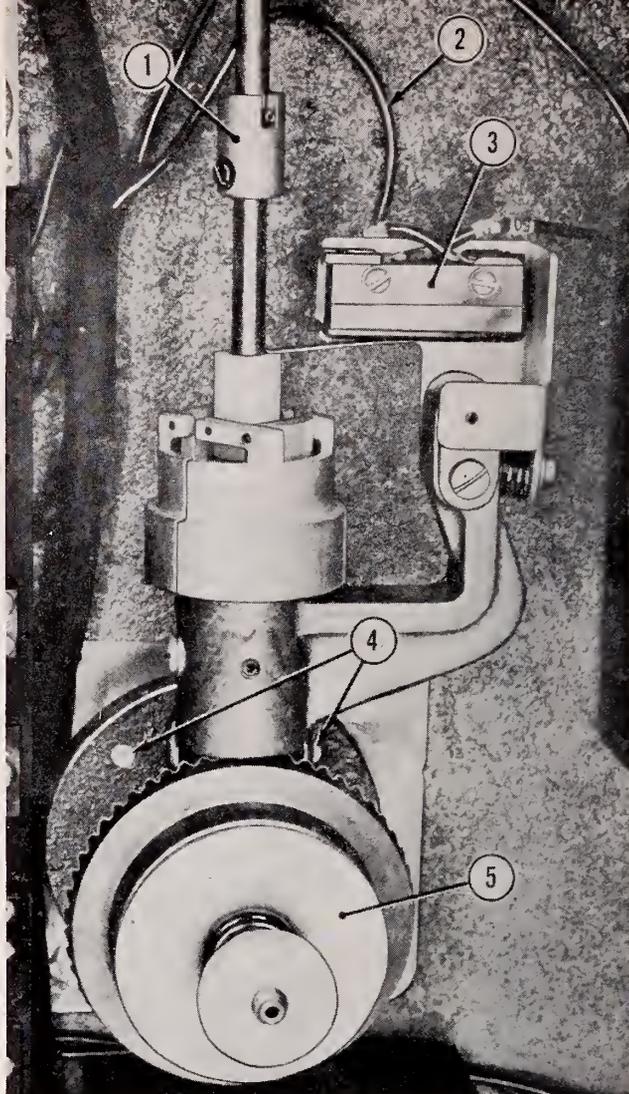


FIG. 4—Closeup of the Philips Norelco takeup drive. The friction-disc clutch is geared directly to the mechanism drive. Adjustment is simple, upkeep negligible. Note the centrifugal governor which operates a relay for shutting the projector down should motor speed decrease through failure of the electric power.

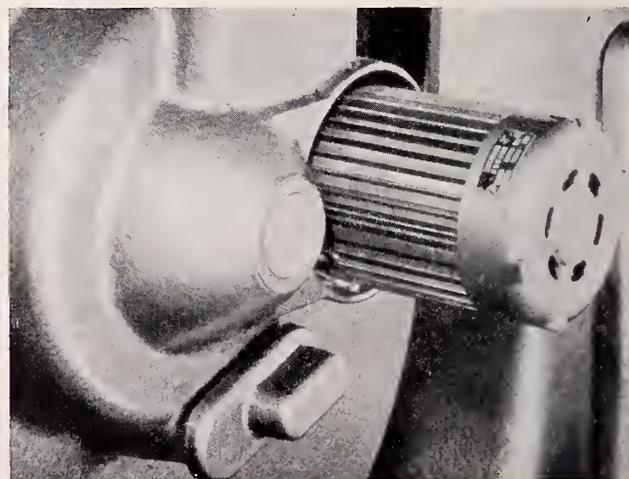


FIG. 5—The Bauer U2 70/35-mm projector employs an independent drive motor for the film takeup, thus eliminating all gearing, pulleys, belts, etc. which would otherwise be present. The Cinemeccanica Victoria-X also has a motorized takeup.

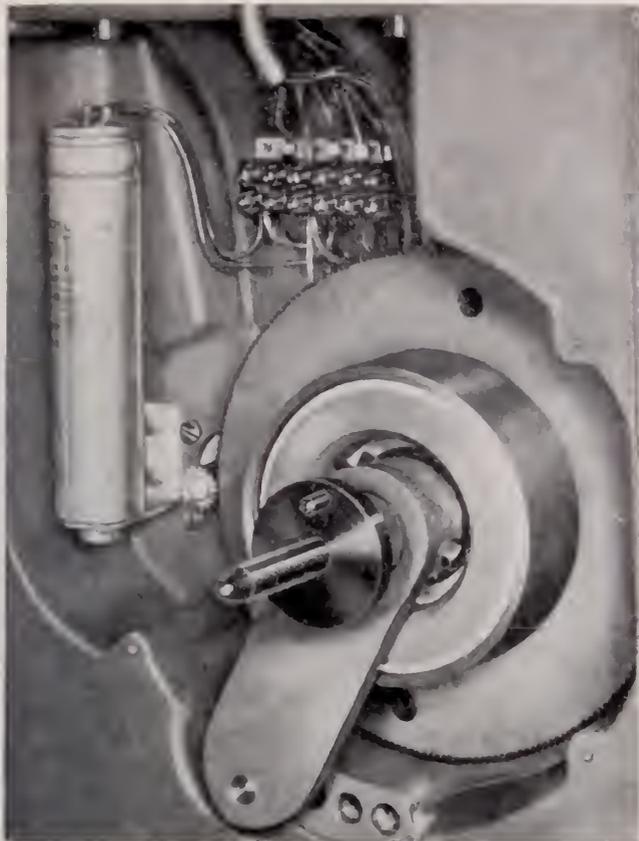


FIG. 6—The motor-driven friction-clutch unit of the Bauer U2 features a load-dependent friction takeup whose degree of coupling is determined by the weight of the reel itself. This device assures a constant, even pull on the film.

unevenly, if the sprocket holes of the film are torn when the projector starts up, or if the lower reel fails to start turning when fully loaded (as when the projector is switched on again after a shutdown near the finish of a reel).

1. Remove the takeup belt.

2. Remove the locknuts, tension spring, pulley and flange, and friction-disc assembly from the reel-spindle shaft, and pull the shaft from the lower magazine after loosening the retaining collar.

3. Clean all metal parts of the completely dismantled takeup unit, using Carbona (a carbon tet and gasoline-naphtha mixture) or lighter fluid (very inflammable!) to remove grimy grease and deposits of dirt. Examine the slip-friction surfaces of both metal clutch discs or flanges to make sure that these surfaces are smooth. (If they are scored or scratched, they must be replaced with new components.)

4. If the leather or cork friction discs are worn or damaged in any way, replace them. Otherwise wash the leather disc in Carbona or lighter fluid to remove the oil it may have soaked up. Allow to dry, then rub *one side only* of the leather disc with a *very small amount* of Vaseline. But note that Motiograph cork friction discs are treated differently: they should be soaked in projector oil.

5. Oil the reel-spindle shaft and reassemble the takeup. *Do not oil the slipping surfaces of the metal flange-discs!* Be careful not to spill projector oil upon the friction clutch when routinely lubricating the gear side of the projector and soundhead!

6. Examine the takeup belt carefully. If rotten, grease-soaked, or frayed in the vicinity of the coupling

staple, replace it with new leather belting of the best quality obtainable. Never use belts made up of several leftover ends of belting—no more than one staple should be present in a belt!

7. With a sharp awl, punch the holes to receive the coupling staple. Try the belt on the machine to see if it is really tight. If not tight enough, remove the staple, cut off a small section from one end of the belting, and punch a new hole for the staple. The takeup belt, we repeat, must be *very tight*, and the tautness checked from time to time.

8. Loosen the set-screw of the locknut on the end of the spindle shaft and adjust the tension spring so that a *full reel of film of the largest size used in the projector* starts turning the moment the projector motor is switched on. But test the revolving reel of film by holding it back from turning with the finger in order to guard against excessive tension which could easily tear the sprocket holes of the film. Not too much force should be necessary to restrain the reel while the projector is running.

Adjustment of the friction-clutch tension spring is essentially the same for the Simplex, Wenzel, ERPI universal base, Motiograph, Philips, and many other popular makes of projector. When the tension spring is correctly adjusted, the film winds up uniformly, yet with just sufficient "looseness" of the roll to be detected when the roll is pressed in from opposite sides with the fingers.

9. When the takeup tension is at last just right, tighten the set-screw of the split locknut securely. Many projectionists use two locknuts on the spindle shaft for extra safety. At any rate, it is a good idea to have a few extra locknuts in the spare parts cabinet.

Holdback Sprocket Important

A "singing" holdback sprocket is commonly attributed to excessive takeup tension which pulls the film too taut between the sprocket and the reel. This is true; but worn holdback sprocket teeth will also cause a loud buzzing noise and chip or tear the film perforations.

It has been the writer's experience that some "singing" of the holdback sprocket of the venerable old ERPI universal base is normal even when takeup tension is correct and the sprocket teeth are in good condition. This sprocket, by the way, is located in the lower-magazine compartment, not in the soundhead when the old-style gate-type Western Electric soundhead is used on the universal base.

When checking the condition of the teeth of the holdback sprocket, remember that it is their *upper edges* which become hooked or undercut—this sprocket does not pull the film down, but literally holds it back and takes all the strain imposed by the tension of the takeup friction clutch. It restrains the speed at which the lower reel turns.

The bad effect on the film of excessive takeup tension or worn holdback-sprocket teeth can be seen by examining the perforations anywhere in the first 25 feet or so of a reel which has been run through the projector. Holding the film so that the tiny pictures appear right-side-up, and using a magnifying glass, note the position of any cracks or tears present in the edges and corners of the sprocket holes. Cracks at the tops of the perforations (pulldown edge) are usually caused by worn intermittent-sprocket teeth and/or excessive gate tension. Cracks at the bottoms of the perforations (holdback edge) are caused by worn holdback-sprocket teeth and/or excessive takeup tension.



It shouldn't happen to a dog . . . or cat for that matter. But it does — all too often! Someone gets behind schedule—feels that he has to cut corners. Result: dull, “tired” prints, even though the original negatives were top quality. Fact is, with a crisp, sparkling negative, anything less than the best is a waste of time and money. That's why it pays to GO EASTMAN all the way—negative and print-stock. And in the case of questions—production, processing, projection



—always call Eastman Technical Service. For more information write or phone: Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N. Y.** Or—for the purchase of film: **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.

EASTMAN FILM

On The Cover:

Frank Hauss and Allen Hauss in the projection room of the Community Theatre.



The Cover Story . . .

Professional Skills, Modern Equipment Make Walter Reade Theatre's Screen Lighting Tops

In the projection room of the new Walter Reade Community Theatre, Cherry Hill, N. J., there is a combination of professional skills and modern screen lighting equipment which is unique.

Our cover photo starts a very interesting story. Frank Hauss, business manager of Local 418, Camden, N. J., and his son, Allen, are the projectionists in this newest of Walter Reade Theatres. Father-and-son projectionists on the same job is not a new situation, but when Ashcraft Core-Lite arc lamps are added, the result is a combination of professional skills and modern equipment.

Projection conditions at the Community are not ideal. The picture is large and the projection distance is short and when such conditions exist, problems develop. Very short focal length lens must be used with all their attendant faults. Screen lighting and other projection problems at the Community were overcome through the use of new Ashcraft Core-Lite arc lamps.

$2\frac{1}{4}$ " E. F. Kollmorgen Super-Snaplite F:1.7 X lenses are used on the flat or wide screen picture and $3\frac{1}{4}$ " Kollmorgen Super-Snaplite F:1.9 lenses are used as backup lenses for CinemaScope.

The secret of the light-making capabilities of the Core-Lite arc lamp is in optical projection distances. 6-5 8" to 6-13/16" is the prescribed distance from the positive carbon crater to the rear surface of the reflector (depending upon the

focal length of projection lenses.) 29-1/2" is the prescribed distance from the rear surface of the reflector to the aperture plate. A 16" diameter reflector is used because a reflector of larger diameter is neither needed nor optically necessary at these operating distances which are exclusive with Ashcraft Core-Lite arc lamps.

"We are proud of the new Ashcraft Core-Lite arc lamps," said Frank. "They are fine new modern tools in the hands of the projectionist in his never-ending effort to put a better picture on the screen for the added entertainment of the theatre patron and satisfaction of the owners."

Frank further commented: "These new arc lamps, with our new Simplex XL projectors and Simplex XL all-transistor sound system form a fine combination of everything that is needed to deliver the absolute best in sight and sound entertainment to our patrons free from all interfering mechanical and audio faults."

The complete equipment installation was made by the Philadelphia office of National Theatre Supply Co. under the supervision of Bill Hutchins, manager, and Mickey Lewis, installation engineer. Frank and Allen Hauss assisted in the installation.

Frank states that a Cinemascope picture, 40 feet wide is projected with a back-up lens of only $3\frac{3}{4}$ in. and a flat picture of 30 feet wide

needs only a $2\frac{1}{2}$ in. lens. He compliments the Walter Reade Circuit for equipping this theatre with most modern light producing systems which enable patrons to see pictures as perfectly as they are photographed in Hollywood studios.

In case there are readers who are not yet familiar with a few of the outstanding features of the Ashcraft Core-Lite, we herewith briefly outline some. The Core-Lite is a 35mm projection lamp into which is incorporated an entirely new optical system that can be integrated with the projection lenses now being used. Because the particular shape of the Core-Lite conical light beam eliminates the losses in your lenses due to vignetting, the light on the sides of the screen is increased to any degree desired.

It is also designed to use only one size positive carbon, the 11mm x $17\frac{1}{2}$ inch high intensity carbon combined with the 5/16 x 9 inch negative projection carbon which is operated at recommended current range of 72 to 95 amperes. Because of these and other important features it burns the carbon slower and eliminates projection losses. It also reduces the carbon consumption and use of high speed lenses. Besides the present National Projector Carbon other firms will soon make available suitable carbons for Core-Lite. Both Ashcraft mirrors and rectifiers are recommended for use with any Core-Lite projection arc lamp system.

IP

Wicker Elected TEDA Prexy At N.Y. Convention

NEW YORK—L. Phil Wicker of Greensboro, N. C., was elected president of Theatre Equipment Dealers Assn. (TEDA) at its annual meeting held in conjunction with the TEDA-TESSMA-NAC trade show at the Theatre Owners of America convention in the Americana hotel here.

Officials announced that they were pleased at the show attendance and at the turnout of members, 90 per cent of whom were present. It was believed to indicate that theatre business, slow for several years, had turned the corner and was headed for better times.

Elected to serve with Wicker were Lloyd C. Pearson, Toronto, Canada, vice president; and Bob Tankersley, Denver, Colo., secretary-treasurer.

Elected to the board of directors were Tom Shearer, Seattle, Wash.; George Hornstein, New York; Hal Hornstein, Miami; Charles C. Creamer, Minneapolis, Minn.; Louis M. Wutke, Los Angeles; J. H. Elder, Dallas, Tex.; Spero Kontos, Los Angeles. Al Boudouris of Toledo, O., was assigned to membership and liaison.

iP

'Golden Hot-Shot' Added As EPRAD Heater

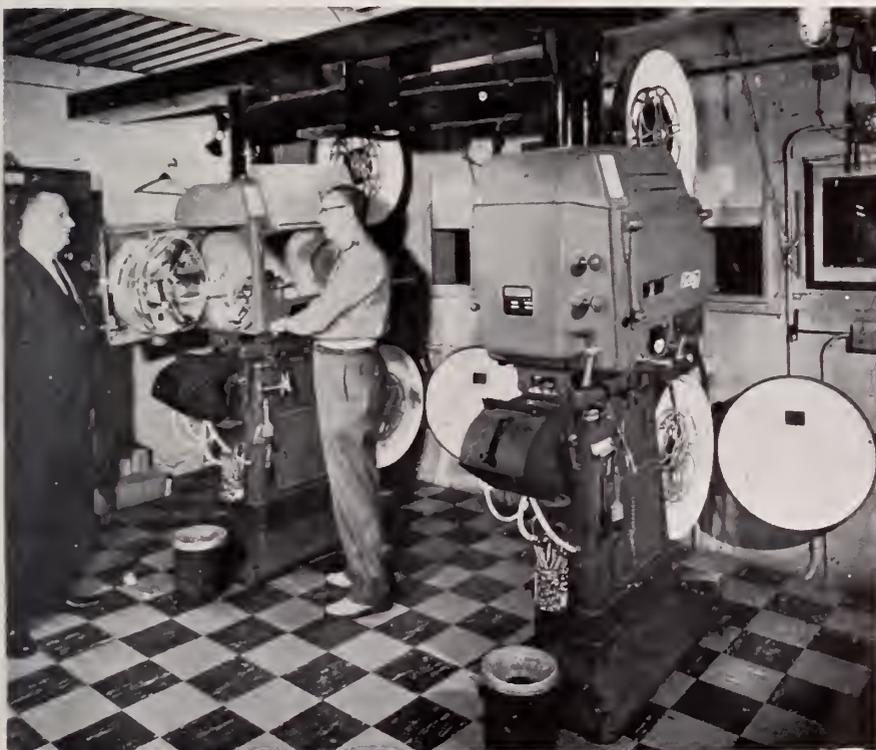
TOLEDO, OHIO—Drive-in theatre viewing in cold weather has another heater entrant with the introduction of the new Golden Hot-Shot electric in-car heater, made by EPRAD Co.

The Golden Hot-Shot will make the average automobile warm and comfortable in 60 seconds, according to EPRAD engineers. It is designed to be placed on the floor of the car to allow an unobstructed view of the screen.

The new heater is constructed of stainless steel and aluminum to resist rust and corrosion. A heavy-duty General Electric heating element is said to provide safe, reliable heat. Designed by General Electric's Industrial Heating Department, of Shelbyville, Ind., the corrosion resistant Inconel tubular heating element is sealed with silicone to prevent the entry of moisture even under the most adverse weather conditions.

Listed by Underwriters Laboratories, Inc., and Canadian Standards Association, the Golden Hot-Shot electric heater incorporates a low-voltage design so that the movie-goer cannot accidentally touch the heating element, according to the company.

iP



Nicholas George, owner of the Jolly Roger Drive-In theatre, Dearborn, Michigan, one of the Nicholas George theatres, is shown with Fred Warendorp, projectionist, admiring their new Constellation projection arc lamp and Strong Bi-Powr rectifier.

The Most Economical Means of Power Conversion
FROM EVERY ANGLE

THE *Strong*
BI-POWR

A new type silicon diode stack transformer rectifier designed as a power source—

FOR THE OPERATION OF 2 ARC LAMPS



DUAL OUTPUT RATING OF:

60-85 / 60-85 AMPS / 35-45 VOLTS

90-135 / 90-135 AMPS / 56-70 VOLTS

120-160 / 120-160 AMPS / 58-75 VOLTS

SAVES ON INITIAL COST!

Sells for 15% less than two of the lowest priced 90-135 ampere rectifiers, and costs less to install. Requires only one line service. Built for extremely long life. Class H glass insulated transformers.

SAVES ON OPERATIONAL COST!

Greater efficiency than selenium rectifiers and previous silicon types.

SAVES ON SPACE

Requires one-third to one-half less floor space than two separate rectifiers spaced for proper ventilation.

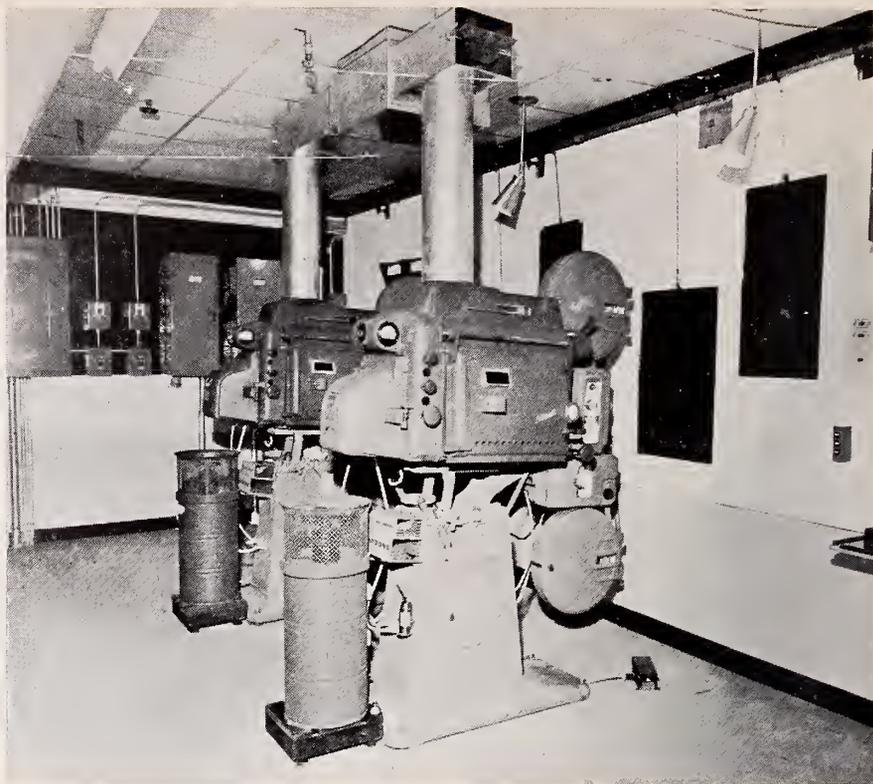
Send for literature.

THE *Strong*
ELECTRIC CORP.

31 CITY PARK AVENUE
TOLEDO 1, OHIO

Vallen for
**CURTAIN CONTROLS,
 TRACKS and SPECIAL
 OPERATING DEVICES**
VALLEN, Inc.
 AKRON 4, OHIO

Norelco
 projection
 equipment
 Available from
 leading theatre supply
 dealers
 North American Philips Co., Inc.
 Motion Picture Equipment Division
 100 E. 42nd St., New York 17, N.Y.



The Concord Theatre's Projection Room

**Miami's Concord Theatre Combines
 Comfort for Patron's Projectionists**

Miami, Fla.—The new Concord Theatre here is operated by the Town & Country Theatres. Glen Cove, L. I., N. Y.

The Concord has 1,100 seating capacity and the cost of the building was \$300,000 and the cost of the equipment was approximately \$100,000.

Joe Hornstein, Inc., of Florida, equipped the Concord Theatre.

The projection booth is equipped with Century water-cooled projectors, and a Century dual channel transistorized sound system: Ashcraft Cine water-cooled high intensity lamphouses and three Ashcraft No. 1412 rectifiers; B & L F:1.8 lenses of focal length of 50 ft. wide CinemaScope picture, and 42 ft. flat picture on Technikote XR-171 Pearl-escence screen; film handling equipment by Neumade and Goldberg with Best Devices port shutters and controls.

Also, Joe Hornstein furnished the wall treatment of fluted Fiberglas to serve acoustical and decorative purposes. The stage treatment is a special Austral shade lift curtain of gold Fiberglas with side legs trimming the curtain in turquoise Fiberglas with heavy duty A.D.C. control equipment.

Specially designed footlights with

All in one package
LEASE FINANCE PLAN
TECHNICAL PLANNING
TOP GRADE EQUIPMENT
 THAT INCLUDES NORELCO PROJECTORS
 Soundheads — Lamps — Projectors — Amplification Speakers — Seating — Screens
 Screen Towers — Carpets — In-A-Car Speakers — In-A-Car Heaters.
 Now you can finance new theatre equipment — remodel or replace outmoded equipment in your present one all with the same company. No need to purchase part of the equipment from one company, have it installed by another, and serviced by a third. Ballantyne technicians handle your theatre work from start to finish. And saves you money.
Ballantyne
 Instruments and Electronics, Inc.
 1712 JACKSON ST. OMAHA, NEBRASKA 68102
 A DIVISION OF ABC VENDING CORPORATION

three different colors accent the curtain treatment, on dimmer arrangements, which also control special hanging lighting fixtures of modern design as well as recessed concealed house lights, also controlled by the special dimmers for lighting intermissions and for dimmer operation.

The carpet, furnished by Hornstein, is a special all wool with a turquoise ground and gold and black splash accent.

The marquee attraction letters are Adler, three dimension, 17 in. in black and red.

Another innovation at the Concord Theatre is the specially taped music public address by Hal Hornstein, which is located in the manager's office, with speakers in the ceiling of the marquee and lobby to entertain the hold-back crowds in the expansive lobby with music while awaiting the break in the show, as well as for the convenience of switching over the public address by the manager to control traffic.

Leon Miller of New York was the architect. The electrical and technical design by A. Marglin. The entire supervision of installation and engineering by Hal Hornstein of Joe Hornstein, Inc. The Concord Theatre has parking for 2,000 cars. **iP**

New Brochure

A new light source for 16mm and 35mm motion picture projection is described and illustrated in detail in a new brochure now available from the Strong Electric Corp.

This lamphouse, known as the X-16, utilizes an Osram Xenon bulb to produce a uniform white light comparable to carbon arc lighting. Three models for 16mm projection are rated at 450, 900 and 1600 watts, for screens up to 24-feet wide, and three models for 35mm projection are rated at 900, 1600 and 2500 watts for screens up to 36-feet wide. This light source requires practically no attention by the operator.

There are no moving parts and the complete absence of dirt assures longer projector life. The operating costs are about the same as for those of carbon arcs projecting an equal amount of light. A copy of the bro-

chure will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio, 43601. **iP**

Hornstein Furnishes Nassau Theatre Projection Equipment

NASSAU, B. W. I. — The new Shirley Street Theatre has a 40 ft. wide screen, and uses Strong X-16 2500 watt Xenon lamps. Joe Hornstein, Inc., of New York, furnished the equipment and stage drapery treatment.

The Shirley Street Theatre is equipped with Century Projection and Century transistorized sound equipment; Bausch & Lomb lenses; Strong rectifiers, and, as noted above, Strong Xenon lamphouses.

Engineering and supervision of the installation was by Hal Hornstein of Joe Hornstein, Inc. **iP**

XeTRON Officials Show "Break-Thru"

New York — The XeTRON booth, at the recent TOA trade show, had a big sign: "Break-Thru," announcing the XBO 6500W high pressure Xenon discharge lamp. (XeTRON is a division of Carbons, Inc.).

Edward Lachman, president of the parent company, and Frank H. Rifle, general manager of XeTRON, explained to the exhibitors the details of the 6500W Xenon.

Features of the high pressure 6500W Xenon are the constant lumen output; a light that resembles natural daylight, having a color temperature of approximately 6900° K; independent of variations in the supply of voltage, which remains unchanged even when the light output is being regulated.

The body of the XBO Xenon lamp consists of an ellipsoidal shaped discharge vessel centered along the axis and containing the opposing electrodes. Both ends of the lamp are fitted with cylindrical caps which are provided with prefocus pins. A special igniter is required (approximately 50 KV pulse, 200 amp capacity). XBO Xenon requires DC power. **iP**

PROJECTIONISTS PREFER ETHYLOID

Film Cement For BEST RESULTS Available from Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSDOORFF CARBON CORP. East McKeesport, Pa.

ASHCRAFT CORE-LIGHT SUPER CINEX CINEX SPECIAL PROJECTION LAMPS

And HIGH RECTANCE MULTI-PHASE RECTIFIERS

World's Standard of Projection Excellence

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XeTRON products

division

XeTRON LAMPHOUSES • XeTRON POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

BOONTON, N. J.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

Century Introduces Acoustic Compensator

NEW YORK—Century Projector Corp. has introduced what is said to be an entirely new device to provide motion picture theatres with a fast and accurate means of adjusting the frequency characteristics of multiple channel theatre sound systems for the best possible sound reproduction.

The device, called by its manufacturer the Century Acoustic Compensator, is engineered and designed as a fully contained, compact unit, has no insertion loss, nor does it re-

PROJECTIONISTS WANTED!

National Sound Service Co. will interview competent IATSE personnel for position as Field Service Men in theatrical and industrial field. Send letter to: Box 410, International Projectionist, 545 5th Ave., New York 17, N. Y.

quire changes in system gain or amplification, the company states.

It can be added to practically any multi-channel sound system.

Century states in its supplied technical information that 1) the input is a bridging type having an impedance of about 100,000 ohms (1K). It will therefore, connect to most pre-amplifier outputs. 2) The output is high impedance and will connect to the input of power amplifiers having input impedances of 1000 ohms or higher. The output will simulate the output of the average pre-amplifier. 3) it can be used at a remote distance (in the auditorium) by using shielded cables for the connections. **IP**

JOHN STRADCUTTER DIES

MINNEAPOLIS—John Stradcutter, 54, projectionist at the Belle Plaine, Minn., theatre, was killed by an automobile on Highway 169 near Le Sueur, Minn. Investigation showed that Stradcutter walked into the side of a car driven by a Chaska, Minn., man. **IP**

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by
MASTER SPECIALTY PRODUCTS
200 West 72nd St., New York 23, N. Y.



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

ACTS OF MARCH 3, 1933, JULY 2, 1946
MENT, AND CIRCULATION OF
STATEMENT REQUIRED BY THE ACT OF
AUGUST 24, 1912, AS AMENDED BY THE
AND JUNE 11, 1960 (74 STAT. 208)
SHOWING THE OWNERSHIP, MANAGE-

INTERNATIONAL PROJECTIONIST

Published monthly at Main Postoffice, Minneapolis, Minnesota for November, 1963.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Frank W. Cooley, Jr., Minneapolis, Minn.

Editor Frank W. Cooley, Jr., Minneapolis, Minn.

Managing editor, Ray Gollo, New York, N. Y.

Business manager, None.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1% or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Northern Publishing Co., Minneapolis, Minn.

Frank W. Cooley, Jr., Minneapolis, Minn.

Rita Cooley, Minneapolis, Minn.

3. The known bondholders, mortgagees, and other security holders owning or holding 1% or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 5,925

F. W. COOLEY, JR.
Sworn to and subscribed before me this 8th day of October, 1963

THEODORE GLAROS,
Notary Public, Hennepin County, Minn.
My Commission Expires Sept. 23, 1969.

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

LAST CHANCE!!

The supply of the current edition of the Mitchell Manual for Practical Projection is nearly exhausted — when the present supply is gone, there will be a ONE-YEAR wait until the new edition is prepared. Get your copy now at the low price of seven dollars, postpaid.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

CITY ZONE STATE

NEW PRICE

\$7⁰⁰

per copy including postage

A Scene From America's Projector Carbon Center...



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says SID MORLEY
National Carbon Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at National Carbon's plant in Fostoria, Ohio, projector carbons move on to an automatic resistance test, where a direct reading instrument measures in ohms-

per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, National Carbon utilizes today's most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!

Contact
Mr. National Carbon



NATIONAL CARBON COMPANY

Division of Union Carbide Corporation • 270 Park Avenue • New York 17, N. Y.

In Canada: Union Carbide Canada Limited, Toronto



INTERNATIONAL PROJECTIONIST



Photo by [unclear]

KODAK MODEL — Surrounded by film packages, Sue Smith, Eastman Kodak film-testing model, shows a winning smile. Her job is posing for pictures—more than 70,000 stills and 150,000 feet of movie film a year—to make her the leading candidate for the title of world's most photographed girl. She works at Kodak Park in Rochester, N.Y. (See Cover Story, page 11.)

DECEMBER
VOLUME 38
40c A COPY



1963
NUMBER 12
\$3.00 A YEAR



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

*— says SID MORLEY
“National” Sales Engineer*

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at “America’s Projector Carbon Center” in Fostoria, Ohio, NATIONAL carbons move to an automatic resistance test, where a direct reading instrument

measures in ohms-per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, NATIONAL carbons are produced by today’s most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!



“National” is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 38 December, 1963 No. 12

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murroyhill 7-7746
(Area Code 212)

IN THIS ISSUE

Tinted Release - Print Film By ROBERT A. MITCHELL	4
The Cover Story: Kodak's Girl	11
306's 50th Anniversary	10
New Audio System for Drive-In	12

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

EXHIBITORS ARE REFURBISHING— CHEERY NEWS FOR CRAFTSMEN

One indication that the exhibitors are refurbishing their theatres is that the equipment manufacturers were very happy at the recent TOA trade show.

The manufacturers who had a booth in the trade show got many orders, particularly on projection room equipment, and the exhibitors who did not order still seemed interested in the new, up-to-date equipment.

The TOA business sessions were in the morning, and after the formal lunch the theatre owners crowded the trade show.

Just maybe the booth craftsmen will get a break, particularly in the subsequent runs. The theatre owners may get wise to protecting their investment against their competition or maybe even pop for a new theatre.

The TOA keynote speech was the "boom" ahead for the theatre industry. Exhibitor Richard A. Smith discussed the growth in the shopping center theatre and drive-ins.

He estimated that 2,000 theatres will be constructed within the next five years. He said that if only 1,500 were built in the next five years the building boom should stimulate the production of films by their increased revenue.

Mr. Smith said if 1,500 theatres are constructed in the next five years that will bring to the film industry over \$175,000,000 a year in increased box-office grosses. He went on at the same time to say that downtown theatre operations can also continue to prosper with the proper handling.

This is cheery news for the booth craftsmen.

To meet present-day standards, for even the subsequent runs and neighborhood theatres the picture should be bright, with good distribution and color rendition.

There are many theatres, especially in the subsequent runs, which have out-moded and well-worn arc lamps and projectors (according to the equipment men more than 55% of the arc lamps and projectors in theatres in this country are more than 20 years old).

Exhibitors look for 1964 to be a good year in their business, topping 1963, which was not bad, at least for the big pictures. If the exhibitors spend money for new projection equipment and they advertise that they have high-standard projection and sound, they can help their theatre by attracting more patrons just because the theatre-goer knows what "modern sound" is.

The theatre owner should consult the projectionist for tips on what he is buying. The projectionist keeps up-to-date on the booth equipment—or he should if he is doing his best job. But how many men can keep up their interest when they must do with ancient gear, and when their suggestions are never requested?

For Will Rogers Memorial Hospital

The projectionist should save copper drippings for the Will Rogers Memorial Hospital.

Morris J. Rotker, a member of Local 306 and a member of the 25-30 Club in New York, originated the copper drippings for the Will Rogers Hospital; the union locals gather the copper drippings for donation for the Hospital at Saranac Lake, N. Y. In some theatres the projectionists strip the copper from the carbon. The Will Rogers Hospital needs the money, so see what you can do.



A Neglected Asset: TINTED RELEASE-PRINT FILM

By ROBERT A. MITCHELL

PART I

TINTED-BASE RELEASE PRINTS have only seldom been used since the advent of talking pictures, and to the best of this writer's knowledge, not at all during the past twenty years. What a contrast to silent-picture days when every available trick of the trade was pressed into service to beautify the screen and amplify—or even over-amplify, if possible,—the emotional and atmospheric values inherent in the dramatic photoplay!

All monochrome prints of the present day are a stark and unexpressive black-and-white—the black of the silver image and the white of unfiltered arc illumination on a chalk-white screen. The effect of plain black-and-white, while of great visual clarity, is sometimes harsh and nearly always pictorially monotonous because of the unrelieved absence of dramatically suggestive or emotionally contextual color. Experience has demonstrated that dominant color tone, especially when appropriately varied from sequence to sequence, enhances in a powerful manner the mood and feeling of each individual scene of a motion picture.

The dramatic technique of tinted film was utilized at a very early date. At first, plain black-and-white footage was colored by dye solutions which were readily and uniformly absorbed by the gelatine emulsion. So widespread did the use of colored film become that the manufacturers of film offered, as an improvement, *tinted-base* positive raw stock in a wide variety of colors. Eastman Kodak, for example, supplied seventeen standardized colors of film, millions and millions of feet of which were consumed by the industry. In fact, fully 90 per cent of all feature-film footage was printed on tinted positive during the 1920's.

Old-Style Photocell Rejects Tints

It is entirely probable that effective dramatic use of tinted release stock would have continued into the days of sound pictures had it not been for the "blindness" of the old-style potassium photoelectric cell to the broad infrared region of the spectrum freely transmitted by most dyes. In other words, tinted film stock seriously interfered with optical sound reproduction when the potassium photocell was used. The old-style metallic cesium cell, unlike the modern cesium-oxide and silver-oxide cell, was similarly afflicted with this sort of "color-blindness."

The early potassium cell, like the modern blue-sensitive photocell having what is called a "type S-1 re-

sponse." is affected only very feebly by green, yellow, and orange light, and not at all by red light and the invisible infrared radiation to which the modern S-4 cesium-silver-oxygen photocell and the silicon photodiode are most sensitive.

With a blue-sensitive photocell in the soundhead, use of green, yellow, or amber-tinted film attenuated the sound output to such an extent that a compensating boost in fader setting unpleasantly decreased the signal-to-noise ratio of the system. Use of deep red film cut the sound off entirely! It is understandable, then, that movie producers resorted to exclusive use of clear-base stock as the best way to avoid unnecessary trouble with a method of sound reproduction which, even at its best during the infancy of talking pictures, left much to be desired.

But things have changed. Except for the isolated instance of a few European equipments, blue-sensitive photoelectric cells have now been completely replaced by infrared-sensitive photocells and phototransistors to which all colors of tinted-base film "look" very nearly as transparent as clear-base film. Accordingly, tinted-base release positive can now safely be used indiscriminately, with as many color changes as may be desired in a single reel, or even intercut with clear-base stock, without noticeable attention of optical-track reproduction.

Tinted Film for Monochrome

This assertion can be proved; and this we intend presently to do to the satisfaction of all concerned—directors and producers as well as projectionists,—but first let us attempt to dispose of two questions which are surely uppermost in the minds of many who may wish to re-examine the dramatic potentialities of tone-coloring the screen.

First, doesn't the prevalence of natural-color filming preclude the need for tinted-base prints? No one can be more enthusiastically appreciative of natural color than we are; but the fact remains that there will always be a place on the screen for monochrome (represented at present only by plain black-and-white). As Bette Davis says in her autobiography, *The Lonely Life*,* "I have always thought color robs an emotional story of power, and most of my work was of an emotional nature. History, however, is usually enhanced by color." Not history only, as Miss Davis may agree, but musical



Some things can't be hurried: Sharp, crisp, top-quality prints take time to produce. Don't push your print-maker into making short cuts. Give him time to do the job right, do your negatives justice. Otherwise, you're throwing away good money. Matter of fact, better play it safe. GO EASTMAN all the way—negative and print-stock. And always, in the case of questions—production, processing, projection—get in touch with Eastman Technical Service. For further information: write or phone Motion Picture Film Department, **EASTMAN KODAK COMPANY, Rochester 4, N.Y.** Or—for the purchase of film: **W. J. German, Inc.** Agents for the sale and distribution of EASTMAN Professional Film for Motion Pictures and Television, Fort Lee, N. J., Chicago, Ill., Hollywood, Calif.

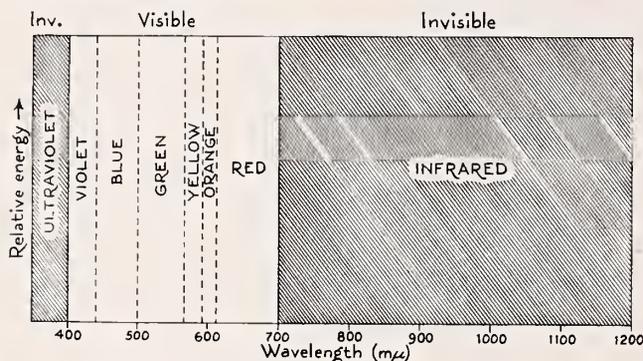
FOR COLOR . . .

EASTMAN FILM

photoplays, sagas of God's great out-of-doors, and spectacular epics of every conceivable kind. But the theatrical motion picture depends for its existence upon the human soul projected in an intense isolation; and for the deeper introspection of human nature, the profounder mood, monochrome appears to be the most suitable medium.

As we said, the blindness of the old-time potassium photocell to the red and infrared wavelengths of exciter radiation prevented the unrestricted use of tinted-base stock for sound-positive printing. The need for mood-coloring monochrome productions was nevertheless occasionally met by *toning* the silver image without adding color to the base or to the clear gelatine of the emulsion. White areas of the photographic image remained white, but the halftones became sepia-brown or some other muted shade of color—a welcome relief from the expressionless achromatic grays of the silver image.

Image-toning was possible because the metallic salts which replaced the silver of the photographic image are nearly opaque to the wavelengths which affect the photocell most strongly, thus insuring a normal sound level without affecting the signal-to-noise ratio. For present-



Scale of Electromagnetic Radiations

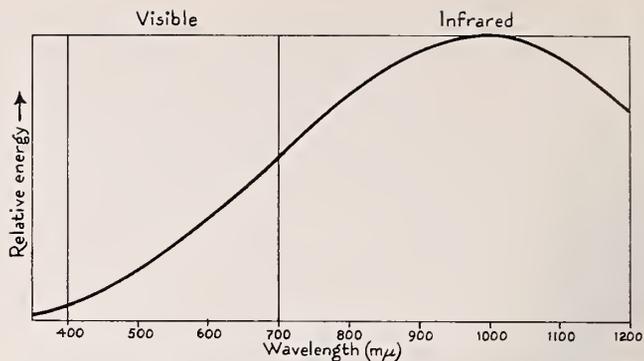
FIG. 1—The radiant emission of light sources, the response of photocells to various wavelengths of radiation, and the transmittance of radiation by colored plastics can best be shown graphically by a "curve" drawn on a rectangular network of co-ordinates.

This diagram is just such a graph, but presented without a curve of any kind in order to reveal more clearly the range of radiation wavelengths in which we are most interested—a "spectrum" from 350 to 1200 millimicrons. Note that this range includes the visible spectrum (unshaded) divided into its characteristic color bands, violet, blue, green, yellow, orange, and red. Beyond the shortwave and longwave extremes of the visible spectrum lie the invisible ultraviolet and infrared regions, respectively.

day use, the colored salts chosen for image-toning must absorb strongly in the low red and near infrared regions of the spectrum so as to "look" opaque to the S-4 type of photocell. Many projectionists will remember the blue-toned soundtracks of the old Cinecolor and Trucolor prints. The blue salt was a form of Prussian blue (ferric ferrocyanide), opaque to the infrared.

The writer recalls several dramatic westerns and other "locale" pictures (e.g. "The Good Earth") which were enhanced in mood by sepia toning. Also much used about 25 years ago was a beautiful process called Sepia-Platinum which resulted in a pleasing combina-

* "The Lonely Life" by Bette Davis, G. P. Putnam's Sons, now also available in a Lancer paperback edition.



Emission of tungsten-filament exciter (2500° K)

FIG. 2—The emission of a tungsten-filament soundhead exciting lamp operated at a color temperature of about 2500° K (amber-yellow light) has most of its radiant energy concentrated in the infrared region of the spectrum. The maximum intensity of exciter radiation occurs close to 1000 millimicrons in the invisible infrared.

tion of greenish pastel tones and chocolate-brown deep tones.

Tinting and toning were often used together in silent-film printing practice. For example, a green image on a yellow ground produced by blue toning on "Sunshine" positive, a violet image on a rose-pink ground produced by blue toning on "Caprice" positive, a sepia image on an amber ground produced by brown toning on "Afterglow," "Candleflame," or "Firelight" positive, etc.

These and other attractive color combinations were especially frequent and varied in such "novelty reels" of yesteryear as Walter Futter's Curiosities, Pathe Review, Lynam Howe's Hodge Podge, and Paramount Pictorial. We miss the color effects as well as the lively variety of the movie shows of other days, for, after all, the public doesn't attend the theatre to be bored to death!

Tinted Film Glorifies the Screen

The second question we have in mind concerns the improvement of theatre motion pictures by the use of tinted positive for monochrome feature-film releases. Is tinted film a boxoffice asset? That is to ask, will the average moviegoer enjoy the movies more when they are pictorially beautified, emotionally enhanced, and dramatically enlivened by the use of tone color for monochrome productions? Our answer is a resounding YES!

Aside from the undisputed fact that tinted film allows pictorial effects which the dead white-and-gray scenes of monochrome TV sets are unable to duplicate, tinting and toning motion-picture film makes for visual interest, viewing comfort, and a significant intensification of the emotions being portrayed on the giant theatre screen. Let the case be stated by Dr. Loyd Jones, an authority on film and color who wrote on the subject during the transition from silent to sound motion pictures:*

"There is little doubt that the employment of material which imparts a pleasing and variable color to the screen adds to the beauty of the production, breaks the monotony of looking for long periods at a plain black-and-white picture, and softens harsh outlines which otherwise may produce unpleasant impressions. But of much

* "Tinted Films for Sound Positives" by Loyd A. Jones, Transactions of the SMPE, Vol. XIII, No. 37, 1929.

greater importance than these rather incidental aesthetic contributions of color is its great potential power to enhance, by either objective or subjective association, the emotional significance of the scene with which it is associated."

Technical Considerations

The pressing technical problem attendant upon the use of tinted film is, of course, satisfactory reproduction of the optical soundtrack. If the tinted base interposes an appreciable optical density to the photoelectric cell or phototransistor, significantly reducing response, it will be necessary for the projectionist to increase the fader setting in order to obtain a normal level of sound volume. And no matter how much "reserve power" the amplifier may have, compensation by means of the volume control invariably increases "ground noise;" and if the photoelectric density of the film is excessive, the increase in gain required for adequate volume may be so great as to introduce overload distortion.

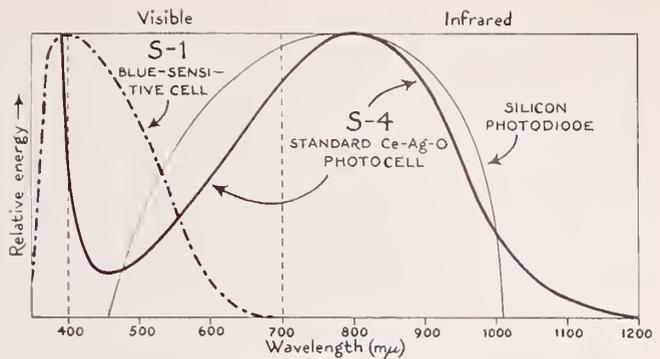
These fears were well founded in the days of blue-sensitive photocells. Tests confirmed the fact that certain red, orange (amber), yellow, and green films had excessive photoelectric density to potassium cells. The main difficulty however, was not so much the ground-noise as the rather drastic and frequent changes in fader setting required for the projection of reels in which different colors of film were intercut.

As stated at the outset, this difficulty no longer exists. The possibility of interference with photocell response by the film-base dyes has now been completely eliminated by the almost universal use of red—and infrared-sensitive photoemissive cells (type S-1 response), silicon photodiodes, and germanium transistors. This statement can be proved.

Fig. 1 is the type of chart used for plotting the response of photoelectric devices as well as the radiant emission of exciting lamps and the transmission characteristics of tinted film-base materials. It is, in effect, a *graph* having rectangular co-ordinates extended from the horizontal scale of radiation wavelengths and the vertical scale of response, radiant emission, or transmittance in terms of relative energy.

Fig. 1 has no "curve" to indicate any of the data which we shall presently examine. The chart has purposely been left blank in order to show more clearly the nature of the spectrum wavelengths which most concern us—the wavelengths from 350 millimicrons in the near ultraviolet down to 1200 millimicrons in the infrared.

Note that the visible portion of the spectrum, with its characteristic bands of colors (violet, blue, green, yellow, orange, and red), extends only from 400 to 700 millimicrons.* Beyond the shortwave extreme of the visible spectrum (violet) are the chemically active, but invisible, ultraviolet wavelengths; beyond the longwave



Equal-energy response of various photoelectric cells

FIG.3—The sensitivity of three different types of photoelectric cells to the range of wavelengths under consideration. The heavy line charts the response of the common cesium-silver-oxygen photoemissive cell (type S-4). Observe that there are two peaks of strong response, one in the ultraviolet and a broader one in the infrared. The S-4 photocell is also sensitive in greater or lesser degree to all visible wavelengths.

The response curve drawn as a broken line indicates the sensitivity of the S-1 blue-sensitive potassium cell. Formerly used in America, the blue-sensitive photocell is now confined to a few European equipments. It has the disadvantage of excessive sensitivity to variations in exciter voltage and ensuing changes in the color of the light, causing undesirable variations in sound volume.

The light solid line shows the response of the modern silicon photodiode or phototransistor. It closely matches the S-4 curve in the important yellow-red-infrared band of the spectrum.

extreme (red) are the heat-producing, but also invisible, infrared wavelengths.

Because the photoelectric cells commonly used in soundheads at the present time are red—and infrared-sensitive devices, it is the longer wavelengths, both visible and invisible, which most concern us.

Exciter Emission, Photocell Response

Fig. 2 presents the radiant emission curve of a tungsten-filament exciting lamp operated at 10 lumens per watt—a "color temperature" of 2500° on the absolute, or Kelvin, thermometer scale (=2227° C=4532° F). Light of this color temperature may be described as amber-yellowish in appearance.

It is of particular interest that most of the radiant energy emitted by a soundhead exciter occurs in the invisible infrared, with its maximum close to 1000 millimicrons when the lamp is burned at 10 L/W.

Fig. 3 shows the response characteristics of three photoelectric devices employed in optical soundheads. The blue-sensitive type S-1 photoemissive cell, used in the early days of sound-on-film reproducers, is totally blind to the red and infrared wavelengths which predominate in exciter radiation. This cell has been brought back for use in a few equipments of European manufacture, but it may justly be condemned because it aggravates the bad effect of incidental variations in exciter voltage.

When exciter voltage decreases, the light not only becomes dimmer, but also redder. The S-1 cell is insensitive to red light. In consequence, sound volume falls off more markedly than it would with an infrared-sensitive cell, thus annoying the projectionist with the necessity of "riding the gain" to maintain a reasonably level volume of sound output.

The blue-sensitive photocell is suitable for the re-

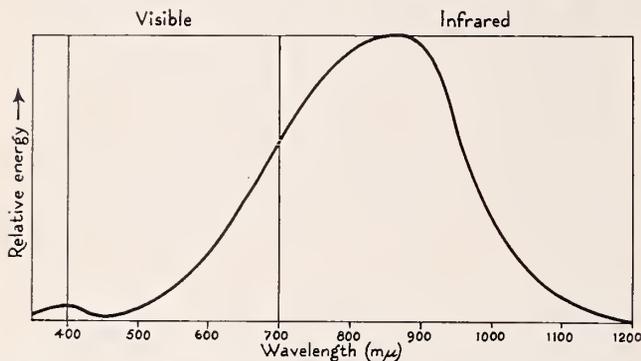
* Although the human eye responds only very feebly to wavelengths shorter than 400 millimicrons or longer than 700 millimicrons, the most painstaking recent research proves that there is some visual response, albeit extremely slight, to about 360 millimicrons in the violet-ultraviolet and to about 830 millimicrons in the red-infrared. The commonly stated limits, 400 and 700 millimicrons, are nevertheless good round figures to remember.

Ordinary crown window glass is opaque to ultraviolet beyond 330 millimicrons and to infrared beyond 5000 millimicrons. Clear acetate film base is opaque beyond 300 millimicrons and has strong absorption bands in the far infrared (beyond 3000 millimicrons).

production of yellow-image dye soundtracks, but is unfit for use with tinted-base films.

Fortunately, the cesium-silver-oxygen S-4 photoemissive cell in common use is most sensitive to those red and infrared wavelengths which form the bulk of exciter radiation. Maximum response occurs at about 800 millimicrons. Small variations in exciter voltage are well tolerated by S-4 photocells. They are also suitable for the reproduction of regular silver-image tracks on both clear and tinted-base film.

The silicon photodiode is perhaps the most trouble-free and satisfactory of all optical-sound pickups be-



Response of S-4 photocell under exciter illumination

FIG. 4 — The integrated response curve of a photocell illuminated by an exciting lamp amounts to the simple mathematical product of photocell sensitivity and exciter emission at each wavelength all along the spectrum. Here we have the response of the common S-4 photocell to exciting light having a color temperature of 2500° K. Note that the strong ultraviolet peak of S-4 photocell response (Fig. 3) is markedly diminished by the weakness of the ultraviolet in exciter radiation (Fig. 2). A similarly integrated curve for the silicon photodiode would be much the same as this one, except for sharp cutoffs at 455 millimicrons (blueviolet) and 1010 millimicrons (infrared).

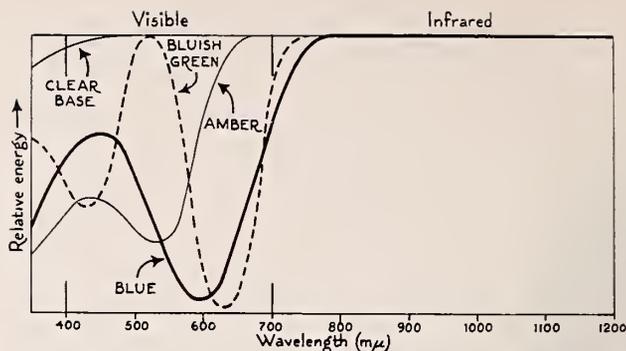
cause of its high signal output, low noise level, extreme ruggedness, and indefinitely long life. Its response to the various wavelengths of radiation is very similar to that of the S-4 photoemissive cell and to the general characteristics of a large family of phototransistors.

Fig. 4 is an "integrated curve"—the response of the S-4 photoelectric cell multiplied all along the spectrum by the radiant emission of a tungsten-filament exciter operated at a color temperature of 2500° K (10 lumens/watt). This curve indicates the response of a standard type S-4 photocell under actual operating conditions. A comparison of this integrated curve with the S-4 curve in Fig. 3 reveals little alteration in shape except for marked attenuation of the secondary response peak in the ultraviolet. This attenuation—quite unimportant—is caused by the very feeble emission of ultraviolet by the exciter lamp.

Dyes Transparent to Infrared

Now we come to a most important matter—the transmission characteristics of tinted film bases. It is evident that such materials absorb certain parts of the visible spectrum, for that is what causes the color. Are there any absorption bands in the infrared which might conceivably decrease S-4 photocell response? Happily, the answer is negative.

The three colors of tinted base chosen for illustration in Fig. 5 are widely separated in absorption character-



Transmission of three colors of tinted-film stock

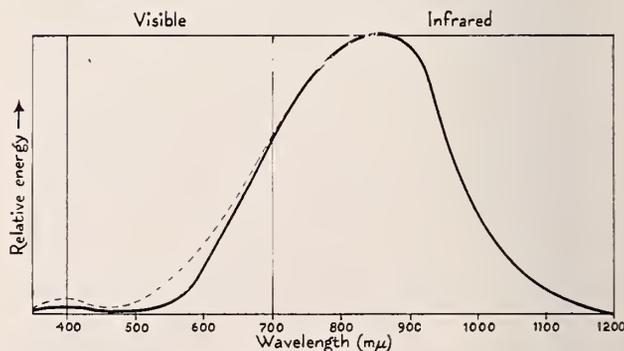
FIG. 5—The spectral transmittances of clear film base and of three selected colors of tinted film base, amber, bluish green (aquamarine), and deep blue. Observe that the clear acetate base transmits all wavelengths freely except for an insignificant falloff in the extreme violet and near ultraviolet. The colors of the tinted-base samples are produced by selective absorptions in the visible spectrum, as the curves show. All samples nevertheless transmit the infrared spectrum down to about 1500 millimicrons as freely as the clear base does—a transmissivity of about 90 per cent.

istics and representative of film tints available in the days of nitrate film and silent pictures. They are amber (soft orange), bluish green (vivid aquamarine), and deep blue, corresponding roughly to the tinted films made by Eastman Kodak many years ago under the names "Peachblow," "Aqua-green," and "Nocturne."

The curve in the upper left-hand corner of Fig. 5 is for clear acetate film base. This material freely transmits all of the wavelengths under consideration; and the slight "dip" in the far violet is not sufficiently pronounced to produce either visual or sound-reproduction effects.

The transmission and absorption bands of the three colored film bases are distributed only in the visible part of the spectrum (and also in the unimportant ultraviolet): and it is these selective absorptions, as we said, which are responsible for the colors exhibited by the tinted base materials. *There are no absorption bands in the infrared down to 1200 millimicrons, however.* Is this merely a fortunate coincidence? Not at all. The organic chemical dyes employed to impart color to the filmbase material, *in common with most organic dyes*, transmit freely, without any absorption bands, in the all-important infrared region of the spectrum.

The top horizontal line of Fig. 5 may be taken to represent a radiant-energy transmissivity of 90% (a transmittance of 0.9).



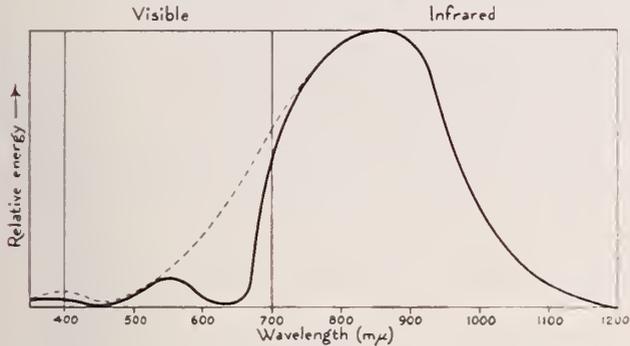
Tungsten-excited S-4 cell ~ Amber-tinted film

FIG. 6—This diagram is extremely important to the subject under discussion. See text for details.

Tinted Film and Sound Reproduction

The final and most crucial step in evaluating the effect of tinted films on optical sound reproduction is integration of the spectral curves of the tinted base materials with the S-4 photocell response which has already been integrated with the radiant emission of the exciter (as shown in Fig. 4). This has been done in Figs. 6, 7, and 8.

Fig. 6 conclusively proves that yellow, orange, and red films cause no perceptible attenuation of sound

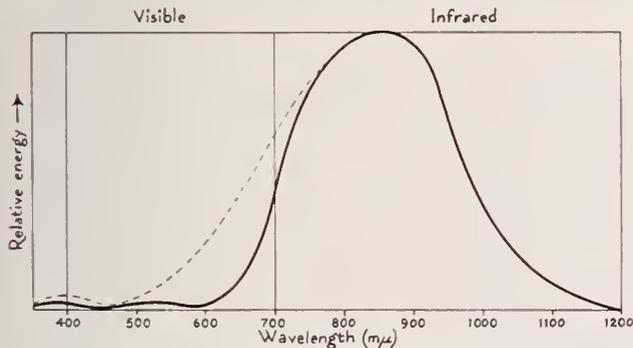


Tungsten-excited S-4 cell — Bluish green film

Fig. 7

volume or other audio disturbance of any kind. Fig. 7 reveals that the bluish green film all but eliminates the S-4 photocell's response to the visible spectrum, but whereas most of the response of this type of cell occurs in the infrared, which is unaffected by the bluish green dye, the resulting sound-volume attenuation amounts to less than is noticeable, and even less than can be compensated for by a single step on the fader. Reproduction is entirely satisfactory.

The bluish green sample plotted here has a slightly greater photocell density than the deep blue plotted in



Tungsten-excited S-4 cell — Deep blue film

Fig. 8

Fig. 8. Most blue dyes, especially if they incline to blue-violet in tone, transmit the low red rather freely, and the infrared perfectly. A few blue dyes are known which are opaque to low red and near infrared; but there is no reason to employ these relatively unusual colorants in tinted-film base.

We may safely conclude, therefore, that all colors of tinted-base prints may be intermixed with one another or with clear-base film without producing audible changes in sound volume when the optical soundtracks are reproduced by photoelectric devices having a type S-4 response. Bluish green film of high color saturation presents the greatest photoelectric density, but not even with this color do soundtrack re-recording compensations or changes in projection-room fader setter appear to be necessary.

(TO BE CONCLUDED)

IP

Get Your Copy Every Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.

New York Marks 50th Anniversary

NEW YORK — The Americana Hotel was the scene of the 50th Anniversary of Local 306. The attendance was above 1,700, which included celebrities, film company executives, and members of 306.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.



ANNIVERSARY—Local 306 of the IATSE celebrated its 50th anniversary recently with a 1,700-person party. Seated above left to right are guest of honor Robert Preston; Richard Walsh, IA president, and Steve D'Inzillo. Standing are Gene Stridel, Ernie Lang, Harry Garfman and Joey Adams.

Steve D'Inzillo introduced distinguished guests, and Joey Adams was the master of ceremonies.

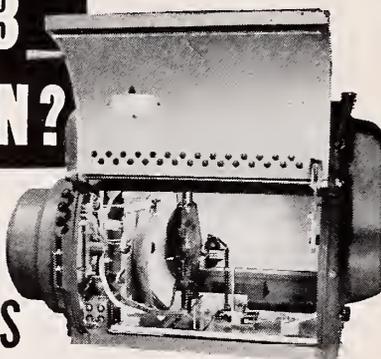
Short speeches were made by Harry Brandt, theatre owner; James J. McFadden, acting commissioner of the New York City division of labor relations; Armand D'Angelo, commissioner of the department of

water supply, gas and electricity; Harry Garfman, business agent for Brooklyn and Queens; Ernest Lang, secretary of Local 306, and Richard F. Walsh, International President of IATSE.

Robert Preston was the guest of honor, currently starring in "All the Way Home." Gene Stridel sang the national anthem.

CAN YOU MATCH ONE OF THESE 3 TO YOUR SCREEN?

Strong
**X-16 XENON ARC
PROJECTION LAMPS**



900-watt model for screens up to 23 feet wide (matte—Cinemascope Aperture)
or 28 feet wide (high gain—Cinemascope Aperture)
1600-watt model for screens up to 29 feet wide (matte—Cinemascope Aperture)
or 36 feet wide (high gain—Cinemascope Aperture)
2500-watt model for screens up to 35 feet wide (matte—Cinemascope Aperture)
or 43 feet wide (high gain—Cinemascope Aperture)

- Steady, flickerless, pure white light is independent of voltage variations of the power line supply.
- Extremely even distribution of light throughout the total screen area.
- "Push-Button repeatability" of intensity and color temperature.
- Excellent color film reproduction.
- Focus remains constant.
- Projects practically no heat to the film or aperture plate. No cooling required.
- Cleanliness assures maximum life for the projector.
- Simple operation. No moving parts in the light source.
- Maintenance and current costs are approximately the same as for carbon and current costs for operating a carbon arc lamp of equivalent light output.

Send for brochure. Demonstration in your theatre on request.

THE *Strong* ELECTRIC CORPORATION
31 CITY PARK AVENUE • TOLEDO 1, OHIO

306 Elects the Same Management Except for The VP for 1964-1965

NEW YORK — Members of Local 306 voted for the same officers, except for the vice president, for the term of 1964-65.

Dick Cancellare, president; Al Ashman, vice president; Ernie Lang, secretary-treasurer. Mr. Lang has a new duty as treasurer: Izzy Schwartz, financial secretary; Steve D'Inzillo, business agent for New York; Harry Garfman, business agent for Brooklyn and Queens.

The management supported Al Ashman for vice president.

Gerson Cohen, Archie Hollander, Artie Klein, Max Rosenberg, Phil Shafran make up the Sick Committee.

The executive board consists of Herman Boritz, Sol Gabel, Frank J. Inciardi, Abe Kessler, Max Kessler, Sol Kirschenbaum, Irving Meltzer, Frank E. Miller, Tony Rugino, Sam Salvino.

Board of Trustees: Al Sprung, Ben Stern, Herman Stoller.

Richard F. Walsh, the International President of IATSE, installed the newly elected officers at the regular meeting of 306 Dec. 4.

THE COVER STORY:

Kodak Cover Girl "Most Photographed"

The most photographed girl of the year is probably not any of the glamour gals you see in the magazine ads, but an attractive young lady named Smith.

Although her face may not be familiar to you, it definitely is to a large group of technicians at Eastman Kodak Company who are concerned with the quality of Kodak photographic film.

Twenty-year-old Miss Sue Smith, 5'3" and 110 lb., poses all day long for still and motion pictures, mostly in color, as part of her job as a model in the film testing division at Kodak Park Works, where film is made. She's been facing the camera lens for more than two years.

In an average year Sue poses for over 70,000 still pictures and more than 150,000 feet of movie film. She is photographed in both indoor and outdoor scenes, in winter and summer, under good and poor lighting conditions. She poses on the beach, in parks, in the living room, at the airport, in the backyard, on the front steps of a cathedral as well as under carefully controlled studio conditions.

The idea is to duplicate many of the typical picture-taking scenes faced by amateur photographers. The colors in her clothing and in the props in certain scenes are selected to check the color characteristics of a particular film. Examination of the negatives and prints also permits judgments to be made about film sharpness, contrast, and graininess.

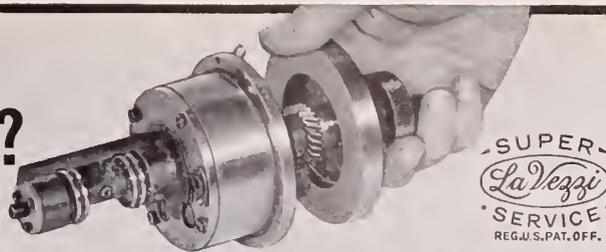
Sue Smith is an ideal testing model for film because her flesh tones are very close to those of the average person. Kodak technicians have a precise idea of just what flesh tones are required after making thousands of scientific measurements using a spectrophotometer. Her light brunette hair was just what was needed.

When you put these requirements together, you don't have the average girl. Far from it. You have a girl who is photogenic in the technical sense as well as in the everyday meaning of the word. A girl pretty enough to be pictured water skiing in a national advertisement by Kodak.

About a year ago Sue started posing for tests of Kodak's newest film, No. 126, which goes into the recently

(Continued on page 14)

Need repairs?



The next time your projection equipment needs repairs ask your dealer to install genuine LaVeZZi Super Service replacement parts. Their unexcelled performance and long life make them your best buys . . . Only the finest—since 1908.

LaVeZZi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 46, ILL.
TELEPHONE—AREA 312—378-1636



HIGHEST SPEED IN PROJECTION

Kollmorgen lenses rate tops in the motion picture industry. Used exclusively with Cinerama, they are standard equipment in more than 70% of American theaters. High light uniformity and less light loss on the screen—the whole screen—are typical of the outstanding performance of SUPER SNAPLITE® lenses.

Other advantages that add up to superior screening with SUPER SNAPLITE are:

- Wire sharp contrast
- Uniform illumination
- Crystal clarity
- Wide range of focal lengths
- Sealed construction



Bulletin 222 describes Kollmorgen lenses in detail. See your equipment dealer, or write us direct.



KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS



Dealers for the Strong Electric Corp., in attendance of the TOA-TESMA-TEDA-NCA convention and trade show, heard a detailed description of the features and operational advantages of the new Strong Futura projection lamp at the City Squire Motor Inn, by Arthur J. Hatch, president of Strong. Harold Plumadore, product engineer of the Strong motion picture division, discussed the development of the new lamp and answered technical questions. The new Bi-Powr silicon type rectifier, cold type reflectors, the new Strong X-16 Xenon lamp for 35mm and 16mm projectors, and a new slide projector with Xenon light source were described by Clifford Callender, sales manager of the theatre equipment division. Also leading discussion was Bill White, field sales representative for Strong Electric. Dealers attending the meeting were: left to right, standing - Al Boudouris, Theatre Equipment Co., Toledo; Harold Plumadore, Strong Electric Corp., Toledo; Frank Strange, Charlotte Theatre Supply Co., Charlotte, N. C.; Ernest Comi, Capitol Theatre Supply Co., Boston, Mass.; J. W. McBurnie, Charleston Theatre Supply Co., Charleston, W. Va.; H. J. Ringold, Ringold Theatre Equipment Co., Grand Rapids, Mich.; H. J. Dus-

man, J. F. Dusman Co., Baltimore, Md.; Carl White, Quality Theatre Supply Co., Omaha, Neb.; Al Mortsen, Southwestern Theatre Equipment Co., Houston, Texas; Bob Tankersley, Western Service & Supply, Inc., Denver, Colo.; J. Ed Miller, John P. Filbert Co., Los Angeles, Calif.; E. J. Peterson, Abbot Theatre Equipment Co., Chicago, Ill.; Bill White, Strong Electric Corp.; Jake Elder, Modern Sales & Service Inc., Dallas, Texas; Roy Smith, Roy Smith Co., Jacksonville, Fla.; Seated - Arthur J. Hatch, Strong Electric Corp.; Cliff Callender, Strong Electric Corp.; John J. Kenny, Theatre Equipment Co., Detroit; Lloyd C. Pearson, General Sound and Theatre Equipment Ltd., Toronto; A. D. Turnbull, General Sound and Theatre Equipment Ltd., Montreal; Wm. Geissler, Wil-Kin Inc., Atlanta; Phil Wicker, Standard Theatre Supply Co., Greensboro, N. C.; Armand Besse, Besse Theatre Supply Reg'e, Montreal; L. M. Wutke, Pembrex Theatre Supply Corp., Los Angeles, Cal.; G. Nadeau, Besse Theatre Supply Reg'e, Montreal; George Hornstein, Joe Hornstein Inc., New York City; Hal Hornstein, Joe Hornstein Inc., Miami, Fla.; Charles B. Kinney, Modern Sales and Service Inc., Dallas.

Split Audio System Designed For New Skouras Drive-In

NEW YORK—The Skouras Route 17 Drive-In Theatre is equipped with a sound system designed by Joseph J. Kelly, technical supervisor for the Skouras/United Artists Theatre chains. employs a split audio distribution system to channel the sound to the numerous ramps comprising the 1200 car drive-in theatre.

Unlike most conventional drive-in sound systems, the new system utilizes a total of ten 75 watt power amplifiers, each one of eight amplifiers distributing sound to an individual segment of the field, the ninth amplifier feeding the concession, playground and patio theatre areas and the tenth amplifier acting as a standby unit that can be switched in place of any of the others

through a specially constructed switching panel mounted in one of the racks.

The front end of the system consists of a conventional Century transistorized 2-projector optical/magnetic system; the output from the projector reproducers feed a low powered transistor amplifier the gain of which is adjusted to produce an output level of .7 volt RMS at 1000 cycles. This comprises a low impedance signal bus which in turn drives the ten amplifiers, the inputs of which are all in parallel. Altec A-256C power amplifiers are used, each having an individual level control.

Each of the eight field amplifiers are connected to an average of 75

Simplex junction boxes equipped with 1125 ohm line transformers. The impedance match is such that all amplifiers operate at identical gain settings and control of sound to the ramps is simply a matter of turning on or off the individual amplifiers which are labeled to coincide with the part of the field they serve. In this manner the power of the system is adjusted to suit the attendance, and no change in volume or distortion content is present when the field is lightly filled or jammed to capacity.

Another feature of this system is protection for short circuits in the field wiring since a short in a junction box post can only affect at worst 1/8th of the field, which if not corrected entails shifting cars in this immediate area to any place in the other 85% of the field. A special junction box on the rear wall of the booth enables quick isolation of short circuits down to an individual ramp as the field wiring is such that all ramp feeders enter this box con-



SKOURAS ROUTE 17 DRIVE-IN THEATRE—Left to right are Phil Taylor, projectionist; Joe Kelly, designer of new sound system; Walter Heaney, manager, and Spyros Lenas, zone manager, gathered around the new equipment discussed in IP for November.

necting to designated barrier strips.

Special input facilities consist of a booth microphone mounted on one of the rack panels, a phonograph mounted on a sliding drawer also in the rack and a selector switch feeding an Altec 1566A pre-amplifier connected for 150 ohms output. This amplifier feeds the signal bus in place of the film input through a latching relay, the control of which is available at each projector operating position as well as on the rack. A 2 circuit push button located in each Century optical sound head defeats the special input amplifier simultaneously with the sound change-over function with a special circuit arrangement through the latch relay contacts to cut-off power to the relay during normal change-overs while film is in progress.

Monitoring facilities consist of a 10 position selector switch to connect the outputs of the power amplifiers to an audio output meter and a transistor monitor amplifier and speaker. The output meter has a calibrating

attenuator ahead of it to permit the meter to deflect to "O" when normal level is present at each segment of the field. With this facility the projectionist can quickly balance the levels on all amplifiers by running a 1000 cycle loop in either of the projectors operating the selector and observing the meter deflection.

The concession building is equipped with eight ceiling speakers inside and two outside under a portico; the patio theatre is equipped with four and the playground, two Atlas coaxial outdoor speakers mounted on posts. These speakers contain linematching transformers, the impedance of which is adjusted for a power level in each area that will permit the same gain setting on Amplifier 9 that is present on the other amplifiers. In addition, four rheostat potentiometers are installed on the ramp distribution box to permit individual volume control or cut-off of sound to each of the special locations without affecting the amplifiers gain setting. **IP**

PROJECTIONISTS PREFER ETHYLOID

Film Cement For
BEST RESULTS
Available from
Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

DIAMOND
TRADEMARK
**PROJECTOR
CARBONS**

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons
division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products
division

XETRON LAMPHOUSES • **XETRON POWER SUPPLIES**
by Cinemeccanica by Christie

CARBONS, INC. BOONTON, N. J.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY



VISITING FIREMEN — Accepting the invitation of Edward Lachman, president of Carbons, Inc., this group of technicians toured the XeTRON Division projection test laboratory at the State Theatre in Boonton, N. J., recently. There was considerable interest as they viewed and measured the light output of the unusual Xenon lamp housings pictured above.

COVER STORY:

from page 11

introduced Kodapak cartridge. This cartridge is simply dropped into the

Kodak Instamatic cameras, thus eliminating loading and unloading problems.

Those posing for their first picture taken with an Instamatic camera using a Kodapak cartridge are more than 5,000 poses behind Sue. She has been "snapped" that many times and more by photographers using this new film size as part of the program to test all films by actual use.

Some of these pictures were taken to test film flatness, which is now controlled by the Kodapak cartridge rather than the camera. Uniformly sharp images over the entire negative area are an indication that the film is flat in the cartridge.

Studies of the keeping qualities of film under a wide range of temperature and humidity conditions also involve our model. Half a roll of film may be exposed in photographing a particular scene. The undeveloped film, still in the camera, is then placed in a special room where the temperature and humidity reproduce the hottest and most humid of summer days. Still other rolls are stored where the temperature may be below zero. Weeks or months later the film and camera are removed from the room, and the same scene is photographed. Then the entire roll of film is developed and the results compared.

The more technical film testing procedures, in which Sue does not participate, yield data in the form of charts, graphs, or tables. Data processing equipment is used to obtain quickly many of the required answers in numerical terms. **iP**

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by

MASTER SPECIALTY PRODUCTS

200 West 72nd St., New York 23, N. Y.



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

- » **AUTHORITATIVE**
- » **COMPREHENSIVE**
- » **PRACTICAL**

Acclaimed by leading technicians in the industry as the most comprehensive and down-to-earth handbook published to date on the subject of motion picture projection. Ideally suited for study and reference by your operators.

ROBERT A. MITCHELL'S

MANUAL OF PRACTICAL PROJECTION

HANDY 5½" x 8½" SIZE — 450 PAGES — ILLUSTRATED — CROSS INDEXED FOR EASY REFERENCE

LAST CHANCE!!

The supply of the current edition of the Mitchell Manual for Practical Projection is nearly exhausted — when the present supply is gone, there will be a ONE-YEAR wait until the new edition is prepared. Get your copy now at the low price of seven dollars, postpaid.



SECTION HEADINGS

(1) Film; (2) The Projector; (3) Projection-Optics, Screens; (4) The Arc Lamp; (5) General Projection Practice; (6) Motors, Generators, and Rectifiers; (7) Sound Reproduction Systems; (8) Projection of Color and 3-D Films, Formulas.

ORDER YOUR COPY TODAY ★ USE THIS HANDY FORM

INTERNATIONAL PROJECTIONIST
Post Office Box 6174
Minneapolis 24, Minnesota

Gentlemen: please send me copy (copies) of ROBERT A. MITCHELL'S MANUAL OF PRACTICAL PROJECTION. Enclosed is my check (or money-order) for \$.....

NAME

ADDRESS

CITY ZONE STATE

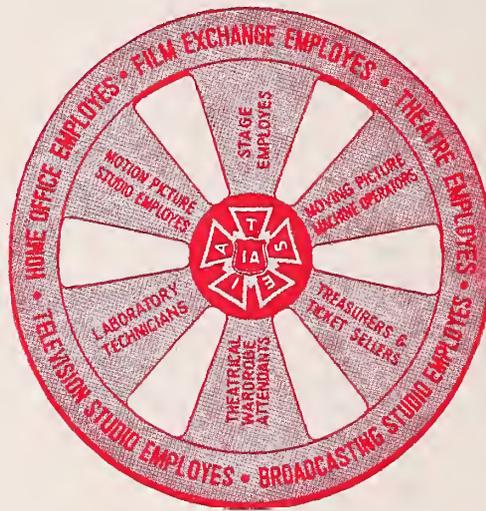
NEW PRICE

\$7⁰⁰

per copy
including postage

Library of Congress
Order Division (0368X)
Washington 25, D.C.

*Hearty greetings at this Christmas Season and best
wishes for a prosperous and happy New Year*



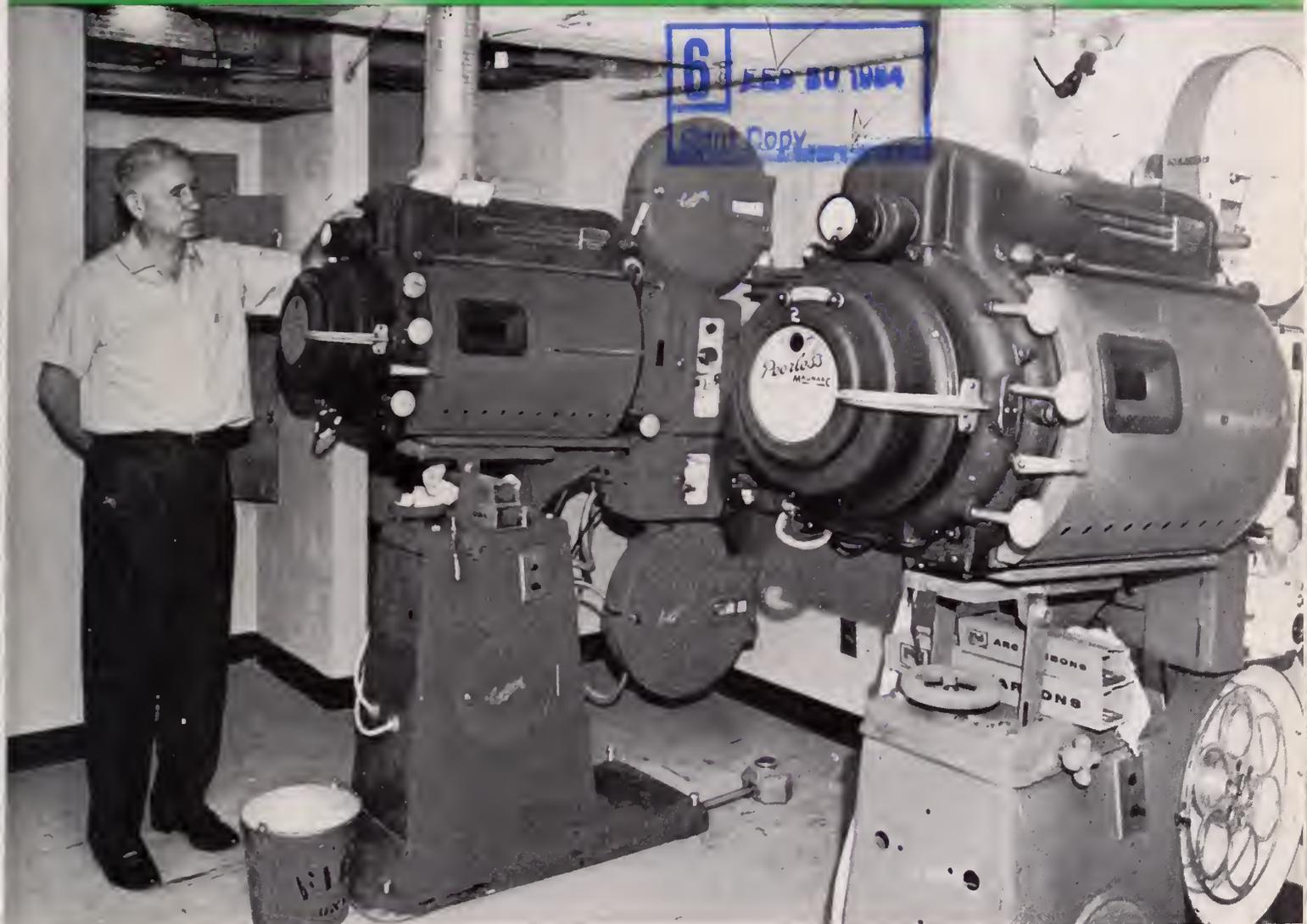
**INTERNATIONAL ALLIANCE OF THEATRICAL STAGE
EMPLOYEES AND MOVING PICTURE MACHINE
OPERATORS OF THE UNITED STATES AND CANADA**

Affiliated with the A.F.L.-C.I.O.

RICHARD F. WALSH
International
President

HARLAND HOLMDEN
General
Secretary-Treasurer

INTERNATIONAL PROJECTIONIST



With Projectionist Charles Linett standing by, this is the bath of the 34th St. East, newest theatre in Manhattan of the Walter Reade-Sterling, Inc., organization. The machines have optical sound heads and Peerless lamp houses, and employ the Century transistor sound system. Rectifiers are the new Sil-Cons. A complete picture story on the new theatre will appear in the next issue of IP.

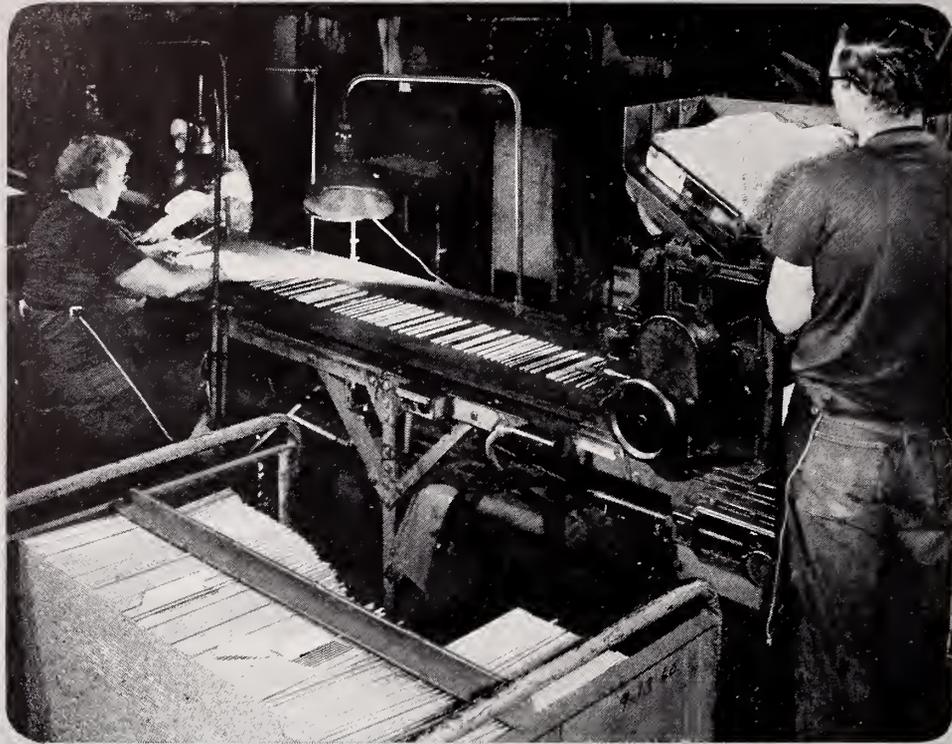
JANUARY
VOLUME 39
40c A COPY

1964
NUMBER 1
\$3.00 A YEAR



Library of Congress
Order Division (0368X)
Washington 25, D.C.

A Scene From America's Projector Carbon Center...



Final inspection before packaging

**“Pre-packaging inspection...the last of
61 checks that keep our projector carbons tops!”**

—says JIM HOYNES
“National” Sales Engineer

From milling and blending of raw materials to packaging of the finished product, NATIONAL projector carbons must pass one of industry's widest and most rigid ranges of tests and inspections. They are outstanding for depth of quality control—from start to finish.



Jim Hoynes

The above view in our Fostoria, Ohio, arc carbon center shows inspection No. 61 — a final overall check of each carbon before packaging for shipment to distributors.

During their many manufacturing and testing stages, NATIONAL projector carbons are

baked and re-baked at precisely-controlled temperatures. All dimensions and straightness of carbons must be within thousandths of an inch. Voids or breaks in rare earth cores are detected by x-ray. Sensitive instruments measure the thickness of copper coating to assure maximum current delivery and light quality on the screen.

All the way up the 61 steps to packaging, the dominant idea at Fostoria is to produce a carbon that gives both exhibitors and patrons *the best light for their money.*

Today, this sound policy is fast approaching its 50th Anniversary!



“National” is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

Strong
**BI-POWR RECTIFIER
 SAVES EVEN MORE
 THAN PROMISED**

"Your local dealer . . . pointed out that we would save about \$35 per month on our electric bill. Actually we save close to \$42 per month since we have changed over from our generator. It is good to know that we can depend upon you and your dealer organization."

—D. M. Pearce
 Ascarate Drive-In Theatre,
 El Paso, Texas

**DESIGNED
 FOR THE OPERATION
 OF 2 ARC LAMPS**

This new type silicon diode stack transformer-rectifier, is the most economical means of power conversion ever manufactured. No flicker or other change in projected light when striking the second arc.

DEPENDABLE

"Lo-Strike" feature associated with each output protects the silicon stacks from overload, and prevents destruction of carbon crater upon striking the arc.



**SAVES
 ON INITIAL COST!**

Sells for 15% less than two of the lowest priced 90-135 ampere rectifiers, and costs less to install. Requires only one line service.

SAVES ON SPACE

Requires one-third to one-half less floor space than two separate rectifiers spaced for proper ventilation.

DUAL OUTPUT RATING OF

- 60-85/ 60-85 AMPS/ 35-45 V
- 75-105/ 75-105 AMPS/ 48-61 V
- 90-135/ 90-135 AMPS/ 56-70 V
- 120-160/ 120-160 AMPS/ 58-75 V

SEND FOR LITERATURE

The *Strong* Electric Corp.

31 City Park Ave., Toledo 1, Ohio

*Not supplied as regular equipment on 60-85 ampere and 75-105 ampere models.

INTERNATIONAL
PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



January 1964

Volume 39

No. 1

FRANK W. COOLEY, JR.
 Editor and Publisher

RAY GALLO
 Executive Publisher

AL BLOOM
 Managing Editor

TOM KENNEDY
 Equipment Editor

RAY GALLO ASSOCIATES
 Notional Advertising Representatives
 545 Fifth Avenue, New York 17, N. Y.
 Telephone Murrayhill 7-7746
 (Area Code 212)

IN THIS ISSUE

Tinted Release - Print	
Film - Conclusion	4
By Robert A. Mitchell	
Picture News	12
Kollmorgen's Talaria Lenses	13
A-V Design Conference	14
News Notes—Technical Hints—	
Miscellaneous Notes	

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55424. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



35 and 70mm



43 Separate Projection Lens Designs
 FOR THE ULTIMATE IN IMAGE QUALITY

KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.





A Neglected Asset:

TINTED RELEASE-PRINT FILM

By ROBERT A. MITCHELL

PART II

TINTING THE SCREEN with a dominant color tone to match the mood of the scene, with an appropriate change of color with each change of mood, time, or locale, is a trick of the trade so well known and so emphatically effective in the days of the silent films that it seems almost ridiculous to belabor the manifold virtues of tinted-base print films. But hammer away we must: the art of utilizing tinted release positive for monochrome ("black-and-white") productions is at present totally neglected to the detriment of screen and boxoffice alike.

Interference with the reproduction of the optical soundtrack is no longer a valid excuse for the abandonment of this effective instrument of cinematic art. The first installment of this article demonstrated conclusively that no color of tinted film noticeably attenuates sound volume when the common infrared-sensitive photocell or phototransistor is used in the soundhead. The entire question boils down to a matter of showmanship, an alert recognition of the uniquely visual character of entertainment motion pictures. Why should the theatre screen remain stripped bare of a most useful dramatic embellishment? Why should moviegoers be subjected in the theatre to the same monotonously unexpressive and vis-

ually unattractive gray image tones that they see all the time at home on black-and-white TV?

Remember—about 90 per cent of *all feature-film print footage* was tinted in the days when black-and-white movies were undeniably very attractive pictorially and dramatically powerful. Of course, we have superb natural color today, but the majority of feature pictures are still photographed in monochrome, a practice that should continue because monochrome seems best suited to the more emotional type of screen play.

The theatre screen is vastly superior to television as an audiovisual medium. It is large and panoramic: it is pictorially superior to TV, presenting images of greater clarity and with a wider range of lifelike photographic contrasts: it does not "fog over" on low-key scenes: it has no disturbing scanning-line pattern: it presents natural color of much higher quality than even the very best color TV: it is able to offer stereophonic sound of the highest audio fidelity. The theatre screen formerly did, *and could right now*, appropriately color by means of tinted-base film and toned photographic images its monochrome offerings, thus enhancing the pictorial values and scene-to-scene moods of pictures not photographed

in natural color. The power of the theatre screen to absorb the interest of the audience would be increased: the small stature of TV as a dramatic medium would be diminished even more, inasmuch as the tiny screen of monochrome TV is imprisoned in a dreary little world of chalky highlights and emotionally neuter shades of gray.

Natural Color Limits "Mood Color"

Although the psychological use of color is by no means absent from the modern theatre screen, *natural* color must look natural at all costs, and hence limits by its very nature the variety and scope of the color effects that the imaginative producer can employ. It is well known that the public insists upon flesh tones redder than those of real life in Technicolor pictures, but, aside from this, the chromatic rendition of natural color cannot be violated in an attempt to flood the screen with a color tone to express the dominant emotion built up in any particular sequence.

The most that can be done with mood coloring in natural-color productions consists of minor variations in set and costume color tones. But the faces of the players and all other significant pictorial detail must consistently be rendered in their natural colors in order to avoid grotesque results which the average moviegoer would interpret as serious color distortion. So it is that violet lighting cannot be used to generate a feeling of mystery and foreboding, nor green lighting to emphasize hate or envy, nor bright yellow to express hope or happiness, nor pink to enhance a feeling of beauty or a romantic mood. The natural color of green foliage might be destroyed; the painstakingly selected color of costumes and set furnishings would be distorted, and the effects of the tinted lighting on the actors' faces can well be imagined.

Tinted and toned black-and-white films are completely exempt from this consideration. The screen may be flooded with sunshiny yellow to intensify cheerful, vivacious emotions, with amber to express a sunset or western mood, or the cozy warmth of firelight, with lavender to enhance an atmosphere of mystery and solemnity, with pink to express frivolous gaiety, romance, or sensuous luxury, with blue to convey the impression of moonlight and a nocturnal mood, with green to create a feeling of the sea, etc., etc.

And extremely important in the dramatic application of tinted films is the well-known fact that the psychological effect of the color imparted to any specific scene persists even after the initial physical awareness of the color has been dulled by visual adaption to it. Color really works for the screen dramatist!

Director Wellman's Color Artistry

Attempts to use color psychologically in Hollywood's natural-color productions have been very numerous, and most of them successful. William A. Wellman, the noted director, was among the first to study and use contextual color in a systematic manner. He conducted a survey and set down the emotional effects and associational connotations of a few basic colors in the form of a chart which was useful to him as a working guide for his Technicolor filming.

In one of his early films, *Nothing Sacred*, Mr. Wellman took special pains to color-key the costumes of his players to the prevailing dominant mood *according to his own conception of general emotional reactions to specific colors*.

Said Mr. Wellman: "Grayness, more than black, is the dismal color of death. Yet when gray is brightened with the metallic luster of silver, it becomes something else again. In a scene in *Nothing Sacred*, Carole Lombard

IP

Get Your Copy Every Month . . .

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.

wore such a dress; and its effect was to accent her blonde beauty, to heighten the tones of her hair.

In another scene in *Nothing Sacred*, a sad, lugubrious effect was desired, and both Miss Lombard and Frederic March wore dark, dull-brown clothing. The predominating colors of the scene were browns and blacks. On the other hand, a night-club sequence in this same picture was a veritable rainbow of warm, gay colors—reds, purples, and gold. They conditioned a happy, joyous mood.

“Our conclusions anent color mood-conditioning are based on the average norm of amny reactions. In such a survey as we could undertake, it was impossible to consider individuals except as they influence mass calculations.”

It is Mr. Wellman's belief that the color preference of an individual has nothing to do with his reactions to color on the screen. If this condition obtained, it would be impossible to formulate an emotional scale of colors for screen use. Conditioning moods with color appears to be dependent largely upon instinctive color reactions and to color symbolism based upon psychological and physical associations. A very large book could be written on the subject.

Black, gray, and brown are rather negative colors in Wellman's color chart: white is affirmative (which it would not be in China, as white is the Chinese color of mourning!). The four saturated hues in his list — blue, green, red, and yellow — are accorded positive connotations. This indicates a rather limited appraisal of the effect of color, however, inasmuch as an older evaluation compiled by Dr. Lloyd A. Jones as a guide to the use of tinted-base films takes account of the ambivalent character of certain colors — positive and uplifting in certain dramatic and scenic contexts, negative and subduing in others.

Ambivalent Colors

The strongest examples of emotional ambivalence are to be found among such “transitional” colors as lemon-yellow and chartreuse (yellow-green), cyan and turquoise-blue, and purple, amaranth, and magenta. A yellow-green, for example, may suggest, on the positive side, springtime freshness, youthfulness, gladness, joyous expectation, etc., or, on the negative side, squalor, sickness, hopelessness, loathing, etc.

It is significant that a greenish yellow or yellow-green corresponding to the hue popularly known as chartreuse was absent from the colors supplied in the otherwise inclusive range of Eastman Kodak tinted-base positive films. This may have been due to their strong ambivalence and the resulting uncertainty of their application in motion pictures, but Dr. Lloyd A. Jones of the Kodak Research Laboratories pointed out that colors of the yellow-green range have been found to be the least agreeable or least preferred in all surveys conducted to determine color preferences.

Be this as it may, the writer remembers that the old Universal Film Co. frequently dye-tinted scenes a bright greenish yellow (lemon) in the days of silent pictures to express the sunshiny, joyous moods usually associated with a warmer yellow, and also that this choice of film color was generally disliked by color-conscious projectionists.

Dramatically Versatile Colors

The emotional ambivalence of colors does not necessarily limit their usefulness on the motion-picture screen. The bluish greens and greenish blues, for example, or,

more important, the purples and amaranths (magenta-purples).

Vivid aquamarines and cyans are handsome and useful colors in the art of tone-coloring the screen, and possess many positive dramatic connotations — summery calm, repose, tropical seas under clear skies, tranquility without depression, etc. However, there is an unsavory quality about aquamarine and cyan (and to a lesser extent about turquoise) which is well expressed by the popular term “poisonous green.” (Could this be an unconscious association of the color with the coldly beautiful, but intensely poisonous, arsenic-containing pigment emerald green or Paris green?) This ambivalence creates confusion and somewhat restricts application of these particular colors.

Purple, amaranth, magenta, and to some extent cerise (red-magenta) are also ambivalent, though much more versatile and of wider usefulness. The tints of magenta and cerise, for instance, are the ever-popular cool pinks and rose tints without which the user of tinted-base prints would feel severely handicapped.

Purple may be described as violet with a touch of magenta or pink, and is undeniably a dangerous color to use on the screen. In certain context it suggests royalty, dignity, pomp, and opulence, and in other contexts it admirably creates an atmosphere of luxurious revelry, abandoned sensuality, degradation, and sexual depravity in the *haute monde*.

Magenta and cerise, together with their rose-pink tints, suggest refined luxury, an elegant way of life, and a romantic mood. At lower screen brightnesses or in stronger color saturations they tend toward connotations of violent passion. In fact, if we pass on through cerise to red, we arrive at the most intensely violent of all colors. The use of red film in the heyday of tinted-base positive was usually confined to scenes in which the color had a physically objective association, such as fiery holocausts, night battles in which artillery fire flashes violently, and the like. But red film has been employed many times to intensify a mood of violence and excitement, unbridled passion, active evil, and many varieties of destructively strong emotion.

The family of amber tints ranging from vermilion through orange, pyridian, and saffron, together with their peach and soft-amber tints, gained the widest use of all. In fact, most silent-film features were printed in their entirety on amber film; but this thoughtlessly indiscriminate use of just one color tended to diminish the atmospheric potentialities of tinted film. At any rate, the amber tint “settled” the audience in a dramatic mood more effectively than plain black-and-white film, and it also increased viewing comfort by softening the cold glare of unfiltered projection lighting.

To be most effective, the color of tinted-base film should be judiciously matched to (1) the mood of the scene or to (2) the time of day or the season depicted or, closely connected in physical context, (3) the locale, interior or exterior.

It is well-nigh impossible to correlate the physical association of colors (time, locale, and depicted objects) with their emotional connotations (mood, mental state, or that indefinite psychic “feeling” called “atmosphere”), or to classify the emotional characteristics of ambivalent colors which depend so largely upon dramatic and scenic

context. These colors suggest one mood or emotional state in one scene, and an entirely different emotional feeling in a scene of different character.

It is a simple matter to draw up a list of colors — red, orange, yellow, etc., and even include all the tints of these colors conceivably useful to the motion-picture dramatist — but it is next to impossible to match them in any systematic way with a list of dramatic moods or generalized emotions, such as the following one which contains four positive and four negative emotional states arranged in graded order with a neutral midpoint (“indifference”):

Excitement (Passion)	+	+	+	+
Joy (Satisfaction)	+	+	+	
Contentment (Satisfaction)		+	+	
Expectation (Hopefulness)			+	
Indifference (Ennui)				0
Apprehension (Anxiety)				—
Fear (Aversion)			—	—
Hatred (Aversion)		—	—	—
Terror (Anguish)		—	—	—

This is why simplified color-mood charts of the kind drawn up by William A. Wellman are necessarily limited in scope and restricted in applicability.

The Important “Jones Paper”

The most complete and practical color guide for the producer contemplating the use of tinted release-print stock is contained in an old paper by Dr. Lloyd A. Jones, “Tinted Films for Sound Positives,” published in the *Transactions of the Society of Motion Picture Engineers*, Vol. XIII, No. 37, 1929, pp. 199-226.

Following are excerpts from Dr. Jones’ suggestions regarding appropriate application of the seventeen tinted-base 35-mm positive films manufactured by Eastman Kodak and very widely used until the advent of sound-on-film. (The light gray neutral-base film called “Argent” is omitted because of its lack of hue and incompatibility with the optical soundtrack.)

These 35-year-old suggestions are revived here, not just to reopen memory lane to old-time motion-picture men, but because they are important enough, valid enough, to inspire later comers with the creative use of screen mood-coloring *via* the movies’ neglected asset, tinted-base release-print film.

* * *

Tint No. 1, Rose Dorée. A deep warm pink suggesting sensuousness and passion. Amorous, romantic, and exotic. It is adapted to the rendition of scenes representing an intimate atmosphere, such as a luxuriously appointed boudoir. In keeping also with feelings of happiness, joy, and excitement.

Tint No. 2, Peachblow. A delicate flesh-pink. This has a small but definite blue content, making it somewhat less warm than Afterglow. It is adapted to the rendition of close-ups where it is desired to do full justice to feminine beauty. The hue and saturation are such as to suggest the glow of life.

Tint No. 3, Afterglow. A soft rich orange color. It is probably the warmest color of the series. It is appropriate to exterior scenes at dawn and sunset. (*The magenta-pink film called Caprice seems more appropriate for dawn scenes.* (R. A.M.) It lends to interiors an atmosphere of warmth and intimacy stronger than Firelight. It should excite mood reactions in general connected with luxury, wealth, security, and relatively strong affections. It is also related to the autumnal mood by obvious direct association with the autumn colors of nature. By indirect

or subjective association it is symbolic of the same relative period in the life of an individual and its associated moods. It is indicative, therefore, of repose, ambitions attained, accomplishment, and similar psychological aspects of maturity.

Tint No. 4, Firelight. A soft yellow-orange. This is warmer than Candleflame to which it is closely akin in mood-reaction value. It is particularly adapted for use on an interior scene where it is desired to suggest an artificial illumination softened and subdued, perhaps, by shaded lamps and candles. It is suggestive also of illumination emanating from an open fire: but it is not quite orange or red enough to satisfactorily render the fire itself if visible, for which Afterglow is perhaps better. It stimulates mood reactions of the same category as Candleflame, but with greater intensity. Suggestive of warmth, comfort, intimate home relationships, mild affection, etc.

Tint No. 5, Candleflame. A pastel orange-yellow. It is slightly lower in transmission than Sunshine, giving a screen more orange in hue and lower in brilliance, which definitely suggests artificial illumination when used on interior scenes. Somewhat warmer than No. 6. Possibly useful on exteriors in suggesting morning or afternoon with less intense sunlight than prevails at midday. By objective association useful in inducing rather mild mood reactions such as feelings of coziness, comfort, intimacy, well-being, peace and plenty without opulence, etc.

Tint No. 6, Sunshine. A clear brilliant yellow approximately complementary to sky-blue, therefore quite closely matching the subjective color of sunlight when seen in contrast to blue sky. The visual transmission is high; therefore it is particularly adapted for use on a scene designed to give the impression of brilliant sunlit conditions and where an interior is obviously illuminated by sunlight entering through windows and open doors. This color is definitely warm, but not to the same extent as Candleflame, Firelight, and Afterglow which make with this color a series increasing progressively in warmth. It is mildly stimulating, suggesting a mood of lively interest and attention, but not one of high excitement or nervous tension.

(*Most 1- and 2-reel slapstick comedies of silent-movie days were printed on clear-base film. When tinted-base stock was used for these pictures, yellow “Sunshine” film was chosen. R. A. M.*)

Tint No. 7, Verdante. A pure green, rather pastel in character. It is the hue of spring foliage, suggesting directly trees, grass, and vernal landscapes. By subjective association typical of youth, freshness, unsophistication, innocence, etc. It is only slightly warm, but definitely not cold. It is very close to the neutral point in the warm-cool scale.

Tint No. 8, Aquagreen. A brilliant blue-green. The color of more northern waters and suitable to the rendition of the sea under clouds and in storm. It is suggestive of wetness. Its transmission being lower than that of Verdante, it gives a less brilliant screen. This together with its greater blue tint probably makes it more suitable for the rendition of the darker green of mature foliage, dense forests of pine, jungles, etc. By extension from the objective correlation to summer, it is suggestive of such mood reactions as pertain to maturity, wisdom, dignity, repose, and restfulness. It is cool but not cold; tranquil, but not subduing.

Tint No. 9, Turquoise. A clear brilliant blue. It is definitely cool, but less cold than Azure or Nocturne.

(Please turn to page 12)

New...from EASTMAN



...Type A704—the uniform magnetic sound recording film

HEAR THE DIFFERENCE: “R-type” binder—an entirely new, smoother, homogeneous oxide layer—reduces tape noise and intermodulation distortion.

Extremely tough, wear-resistant, but without abrasiveness, it minimizes oxide build-up on recording and pick-up heads.

With its high chemical stability, it makes for long life, prolonged usefulness of the recorded library.

And, most important, new “R-type” binder permits uniform oxide coatings of superb magnetic characteristics. *Its high output and low print-through result in excellent reproduction quality—more vibrant highs, a more natural balance between highs and lows.*



SEE THE DIFFERENCE: Printed on the back of the new Type A704 film is the permanent legend “Eastman Kodak Co.,” together with a series of dispersion numbers. This “Life-Time Coding” provides a convenient, accurate means of indexing film by content, a useful reference for logging of optimum bias settings, re-use and purchase data. *What’s more, it is your assurance of highest quality.*



EDGE SLITTING exerts great influence on ultimate audio quality; uneven tracking introduces intermodulation distortion. Note loose particles on rough guiding edge shown in photomicrograph of conventional film at *left* compared to evenness of EASTMAN Magnetic Sound Recording Film at *right*.



PERFORATING affects audio fidelity. Note the superior perforations of the Eastman product at *right* compared to the uneven perforations of conventional film at *left*. Eastman perforating is known for quality, for conformance to high standards and for rigorous uniformity.

AVAILABLE NOW: 16, 17½ and 35mm widths in a complete range of cores and windings. For further information about EASTMAN Magnetic Sound Recording Film, Type A704, as well as the new EASTMAN Sound Recording Tapes, write:

MOTION PICTURE PRODUCTS SALES DEPT.

EASTMAN KODAK COMPANY, Rochester, N. Y. 14650

Letters...

to the editor

Gentlemen:

We are subscribers to your magazine for many years and would appreciate your information at this time as to the following:

We believe that from long experience in the Theatre Industry, some conclusive figures are available in regard to the proportional screen sizes. We would like to know what recommendable relationship has been determined between the dimensions of screen pictures in standard, panoramic, CinemaScope and 70 mm projections.

J. Datshkovsky
Cinema Division
Westrex Co., Mexico

There is considerable evidence that non-anamorphic 35-mm projection is becoming standardized at a "widescreen" aspect ratio of 1.75/1, using a projector film aperture measuring 0.825 inch wide by 0.600 inch high. Screen light falls off and image quality deteriorates when higher aspect ratios are used for the projection of regular prints; and the old conventional 3:4-proportioned ratio of 1.333/1 (more exactly 1.375/1) is now considered too nearly square in shape to suit the tastes of moviegoers who are now accustomed to the more panoramic visual sweep of widescreen pictures.

Many responsible film producers in Europe and America recommend the 1.75/1 aspect ratio for the most satisfactory widescreen type of presentation with standard 35-mm prints. We heartily endorse this recommendation. Accordingly, we feel that there is no longer any need for such aspect ratios as 1.66/1, 1.85/1, and 2/1, all of which have been used to some extent for showing regular 35-mm prints.

Originally 2.55/1, CinemaScope was standardized at an aspect ratio of 2.35/1 by the addition of an optical soundtrack to the four magnetic

soundtracks on CinemaScope prints. The CinemaScope film aperture measures 0.839" x 0.715", and an anamorphic expansion factor of 2X doubles the width of the projected image.

The Todd-AO 70-mm projector aperture measures 1.913" x 0.866", giving an aspect ratio of 2.21/1. It is very desirable, however, to reduce the height of the 70-mm aperture to 0.814 inch in order to conform exactly to the CinemaScope aspect ratio of 2.35/1. We therefore regard a 1.913" x 0.814" 70-mm aperture as the most serviceable standard for wide-gauge film.

It is good practice to select a set of projection lenses which will give the same height of picture on the screen with all of the various aperture sizes and widths of film. It is a simple matter to calculate the lens focal lengths needed if it has previously been established what focal length is satisfactory for one size of aperture used. If a certain lens E.F. (equivalent focus) gives the right picture height with the old conventional 1.375/1 aperture, multiply this E.F. by the following factors to obtain the correct focal lengths for (a) 1.75/1 non-anamorphic widescreen 35-mm projection, (b) 2.35/1 CinemaScope 35-mm projection, and (c) 2.35/1 70mm projection (see table).

It is not always possible to "match" lens focal lengths exactly, but usually one can come close enough to maintain very nearly the same projected-picture heights with all processes. Of course, whatever picture height is chosen, the screen should be wide enough to accommodate the full 2.35/1 CinemaScope and 70-mm images. That is, the width of the screen should be 2.35 times its height.

Some of these aspect-ratio problems were discussed in several articles published in INTERNA-

EQUIVALENT FOCUS FACTORS

1.75/1 widescreen lens = C'Scope prime lens x 0.6587

2.35/1 C'Scope lens E.F. = 1.375/1 lens E.F. x 1.1917

2.35/1 70-mm lens E.F. = 1.375/1 lens E.F. x 1.3567

Conversely:

1.75/1 Widescreen lens = C'Scope prime lens x 0.6587

2.35/1 C'Scope prime lens = 1.75/1 widescreen lens x 1.5180

2.35/1 70-mm lens = 1.75/1 widescreen lens x 1.7282

2.35/1 70-mm lens = C'Scope prime lens x 1.1385

TIONAL PROJECTIONIST, e.g. "Non-Anamorphic Aspect Ratios: a Return to Sanity" (Dec. 1961). Of special interest are the two articles under the title "Glamourizing the Screen" in the current September and October issues of IP.

Tables of projected picture sizes with various lenses, apertures, and projection distances or "throws" are published by the manufacturers of lenses: where these are not available, the height of the projected picture may be calculated by means of the following formula, the same linear units (inches or centimeters) being used throughout:

$$\text{Picture height} = \frac{\text{Throw} \times \text{Aperture height}}{\text{Focal length (E.F.) of lens}}$$

This formula assumes a 0° projection angle. If a steep projection angle prevails, the picture height will be greater than calculated. In such a case use the trigonometric formula on p. 423 of "Mitchell's Manual of Practical Projection."

There is considerable leeway allowable in the size and shape of the seating area in a motion-picture auditorium. Above all, the picture should be large enough to be viewed comfortably from even the most distant seats. In general, we recommend that the front row of seats be 2 "picture heights" distant from the screen, and that the back row of seats be no farther away than 6 "picture heights" from the screen—regardless of the width of the picture, which will presumably vary from 1.75 to 2.35 times the picture height. Moreover, the width of the seating area should not exceed 4 times the picture height. As we said, there is no hard-and-fast rule.

IP

Hornstein Furnishes Nassau Theatre Projection Equipment

NASSAU, B. W. I. — The new Shirley Street Theatre has a 40 ft. wide screen, and uses Strong X-16 2500 watt Xenon lamps, Joe Hornstein, Inc., of New York, furnished the equipment and stage drapery treatment.

The Shirley Street Theatre is equipped with Century Projection and Cenutry transistorized sound equipment; Bausch & Lomb lenses; Strong rectifiers, and, as noted above, Strong Xenon lamphouses.

Engineering and supervision of the installation was by Hal Hornstein and Joe Hornstein, Inc. IP



Harry Rubin

Film Industry Calls Harry Rubin A "Perfectionist" — Both as A Projectionist and As A Man

The film industry calls him a "perfectionist," and Harry Rubin richly deserves that title as a projectionist and as a man.

This correspondent (we're old friends) just recently had a talk with Harry in his office at the New York Paramount Theatre, where he has spent 44 years with the Paramount theatre chain as a supervisor of projection and sound. Now he supervises projection for the AB-Paramount Theatres.

Harry Rubin pioneered many of the industry's most helpful projection devices, because of his creative talent. By his showmanship as a projectionist, Rubin surrounded the

screen with rich effects and novelties. He did this with special pattern slides and floodlights. Harry's flare for showmanship induced him to blow-up portions of the film, when there was a spectacular sequence. His timing had to be right on the button and the screen masking too, to fill the proscenium area.

Manufacturers of new projection devices would turn to Harry to test their equipment. And when it was passed by Rubin they knew that their new equipment was okay.

In 1917, Rubin was supervisor of projection at the Rialto and Rivoli theatres, when the late Roxy was managing director. He began devising effects and novelties, and his outstanding contributions to the projection of pictures attracted the attention of Sidney Kent, then the high executive of Paramount Pictures.

In that same year, Paramount was buying theatres and building new theatres to expand their theatre chain. And Paramount signed Harry as the supervisor of projection.

Rubin's first assignment was to supervise projection of the two-a-day engagement of "The Covered Wagon." Paramount sent Harry to St. Augustine, Fla., to handle the technical details of a special showing of "The Covered Wagon" for President Warren G. Harding.

Rubin went on the road to plan projection rooms for new theatres and inspect the older theatres' projection booths.

With the formation in 1925 of Paramount-Publix, Rubin was appointed director of projection and toured the country. Paramount-Publix eventually had upward of 2,000 theatres, so Rubin was busy keeping an eye on the equipment and the personnel.

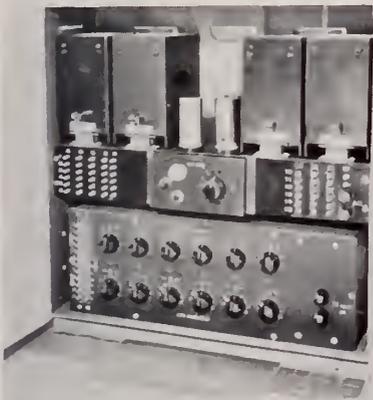
When the New York Paramount Theatre was built, Harry planned the projection room. And when it opened, Harry had three projectors, instead of two: one floodlight; one lantern slide and one effects machine and two spotlights.

When in 1927, the Paramount

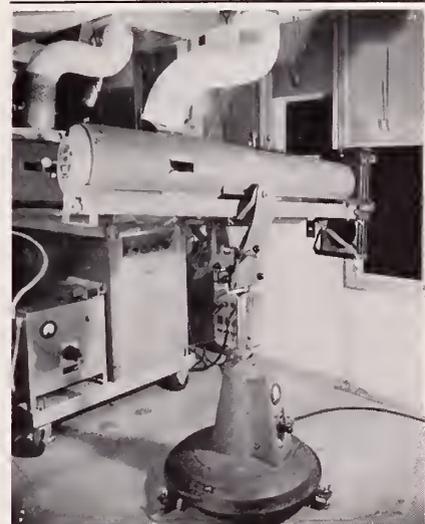
Theatre was installed with a sound system, the cautious Rubin insisted on an emergency amplification system with a switch for turning to the other system if regular system breaks down. And that was the birth of an emergency amplification system. Harry reasoned that if a single system goes amiss, he'd better have an emergency system for safety.

But Rubin is not so cautious to try anything new. His habit was to test anything new at all hours of the night. The equipment manufacturers appreciated Harry's testing to get the bugs out of their new equipment. And the new development, whatever it was, Harry wouldn't show the movie patrons unless it was smooth and an advance in projection and sound.

(Concluded in the Next Issue)



ACOUSTIC COMPENSATOR—The Century theatre acoustic compensator is said to be an entirely new and unique device to provide the motion picture theatre with a fast and accurate means of adjusting the frequency characteristics of multiple channel theatre sound systems for the best possible sound reproduction for any and all films. The compensator is engineered and designed as a fully contained, compact unit which has no insertion loss nor does it require changes in system gain or amplification. It was discussed in a news story in the November issue of IP. It can be added to practically any multi-channel sound system. The photo shows the Century acoustic compensator installed in the Junction Box of a Century 6/4/1 channel sound system



Probably the largest installation of carbon arc lighting equipment in any theatre is that of the 5,000-seat Crown Theatre in Chicago's huge exposition building, McCormick Place. It includes three Troupier follow spotlights (one illustrated), eight powerful Super Troupier follow spotlights, 3 of the world's largest slide projectors to provide 50,000 X on the theatre's 40' x 80' screen, and two carbon arc motion picture projection lamps. Literature on this type of equipment will be sent to any reader addressing the Strong Electric Corp. 31 City Park Ave., Toledo 1, Ohio.

Altec Engineers Train at Century Projector Plant



TRAINING — Altec service engineers attending training sessions at the Century Projector Corp. factory in Long Island City New York are shown above. The training covers Century's American made projectors and Century's all transistor sound systems. Left to right in left picture are



Altec engineers D. S. McLean, George Evans, Artie Baus, Ralph Kautzky, Jack Gnrirrep, Jim Raia, and Peter Capone. Left to right in the right picture are Altec engineers M. Goldberg, H. Schwartz, Robert Sweeny, H. Lateltin, S. McGuigan, J. Eves, and F. Hall.

Tinted Release Print Film

from page 7

tending to produce a mood of peace, reposefulness, and tranquility. It is the color of calm tropical seas under clear skies. It is suggestive of the Mediterranean and the South Sea Islands. If used on interiors it would impart a feeling of restfulness, dignity, and reserve without inducing appreciable depressive moods. (*I disagree. No shade of blue is suited to interior shots unless it is desired to convey a feeling of coldness, gloom, neglect, poverty, or night — the "haunted-house" type of atmosphere. R. A. M.*) With proper contextual influence it might be used for the suggestion of brilliant moonlight effects. although No. 10 may be somewhat better for this purpose.

Tint No. 10, Azure. A strong sky-blue. It is colder than Turquoise; tranquilizing to the point of becoming depressing. It is suggestive of the sedate and the reserved, even approaching the austere and forbidding; under certain conditions slightly gloomy

Tint No. 11, Nocturne. Deep violet-blue. The visual transmission is low, giving a screen of low brightness. It definitely suggests night, shadows, gloom, coldness, etc. By subjective associational reactions appropriate to depressive conditions, despair, failure, unattained ambitions, intrigue, the underworld.

Tint No. 12, Purplehaze. A bluish violet or lavender, rather pastel in character. It has a relatively high visual transmission, giving a screen of greater brilliance, higher key, than the adjacent tints. Nocturne and Fleur de lis, to both of which it is closely related in emotional value. The mood induced by this color is particularly dependent (more so than many of the other colors) upon contextual factors. For instance, to a twilight scene on the desert with distant mountains it imparts a feeling of distance,

mystery, repose, and languorous warmth; used on a scene containing snow fields, glaciers, snow-capped mountains, etc., it has a pronounced cooling effect. The hue of this color is approximately the same as that of the shadows on sunlit snow under a clear blue sky.

Tint No. 13, Fleur de lis. A rich royal purple. This color has long been the badge of royalty, high office, power, and pomp. In ancient times the dye was very costly and was used to color the garments of the aristocracy. (*A common misconception. The "royal purple" of ancient times corresponds to the vivid rose color we call "magenta" today. R.A.M.*) The transmission of this film tint is low, thus giving a depressed screen brightness suggestive of reserve, dignity, and austerity. It has a relatively cool color, but not as cold as Nocturne.

Tint No. 14, Amaranth. This is also a purple, but has a greater red content than Fleur de lis; therefore it is warmer and less austere. It is adapted to the rendition of scenes showing opulence and luxury together with refinement. With proper contextual relation it may be well adapted to scenes approaching sensuality and abandon, such as bacchanalian revels staged in settings of wealth, luxury, and elegance.

Tint No. 15, Caprice. Cool pink. The visual transmission is relatively high, thus giving a brilliant sparkling screen. It is a jolly, carefree, hilarious color suggestive of carnivals, Mardi gras, fête days, and merry-making in general.

Tint No. 16, Inferno. Fiery red tinged with magenta. Since it is directly suggestive of fire, it is adapted to scenes of burning buildings, glowing furnaces, forest fires, etc. By subjective association indicative of riot, panic, anarchy, mobs, turmoil, strife, war, battle, and unrestrained passion.

IP

Kollmorgen Will Supply Lenses for GE Theatre Color Television

The Kollmorgen Corp. has been selected by the General Electric Co. to provide the projection and Schlieren lens assemblies for the first production of "Talaria." General Electric's revolutionary color projector, National General Corp., a 220-theatre movie exhibitor plans to use the Talaria projector in a nationwide theatre TV network.

The quarter-million dollar award by General Electric to Kollmorgen for the production of projection and Schlieren lenses was made after competitive bidding by major projection lens manufacturers in the United States. Among factors governing selection were the ability to produce complex precision lenses possessing ultra-high resolution, linearity, uniformity and contrast, plus a proven "quick-reaction" capability.

"Talaria" has a wide range of possible uses outside the commercial entertainment field, including medical and other instruction, military briefings, and national conventions.

Until development of the projector by General Electric, display of TV pictures on full size 25 by 33 ft. screens with adequate brightness was limited to black and white. Previously, most color systems were limited to screens about one-fourth this size. Talaria provides a color picture with characteristics that compare very favorably with color film.

The key factors which make possible the capabilities of this projector are the development of a special control fluid, the development of a novel light gathering system to utilize the very high light output of a 5-kw xenon arc lamp, and a simplification of the projection optics wherein all three primary colors are projected with only two output light beams.

This dual-beam method results in a simpler and more reliable projector, and substantially simplifies the problem of achieving and maintaining precise color registration. This is particularly important for large-screen projection where minute errors would be greatly magnified.

The Talaria projector has a high-power light source and an optical projection system similar to that of a motion picture projector. But in place of the printed motion picture film, a thin layer of viscous fluid is used. This control fluid was developed by General Electric for this particular application and has unique electrical, mechanical and optical properties.

This control layer is continuously scanned by an electron beam in the same manner as the phosphor on the face of the picture tube in a conventional TV set. But instead of producing a picture directly on the control layer, the scanning process controls the light from the lamp which passes through the control layer in such a manner that a live picture is instantaneously produced on a large screen in full color and brightness.

In addition to producing high speed 35mm projection lenses for the motion picture industry, and projection lenses for Cinerama, Kollmorgen produces sophisticated optical alignment instrumentation, submarine periscopes for the Navy, and a variety of optical-mechanical and electronic instruments for the military and industry.

ip

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.

Motion Picture Equipment Division

100 E. 42nd St., New York 17, N.Y.

DIAMOND
TRADEMARK
**PROJECTOR
CARBONS**

Better
Light!

Lower
Costs!

RINGSDORFF CARBON CORP. East McKeesport, Pa.

WHY WASTE CARBONS?

Use The "Master Saver Device"

Reduce your projection carbon cost by adopting the MASTER CARBON SAVER (designed by a pioneer IATSE projectionist.)

The only simple and accurate saver on the market with no springs, screws, nuts and bolts and requires no carbon grinding. Each carbon held by "Precision Taper" after stub is easily tapped into saver. There is a "MASTER" saver for every type of Suprex non-rotating or rotating arc lamp. Now being used by hundreds of theatres on STRONG, ASHCRAFT, PEERLESS, etc.; sizes 6-7-8-9-10-11mm, \$3.50 each; 13.6mm, \$4.50 each.

SOLD BY YOUR LOCAL SUPPLY DEALER

Manufactured by

MASTER SPECIALTY PRODUCTS

200 West 72nd St., New York 23, N. Y.

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica

by Christie

CARBONS, INC.

BOONTON, N. J.

SMPTE Calls A-V Design Conference

NEW YORK — A conference of experts in audio-visual education has called for a "systems" or integrated, approach to the design and use of A-V devices.

Their report, recently put in final form by the Society of Motion Picture and Television Engineers (SMPTE) under contract with the U. S. Office of Education, notes that because of the "piecemeal" evolution of today's audio-visual devices, schools have not been able to make the effective use of A-V techniques that the state of the art permits.

The 240-page report, entitled "Designing New Apparatus for Learning," grew out of a three-day conference held at Princeton, N. J., in 1961. Findings of the conference were outlined by the SMPTE project director, John Flory of Eastman Kodak Co., in Oct. at the Society's 94th Technical Conference, held in Boston.

The conferees saw a number of reasons why the audio-visual movement has encountered resistance. Among these factors are economics, ignorance of A-V techniques and possibilities, inefficient equipment and "a print-oriented . . . tradition" in instruction.

"For many years," they reported, "some teachers have been combining

different kinds of materials—films, filmstrips, still pictures, models, etc. — to realize their teaching goals. These are instructional systems at the simplest level. . . . Not only do we need to develop packages of inter-related instructional materials . . . we need also to analyze the entire educational process in an effort to make it operate at an optimum level."

The conferees suggested that the recent success of language laboratories lies in the fact that they are set up not as isolated devices, but rather as "total configurations of equipment and materials to meet certain aims." This, they suggested, is the fundamental purpose of any system. **iP**

Local 306 Plays Santa

BROOKLYN, N. Y.—For the 14th year, the Movie Social Club of Kings County spread Christmas cheer at the various hospitals throughout Brooklyn by giving out candy and toys to sick children.

The overall activity is under the direction of Harry Garfman, executive director of the club, who is also Brooklyn and Queens Business Agent of IATSE Local 306 of the Projectionists Union. Burt Sutter is chairman of the entertainment committee.

In addition to special yuletide activities, the Movie Social Club projects movies throughout the year at the various hospitals in Kings County. Projection equipment is loaned free to these institutions and oftentimes films are projected on ceilings for prone patients. **iP**

Hughes Electronics Announces New Xenon Solid-State Power Supplies

LOS ANGELES, Calif. — A new "Solid-State-Series" of nine power supplies designed to optimize the life of high cost Xenon and Xenon-Mercury arc lamps in equipment such as motion picture and micro-film projectors, theatrical and photographic spot and flood lights, sun simulators, comparators, interferometers, oscillographs and polariscopes is now available from Hughes Electronics Co., Los Angeles, Calif.

Utilizing high efficiency solid-state circuitry throughout, units in the series feature output ratings from 30 to 5000 watts, and meet all of the technical requirements of Xenon and Xenon-Mercury lamps to assure maximum life.

Performance and operating characteristics include: inherent, self-regulating volt-ampere characteristics; DC output ripple less than 1%:



Hughes Electronics Co. Model 1200-A33T, 1200 watt solid-state power supply for xenon and xenon-mercury lamps. One of nine models rated from 30 to 5000 watts.

automatic current limiting; adjustable output range selector; and protection against high voltage igniter starter. Free convection cooling eliminates noisy fans and blowers and permits continuous operation in temperatures ranging from 0°C to 50°C.

Models 100A25S and 300A25S are compact, portable units measuring 9½" x 6½" x 5½". Weighing approximately 20 pounds, they provide outputs of 30-100 and 150-300 watts respectively. Models in the series increase in size and rating to the Model 5000A65T for powering 5000 watt Xenon lamps. Priced from \$405 depending on output rating.

All units in the series have been designed to occupy a minimum of floor space, with a single control recessed into the front panel of the two-tone cabinets. For mobility, casters can be supplied on all models as an optional feature.

Bulletin AL-64 describing the series in technical detail will be sent on request through International Projectionist. **iP**

America's
headquarters
for all
theatre equipment
and
supplies

National
THEATRE SUPPLY COMPANY

Vallen for

CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES

VALLEN, Inc.
AKRON 4, OHIO

basic mathematics

by **NORMAN H. CROWHURST**

**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

HERE'S AN ANNOUNCEMENT OF EXTRAORDINARY IMPORTANCE!

C. S. ASHCRAFT MANUFACTURING CO.
IS NOW MANUFACTURING

The **SUPER**
CORE-LITE

THE FINEST, MOST POWERFUL ARC LAMP EVER PRODUCED.

A PHENOMENAL, NEW SYSTEM
OF ARC LAMP PROJECTION!

CAPABLE OF PRODUCING AN OUTPUT IN EXCESS OF

63,000 LUMENS

**AT 165 AMPERES USING AN ECONOMICAL, STANDARD
13.6mm HIGH INTENSITY CARBON AND THE HIGHEST PER-
CENTAGE OF WHITE LIGHT DISTRIBUTION EVER ACHIEVED!**

THIS NEW ASHCRAFT LAMP WILL BE SOLD BY
AUTHORIZED ASHCRAFT THEATRE SUPPLY DEALERS

C. S. ASHCRAFT MANUFACTURING CO., INC.

36-32 THIRTY-EIGHTH STREET, LONG ISLAND CITY 1, NEW YORK

INTERNATIONAL PROJECTIONIST



Projectionist Stan Goldstein, member of New York Local 306, is shown here pointing out some of the important features of the XeTRON lamp-house. Note the clarity of the picture on the black-back side of the rear process screen. (See story on page 9.)

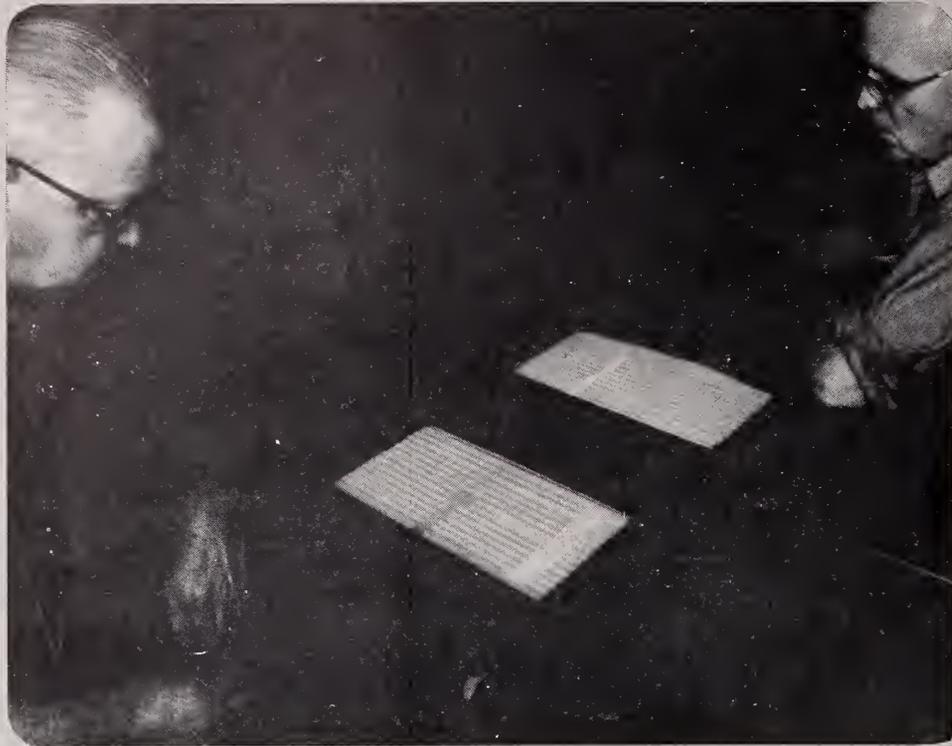
FEBRUARY
VOLUME 39
40c A COPY

1964
NUMBER 2
\$3.00 A YEAR



Library of Congress
Order Division (0368X)
Washington 25, D.C.

A Scene From America's Projector Carbon Center...



X-ray reveals breaks and voids in positive projector carbon cores

"The x-ray eyes of our inspectors are your assurance of perfect projector carbon cores"

— says **VERYL JOHNSON**
"National" Sales Engineer

You can't judge a movie by its title. And you can't judge a projector carbon solely from the outside. That's why carbon inspectors in our plant in Fostoria, Ohio, test every carbon *from the inside out*—with modern x-ray equipment. As an extra safeguard, our inspectors are paid a premium for every imperfect carbon they reject and scrap.



Veryl Johnson

Shown above is our x-ray room, through which all positive carbons must pass on a belt containing from 6 to 20 carbons, depending on size. The assignment is to weed out carbons with voids or

breaks in their *rare earth cores*—the key to uninterrupted burning and maximum light quality.

As a further inspection safeguard, operators of this x-ray equipment stay keen and alert by changing off *every 30 minutes!*

Quality manufacturing and precision testing are only a part of the NATIONAL projector carbon story. For more than 45 years we have provided the motion picture theatre industry with unsurpassed technical service.

Our Sales Engineers are equipped with, and are specialists in using, today's most modern test devices for assuring *more* screen light per projector carbon dollar!



"National" is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 39 February, 1964 No. 2

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murroyhill 7-7746
(Area Code 212)

IN THIS ISSUE

- | | |
|--|----|
| That Vital Leader Footage
By Robert A. Mitchell | 4 |
| New Strang Lamp | 10 |
| XeTRON for Rear Projection
The Cover Story | 11 |
| Harry Rubin, Part 2 | 13 |

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dowson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1963 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



INTERNATIONAL PROJECTIONIST February, 1964

MONTHLY CHAT

THE DESIGN FOR PROJECTION ROOMS

Thank heaven for new theatres. They're designed and constructed around the projection room, enabling the craftsman to get around his machines.

The older theatres, except for the downtown city houses, have their quota of cages and what-nots, where in by dint of much squeezing, a pair of projectors and rewind bench nestle up to one another in an effort to remain within the confines of the space so grudgingly allowed them.

In spite of the increasing recognition of the importance which is attached to the projection in motion picture theatres, no small number of freaks in the projection room design continue to make their appearance.

The question might logically be asked: "In what manner do improperly designed projection rooms affect the presentation of the pictures on the screen?" It is true that the effects of relatively minor errors in design are seldom visible on the screen, since they but serve to make the craftsman work harder in order to overcome the handicaps needlessly and thoughtlessly imposed upon him. The major errors, however, of which the undersized projection room is perhaps the most serious, result in the curtailment of equipment and the effects of such curtailment are plainly visible to an experienced observer, since certain elements which are necessary to a well balanced program must be sacrificed, due to the lack of projection equipment.

The construction of which dates back to the times when the builders held less tolerant views concerning the importance of projection than do those now engaged in the business of exhibition.

In the final analysis, the responsibility for such errors rests with the architect, or at least with some member of his organization whose duty it is to look after such details. Indirectly, the owner of the theatre is to blame, since he should see to it that where the architect is incapable of handling the design of the projection room with all its ramifications, the logical person to call upon for assistance is the chief, or senior projectionist, and the supply house. Even where the architect is experienced in such matters, the projectionists should be consulted—while the plans are being drawn and not after the construction of the theatre has advanced to such a stage that the size of the projection room governs the amount of the equipment to be used rather than letting the selected equipment determine the size of the booth.

There is a simple way, of course. The owner of the theatre could ask a competent projectionist to supervise the selection of equipment, and charge him with the responsibility of seeing to it that all matters pertaining to projection are carried out in strict accordance with the plans. The owner should then go to the architect with a list of proposed equipment and a notation of the space required by each piece and insist that the projection room be of a size sufficient to meet the necessary space requirements. **ip**



That Vital Leader Footage

By ROBERT A. MITCHELL

THE FEW SECONDS between the appearance of the motor-start and changeover cues on the screen constitute projection's "moment of truth," the most critical period of the entire projection process.

Although this crucial period lasts only about seven seconds, it recurs at every changeover with all its inherent dangers. When it exposes the projectionist's neglect in the inspection and repair of leaders and cue marks, it does so right on the screen for all to see! This is when a film break is most likely to occur, or, less serious but still intolerable, a misframe, a sudden change in light or focus, a momentary "blackout," or a "white screen."

It is unfortunately true that slip-ups sometimes happen in spite of the best projectionist's best efforts, but why invite trouble with neglect or carelessness? Those 15 or 20 feet of leader footage that *the audience never sees* are the most important of the entire show!

Professional presentation of a film program begins with inspection and repair of the prints. The projectionist can be reasonably confident about the performance of the projectors because he works with them every day and has plenty of opportunity to keep them up in good working order. The prints are a different matter: he never knows what he is going to find when he opens up the shipping cases and begins to inspect the footage on his hand rewind. This is particularly true in subsequent-run theatres.

In view of the crucial nature of the changeover period, the standard film leader which heads each reel is extremely important to the quality of the presentation. And yet the leaders are often mangled and soiled and excessively patched even when the picture footage is in excellent condition! All projectionists know that every splice in a leader offers one more chance of a misframe, a momentary blackout, or even a film break which will interrupt the show and cause audience grumbling. Unlike the operators of television stations, we can't excuse our faults by announcing that we are "experiencing slight technical difficulties"! Moviegoers expect perfect, uninterrupted projection on the theatre screen.

Now, the irony of the situation is that the vital leader footage is more exposed to abuse than any other part of a reel of film. It may be damaged by careless threading of the projectors, torn, indented by sprocket

teeth, mashed in the gate, the edges of the film chipped, and much of it unwound upon the floor where it picks up oil and dirt, and is occasionally creased and cracked by being stepped upon. No wonder that leaders have to be replaced several times during the useful life of a release print!

Standardization of Film Leaders

The *standardization* of the release-print leader is its most valuable feature. Accordingly, any alteration of its length or transposition of its parts greatly diminishes its usefulness. The general lack of leader standardization in the days of silent movies required the projectionist to measure off and "play out" the requisite length of framelined blank film. We would be doing this today were it not for the standard leader.

The modern release-print leader begins with several feet of opaque or transparent "projection leader" on which the picture title and reel number may be written lengthwise in large characters for ready identification. Then comes the "identification leader" which gives in each of its 24 frames the print type, reel number, and picture title. This is followed by 12 feet and 20 frames of the main "synchronizing leader" having black frames separated by rather thick transparent frame-lines. Every 16th frame of the synchronizing leader is transparent and marked with an inverted footage-indicator numeral for threading purposes.

The footage-indicator frame located exactly 12 feet from the first frame of the picture is marked "Picture Start." One foot from the Picture Start frame is the indicator frame "11." Each succeeding foot is marked by a numbered frame, "10," "9," "8," etc., down to "3," followed by three feet of black film and the first frame of the picture. Each indicator frame, including the "Picture Start," is preceded by a sound-synchronizing diamond exactly 20 frames ahead of it.

Television leaders containing image adjustment patterns and focusing targets should not be used on theatre-release prints.

The "protective leader" of transparent blank film or opaque raw stock is supposed to be restored to its initial length of 8 feet when repeated use has reduced it to 6 feet. This leader is threaded onto the take-up reel; and because its end is frequently trimmed with the

(Please turn to page 6)



Investment Opportunity

The skills he's learning today he will someday put to use for you.

But it is going to take a substantial investment before the strides he takes will be sure and swift and strong. An investment of time, of love, of money and thought.

You have a stake in that investment.

You can protect it by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U. S. Savings Bonds. The Treasury Department's Plan encourages habits of prudence and diligence and responsibility that are

the most valuable currency of a free society and a free economy.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the skills of tomorrow's workers. In the energy and ability of youth that is our real wealth. You are investing in America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, U. S. Savings Bonds Division, Washington, D. C. 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



• The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine. •

Upper Magazine

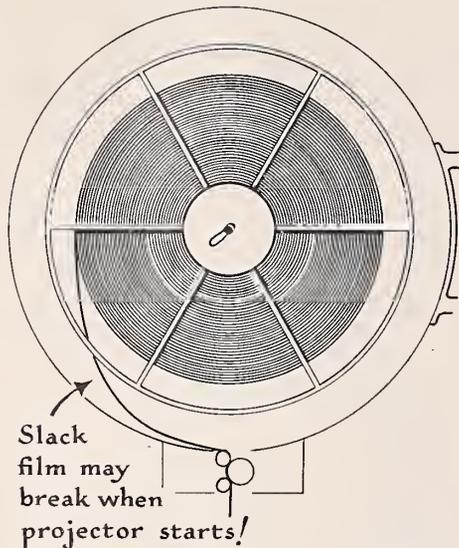


FIG. 1—Always bring the film up taut in the upper magazine to avoid a length of slack film. Be sure that upper-reel tension is sufficient to hold the reel where you turn it (but not enough to strain the film, of course). If the slack in the film is not removed, the teeth of the upper feed sprocket may rip out the holes when the projector motor is turned on.

scissors to permit easier insertion into the reel slot, its length is gradually reduced.

Protective Leaders Too Long?

The writer believes that a protective leader 8 feet, or even 6 feet, in length is inconveniently long. If the projector is threaded up with the indicator numeral "7" or "6" at the aperture, about seven feet of leader drape down to the floor until threaded into the remainder of the machine. If the picture aperture is 4 feet above floor level, approximately 3 feet of the standard leader will lie on the floor. Add to this 8 feet of opaque protective leader, and a total of 11

Lower Magazine

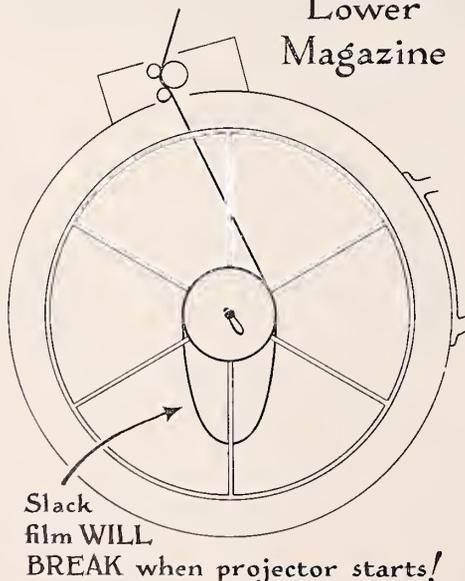


FIG. 2—Most dangerous of all is a slack length or loop of film in the lower magazine. Make certain that the film is taut before the projector motor is switched on! When not held back, the takeup reel turns so fast that the film will break when it tightens.

feet of film are curled around the projectionist's feet. All this excess film must be wound up on the hub of the takeup reel as the last step of the threading operation.

It seems to us that 2 or 3 feet of opaque protective leader are enough, and certainly much easier to handle than the longer recommended lengths. Surely, a 2½-ft. length is sufficient to protect the main leader and to provide space for writing the reel number on the film when necessary for ready identification of the reel in the storage bin.

Splices in Leaders

Unless the print is a fairly new one, the leaders are usually patched in several places. This means that they have been torn several times by rough handling, or that misthreading has caused them to break when the projector was started up. One or two splices are rather common in the leaders of used prints, and each one must be scrutinized and tested for mechanical strength, ability to run through the projector smoothly, and for frame registration.

The very worst time of all to have a film break is when a changeover is being made. Two projectors are then operating at the same time; and the projectionist's attention is glued to the screen as he waits for the changeover cue. Likewise, an out-of-frame splice in a leader will result in an out-of-frame picture on the screen when the changeover is made. Misframed splices are most likely to be found in the black film between the "3" indicator frame and the picture, especially where the leader is spliced to the black footage of a fade-in.

Sections of leader in which three or four splices occur within a few inches of each other should be cut out completely and replaced by the requisite length of new plain leader stock having black frames and white framelines. Such stock may be purchased in 100-ft. rolls at about 3c per foot. The short lengths of leader cut from brand-new preview trailers and usually thrown away are worth saving for the repair of standard leaders.

Shortened Leaders

After checking all splices for strength and frame registration, observe whether the leader has been materially shortened by the patching previously done on it. Loss of a foot or less does no harm, but it should be kept in mind that a shortened leader causes the picture to come into the aperture prematurely before the changeover, and that 1 second of picture running time is thus lost for every 1½ feet of film missing from the leader. Continuity is not disturbed unless a fade-in is lost or a few words of dialogue are "clipped off" at the changeover.

The recommendation that "significant sound should be kept at least 5 feet from the start of the picture" is unfortunately not always heeded by the people who assemble the prints and decide just where the reels shall begin and end.

Loss of action due to a shortened leader can be avoided either by threading up on a larger indicator number to compensate, or by allowing just the right amount of time-delay in switching on the incoming projector when the motor-start cue appears. Either method risks a momentary blackout through miscalculation. It seems better to restore the leader to its correct length or to lose only a second or two of unimportant action: the audience probably will not notice any "jump," but they do notice blackouts and complain if the screen "goes black" for even the merest fraction of a second!

From the point of view of the average moviegoer, the

worst sin a projectionist can commit is to allow the indicator numerals and sound-synchronizing diamonds to flash by on the screen. This seldom happens unless the projectionist habitually threads up on a high indicator number and "runs down" to the correct starting number—and then forgets to run the film down after threading!

Excessive Leader Length Tabu

Strange as it may seem, replacement of damaged leaders by the exchanges sometimes results in the inclusion of more than 3 feet of black film between the "3" indicator frame and the first frame of the picture. An excessively long leader is actually worse than a shortened one, for if the projectionist does not notice and remove the excess film before the reel is shown, both he and his audience will be treated to a brief blackout when the changeover is made.

On the protection-leader footage of fairly new prints the projectionist may find the words: "Do not patch this leader. Replace if torn." This notice is addressed to the operator of the film-printing machine, not to the projectionist. It refers to the *negative* from which the leader is printed, and is intended to prevent the printing of defective leaders.

Having been unwound upon the floor many times, the leaders of old prints may be badly soiled. The oil and dirt adhering to them should be removed by drawing them through a folded pad of soft cotton cloth moistened with film-cleaning fluid.

Conserve Those Leaders!

Most projectionists help save leaders by keeping them as clean as possible and by treating them gently when threading the projectors. One simple rule is to make sure that the film is *on the sprocket* before closing the idler roller or the gate door. Carelessness may result in a film break and one more splice in a leader which may already have more than its fair share of patches!

It is especially important to take up all slack film on both the upper and lower reels to avoid sudden tightening of loose lengths of film. Perforations are ripped out by the teeth of the upper and lower sprockets when the film snaps tight. If the film does not break immediately, it will in the gate when a loop is lost. The takeup reel turns very fast when not held back by the film, and is very likely to break the leader if a length of slack film is left between the lower sprocket and the takeup reel. This is probably the chief cause of damage to leaders.

A misthreaded leader may break if the film is "run down" to the correct indicator number by switching on the projector motor instead of using the handwheel. The best way to thread is to bring down a sufficient length of leader from the upper reel so that the correct indicator number can be placed just above the aperture in the gate. The threading can then be checked by running down a few frames with the handwheel. *Very serious damage can be inflicted upon the projector by switching the motor on and off rapidly to check the threading!*

In the first place, the motor-switch contacts may be badly burned when the projector motor is turned off before it has attained full running speed. The starting winding of a motor consumes a very strong current and produces a hot spark when the circuit is broken. In the second place, the starting winding of a motor has a powerful "torque," or force of rotation. If the motor is switched on again before it has had a chance to stop turning, the powerful starting torque is added to the momentum of the revolving rotor and the projector

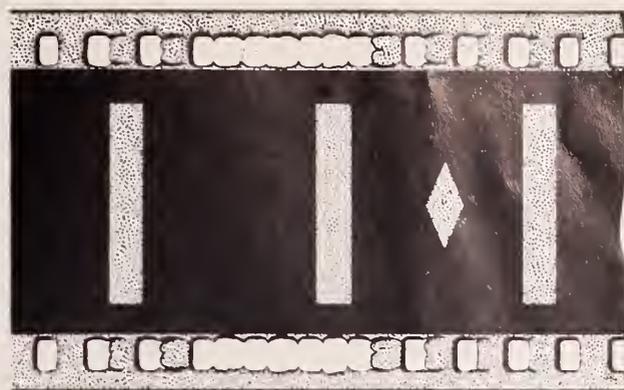


FIG. 3—Here is what happens to the sprocket holes when film is violently "yanked" on a sprocket—the perforations in each margin are simply ripped out! If this happens on the upper sprocket, a loop may be lost when the torn perforations come to the intermittent sprocket. The result: a film break and possibly a "burn-out" when the film stops in the gate.

gears and flywheels. This results in an almost instantaneous acceleration which may strip the teeth from the main drive gear and the shutter spiral gears.

It is a matter of great convenience to have equal starting times for both projectors of the installation in order that the same indicator-frame number be used in threading any projector. The time required for a projector to reach normal operating speed may be regulated with the starting-winding rheostat on most split-phase induction motors.

Film Cues Also Standardized

Because the motor-start and changeover cues at the end of a reel are 11 feet apart (7.333 seconds), it is obvious that the speed-up time of a projector must be less than 7 seconds. Actually, a speed-up time between 2 and 3 seconds seems to be best, and requires the projector to be threaded up on "6," "7," or "8."

Naturally, the two sets of cues, each consisting of four consecutive frames having a white-outlined black dot in the upper right-hand corner of the picture, must be the correct distance apart (11 feet between the first cued frames of the two sets) in order that the standard leader be used with confidence. There should also be 22 frames of film between the first frame of the changeover-cue set and the first frame of the black "run-out trailer" to allow a fraction of a second for the changeover device to function.

Splices in the film between the motor and changeover cues make it advisable to check the length of film between the two sets of cues when inspecting the print. (This is easily done by noting the footage numbers printed in the perforation margin of the film.) If more than 4 or 5 frames are missing, a new set of motor-start cues must be marked on the film 11 feet ahead of the changeover cues.

A cue-marking die is an absolute necessity for scoring a neat, inconspicuous set of cues on film. Crude lines and X's scratched over the frames are an unnecessary form of film mutilation, as is also the punching of holes in film. Many projectionists use china-marking crayons on the base side of the film for temporary curtain cues which can be wiped off with a clean cloth before the film is returned to the exchange. Red china-marking crayon cues show up the best, but the red dye seems to streak over the film to form an indelible smear. The black crayons are safest. **ip**



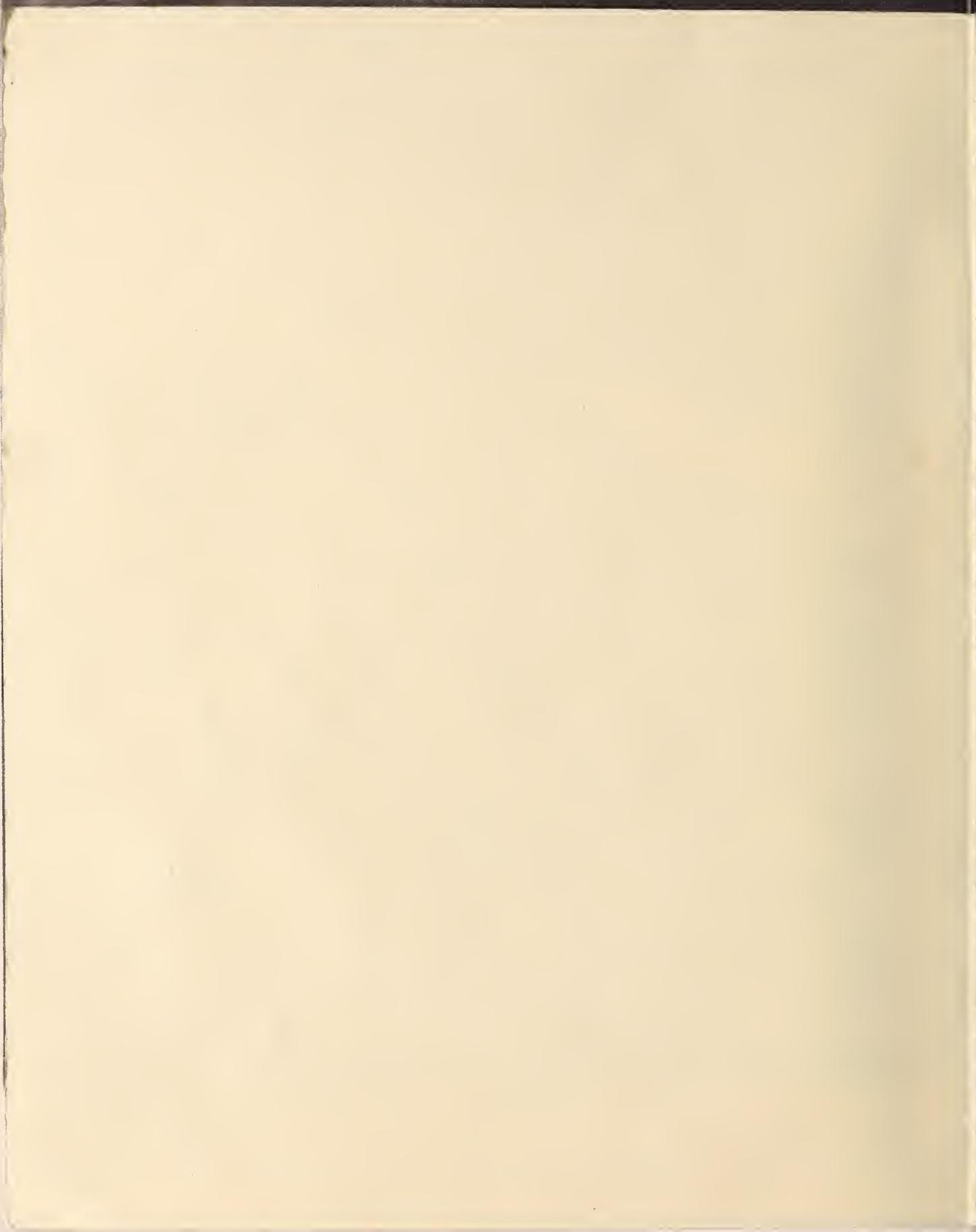
You can't stretch time:

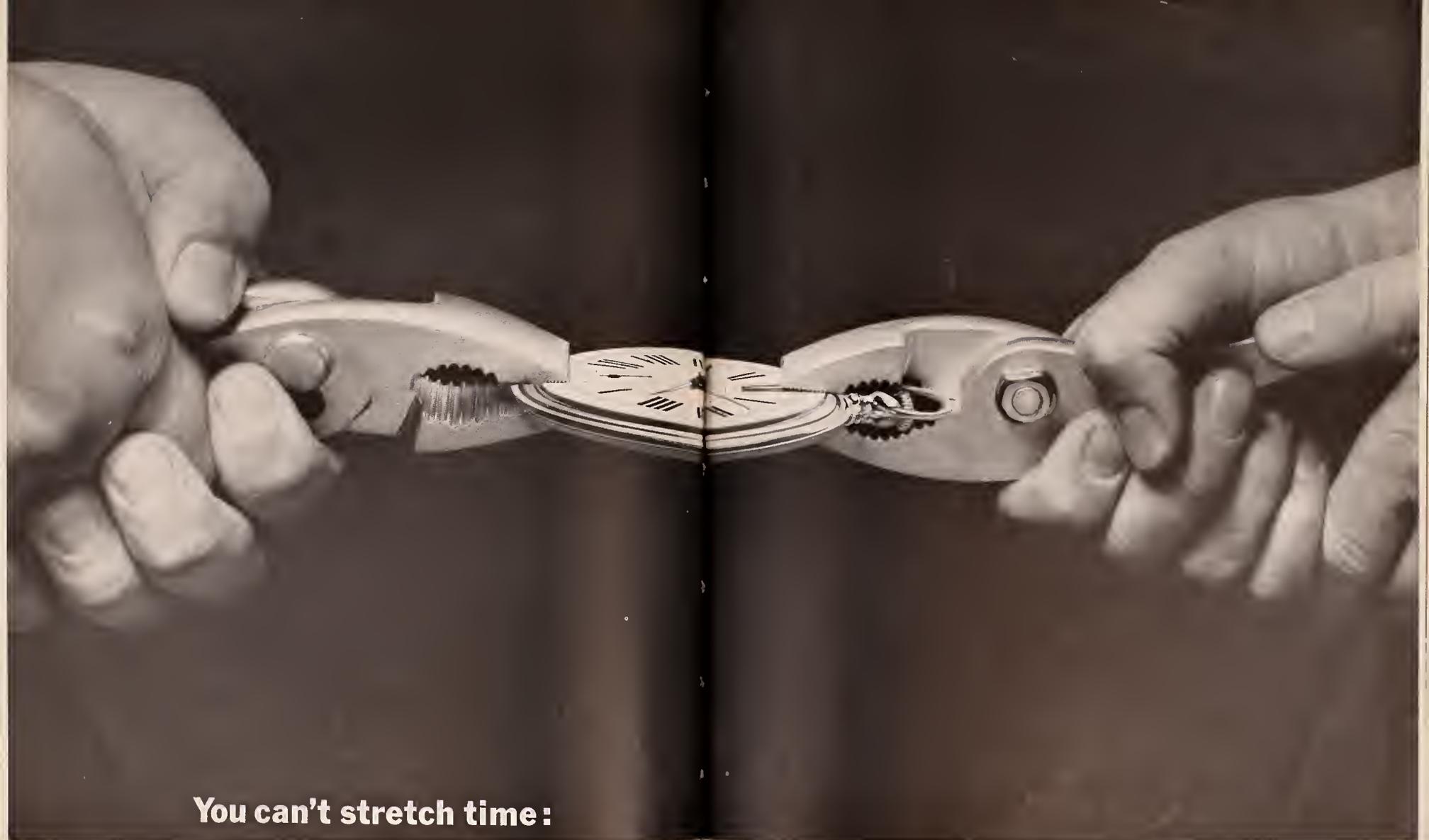
If you want crisp, top-quality prints—and you most certainly do—don't waste good negative quality by pushing your laboratory into making short cuts. Give them time to do the job right with the right materials. In other words, GO EASTMAN all the way—negative and print-stock. For the purchase of film, technical queries,



and service, write or phone: Motion Picture Products Sales Department,
EASTMAN KODAK COMPANY, Rochester, N.Y. 14650, or the regional
sales divisions, 200 Park Avenue, New York, N.Y.; 130 East Randolph
Drive, Chicago, Ill.; 6706 Santa Monica Boulevard, Hollywood, Calif.





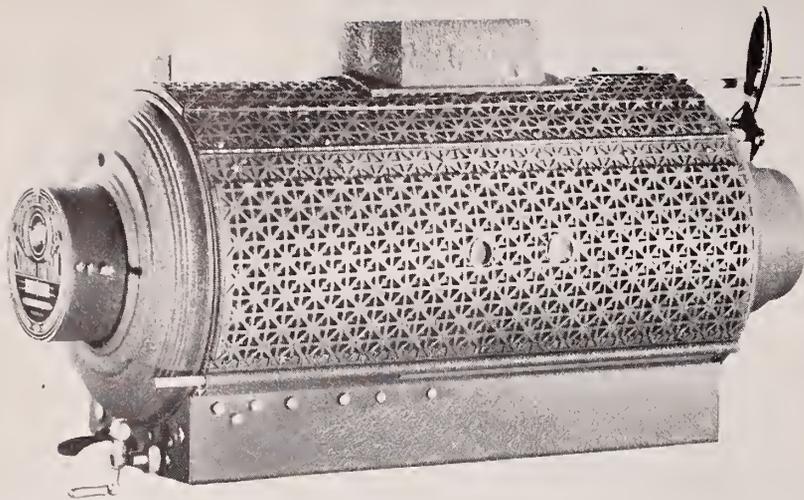


You can't stretch time:

If you want crisp, top quality prints—and you most certainly do—don't waste good negative quality by pushing your laboratory into making short cuts. Give them time to do the job right with the right materials. In other words, GO EASTMAN all the way—negative and print-stock. For the purchase of film, technical queries,

and service, write or phone: Motion Picture Products Sales Department, EASTMAN KODAK COMPANY, Rochester, N.Y. 14650, or the regional sales divisions, 200 Park Avenue, New York, N.Y.; 130 East Randolph Drive, Chicago, Ill.; 6706 Santa Monica Boulevard, Hollywood, Calif.





Strong Develops New Arc Lamp For 35mm Portable and 16mm Projector

A new high intensity reflector type projection arc lamphouse and associated rectifier equipment for use with 35mm portable and semi portable projectors and 16mm projectors has been developed by the Strong Electric Corp. The 2600 lu-

mens of light produced for 16mm projection and 4000 lumens produced for 35mm projection is approximately four times that of a mazda light source, in both instances sufficient for showing brilliant pictures up to 18 feet in width. The snow

white character of the light makes it ideal for the projection of colored films.

The type 48600-1 lamp for 16mm projectors uses a 6mm x 8½" positive and a 5½mm x 6" copper coated Pearlex negative carbon to burn for an hour at 30 amperes and the type 48400-2 lamp for 35mm projectors utilizes a 6mm x 9" negative and a 7mm x 12" copper coated positive to burn one hour and twenty minutes at 40 amperes.

Known as the Univarc, the lamphouse weighs only 55 pounds, and shipping weight is 70 lbs. The 40 ampere type measures 29 29/32" long x 14 3/8" high x 11 7/16" wide and the 30 ampere type measures 28 13/16" long x 14 3/8" high x 11 7/16" wide.

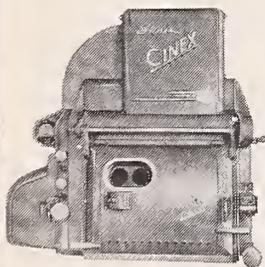
Direct current for the 40 ampere 29-30 volt arc is supplied by a 4-tube Type 16200 rectifier which measures 13" x 20" x 21" and weighs 125 pounds and the 30 ampere 26-28 volt arc is supplied by a two-tube Type 26,000 rectifier which measures 20" high x 12" wide x 11" deep and weighs 100 pounds. The single phase full wave rectifiers for 16mm projection consist mainly of a

(Please turn to page 12)

Ashcraft PROVED BY TEST...BY FAR THE BEST

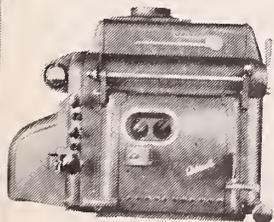
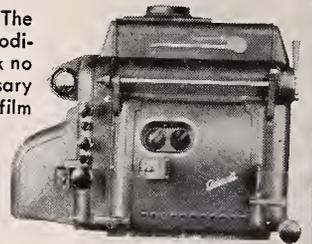
Arc Lamps and Rectifiers for Every Projector...for Every Theatre...The World's Finest

HERE ARE THE FACTS



SUPER CINEX . . . The masterpiece of the most experienced projection lamp designer. No other lamp has even remotely approached its perfection from every point of view—mechanically, electrically, optically, hydraulically or its fine air-conditioned system. Its durability and stamina have been proved. More and more fine theatres and drive-ins are re-equipping with Ashcraft Super Cinex daily due to their fine reputation for perfect screen light and service. Current range with 13.6 mm carbon, 125-165 amperes.

CINEX 35/70 SPECIAL . . . The Great of the Ashcraft Arc Lamps is a modified Super Cinex. Like the Super Cinex no third element or relay lens is necessary regardless whether 35 mm or 70 mm film is being projected. Uses a 13.6 mm high intensity positive carbon at current ranges between 125 and 140 amperes.



CORE-LITE . . . the latest and most phenomenal producer of white light at lowest possible operating cost in the family of Great Ashcraft Arc Lamps. Same arc burner and arc controls as the SUPER-CINEX. Same quality and built-in reliability. The lamp is optically designed to give greater white light distribution at less cost for carbons and electricity. There is none better—anywhere! 70-110 amp.

RECTIFIER . . . THE SPECIAL CORE-LITE 12 PHASE HIGH REACTANCE RECTIFIER . . . designed for the requirements of the Core-Lite lamp, this rectifier will give the best results. Low reactance 6 phase rectifiers should not be used. Certain motor generators, but not all, are acceptable. The special Core-Lite S/1212 rectifier will give you long, excellent service with an absolute minimum of expense. Other Ashcraft rectifiers available for every power need. The cost is no more than for inferior rectifiers.



SOLD EVERYWHERE IN THE UNITED STATES BY LEADING AUTHORIZED THEATRE SUPPLY DEALERS

C. S. ASHCRAFT MFG. CO., INC. • 36-32 38th STREET • LONG ISLAND CITY 1, N.Y.

Cover Story:

Boat Show Exhibit Uses XeTRON Light for Rear 16mm Projection

NEW YORK—The rear projection system designed to show 16mm movies with the XeTRON lamp was demonstrated here at the National Boat Show, an important part of the Johnson Motor Co. exhibit.

The Gardner Display Co. of Chicago, built a display to house the equipment and included a shadowbox arrangement to reduce washout of the picture due to high ambient lighting.

M. E. Pickrell of the XeTRON Division, Carbons, Inc., Boonton, N. J., supervised the installation and instructed the operators to its use.

The results were considered sensational and attracted many people to the Johnson display area, where

for the first time an excellent picture about 10 ft. wide was being projected in an area where 15 to 20 foot caudles of ambient lighting could be measured. Due to the nature of the new light, ambient washout was no problem.

By using a special wide-angle lens it was possible to make a picture 10 feet wide with a projection distance of only 10 feet.

The equipment operated 12 hours a day for 10 days under the supervision of Stanley Goldstein, of IA New York Local 306. Goldstein was impressed with the reliability of the equipment and the result obtained. (See cover.)

The demonstration was shown to be approximately three times as



Even when viewed from a considerable angle the brightness is very outstanding as is the Johnson Motor Model, Miss Sigrid Nelsson.

much as screen brightness.

This equipment will be in operation at other boat shows, also for the boat shows in San Francisco, Los Angeles boat show, the Denver boat show, and Chicago boat show. **ip**



Edward Lachman, President of Carbons, Inc., observing the operation of the Johnson Motor film.



An amazing demonstration of background projection in an area having high (15 to 20FC) ambient lighting. The picture is 10 feet wide.

Union Carbide Corp. To Build New Technical Facilities in Cleveland

Union Carbide Corporation will establish a technical center in the Cleveland, Ohio, area to consolidate its technical and development activities in the carbon and graphite fields, it was announced by Birny Mason,

Jr., president. Motor and generator brushes and mechanical seal rings, now manufactured in Cleveland, will be produced in a new plant in Greenville, S. C.

Union Carbide's Carbon Products

Division will operate both of the facilities. J. R. Johnstone, president of the division, said that the technical center should be in full operation by the end of 1965. Work on the Greenville plant will begin in June, 1964, with completion scheduled for mid-1965.

The technical center will consolidate the activities of three Carbon (Please turn to page 14)

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity,
distortion free.

*Low installation cost,
minimum space needs.

*Increased reliability,
less maintenance.

*No vacuum tubes, no
photoelectric cells.

***and the only American-made 70 mm 35
theatre projection systems**

SEE
YOUR CENTURY ... for bigger, brighter projection.
DEALER

CENTURY PROJECTOR CORP.

New York 19, N. Y.

STRONG LAMP

from page 10

transformer for reducing the high line voltage to a potential correct for operating the arc. an overload circuit breaker, line relay which is connected to a lamphouse automatic door switch and the necessary sockets, switches, voltmeter and terminals, all of which are housed in a substantial metal case which is provided with handles for easy portability. The a-c load, or rectifier input, does not exceed the 15-ampere limit provided by any 110-volt convenience outlet.

The live parts of the lamp are effectively insulated from the grounded line current by use of a separate primary and secondary winding in the transformer. There is also a smoothing reactor which is connected in the direct current circuit to the arc. This reduces the a-c component so as to eliminate light flicker.

The lamphouse is provided with horizontal, vertical and focus adjustments for the reflector; manual controls for carbon alignment; an adjustable-speed motor for feeding the carbons; an arc imager; and an ammeter for reading the current at the arc.

The reflector is 10 $\frac{1}{4}$ inches in diameter and has a working distance of 24 inches for 35mm projection and 18 inches for 16mm projection. The geometric focus is 3 $\frac{1}{2}$ " for the 40 ampere and 4" for the 30 ampere to result in an f value of f 2.3 on the 40 ampere and f 1.6 on the 30 ampere to match the commonly used lenses of modern projectors.

For further information address the Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio 43601. **iP**

S.O.S. Announces New Appointment

Arnold T. Nappi has joined the New York staff of S.O.S. Photo-Cine-Optics, as sales engineer. The appointment was announced by the firm's president, Alan C. Macauley.

Mr. Nappi comes to S.O.S. from Fischer & Porter Co., where he was a sales engineer and manager of their New York sales office; and has also worked as a mechanical and electronics technician for American Machine & Foundry Co., in Brooklyn, N. Y.

He began his technical and engineering education early, receiving his high school diploma in mechanical technology. **iP**

**ask your dealer
for the reflector**

WITH THE 2-YEAR COATING GUARANTEE

Strong **TUFCOLD**



The first surface reflector with the harder than glass, flake and peel-proof front coating.

Guaranteed twice as long, they actually cost much less per month than any others.

Replace your old reflectors now. Your dealer has the size you need.

THE
Strong
ELECTRIC CORP.

31 CITY PARK AVENUE • TOLEDO, OHIO 43601
PHONE: (419) 248-3741



Film Industry Calls Harry Rubin A "Perfectionist" — Both as A Projectionist and As A Man

Harry Rubin

Harry has learned his work the hard way (the other men referred to Rubin as "the kid projectionist" at a New York film house on the East Side). He contributed much—pioneered is the better word—when the film industry was improving and refining the technology and the art of showmanship in projection.

In 1917 when Harry Rubin was at the New York Rialto, Roxy had Hugo Riesenfeld, the orchestra leader, write the music score for the silent features, and Rubin's job was to co-ordinate the projection with the musical effects. The projectors were equipped with speed meters. The projectionist had to accelerate and speed up the film when the orchestra leader buzzed the booth from the orchestra pit. That would mean rehearsal when the Rialto had a new bill.

Harry's wide-screen presentation of "Old Ironsides" at the New York Rivoli Theatre in 1926.

The production had a magnificent view of Old Ironsides in a battle, and to take advantage of that, Rubin designed the proscenium-wide screen, with the screen masking drawn back and up and the screen image expanded in size to fill the proscenium area. Harry had the sequence blown-up with a wide-angle lens in the projector. It was one of the movie sensations of the early 1920's.

Producer-director Cecil B. DeMille, up to his last picture, insisted that Harry Rubin be around the projection booth at the premiere of his new production. That started with C. B. at the world premiere of the original "Ten Commandments" at the Criterion Theatre in 1923 when Harry was the head projectionist.

PART 2

J. Edgar Hoover called on Harry Rubin to install a motion picture projection room at the F.B.I. headquarters in Washington.

For 12 years, Harry Rubin was chairman of the Projection Practice Committee of the Society of Motion Picture Engineers.

And during those years many new projection developments were in the making. Under Rubin's leadership that committee pioneered—to cite only one detail—the SMPTE projection room plans that are now standard guides to projection room layout, consulted by theatre men and architects the world over.

A fellow committee man said: "Those who were privileged to work under Harry's direction during those years knew that he always insisted on quality, objected to the weak or undependable solutions of problems, stressed reliability of performance, and was ready at the drop of a hat to take up the cudgel against those who would have accepted lowered standards of projection. The projection art owes him much for the basic work which he did during those years."

Harry Rubin has contributed to projection innovations. The film industry can thank Harry for his patience and his perfectionist attitude to projection. He has many new things come before him as a projectionist, and many new projection devices he has developed by testing the new projection equipment.

During the formative period with film projection, Harry said that "showmanship is involved with projection," and he did something about it. **IP**

PROJECTIONISTS PREFER ETHYLOID

Film Cement For
BEST RESULTS

Available from
Supply dealers

FISHER MFG. CO.
1185 Mt. Read Blvd.
Rochester, N.Y.

DIAMOND
TRADEMARK
**PROJECTOR
CARBONS**

Better Light! Lower Costs!

RINGSDORFF CARBON CORP. East McKeesport, Pa.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES
by Cinemeccanica by Christie

CARBONS, INC.

BOONTON, N. J.

Union Carbide

from page 11

Products Division development laboratories now in Niagara Falls, N. Y.; Fostoria, Ohio; and Lawrenceburg, Tenn. In addition to the consolidation of development activities, those existing departments responsible for division-wide engineering, quality control, and customer technical services will be incorporated in the technical center. The center, when completed, will occupy about 175,000 sq. ft. of space.

The machining operations of specialty graphite and carbon products, now being done at the Cleve-

land site, will be combined, in expanded facilities, with the division's other specialty machining operations in Niagara Falls.

Carbon brushes are important components in industrial and railroad motors and generators and in electrical household appliances. Carbon seal rings are used in steam turbines, jet engines, and pumps for industrial and household use.

Union Carbide's Carbon Products Division (formerly National Carbon Company) has pioneered in the fields of manufactured carbon and graphite. Among its many products are the giant electrodes used in electric furnaces; arc carbons used in motion picture photography, and theatre projection, solar simulation and other special lighting; graphite cloth and fibers; and activated carbon. New forms of graphite have been developed for nuclear and aerospace applications. The division also produces special high-temperature refractory materials. **IP**

Kodak Appoints Simmons To Los Angeles Post

Norwood L. Simmons has been appointed general manager of the West Coast division of Eastman Kodak Co. motion picture products sales department.

He succeeds John L. Courcier, a veteran of 45 years in the film industry, who died Jan. 6, a few days after his appointment to the West Coast spot.

Vaughn C. Shaner succeeds Simmons as manager of engineering service at the West Coast Division's Hollywood offices. Both appointments were announced by Gerald B. Zornow, vice president for marketing at Kodak. **IP**

Midwest Gets First Twin-Screen Theatre

CHICAGO — Construction is underway on Evergreen Theatres I & II, the Midwest's first indoor twin-screen motion picture theatre. Twin-screen design will permit simultaneous showing of two different films.

Evergreen Theatres I & II will bring a new look in motion picture presentation, convenience and comfort to the Chicago area. The building will house a central lobby with two auditoriums which will allow the presentation of two feature films. Though there are a number of double outdoor drive-ins, the movement of the twin screens indoors represents a new direction in theater design.

The theater will be supported on stilts that serve not only to elevate the theater to the same level as Carson Pirie Scott & Company, the adjacent store, and its parking deck, but to allow for a parking area directly underneath the structure. This will allow theatre-goers to avoid inclement weather and brings the total number of free parking facilities to over 5,000 when combined with other areas in the shopping center.

Continuous malls make Evergreen Theatres I & II available from all buildings in the center and eliminate the need for changing levels while shopping and theater-going.

Target date for completion of the theaters is mid-June, 1964. **IP**

Oxberry Changes Name

NEW YORK—Oxberry Corp., is the new name for the Animation Equipment Corp., 38 Hudson St., New Rochelle, N. Y. Oxberry will continue to be the trade name for all company products.

Ownership, management and financial responsibility are in no way affected by the name change. Up to seven years ago, the company's chief products were animation stands and Oxberry animation cameras. Today, the firm makes optical printers, film strip equipment, special projectors and several types of process cameras besides animation stands.

The Oxberry precision film movement is featured on most of the company's products which are engineered to meet exacting specifications for photographic applications in scientific, industrial and government fields.

An expansion of Oxberry's engineering staff is planned in order to speed development on a number of new concepts and designs. **IP**

**America's
headquarters
for all
theatre equipment
and
supplies**



National
THEATRE SUPPLY COMPANY

THE VERY FINEST



**IN
PROJECTOR PARTS**

The ultimate in precision, long life and dependability—
they keep projectors in top operating condition essential
to good pictures, patron satisfaction and good business.
Available through your Theatre Equipment Dealer.

LaVezzi **MACHINE WORKS**
4635 W. LAKE ST., CHICAGO 44, ILL.
SINCE 1908 TELEPHONE—AREA 312—ES 8-1636



basic mathematics

By NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

 RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I, you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST

1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

The Beautiful New
Strong
FUTURA
PROJECTION ARC LAMP

A Product of

The *Strong* Electric Corporation

37 City Park Avenue • Toledo, Ohio 43601

Phone: (419) 248-3741

Brochure on request

MORE LIGHT

for all indoor theatre screens up to 65 feet and drive-in screens up to 120 feet.

LESS COST

to buy and less to use. Efficient utilization of standard 20-inch carbons insures THE GREATEST AMOUNT OF LIGHT EVER DELIVERED PER CARBON DOLLAR. Permits projection of an extra reel per carbon.

WIDER USE

Matches the optical requirements of all 35mm and 70mm projectors. A single knob allows instant change between film widths. A calibrated scale with reference pointer facilitates precise reset of burner focus . . . a Strong exclusive.

GREATER CONVENIENCE

Unit construction permits instant removal of components for cleaning and inspection. 25% lower silhouette permits easy installation in low-ceiling projection rooms.



The **FUTURA I**

for utmost economy in operation with standard 11mm carbon trim burning at 75 to 105 amperes.



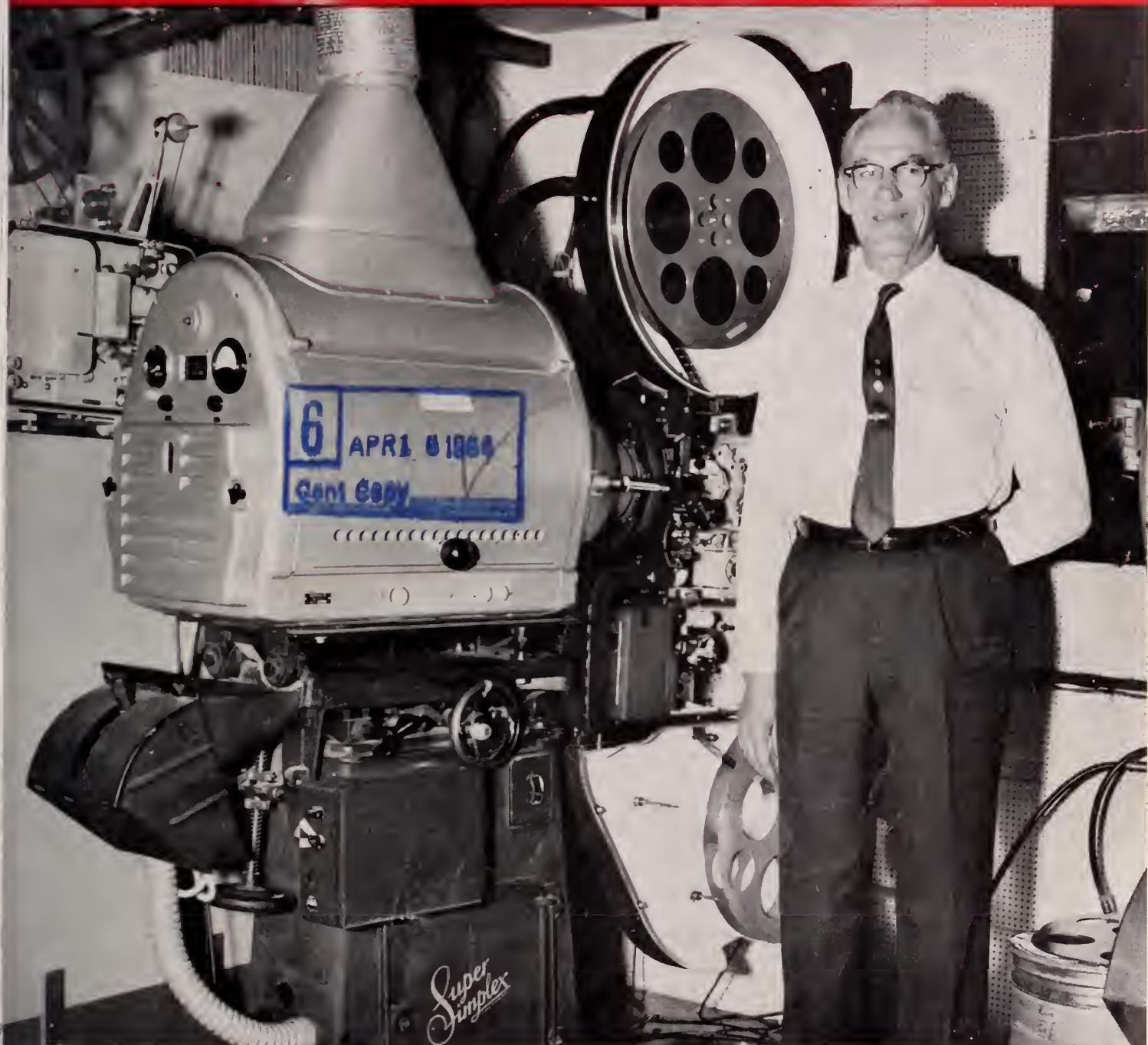
The **FUTURA II**

with automatic crater positioner for 13.6mm carbon trim burning at 120 to 160 amperes, or for 11mm carbon trim burning at 100 to 125 amperes.

MORE FEATURES

New type relocated arc imager system eliminates parallax. Big 18-inch first surface Strong Tufcold reflectors used in lamps operating above 95 amperes assure lower aperture temperatures. Silvered reflectors used in lamps burning under 95 amperes. Streamlined ammeter for reading arc current. Automatic trimming light. Inside dowser system.

INTERNATIONAL PROJECTIONIST



Dane Hansen, Local 165 IATSE, Consolidated Film Industries' head projectionist, is pictured in the booth of one of CFI's review rooms. Hansen has been with CFI since 1936. (See story on page 11).

MARCH

VOLUME 39

40c A COPY

1964

NUMBER 3

\$3.00 A YEAR

Library of Congress
Order Division (0368X)
Washington 25, D.C.

New...from **EASTMAN**... Type A704—the uniform magnetic sound recording film



Get brilliant tone quality...greater depth... more vibrant highs...improved balance

LISTEN: First, to Type A704—Eastman's new magnetic sound recording film; then, to conventional films! You'll recognize the difference immediately. "R-type" binder—permitting smoother, more homogenous oxide coatings—reduces surface noise and intermodulation distortion.

At the same time, extremely wear-resistant and chemically stable, "R-type" binder minimizes oxide build-up on equipment, making for longer recording usefulness.

Most important, "R-type" binder permits *uniform* oxide coatings of superb magnetic characteristics which result

in high output and low print-through . . . *more vibrant highs, a more natural balance between highs and lows.*

Another valuable convenience. "Lifetime Coding" offers an accurate means of indexing film as well as a useful reference for logging of bias settings, re-use and purchase data.

AVAILABLE NOW: 16, 17½ and 35mm widths—complete range of cores and windings. For further information about EASTMAN Magnetic Sound Recording Film, Type A704, and new EASTMAN Sound Recording Tapes, contact:

Magnetic Products Sales Division

EASTMAN KODAK COMPANY 343 State St. 200 Park Ave. 130 E. Randolph Dr. 6706 Santa Monica Blvd.
Rochester, N.Y. New York, N.Y. Chicago, Ill. Hollywood, Calif.

INTERNATIONAL
PROJECTIONIST

Including a special Audio-Visual section relating to the operation and maintenance of A-V equipment in the educational and industrial fields.



Volume 39 March, 1964 No. 3

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

The Drive-in's No. 1 Problem 4
By Robert A. Mitchell

D-150 Wins Acclaim 8

RKO's New 23rd St. Theatre 10

COVER STORY:
CFI's Review Facilities 11

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

**WE GUARANTEE
YOU CAN'T LOSE**

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Screen Light . . .

The Drive-in's No. 1 Problem

By **ROBERT A. MITCHELL**

PART I

RISING BOXOFFICE RECEIPTS and the truly astonishing ubiquity of film presentations are the best evidence that theatrical movies, like music and literature, are part and parcel of the human scene, and are not going to be displaced by TV or by any other substitute in the field of commercial entertainment. There is no substitute for the entertainment film optically projected on a large panoramic screen!

The field of professional movie presentation has become so broad that it embraces every conceivable place where an audience can be assembled and motion pictures shown. The very latest feature attractions are now routinely exhibited on trains, ships, and planes. There are undersea theatres for skin-diving enthusiasts, theatres suspended on the dizzy heights of observation towers, "trot-in" theatres for the horsey set, and screens suddenly materializing in the intimate atmosphere of cabarets. The regular drive-in theatre seems hardly less orthodox today than the conventional 4-wall show-place, and deserves, so far as it can be achieved, the same high quality of projection and sound.

Professional quality of the screen presentations is the keynote of successful movie exhibition, especially in these days of near-perfect color, higher image acuity, high-fidelity soundtracks, and panoramic aspect ratios. No matter whether the film is presented indoors or out, in a conventional theatre or in the most novel screening locations, the craftsmanship of a skilled projectionist practised upon the most refined modern equipment is absolutely necessary to the successful reproduction of all the professional visual, aural, and dramatic qualities latent in the reels of film.

Perfection Worth Shooting For

The drive-in projectionist, therefore, should strive to attain indoor-theatre quality on his outdoor screen; and with the most powerful modern lamps, mechanisms, and lenses to aid his efforts, a reasonable degree of success can be expected even on the larger drive-in screens. The film is the same whether it be shown indoors or out, and the audience expects the same excellence in its presentation—an uninterrupted projection of clear, bright, rocksteady pictures accompanied by the most lifelike sound. Thanks to modern motion-picture

technology, the severe drive-in projection conditions which militate against indoor-theatre quality are being overcome.

The size of the drive-in screen creates many problems, the most obvious of which is the attainment of adequate light levels. The development of more powerful arc lamps and larger, more efficient lenses has made possible a screen-light level of $4\frac{1}{2}$ to 5 footlamberts of brightness even on drive-in screens 100 feet wide. This is only half the minimum brightness recommended for indoor-theatre screens, but nevertheless entirely adequate for comfortable viewing. But with the development of more powerful lamps, the heat problem became more serious. This, too, has been successfully vanquished by modern technological means.

Evils of Overheating

Excessive heat on the film induces a rapid in-and-out buckling, or flutter, that hopelessly blurs the picture. A sharp focus is impossible, particularly with shortfocus lenses having small depth of focus. Moreover, hot film-gate rails may permanently deform the film, while direct irradiation in excess of well-defined energy levels may actually blister the emulsion of black-and-white prints. Blistered film is unfit for further use.

Heating of the film has been dramatically reduced by the use of water-cooled film gates, interference-type heat filters, and, especially, by interference-type ("cold") arc-lamp reflectors. One or more of these heat-reducing means must be used in drive-in theatres to insure good focus of the picture and to prevent damage to the film. Air-cooling of the film at the aperture may also be of benefit, but this method should be used in conjunction with water-cooled gates and removal of hot infrared radiation from the arc beam.

As for sound reproduction in drive-in theatres, it must not be expected that small in-car speakers can give the same high quality of sound as an expensive indoor-theatre speaker assembly having powerful low-frequency units and the most carefully engineered speakers for the treble range. However, the most modern in-car speakers undeniably give better sound than the average car radio, and are an absolute necessity for the excellence of sound reproduction that drive-in patrons have a right to expect.

Secretary of the Treasury Douglas Dillon discusses prospects for 1964 with the chairman of the United States Industrial Payroll Savings Committee—Frank R. Milliken, President of Kennecott Copper Corporation.



The leaders of America's business community invite you to join in a major fiscal undertaking

"The volunteer efforts of such distinguished business leaders as yourselves on behalf of the Payroll Savings Plan are a notable instance of the active and productive concern of American business generally for the fiscal soundness and economic well-being of this nation."

With these words the Secretary of the Treasury greeted leaders of 27 basic industries and opened the 1964 planning of the U. S. Industrial Payroll Savings Committee, a group formed of key businessmen and industrialists who assist the Treasury Department in its debt management program by promoting U. S. Savings Bonds.

The Committee's prospects for 1964 are bright. Thousands of companies will be urged to promote the Payroll Savings Plan enthusiastically within their organizations. *Your support is needed.* Will you join your fellow businessmen to help millions of American employees help themselves by saving regularly? Your own organization—with your backing—can make a splendid showing!

For full information, contact the chairman of your field of activity —today.

THE 1964 INDUSTRIAL PAYROLL SAVINGS COMMITTEE OF THE TREASURY DEPARTMENT

Honorary Chairman:
Honorable Douglas Dillon
Secretary of the Treasury

Chairman:
Frank R. Milliken, Pres.
Kennecott Copper Corporation
(Copper)

Members:
Crowdus Baker, Pres.
and
James T. Griffin, Vice Pres.
Sears, Roebuck and Company
(Retail Merchandising)

Walter Bouldin, Pres.
Alabama Power Company
(Public Utilities)

Maurice R. Chambers, Pres.
International Shoe Company
(Shoe Manufacturing)

Harold W. Comfort, Pres.
The Borden Company
(Food Manufacturing)

John D. deButts, Pres.
Illinois Bell Telephone Company
(Telecommunications)

John D. Ehrgott, Chm. of the Bd.
The Great Atlantic & Pacific
Tea Company, Inc.
(Retail Food)

Dr. Elmer W. Engstrom, Pres.
Radio Corporation of America
(Electronics)

Ray R. Eppert, Pres.
Burroughs Corporation
(Office Equipment)

Raymond C. Firestone, Pres.
Firestone Tire & Rubber Company
(Rubber)

Alexander H. Galloway, Pres.
R. J. Reynolds Tobacco Company
(Tobacco)

Harold S. Geneen, Pres.
International Telephone &
Telegraph Corporation
(At Large)

John F. Gordon, Pres.
General Motors Corporation
(Automotive)

Crawford H. Greenewalt, Chm. of the Bd.
E. I. du Pont de Nemours & Co., Inc.
(Chemicals)

John L. Gushman, Pres.
Anchor Hocking Glass Corporation
(Glass)

Reed O. Hunt, Pres.
Crown Zellerbach Corporation
(Paper)

Thomas V. Jones, Pres. and Chm.
Northrop Corporation
(Aerospace-Aircraft)

Clarence A. Kelley, Pres.
Dixie Ohio Express, Inc.
(Trucking)

Lawrence Litchfield, Jr., Chm. of the Bd.
Aluminum Company of America
(Aluminum)

Joseph A. Martino, Chm. and Pres.
National Lead Company
(Lead)

Charles F. Myers, Jr., Pres.
Burlington Industries, Inc.
(Textiles)

William J. Quinn, Chm. and Pres.
Chicago, Milwaukee, St. Paul and
Pacific Railroad Company
(Railroads)

M. J. Rathbone, Chm. of the Bd.
Standard Oil Company (New Jersey)
(Petroleum)

H. I. Romnes, Vice-Chm. of the Bd.
American Telephone and
Telegraph Company
(Electrical Equipment)

W. Cordes Snyder, Jr., Chm. of the Bd.
Blaw-Knox Company
(Machinery Manufacturing)

C. E. Woolman, Pres.
Delta Air Lines, Inc.
(Air Transportation)

Leslie B. Worthington, Pres.
United States Steel Corporation
(Steel)

Charles J. Zimmerman, Pres.
Connecticut Mutual Life
Insurance Company
(Insurance)

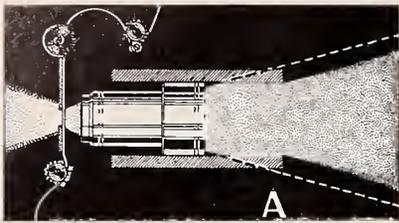


in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**

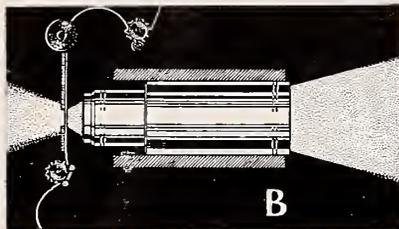


The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.

INTERNATIONAL PROJECTIONIST



Light rays from the aperture spread out as they pass through a conventional projection lens, represented here by a simple biconvex element; and the shorter the focal length of the lens, the more rapidly the rays diverge. This may result in shading of the sides and corners of the picture by the lens holder and the hole in the front of the mechanism. A reverse-Galilean



lens, on the other hand, employs a strong positive element close to the aperture to "pipe" the rays through the lens holder with very little divergence. The negative element at the front of the barrel diverges the near-parallel rays and establishes the desired focal conditions.

Many drive-in theatres, unfortunately, are operating with lamps, lenses, projectors, and sound systems that are wholly inadequate for their exacting job and totally incompatible with the high picture and sound quality today's moviegoers insist upon regardless of the type and size of the theatre. It is clearly the duty of the projectionist, after he has evaluated the drive-in's equipment unfavorably, to point out its shortcomings to the management and strongly urge the purchase of more suitable units.

Such projection troubles as jumpy pictures, sidesway, travel ghosts,

"wows" in the sound, high-frequency attenuation, frequent film breaks, etc. are common to all theatres and not peculiar to the drive-in. Actually, the severe light requirements of giant outdoor screens with attendant heat and focus troubles constitute the drive-in's Number One problem, as suggested by the foregoing. And the logical place to begin an attack on the screen-light problem is at the drive-in screen, itself!

Most drive-in screens are constructed of large, flat, weather-proof panels with the joints between them sealed with a cement compound. Cement-plaster screen surfaces laid over a wire-grid or steel-rod backing are also commonly used. But whichever material is used, the screen surface, if perpendicular to ground level, should be painted with at least three coats of a matte (non-gloss, or "flat") durable white paint of high reflective power. The screen must be repainted whenever the surface becomes dull, discolored, streaked, or damaged in any way. Adequate picture illumination is too difficult and too costly to achieve in a drive-in theatre to be wasted by a dull or darkened screen surface!

Reflectivity Varies

You must choose your drive-in screen paint with a full knowledge of its pigment composition. Don't be misled by "secret formulas"! There are only a few suitable white pigments of high reflectance—titanium white (titanium dioxide, also called permanent white), white lead (basic lead carbonate, also known as flake white and Cremnitz white), zinc white (zinc oxide, also called Chinese white), and lithopone (mixture of barium sulfate and zinc sulfide, sometimes called silver white).

Lithopone has the highest initial reflectivity (97%), but is unsuitable for painting drive-in screens because it is slightly darkened by exposure to daylight. Zinc white has the lowest reflectivity of the four (93%), and

also the least effective opacity, or covering power. However, zinc white is completely permanent, and is not discolored by time, light, or gases. White lead has excellent covering power and a fairly high reflectivity when fresh (95%), but is quickly turned yellowish brown by sulfur-containing fumes such as coal gases, auto exhaust, etc. For this reason white lead should be avoided for painting screens. Titanium white has good covering power and a very high reflectivity (96%), and is the most permanent and stable of all white pigments. It does not discolor with age or upon exposure to light or gases. Titanium white is definitely the choice for use as a screen paint.

Pigment Critical

Screen paints for drive-in screens should have a pigment composition of pure titanium dioxide alone, and not adulterated with any other white pigment or with such commercial "extenders" as asbestine, talc, silica, whiting, china clay, or barytes. Neither should they contain magnesium oxide, a substance which has low covering power despite its extremely high reflectivity in thick layers (98%).

Freshly powdered titanium white has, as we said, a reflectivity of 96%. In the form of paint containing linseed oil, it has a reflectivity of about 90% when fresh, and about 85% after the oil has aged. "Chalking" of the surface caused by the effects of weather may restore reflectivity to a value close to 90%, but it is safer to reckon on 85% as the reflective power of aged titanium white screen paint. This is very bright for a white paint, and is the value adopted in Table I, given below.

Now a word of warning. Never use aluminum paint for surfacing a perpendicular drive-in screen. Aluminum paint is directional; and used on a perpendicular screen lighted by projectors pointed up at it, most of the light will be reflected mirror-

TABLE I

ARC CURRENTS AND CARBON TRIMS NEEDED FOR 4½ TO 5 FOOTLAMBERTS ON 85%-REFLECTING WHITE SCREENS

SCREEN WIDTH (Feet)	CARBON TRIM Pos., Neg., and Type	REQUIRED ARC AMPERES
25	7 mm - 6 mm, Suprex	40
30	7 mm - 6 mm, Suprex	42
35	7 mm - 6 mm, Suprex	46
40	8 mm - 7 mm, Suprex	60
45	9 mm - 8 mm, Suprex	80
50	10 mm - 11/32 in, Reg. HI	100
55	10 mm - 11/32 in, Reg. HI	110
60	11 mm - 3/8 in, Reg. HI	120
65	13.6 mm - 7/16 in, Reg. HI	160
70	Blown Arc, 10 mm Hitex pos.	130
75	Blown Arc, 10 mm Hitex pos.	138
80	Blown Arc, 100 mm Ultrex pos.	155

TABLE II

ARC CURRENTS AND CARBON TRIMS NEEDED FOR 4½ TO 5 FOOTLAMBERTS ON DIRECTIONAL SCREENS (150% Refl.)

SCREEN WIDTH (Feet)	CARBON TRIM Pos., Neg., and Type	REQUIRED ARC AMPERES
50	7 mm - 6 mm, Suprex	50
55	8 mm - 7 mm, Suprex	65
60	9 mm - 8 mm, Suprex	80
65	9 mm - 8 mm, Suprex	85
70	10 mm - 11/32 in, Reg. HI	110
75	11 mm - 3/8 in, Reg. HI	115
80	11 mm - 3/8 in, Reg. HI	120
85	13.6 mm - 7/16 in, Reg. HI	155
90	13.6 mm - 7/16 in, Reg. HI	165
95	Blown Arc, 10 mm Hitex pos.	130
100	Blown Arc, 10 mm Hitex pos.	138
105	Blown Arc, 10 mm Ultrex pos.	155

wise over the tops of the cars in the parking area and up into the sky.

In order to obtain the light-directing benefits of aluminum paint, the screen must be tilted forward toward the parking area by an angle about equal to the upward projection angle. In other words, the aluminum screen should face the projectors squarely. If this is done, a "low gain" aluminum surfacing will provide an effective reflectivity of about 150% as an average over the central part of the viewing area, and may be a decided advantage when the screen is more than 110 feet wide. Experience indicates, however, that the results do not justify the increased construction costs of tilted screens when the width of the screen is under 100 feet.

Fast Lenses and Beam Clearance

In order to get all available light from the arc to the screen, the projector lamp and optics must have maximum efficiency. This means that the rated mirror speed must be at least $f/1.9$, and preferably $f/1.7$, except in the case of "Suprex," or simplified high-intensity arc lamps, most of which have an optical speed of $f/2.3$.

The projection lenses must be antireflection-coated and have a speed of at least $f/2.0$ or $f/1.9$ in the longer focal lengths and $f/1.7$ in the medium and short focal lengths. This recommendation is a good one to follow when $f/2.3$ Suprex lamps are used. For the most efficient overall optical performance, the lens should be somewhat faster than the lamp, a desirable state of affairs not always possible to achieve.

It is extremely important in drive-ins to insure unobstructed light-beam clearance through the projector, making sure that the rear-shutter case, heat baffles, and sight box do not cut into the arc-lamp beam and cause shading or loss of light. This is a serious problem with the Simplex Regular, Super Simplex, Brenkert, Motiograph, and other mechanisms designed before the days of widescreen projection and fast short-focus lenses. In some cases the obstructing parts can be cut away; in others it may be necessary to install special replacement parts.

The small lens holder and hole in the front of the mechanism case produce severe vignetting, or fadeaway at the sides and corners of the picture, when short-focus lenses are used for widescreen projection. Modern mechanisms are designed with 4-inch diameter lens holders; and these are adequate for the fastest

lenses in all focal lengths. Unless larger lens holders can be installed in old-time mechanisms, and the opening in the front of the case enlarged, special long-tube short-focus lenses must be used to avoid vignetting and loss of light.

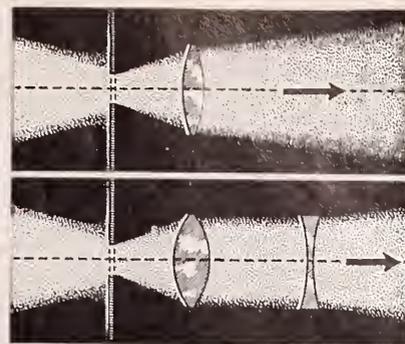
These special long-tube lenses not only eliminate the vignetting problem with Simplex Regulars and other old machines, but give the brightest pictures possible and a more consistently sharp focus than ordinary short-focus lenses do. They have an optical speed of $f/1.7$, are antireflection-coated, and are manufactured by the Kollmorgen Optical Corporation under the series named "X-tended Super Snaplites." They are available in focal lengths of from $1\frac{1}{2}$ to 3 inches, and all have a barrel diameter of 2.781 inches.

The optical design of an X-tended lens bears a resemblance to that of an opera glass, or Galilean-type telescope, used in reverse. The strong "positive" lens element faces the film, and maintains a nearly constant beam diameter through the long barrel. The "negative" element partially counteracts the effect of the positive element and establishes the correct focus. This type of optical system has the advantage of an unusually good depth of focus, making the lens relatively immune to the focus-ruining effects of film buckle.

Clearer Pictures

Owners of drive-ins requiring lenses of 3 inches or shorter E. F. for non-anamorphic widescreen projection should seriously consider the purchase of Kollmorgen X-tended Super Snaplites for brighter and much clearer pictures. These unusual lenses are so satisfactory in every way that they are even widely used in modern mechanisms having large lens mounts! The pictures are much sharper than is possible with ordinary short-focus lenses under the severe heat conditions imposed by powerful arc lamps.

The use of reversed anamorphic lenses commends itself in drive-ins having "throws" so long that the focal length of the CinemaScope prime lenses would otherwise be excessive. Even the biggest lenses in the longest focal lengths are not quite so fast as lenses in more moderate focal lengths. Instead of expanding the horizontal dimension of the CinemaScope image 2 times to double the width of the projected picture, a reversed anamorphic lens squeezes the vertical dimension to $\frac{1}{2}$ the normal picture height. The end result is the same, but the reversed anamorphic lens permits the regular



The small-diameter lens holder of most of the older projectors cut into the diverging beam of light rays thrown forward by fast lenses of short focal length, wasting light by shading the sides and corners of the picture. The short-focus $f/1.7$ Kollmorgen X-tended Super Snaplites eliminates shading by utilizing reverse-Galilean optics to "pipe" the light through the small-diameter lens holder without vignetting. In addition, X-tended Super Snaplites have such a great depth of focus that many exhibitors use them in the most modern projectors for the clearer, more evenly illuminated pictures they make possible.

projection lens for non-anamorphic projection to be used as the prime lens for CinemaScope projection.

Best Heat Reducer

Water-cooled film gates are very desirable when arc currents are so high that the film might otherwise be warped, or permanently buckled, by hot gate rails. Air cooling helps remove heat from the picture area of the film, and is of positive benefit in curved gate mechanisms. There is some evidence that air cooling generates film flutter in flat-gate machines. When "cold" arc-lamp mirrors and water-cooled gates are used, air cooling is probably unnecessary.

If ordinary silver-coated reflectors are used in the lamps, and the arc current exceeds 75 amperes, interference-type heat filters should be interposed in the arc beam. These reflect most of the invisible, heat-producing infrared radiation and allow most of the light (about 85%) to pass on. In order to avoid this rather serious loss of light, interference-type "cold" mirrors should be used without heat filters. "Cold" mirrors (such as the Strong TufCold and the Bausch & Lomb BalCOLD) transmit the useless infrared, but reflect light as well as silver mirrors do.

Please turn to Page 13

D-150 Demonstration Run Gets Unanimous 'Raves'

A demonstration of Dimension-150 was held recently at the Skouras Syosset Theatre, Syosset, Long Island, N. Y.

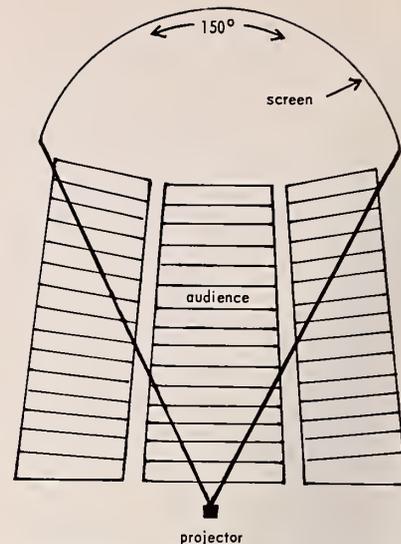
At the invitation of Marshall Naify, president of Dimension-150, film industry executives and exhibitors attended. They report the equipment had notable depth of focus, definition and clarity.

Dimension-150 is the newest development in the field of wide-screen. The system, single-image in connection with Todd-AO, requires a 65mm camera equipped with wide-angle lenses and standard 70mm projection machines for presentation on a deeply-curved screen. The new

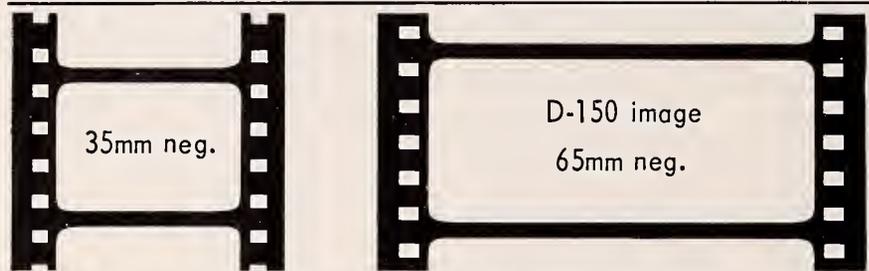
tion to the new process are "South Pacific" and "80 Days Around the World." Louis de Rochemont expects to release a feature in D-150 by early 1965.

Motion picture producers and technical experts in the field of cinematography have expressed great enthusiasm about the process and the many benefits to be derived in production and exhibition through its use.

Thus, the new process offers the producer and exhibitor maximum flexibility—from big, deeply-curved screen for 'hard ticket' roadshow policy, to standard flat-screen with 70mm prints and 35mm reduction



Auditorium, showing projection arc



D-150 film section compared to 35mm

process offers producers and exhibitors maximum flexibility—from big, deeply-curved screen for roadshow policy, to standard flat-screen with 70mm prints and 35mm reduction prints in subsequent runs.

Dimension-150 printing utilizes a standard 65-70 optical printer, and allows an area for stereographic 6-track. The system requires 50°, 70°, 120° and 150° lenses. Specially developed print lens "corrects" image for projection on deeply-curved screens. This printing permits the correcting of previously photographed 70mm material. Projection optics proved extreme wide-angle projection to ensure viewing of a substantially distortion-free picture on a deeply-curved screen.

Dimension-150 was developed by Dr. Richard Vetter and Carl W. Williams. Dr. Vetter is assistant professor of audio-visual communication, and Carl Williams is instructor in the same department. Both are from the University of California at Los Angeles. Their system employs screens from 120 degrees to 150 degrees of arc, depending on the physical features of various theatres. A typical deeply-curved screen size: 34' high by 92' wide; its aspect ratio is 2.7 to 1.

Two re-releases suitable for adapta-

prints in subsequent runs.

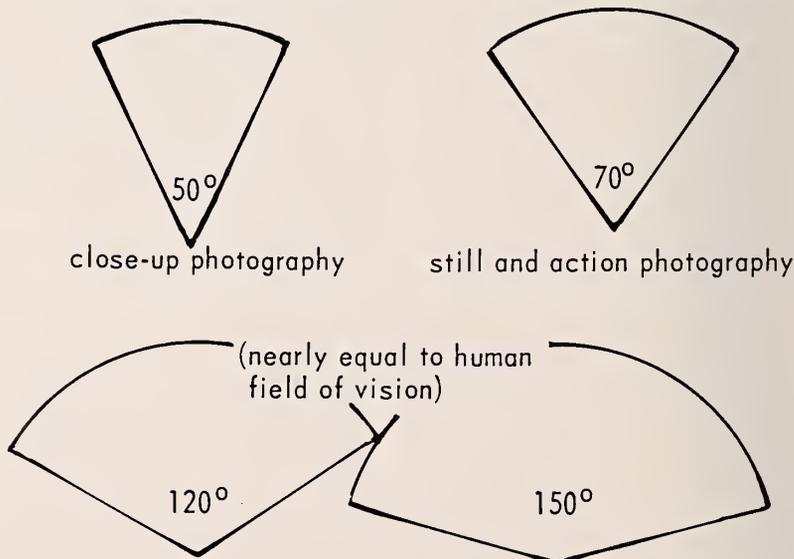
Dimension-150 was developed over a period of several years by Dr. Vetter and Williams. Their many and varied tests under the most stringent and demanding conditions have resulted in a combination of technical developments to assure motion pic-

ture producers the maximum in photographic and projection quality.

The unique flexibility factors of D-150 in both photography and exhibition, plus its ability to create a sense of realism and audience participation mark an important step forward in the technical advancement of the motion picture medium.

The reactions of motion picture and entertainment trade journals have matched the enthusiasm of D-150's developers. Following other debut showings over the U. S., trade reporters gave the new process "raves," and heralded it an important milestone in the state-of-the-art.

One of the more important comments that came out of many reviews was the absence of distortion over the entire 150° arc sweep. **ip**



ultra-wide angle audience participation sequences
Projection arcs employed in D-150



Don Davis of Chicago (standing), Altec Lansing sound specialist, checks out new sound laboratory equipment with Harry Thielvoldt of Northwest Sound Service, Inc., Minneapolis.

Sound Laboratory Takes the Guesswork out of Acoustics

Northwest Sound Service of Minneapolis is now fully equipped to make scientific acoustic analysis and sound system tests. They recently purchased a \$5,000 portable sound laboratory with some of the equipment developed by Purdue University only a few months ago.

The sound laboratory is the same type of equipment used by the U. S. Bureau of Standards. It takes the guesswork out of sound engineering and often saves thousands of dollars by enabling trained sound specialists to make detailed recommendations for improving sound that are based on scientific facts.

This equipment turns an auditorium or church into a huge test area. It generates a piercing 1/100-second pulse that checks the "echo" or reverberation time. The initial sound pulse triggers the recording equipment. The "echo" bounces back from the ceiling, walls, windows, balcony, etc., and the return time and intensity are measured, graphically displayed and automatically photographed - all within a few seconds. These tests are repeated across the

entire sound spectrum as the automatic equipment records the auditorium's acoustical "personality."

By studying the maze of photographs and graphs, the skilled sound technician can pinpoint the source of trouble as accurately as the radar operator, and locate the areas that are dead, too loud or fuzzy. For example, in churches or other multi-purpose buildings good music requires long reverberation time at low frequencies to give it rich, full tone quality. But short reverberation time at higher frequencies is required for speaking to make the voice crisp, clear and easily understood. A sound survey permits a scientific compromise to retain the best characteristics of both speech and music.

Northwest Sound Service is a pioneer in acquiring this advanced laboratory equipment. Like a doctor checks a patient, the sound specialist obtains photographic evidence from oscilloscope patterns and strip charts made by the sound itself as it booms and bounces, echoes and re-echoes to smother the original sound's natural quality. **iP**

NY, Eastern Film Making Boosted by Acquisition

Florman and Babb, Inc., a leading supplier and servicer of motion picture equipment, has acquired a controlling interest in the Camera Equipment Corporation and Ceco Industries, Inc.

The motion picture industry's future activities in the New York area, specifically, and the entire East Coast, generally, are certain to be affected by the move, according to Arthur Florman, President of Florman and Babb.

Florman added, "With the industry showing a steady increase in production of theatrical, commercial, industrial, educational and scientific films, it became obvious that if the present rate of growth was to be maintained, more and better facilities would have to be made available to the film producer. The move is a giant step in that direction, and one that will insure continued growth."

Florman also pointed out that "The combined knowledge of the enlarged staff of technicians will be made available to all producers—large and small. Their collective know-how, with respect to the tools of the trade, cameras, lighting, grip, sound and editing equipment, for example, will be at the producer's disposal." **iP**

B & L Chairman Retires

ROCHESTER, N. Y. — Carl S. Hallauer, board chairman of Bausch & Lomb Incorporated, retired from active duty with the company January 31, 1964. He reached the mandatory retirement age of 70 on January 5.

At the request of the board, he is remaining as chairman and will serve as a consultant to the company with which he has been associated for over 45 years.

Hallauer started with Bausch & Lomb in 1919 as manager of Industrial Relations. **iP**

SMPTE Exhibit, Conference Set For April 13-16

NEW YORK — Motion-picture laboratory equipment will be in the spotlight at the Equipment Exhibit April 13-16, during the 95th Technical Conference of the Society of Motion Picture and Television Engineers (SMPTE). The semi annual conference will be held at the Ambassador Hotel in Los Angeles. **iP**

New RKO Theatre Graces 23rd Street

With the opening of RKO 23rd Street Theatre (on 23rd Street near Eighth Avenue) the RKO Theatre chain is now operating eight theatres in Manhattan.

The new theatre is of the stadium type. Modern in architecture and decor, its seating capacity is 900.

The projection booth was equipped by Joe Hornstein, Inc. with Norelco 35/70 mm, mounted with Ashcraft Super Cinex (water cooled) and Ashcraft rectifiers. Bausch and Lomb lenses are used for flat, CinemaScope and 70mm projection.

The sound system reproduces single track optical, and three, four and six track magnetic. Mixing is done at high level with Ampex and RCA equipment. Five sets of RCA stage loud speakers, and surround speakers are concealed in the ceiling and at the rear wall of the auditorium. Projection is zero.

Push-button Screen

The screen is a 23x46 ft. Hurley Super-Option, and can be masked to fit all processes and aspect ratios by push button control from the booth. Morris Heller, Irving Specland, Michael Goldstein, Joseph Schweit and Benjamin Phillips make up the projection crew.

The RKO 23rd Street is part of the Penn Station South development, by Mutual Redevelopment Houses Inc. RKO Theatres has a long-term lease. Mutual Redevelopment has constructed the outside walls of the new theatre. Under the agreement, RKO Theatres, at a cost of more than \$350,000, constructed and decorated the interior of the theatre. The walls of the theatre are landscaped on three sides. John J. McNamara, architect for the RKO Theatres, and Herman J. Jessor, architect for the development, collaborated on the design.

Hot water during the heating season and chilled water in the air conditioning season is piped into the theatre from the control plant of the development, eliminating the need for compressors or boilers in the theatre.

The seats are Griggs pushback type, with foam rubber added to both the spring-type bottoms and backs. Upholstery is a combination of blue and gold. Carpeting, by Stephen Leedom Company, especially designed and woven for the theatre, is a matching combination of blue and gold.

Modern Lighting

The lighting system is mainly down lights in the lobby, sunken lounge and the auditorium. Decorative lighting fixtures are the only exception to the down lighting. Auditorium down lights are by Century Lighting Company. Wall brackets and general lighting fixtures are by Adams Lighting Company. All auditorium lighting is motorized, two-scene, Kleigl silicon type electronic dimmer system, controlled from the projection room.

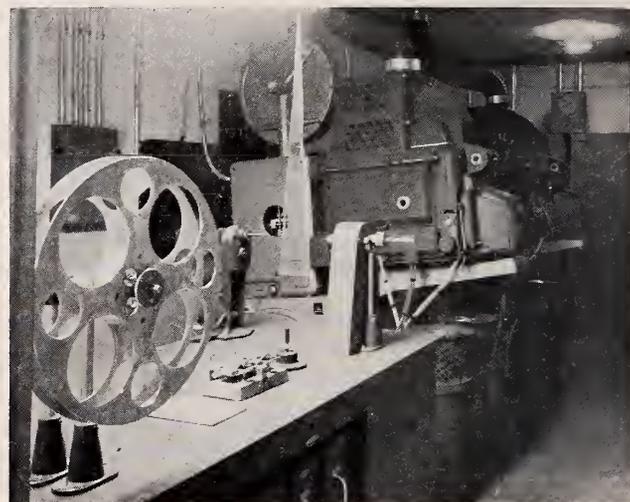
Two motorized curtains, proscenium and title curtain, arranged for stopping at any position, are controlled from the booth. The attraction signs are illuminated by fluorescent lamps, installed by Artkraft Strauss. Changeable sign letters are Adler Silhouette in colors.

Sal Parete is the manager of the theatre, which is being operated on a first-run policy.

ip



The modern facade of the RKO 23rd Street Theatre in Manhattan is a suggestion of the modern decor and furnishings inside.



Norelco 35/70mm projectors, fitted with Bausch and Lomb lenses, are capable of flat, CinemaScope and 70mm projection. Ashcraft, RCA and Ampex equipment is also used in the theatre's optical and sound amplification systems.



The RKO 23rd St.'s 900-seat auditorium is done in blue and gold. This photo shows its well modulated down-light system, and reveals the house's excellent acoustic properties.



Pictured here is one of the five review rooms at CFI where customers' films are projected at the Hollywood facility.

COVER STORY: CFI Review Rooms Boast the Finest in Projection Equipment

Consolidated Film Industries (CFI), one of the country's largest and most modern film processing laboratories, is the site of the latest in projection equipment operated by skilled professionals employing standard techniques.

This Hollywood concern, founded in 1920, maintains and operates five fully-equipped review rooms for use by its customers in viewing all types of commercial films from 16mm black-and-white or color educational films to 35mm anamorphic or wide-screen color spectaculars.

All rooms have high-gain aluminized screens, and are equipped with CFI-developed scene counter systems, for which the company was presented a technical award from the Academy of Motion Picture Arts and Sciences in 1956. These scene counters operate a read-out device located at the base of the screen, which allows the viewer to identify scenes by number during projection so that minor intensity and color corrections may be indicated on the light cards or timing cue sheets for use in making subsequent prints.

In keeping with CFI's policy of utilizing only the most modern equipment available, in 1963, all three 35mm projection booths were furnished with pairs of Zeiss-Ikon "Xenosol III" lamphouses. Two of these booths are equipped with 2500 watt lamps, and the other with 1600 watt lamps.

In addition to the Simplex Projectors (which are used exclusively), the 35mm booths are also equipped with Bell and Howell JAN 16mm Projectors. The 16mm review rooms offer the use of Eastman Model 25 Projectors equipped for optical sound reproduction. All 35mm rooms have provisions for both optical and magnetic pick-up of sound tracks, with one room having two additional playback channels for magnetic pick-up. This room console is equipped with four volume controls.

The CFI projection booths are manned by members of Local 165, IATSE. Howard Bishop, Al Bourne and Ed Lemare each have over ten years' service with CFI, and Dane Hansen, head projectionist, has been at CFI since 1936. The projection staff of five men is rounded out by Herbert Starke, projection engineer. These men are charged with maintaining constant color temperature, screen brightness and field uniformity in compliance with ASA Standards.

CFI's pair of 16mm review rooms have a seating capacity of about twelve each, while the three 35mm rooms seat thirty-five, twenty-five and eighteen respectively, bringing the total to slightly over one-hundred. These one-hundred seats offer Consolidated's customers comfortable viewing of their prints in a convenient and professional fashion. **IP**

DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

ASHCRAFT

e q u i p m e n t

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division

100 E. 42nd St., New York 17, N.Y.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

New York Projectionists Schedule May Meeting

The Annual Spring Meeting of the New York State Association of Motion Picture Projectionists will be held at the New Sherwood Hotel, Hornell, N. Y., on Monday, May 13, 1964.

The meeting will be held in conjunction with the 35th Anniversary Affair of Local No. 676 of Hornell, and marks the Local's 35th year as a member of the I.A.T.S.E.&M.P.M.O.

Registration will start at 10:00 a.m. in the Lobby of the Hotel, followed by a day of activities arranged by Business Agent Elliott Hazen and his Local 676 Committee. At 2:30 p.m. Frank E. Coniglio, Business Agent of Rochester, New York, Local 253, will

preside over the business meeting.

The Ladies Auxiliary will meet at 2:30 p.m. in a room provided for them by Local 676. A relaxation room for guests will also be furnished by the Local. A dinner will conclude the affair.

All wishing to attend are asked to contact Elliott Hazen at 10 Mays Avenue, Hornell, N. Y., by May 11.

According to George F. Raaflaub, secretary-treasurer, at the last association meeting held in Utica, N. Y., in October, 1963, the following resolution was unanimously adopted and ordered forwarded to the producers of motion pictures:

"That a standard title be placed on all films and each reel to be plainly marked with reel number printed in Large Type and not overdeveloped so that the projectionist can readily determine the name and number of each individual reel. That the cue dots be printed on the ends of the reels on light scenes or circled so that the projectionist will not have to resort to ugly markings of his own." **iP**

25-30 Club Honors C. S. Ashcraft Co.

NEW YORK—The 25-30 Club, an organization comprised mainly of Projectionists from Local 306, recently held its annual dinner-dance at the Empire Hotel.

A featured event of the evening was the presentation of Honorary Mem-



Morris J. Rotker (right) is shown presenting the plaque to Mr. and Mrs. Buddy Ashcraft.

bership to the C. S. Ashcraft Manufacturing Co., Inc., including Clarence, Mary and Buddy Ashcraft. Buddy Ashcraft and his wife accepted the plaque on behalf of Clarence and Mary Ashcraft. Morris J. Rotker, past club president, presented the plaque. **iP**

Wolk, Inc. Adds RCA Equipment to its Line

Edward H. Wolk, Inc. of Chicago recently announced it has acquired the RCA (Brenkert) 35mm Projector and Arc Lamp Business from the Radio Corporation of America. The Wolk Company now manufactures replacement parts for this equipment, making them available through local theatre supply dealers.

Recognized throughout the world as the largest single supplier of replacement parts for the motion picture industry, the company was founded in 1920 by the late Edw. H. Wolk, one of the pioneers of the motion picture industry. Today the company enjoys a prominent position in the industry, maintaining an extensive inventory of precision parts ready for immediate shipment to all parts of the world. **iP**

Dutch Introduce Projection Stands

Negema Projection Stands, made in Holland and distributed in the United States by Burleigh Brooks, Inc., are said by the distributor to offer a unique run-down of features, all designed to add to the convenience of use and ease of storage.

Negema stands are a full 42½ in. to clear the heads of a seated audience. Steadiness and freedom from vibration is accomplished through the use of a multi-braced A-frame construction of tubular steel. The stand folds flat to a mere 3½ in. for easy storage.

This construction is sufficient to hold the heaviest 16mm sound pro-



A new line of Dutch-made projector stands, featuring rigid strength and easy compactability, is shown above.

jector with no quiver or shake. Leveling and control of the angle of projection are provided by one leg which may be adjusted to bring the projected picture to exact alignment with the screen edge, compensating for uneven floors or tipped screens.

A feature of the Negema line is the "piggy-back platform." This is a snap-up shelf that locks securely in position on the rear of the frame, below the main projector platform. It provides a rest for a tape recorder in conjunction with a projector, keeping both items of equipment near at hand, so one operator can handle both with optimum convenience. **iP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON

division

products

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica by Christie

CARBONS, INC. BOONTON, N. J.

(Continued from Page 7)

Neither "cold" mirrors nor heat filters can remove all of the heat. However, the needed light rays are just as hot as the unwanted infrared rays.

The use of a heat filter with a "cold" mirror is wasteful because the mirror, itself has already removed most of the heat-producing infrared. Any further reduction of heat can come only through reduction of the light—and light is something we are trying to get more of, not reduce! So don't use heat filters with your "cold" mirrors. It would be cheaper to diminish your arc current to reduce the heat (and the light) by about 15%! This should not be necessary—not even if you are using the most powerful arc lamps at the highest currents possible.

Arc Current You Need!

The minimum recommended screen brightness for drive-in theatres is $4\frac{1}{2}$ footlamberts at the center of the screen when the projector is run without film and the brightness is measured from the center line of the viewing area. If you can get a brighter screen than this, all the better: but the $4\frac{1}{2}$ -footlambert level actually represents a higher light level than the majority of drive-in theatres are getting. The all-important question is: What arc current should be burned in order to achieve this minimum level of screen illumination?

Assuming that the projection lenses are optically fast and antireflection coated, and that no obstructions are present in the optical trains of the projectors, the required arc current depends entirely upon the light reflecting power and size of the screen, provided that the arc lamps are efficient.

Now, the average white drive-in screen several years old has a reflectivity of about 85%. By calculating the lumens of light needed for $4\frac{1}{2}$ footlamberts of brightness on 85% reflectivity screens of different widths, and equating the results with the luminous outputs obtained with various trims of carbons burned at suitable currents in efficient reflector arc lamps, we arrive at the information listed in Table I. These data assume a 50% shutter transmission and hold good regardless of the aspect ratio of the 35-mm projection.

Nor does it matter whether the projection is regular or anamorphic—the extra light passed by the Cinema-Scope aperture is wasted by the anamorphic lens.

Never forget that high-intensity arc-lamp carbons burn most efficiently with the brightest, whitest light at or very close to their maximum rated currents. It is a serious mistake to "underburn" carbons just to slow down consumption and save on carbon costs. If burned well below their maximum ratings, carbons give an unpleasantly dim, yellowish light. For quality projection in drive-in theatres you need snow-white light of at least $4\frac{1}{2}$ footlamberts of brightness! Of course, if you can go beyond this minimum level and come up to the indoor-theatre minimum level of 10 footlamberts, all the better, but this is generally impossible in the larger drive-ins.

The actual "make-ready" and "lining up" of projection and sound equipment which has lain idle all winter, or partially dismantled, is a most important part of the drive-in projectionist's job. These procedures will be outlined in next month's IP article with a particular view to sparing the projectionist complicated knock-down and inspection jobs that seem to us unnecessary and time-wasting. It shouldn't be necessary, for example, to rebuild the intermittent units or to inspect hundreds of in-car speakers every day.

First Consideration

The very first matter to be considered when a drive-in opens for the season, however, is the matter which has been discussed in this article—adequate picture brightness. The screen surface, the projection lenses, the lamps, mirrors, and heat-reducing means, and the correct carbon trims and currents for quality projection are the things which must be checked at the outset. The owner of the drive-in may have to spend money for the replacement of inadequate equipment, but he really has no choice if his object is to stay in business and make a profit. The moviegoing public insists upon professional quality in the exhibition of motion pictures, and will no longer tolerate substandard projection in drive-in theatres.

To Be Concluded



43 Separate Projection Lenses
FOR THE ULTIMATE IN IMAGE QUALITY



KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.

Valley for
 CURTAIN CONTROLS,
 TRACKS and SPECIAL
 OPERATING DEVICES
VALLEN, Inc.
 AKRON 4, OHIO

Norelco
 projection
 equipment
 Available from
 leading theatre supply
 dealers
 North American Philips Co., Inc.
 Motion Picture Equipment Division
 100 E. 42nd St., New York 17, N.Y.

Ford Named to Tech Post at Union Carbide

NEW YORK—Curry E. Ford has been named General Manager of Technology for the Carbon Products Division of Union Carbide Corporation. In his new position, Mr. Ford will be responsible for the Technical Center the Division is to establish in the Cleveland, Ohio, area, and will direct the research and development laboratories operated by the Division.



C. E. Ford

Mr. Ford was graduated from Purdue University in 1933 with a B. S. degree in engineering, and received his M.S. degree from Harvard in 1934. He joined the Carbon Products Division in 1937.

In 1953, he was named manager of chemical product sales, and was appointed new products marketing manager in 1957. In 1960, he was named director of marketing; since August 1961, he has served as director of development. **IP**

Upswing in Hollywood Producing Is Foretold

SAN FRANCISCO — Richard F. Walsh, International President of IATSE, said at a recent meeting of the group's executive board that 1963 may have marked a turning point in the current decline in Hollywood movie-making.

"Though employment in no way equals that of the immediate post-WW II years, it has improved greatly over the employment record of the last few years," he said. "If the forecasts are to be believed, 1964 will be an improvement over the past year."

An audit of the IATSE records by the trustees for the first half of last year disclosed assets totalling \$1,620,999. Here's the breakdown: general and special class "B" funds, \$356,388; securities, \$1,092,194; cash on hand, loans to locals and interest receivable, \$15,386; transportation and per diem fund (biennial convention), \$157,031. **IP**

Strong Develops Light Source for 16 and 35 mm

A new light source for 16mm and 35mm motion picture projection has been announced by the Strong Electric Corporation. The lamphouse, known as the X-16, utilizes an Osram Xenon bulb to produce a uniform white light comparable to carbon arc lighting. Three models for 16mm projection are rated at 450, 900 and 1600 watts, for screens up to 24-foot wide.

Three models for 35mm projection are rated at 900, 1600 and 2500 watts for screens up to 36-foot wide. This light source requires practically no attention by the operator, according to the company.

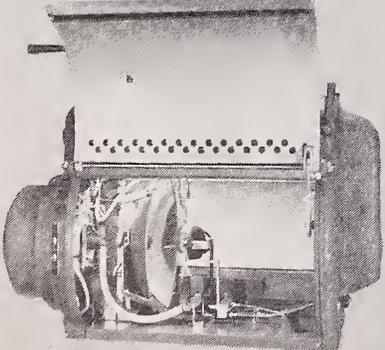
There are no moving parts, and a dirt-free environment assures longer projector life. Operating costs are about the same as for those of carbon arcs projecting an equal amount of light. A descriptive brochure will be sent on request to The Strong Electric Corporation, 31 City Park Avenue, Toledo, Ohio, 43601. **IP**

Training Executives Appointed at Kodak

Robert C. McClelland has been appointed director of training for Eastman Kodak Company, according to Monroe V. Dill, director of industrial relations.

Frederick E. Viken succeeds McClelland as manager of technical training. Ervin L. Perkins moves up to Viken's previous post as manager of training services. **IP**

"I don't open the lamphouse door once in 30 days"
says a projectionist operating
Strong XENON PROJECTION ARCS



It's that simple. No moving parts in the light source. Focus remains constant. So clean the projector lasts much longer.

Projects a pure white light, evenly distributed over the entire screen area. Steady, flickerless regardless of voltage variations in power supply. "Push button repeatability" of intensity and color temperature.

4 models for matte screens up to 35 feet and high gain screens up to 43 feet.

Maintenance and current costs? The same as for carbon and current costs for a carbon arc of equivalent light output.

Send for literature.
 Demonstration in your theatre on request.

THE Strong ELECTRIC CORPORATION
 31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

basic mathematics

by NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

 **RIDER**

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you toward your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I, you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4. \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name
Address
City Zone State



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says **SID MORLEY**
“National” Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at “America’s Projector Carbon Center” in Fostoria, Ohio, NATIONAL carbons move to an automatic resistance test, where a direct reading instrument

measures in ohms-per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

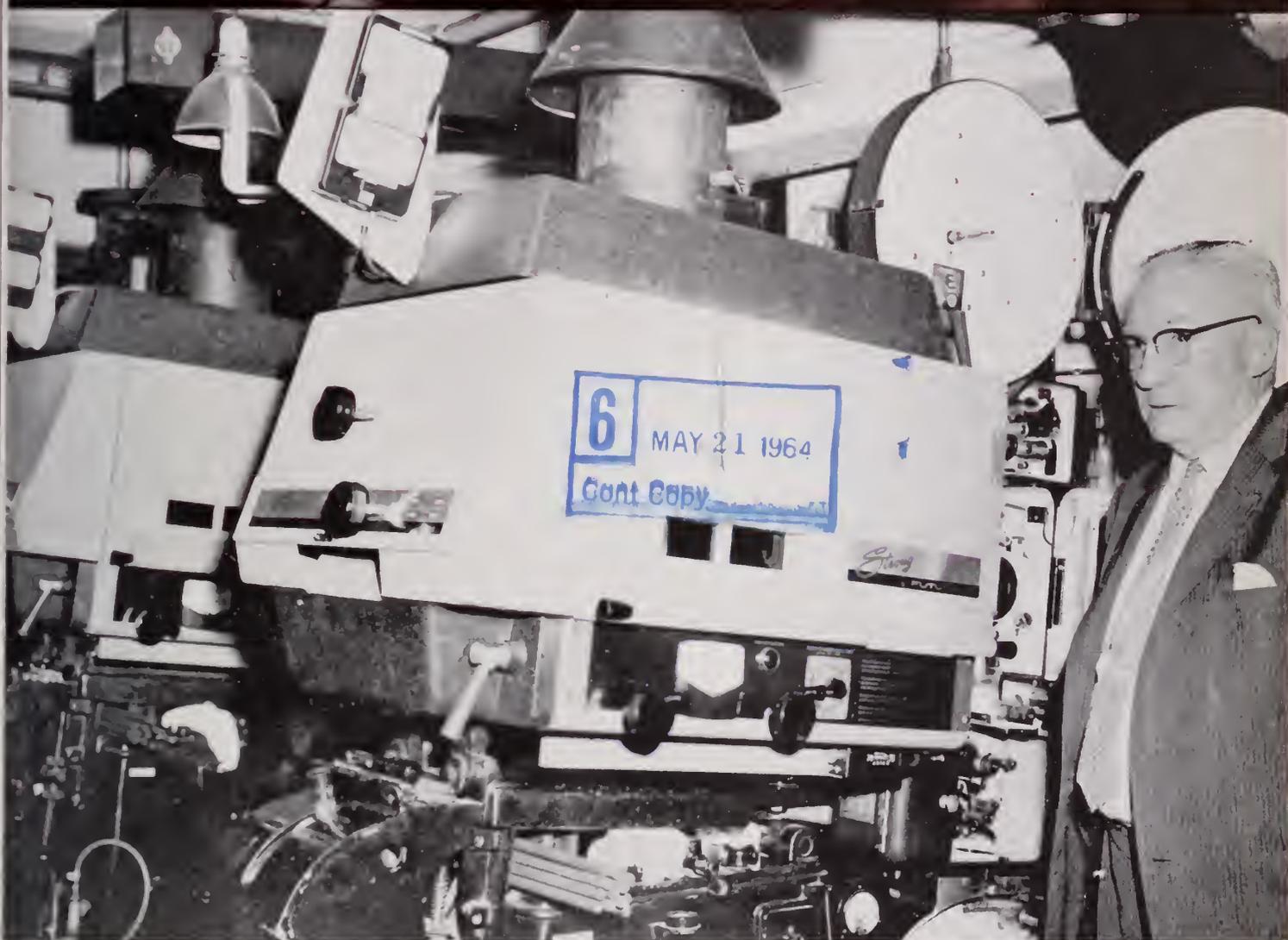
In coating and all other manufacturing steps, NATIONAL carbons are produced by today’s most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!



“National” is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

PROJECTIONIST



Shown with the new Futura II projection lamps recently installed in the Studio Theatre at Paramount Pictures Corporation West Coast Studios is Edward V. Maule, Supervisor of Projection. Where screen lighting requirements are much more exacting than those of the average theatre, such as in studio theatres, the new Strong Futura projection arc lamps are meeting with wide acceptance. Steadiness of arc, a highly uniform field, and the absence of color rotation are requirements essential to determining release print quality.

From the
Library of Congress
Order Division (0368)
Washington 25, D.C.

APRIL
VOLUME 39
40c A COPY



1964
NUMBER 4
\$3.00 A YEAR

A Scene From America's Projector Carbon Center...



Equipment for coating carbons with copper

“Coating projector carbons with the right amount of copper is a top-billing production step”

—says **SID MORLEY**
“National” Sales Engineer

This equipment performs the important task of coating projector carbons with copper—not for eye appeal, but for the vital purpose of assuring more dependable screen lighting. The coating helps conduct current from the jaws of the lamp to the arc. For maximum light efficiency the copper coating must be of precision thickness—no more—no less!



Sid Morley

From the coating operation at “America's Projector Carbon Center” in Fostoria, Ohio, NATIONAL carbons move to an automatic resistance test, where a direct reading instrument

measures in ohms-per-inch the coating on each carbon. If the coating is too thin or too thick, the unwanted carbon is ejected from the line.

How is this rigid test related to good lighting? First, if the coating is too thin, the carbon might spindle back to the holder, resulting in freezing and a possible lamp shutdown. Secondly, if too thick, it might produce copper dripping and cause the arc to wander.

In coating and all other manufacturing steps, NATIONAL carbons are produced by today's most reliable quality control methods. We want to be sure your patrons get the finest screen lighting that projector carbon money can buy!



“National” is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

Strong BI-POWER RECTIFIER SAVES EVEN MORE THAN PROMISED

"Your local dealer . . . pointed out that we would save about \$35 per month on our electric bill. Actually we save close to \$42 per month since we have changed over from our generator. It is good to know that we can depend upon you and your dealer organization."

—D. M. Pearce
Ascarate Drive-In Theatre,
El Paso, Texas

DESIGNED FOR THE OPERATION OF 2 ARC LAMPS

This new type silicon diode stack transformer-rectifier, is the most economical means of power conversion ever manufactured. No flicker or other change in projected light when striking the second arc.

DEPENDABLE

"Lo-Strike*" feature associated with each output protects the silicon stacks from overload, and prevents destruction of carbon crater upon striking the arc.



SAVES ON INITIAL COST!

Sells for 15% less than two of the lowest priced 90-135 ampere rectifiers, and costs less to install. Requires only one line service.

SAVES ON SPACE

Requires one-third to one-half less floor space than two separate rectifiers spaced for proper ventilation.

DUAL OUTPUT RATING OF

60-85/ 60-85 AMPS/	35-45 V
75-105/ 75-105 AMPS/	48-61 V
90-135/ 90-135 AMPS/	56-70 V
120-160/ 120-160 AMPS/	58-75 V

SEND FOR LITERATURE

The **Strong** Electric Corp.

31 City Park Ave., Toledo 1, Ohio

*Not supplied as regular equipment on 60-85 ampere and 75-105 ampere models.

INTERNATIONAL PROJECTIONIST



April 1964

Volume 39

No. 4

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

In This Issue

Projection Make-ready for Drive-ins by Robert A. Mitchell	4
Jack Winick — Still on the Job	6
Fair Features "Voyage to the Moon"	7
Skouras Remodels Great Neck Playhouse	8
Wonderama Reviewed	9
39th Street East Opens	10
Theatre-within-a theatre	12

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55424. Subscription Representatives: AUSTRALIA — McGill's, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixan's, Ltd., 64 Courtnay Place, Wellington, ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



1

35 and 70mm



43 Separate Projection Lens Designs
FOR THE ULTIMATE IN IMAGE QUALITY



KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.



Projection

MAKE-READY FOR DRIVE-INS

By **ROBERT A. MITCHELL**

PART II

ADEQUATE SCREEN LIGHT is the primary concern of the drive-in projectionist. This important problem was discussed in last month's article. Beyond this, and except for the fact that the sound is reproduced through hundreds of individual in-car speakers, a drive-in projection setup is very similar to the booth installation in almost any large indoor theatre. Accordingly, routine cleaning, lubrication, and adjustment procedures follow the same pattern as in any projection room.

Nevertheless, the preparation of the projection and sound equipment for the opening show after months of storage inundates the drive-in projectionist with an immense amount of work to be accomplished in a very short time. The numerous make-ready details press for attention just as soon as the equipment has been reinstalled or the wraps removed after the winter's hibernation. Everything must be checked, cleaned, oiled, adjusted, and lined up for top-quality performance.

Much confusion can be avoided and valuable time saved by tackling the make-ready job in an orderly, systematic manner. Assuming that the rewinders, splicing blocks, film bins, parts cabinets, music phonographs, and ventilating equipment are ready for use (important details), the overall job can be broken down into four divisions: (A) Cleaning and Electrical Checking, (B) Lubrication, (C) Adjustments, and (D) Optical Lineup and Sound Check.

The following systematic tabulation of the work to be

done may seem rather overwhelming just to read it through, but keep in mind that many items need only to be inspected and require no outlay of time. The projectionist can therefore literally sail through large sections of the work list, but its inclusiveness insures that nothing of importance will be overlooked. His checkout should follow the general headings of:

A. Cleaning and electrical checking; B. Lubrication; C. Adjustments and D. Optical line-up and speaker check. Following are guidelines for each of these major areas.

A. CLEANING AND ELECTRICAL CHECKING

Preliminary: Check all fuse boxes to make sure that the fuses are secure and unblown, and that spares are close at hand.

1. ARC LAMPS

(a) *Vent pipes.* Remove deposits of carbon core ash from the interiors of the vent pipes, dampers, and fans. Guard against allowing this dirt to fall down into the lamphouses.

(b) *Lamphouses.* Brush out all ash and dust from the interiors of the lamps. Wipe the carbon holders with a dry cloth. Never file or sandpaper them! Clean all shafts and bearings, and remove grime from carbon-feeding gears. If the lamps are of the modern rotating-positive type (Strong), and the manual carbon feed

cranks hard. remove the drive-roller unit and spin the rollers immersed in a can of kerosene. This will remove caked lubricant. Relubricate as suggested under B2. Check and tighten, if necessary, all electrical connections to the lamp table switch, lamphouse terminal board, carbon holders, control relays, and feed motors.

2. RECTIFIERS AND GENERATORS

Remove dust from the interiors of the rectifier cabinets, and see that the cooling fans and automatic switches function properly. Wipe rectifier bulbs and check connections for tightness. See that the main switch and relays are functioning well and that the current selector switch and all connections are clean and tight. Turn generator over by hand to note feel of the machine. Blow all dust from the interior with a hand bellows carefully wipe commutator with a clean, dry cloth, apply a thin film of vaseline to the commutator and wipe off excess to leave only a trace. (The color of the copper commutator bars should be a darkish brown, *not* bright copper color!) If brushes are worn, replace them and "run in" the new ones for an hour after the generator has been lubricated (B1).

Check and tighten electrical connections at generator terminals and ballast rheostats.

3. PROJECTOR MECHANISMS

Remove any rust-preventative grease that may have been applied to exposed metal parts. Drain old oil from gear side, soak up oil from floors of old-style mechanisms, and remove grime from gears and shafts of old-style heads by scrubbing with a stiff-bristled toothbrush moistened with kerosene. Drain oil from intermittent movement and flush out the oilwell with clean projector oil, *not* kerosene. No attempt should be made to remove lubricating grease from Motiograph AA's, however.

Blow out dust from heat shields and baffles after removing sight box for easier access. If this is done, check framing lamp and replace bulb if blackened. Wipe the film gate and rails of each mechanism, also the gate-door tension pads, using a clean, lintless cloth lightly moistened with cigarette-lighter fluid. Remove all dirt which may be lodged *underneath* the tension pads! Clean all aperture plates. Gently remove dirt from the flanged guide rollers and coil spring by means of a camel's-hair watercolor brush. Be sure to get out all the dirt lodged in the film strippers, swinging the strippers out, if necessary, then replacing in their original position after cleaning.

Scrub all sprocket teeth and idler rollers with a toothbrush lightly moistened with kerosene — but use a *clean* toothbrush, not the one previously used for cleaning the gear teeth!

4. SOUNDHEADS

Carefully clean the sound gates of old-style optical soundheads, or the sound scanning drums and pressure rollers of newer models, using a clean, lint-free cloth *very lightly* moistened with lighter fluid. Remove dirt from the film strippers and clean the sprocket teeth with a kerosene-moistened toothbrush. (Guard against splattering the sound optical lenses.) Clean magnetic soundheads in the same way, and remove deposits of film wax and dirt from the magnetic-cluster surfaces. An orange-wood fingernail stick may be needed.

5. MAGAZINE VALVE ROLLERS

With the scissors cut along a length of film midway through the perforations so as to obtain a rough, saw-tooth edge. Draw this back and forth through upper and lower valve-roller boxes to catch and draw out

In Memoriam



R. A. Mitchell

It was with great sadness and a sense of personal loss that the staff of the International Projectionist received the word of the death March 28 of Robert Allen Mitchell, the author of so many technical articles we have printed. He will be missed for his personal warmth and great character, as well as for his contributions to projection technology. He was an acknowledged authority in this field, and we feel privileged to have worked with him.

stubborn deposits of film dirt. Finish the job with a clean cloth.

6. OPTICAL COMPONENTS

(a) *Lamp mirrors.* Wipe silver-coated mirrors clean with a dry cloth. Use a razor blade to scrape off copper splashes. If necessary to use soap and water, moisten the cloth lightly to avoid wetting the back of the mirror, then rinse with clean water and wipe dry with another cloth. It may be convenient to remove the reflectors from the lamps: if so, do not tighten them excessively when replacing. Badly tarnished or partly cracked mirrors should be replaced with new ones without delay!

Clean front-surface "cold" mirrors by first wiping dust away with a soft, dry cloth, then removing stains and fingerprints with a soft cloth moistened with lens-cleaning fluid, and finally wiping the mirror with lens tissue. Silver mirrors may be lightly scoured with steel wool to remove stubborn deposits of scum, *but abrasives should never be used on "cold" mirrors!* Scouring soap is helpful for cleaning badly scummed silver mirrors, but avoid any containing chlorine bleach, which may turn the silver coating milky-white if the fumes work through the mirror backing! *All chlorine-releasing compounds (hypochlorites) as well as sulfides and cyanides (in some silver polishes) should be kept far away from silvered are-lamp mirrors!*

(b) *Heat filters.* Remove dust by wiping with a dry cloth, then clean with lens-cleaning fluid and lens tissue. As with front-surface "cold" mirrors, do not scour or scrub — it may scratch the delicate interference coatings.

(c) *Port glasses.* Avoid the use of projector port glasses if possible, but if they are absolutely necessary, treat them very carefully because an image-forming light beam must pass through them. First dust off, then wash with a weak solution of Ivory soap. Rinse with pure water and dry with a soft cotton cloth or lens tissue.

(Please turn to page 12)

Projectionist for 57 Years, Jack Winick Keeps Working

Jacob S. Winick wears two hats, and on him they look good. Jack, as his friends know him, has 57 years behind him as a projectionist. Winick is also a great organization man, as we'll see later in this profile.

He is proud to be a native New Yorker, and fondly reminisces about his education in the New York City public schools.

Jack was born on the City's East Side. His first job, in 1905, was as printer's devil; but a year later he became assistant to Charles Burton at the Vitagraph "studio" on Nassau Street. There they filmed silent movies under the sunlight with such stars as Flora Finch, John Bunny and Maurice Costello. In this first-hand environment Jack learned to be a projectionist.

He was an apt pupil, because one year later he installed projectors at a N. Y. hotel and at Luna Park in Coney Island, for the picture called "The Bull Fight."

When Jack Winick recalls his past, he calls up great names connected with the motion picture industry: pioneers like Adolph Zukr, D. W. Griffith and early screen actors, including Henry Walthall and Lillian Gish.

Carriage Trade Came

In 1912, when Zuker was preparing to launch "Queen Elizabeth" starring Sarah Bernhardt, Jack Winick projected that film in New York theatres. Incidentally, "Queen Elizabeth" was sold to exhibitors for \$50 a day, an unheard of price in those times. It demanded prices above the regular admission to movie houses, and started the carriage trade's movie-going. The Lyceum Theatre, the first legitimate house used to exhibit movies, was used for the trade and press preview on July 12, 1912.

Winick was projectionist for the first \$2 movie in New York. He was in the projection booth for the Italian super-spectacle titled "Cabiria."

In 1915, Jack went with the D. W. Griffith Company as projectionist for "The Birth of a Nation," the start of road shows. He was with the Griffith company for their other legendary road shows: "Intolerance,"

"Orphans of the Storm" and "Way Down East." Griffith was the first producer who had sound effects for movies. Back stage drums and other sound devices were cued to make the pictures more realistic.

In 1926, Winick was associated with Western Electric as an installation man; a year later he made the installation in the Winter Garden for the Al Jolson picture, "The Jazz Singer." It was the first time an actor had delivered a spoken dialogue from the screen. A couple of years before that, "Don Juan," starring John Barrymore, played an engagement at the Warner Theatre on Broadway. "Don Juan" was the first film to have recorded on discs the background music for the feature. On the same program were Warner Bros. sound shorts.

Active Clubber

Threaded through Jack's 57 years as a projectionist is much hard work as an organizer and active member of union, civic, fraternal and social clubs. He signed the Charter for Local 306, and was a business agent in its early days.

Jack has an imposing record of past presidencies of civic, fraternal and social clubs. Among them are the Projectionists Square Club (Masonic), the Theatrical Square Club, National Masonic Club and the 25-30 Club. He is Past District Deputy Grand Master of 12th Odd Fellows. He was an officer of the New York Association of Motion Picture Projectionists and the Central Trades Labor Council. In recognition of Jack's activities in the Projectionists'

Square Club, the organization has awarded him a life membership, and he was presented with its "Gold Card" in 1962.

Jack hasn't the time to sit back and meditate on the enviable professional recognition he enjoys; he's on the job as projectionist at the Grand Central newsreel theater. **IP**

Klapholz New Prexy For 25-30 Group

NEW YORK—Morris I. Klapholz was named president of the Twenty-Five-Thirty Club at its recent election meeting.

Others elected to office were: Robert Sanders, vice president; Morris J. Rotker, recording and corresponding secretary; Jacob Krison, financial secretary and treasurer; Nathan Stauss, sergeant-at-arms. Other offices filled were: three year trustee, Tony Rugino; two year trustee, Harry Bergoffen. **IP**

Lindemeyer Gets Tech Post at Metro-Kalvar

NEW YORK — Robert B. Lindemeyer, a former armed services television and photographic officer, has been named director of Technical Services for Metro-Kalvar, Inc.

The announcement was made by Metro-Kalvar Vice President Noel R. Bacon. A 1958 graduate of Iowa State University, Lindemeyer served in the U. S. Navy, where he was assigned to the Naval Photographic Center in Washington, D. C.

He later became Television Production Director at the Air Force System Command, also in Washington. **IP**

Hornstein Equips Two New York Theatres

New York—The Festival Theatre and the Trans-Lux East Theatre were equipped by Joe Hornstein, Inc.

The Festival Theatre at 57th St. has Century projectors and Century transistorized sound equipment; Magnarc lamphouses and silicon rectifiers; Bausch & Lomb lenses; Neumade and Goldberg film handling equipment, and a Tecknikote XR-171 Pearlescent screen.

Retractable chairs, Wilton carpet and special stage draperies and special aluminum frames were supplied by George Hornstein.

The Trans-Lux East, on 58th St. has Century projectors and Century transistorized sound equipment; Magnarc lamphouses and silicon rectifiers; B&L lenses, Neumade and Goldberg film handling and a Tecknikote Pearlescent screen. **IP**



Amity Granted Century Foreign Distributorship

Amity International Distributors, Inc., Amityville, L. I., N. Y., has been appointed a non-exclusive foreign distributor (except Canada) for the Century Projector Corporation, it was announced recently by Adolf R. Schwartz, President of Amity.

Schwartz, Manager of Branch Operations for Westrex International until his retirement last August, will travel extensively to strengthen and enlarge the A.I.D. network of overseas dealers. Schwartz lived for several years in Australia, India and Trinidad as manager of the Westrex branches in those countries, selling and servicing Century projectors and sound systems.

Facilities available

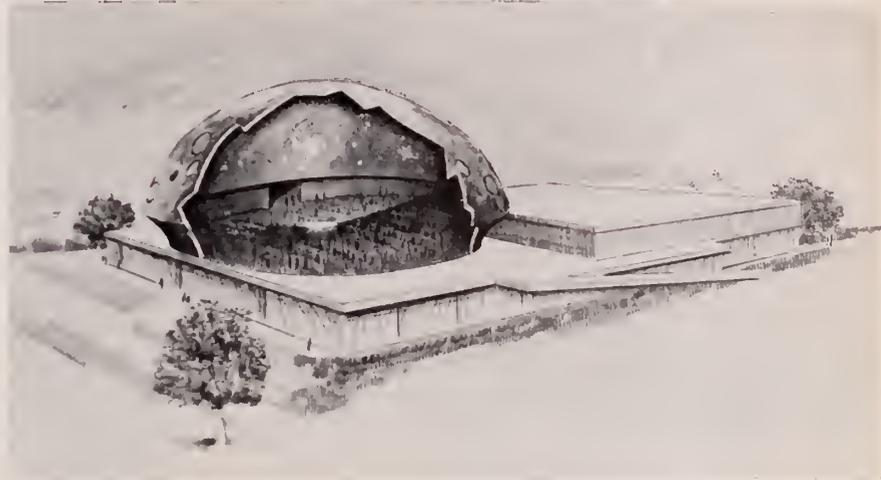
Vice President of A.I.D. is Charles Friedman. Friedman operates Pyramid Power Products, Inc. at the Amityville address, manufacturing engine-driven power plants which are frequently used in theatres abroad as standby power sources during main line power failures. The plant, storage and export packing facilities of Pyramid are available to A.I.D. for the export operation.

Schwartz, who was associated with Westrex and its predecessor, ERPI, for thirty-five years, says the overseas market for American-made equipment has displayed a healthy resurgence due largely to the marked expansion in 70mm and drive-in theatre presentation.

Money available

"Exhibitors abroad demand high quality equipment," he says; "maximum reliability in equipment performance is essential to hold breakdowns and servicing to a minimum and Century projectors and transistorized sound systems are the answer. Importers and local dealers can now get more dollar exchange to assure this protection. Dollar scarcity in most countries is history now. The awakening of Africa and the development of Asia, for example, supported by U. S. aid, are gratifying and healthy signs. Latin America also continues to be an excellent market for the importation of U. S. theatre equipment." "Inflationary rises in European production costs are a contributing factor." Schwartz says. **IP**

Cinerama 'Voyage to Moon' Set for N. Y. World's Fair



A voyage to the moon via the revolutionary "Spacearium" film process will take place within the "moon dome" of the Transportation & Travel Pavilion at the New York World's Fair. Announcement of the space show was made jointly by Fair president Robert Moses and Nicolas Reisini, president of Cinerama, Inc., at ceremonies marking the start of steel construction for the pavilion, last of the major exhibition buildings to rise at the Fair.

NEW YORK — A "voyage to the Moon" via a revolutionary new Cinerama motion picture process never before seen here, will be offered to visitors to the 1964-65 New York World's Fair, at the Transportation and Travel Pavilion, it was announced recently by Fair President Robert Moses and Nicolas Reisini, President of Cinerama, Inc.

The announcement was made at ceremonies marking the start of steel construction for the Transportation and Travel Pavilion, last of the major exhibition buildings to rise at the Fair. The film exhibition will be shown within a 96-foot-high "moon dome" that forms the northern end of the pavilion.

Called Cinerama-Spacearium-360, the unique film process that will simulate the moon voyage was developed by Cinerama. The Federal Pavilion at the Seattle World's Fair featured a film entitled "Journey Into Space". It attracted more than six million viewers. The process provides for a film to be projected from below into a huge domed screen that completely surrounds the audience—on all sides and above. The 18-minute film depicting the moon voyage will utilize all information on space flight and lunar science presently available, according to Reisini.

The "Spacearium" project involves: the world's largest projection screen; the world's largest and wide-

est-angle projection lens; an outstanding undertaking in animation and stop-motion photography, and a realistic trip into space.

The film utilizes a newly-designed Cinerama lens to achieve its startling effect. The lens projects the film 360 degrees horizontally and 180 degrees vertically. Thus, the viewer is actually enveloped in the picture, which is above and on all sides of him.

Scientists who have acted as advisors to Cinerama in the preparation of the system say that the entire projection concept is a highly sophisticated step far beyond the planetarium.

Cinerama will assume full operation of the theatre at the Fair. In operation, the domed screen will be tilted forward at a slight incline, in keeping with the pitch of the auditorium. Viewers will stand behind tiered rails which make up the theatre. The slight forward incline is for theatrical visibility and to help focus attention on the central point of the show, which will be approximately 10 degrees above the horizon in the center of the screen. Although action will take place all over the domed screen, a central focal point is necessary for continuity.

Because of the size of the screen, Cinerama technicians feel they need the greatest possible film area from which to project the show. The actual prints will be loaded into continuous magazines for projection on the special equipment. **IP**

Skouras Playhouse Undergoes Extensive \$100,000 Remodeling

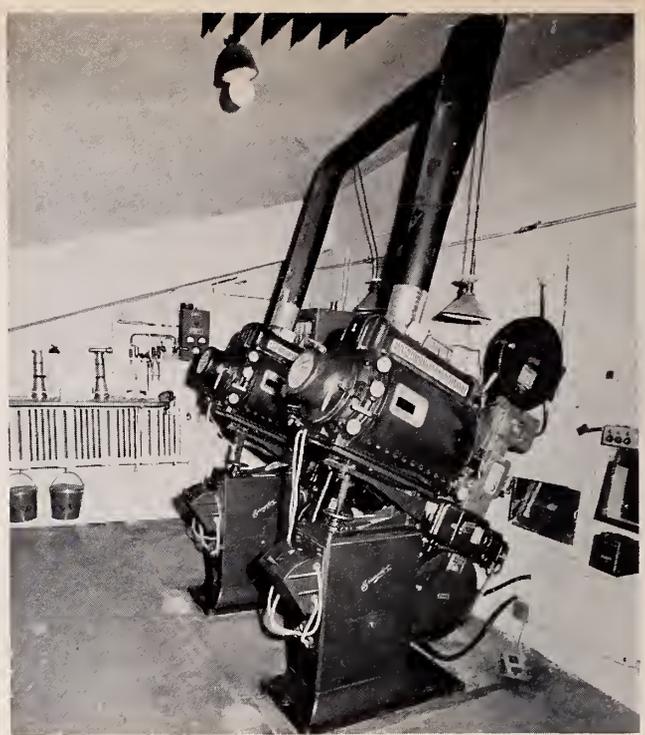
GREAT NECK, N. Y. — The Skouras Playhouse Theatre in this Long Island community has been undergoing a major remodeling at a cost of \$100,000, exclusive of equipment.

The brick structure was decorated, lobbies enlarged and new furnishings installed during three weeks when the theatre was closed.

The booth is now equipped with Super Simplex projectors, Peerless Magnarc arc lamps, Knisley rectifiers, Simplex rewinders and Neumade film cabinets. The sound system is an Ampex Super 30 watt, 3 channel magnetic - optical with special modifications by the Skouras Theatres' sound department. The screen is a Pearlescent, by the Technikote Corporation. Mrs. Neva Hassanein was the decorator, and Novelty Scenic Studios installed the drapes.

The Playhouse Theatre has a seating capacity of 1,000 with American Seating Company chairs. The seats are upholstered with red nylon. Auditorium walls are covered with two-inch acoustical fiberglass. The lobby and foyer has an acoustical hung ceiling, with vinyl on the walls.

The Skouras Theatres chain operates the Playhouse Theatre for the Metropolitan Playhouses, Inc. It is located in the main business area, and operates on a single feature, first run policy. **IP**



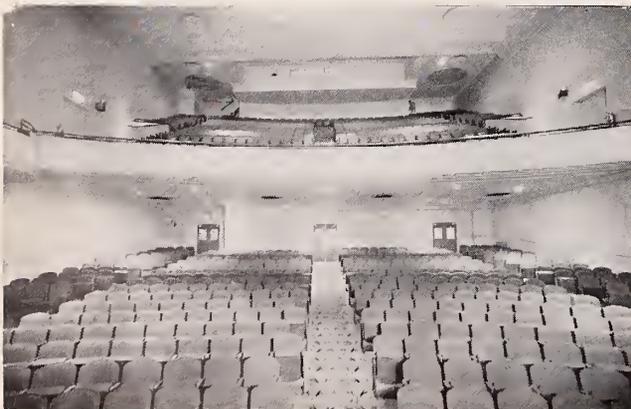
Super Simplexes in remodeled booth



Mezzanine lounge at Playhouse



Concession stand features modular areas



Auditorium seating arrangement

Wonderama Reviewed in New Jersey



The Wonderama Process, the projection of which is shown above, was viewed by the public for the first time last month. The process is a development of Walter Reade-Sterling, Inc.

New Equipment for Sayrewood Theatre

SAYREVILLE, N. J. — The projection booth of the new Sayrewood Theatre is well equipped to accommodate modern needs. New Century projectors and Century transistorized sound; Magnare lamphouses and silicon rectifiers; Bausch & Lomb lenses; Neumade and Goldberg film handling equipment and a Techikote Pearlescent screen.

Other new equipment includes nylon rubber-backed carpeting, stage draperies and aluminum frames by George Hornstein. The Sayrewood Theatre was equipped by Joe Hornstein, Inc., of New York. **IP**

Ballantyne Orders Norelco Projectors

OMAHA—Orders for over \$350,000 worth of Norelco AA II 70 35 mm projectors have been placed by Ballantyne Instruments and Electronics, Inc. with North American Philips Company, Inc., according to J. Robert Hoff, Executive Vice President of Ballantyne. He said the new order is "one of the largest equipment orders by any distributor, and will probably take care of our needs through June of 1964," Hoff added. "This will keep us a leading distributor for Norelco in the U. S."

The new order brought Ballantyne's 1963 Norelco purchases to a total of more than \$689,000, including over a quarter-million dollars for Norelco FP 20 B's. Ballantyne installed many of them in 1963, as part of the company's All-in-One theatre package. **IP**

Enthusiastic Welcome for New Process

Wonderama, a revolutionary new screen process, had its World Premiere March 5 at the Strand Theatre in Plainfield, N. J.

Walter Reade, Jr., Chairman of the Board of Walter Reade-Sterling, Inc., said the innovation is the result of an electronic and prismatic lens invention that includes the printing of each of the thousands of picture frames that make up a motion picture vertically in two halves on the film, instead of horizontally. The two parts are projected and joined together by prismatic optic lens to fill a screen which is the largest ever to be installed in a theatre in New Jersey.

The motion picture shown in the new process was "Mediterranean Holiday," in which twenty teen-age sea cadets sail a three-masted clipper ship to the colorful countries of the Mediterranean.

The Wonderama process was developed by Leon Bronesky. It is the invention of Dr. Leon Wells, a noted polish-born American scientist.

Wonderama produces an evenly-lighted picture through the use of one light source, providing double the brilliance normally used in motion picture theatre projectors (140 amps instead of 65 amps).

Samuel J. Colosimo, Chief Engineer of Walter Reade-Sterling, Inc. supervised the installation of Wonderama at Plainfield. The Wonderama system can be attached to any 35mm projector. **IP**

TNT Demonstrates First Big-Screen Color Television

WASHINGTON, D. C. — TNT (Theatre Network Television, Inc.) the company which founded closed-circuit television communications, demonstrated Color Eidophor - the world's first practical large-screen television system in true color - linked with a revolutionary Norelco color TV Plumbicon camera in a series of showings recently.

The showings included material which demonstrated the wide range of closed-circuit uses now made practical for the first time. A model twirled a parasol that created a dramatic, rainbow effect in completely realistic colors. Art-work for fashion and cosmetic advertising came through with equally realistic flesh tones. A table covered with fruit demonstrated the kind of color quality which observers said was comparable to that of 35 mm. color motion picture film.

The terrain seemed to leap from the television screen during the demonstration of a flight simulation. A tactical military situation was displayed against a map background. Alpha numeric characters and symbols were electronically generated to represent missiles, aircraft and other military units, which moved on the Eidophor display. Information, such as weather, was shown in appropriate colors on the map background.

Nathan L. Halpern, TNT president, predicted that the new color television system "will inaugurate a new era in closed-circuit television communications." He said that industry as well as theatre pay-TV will make use of the new system for color transmission and projection of business meetings and for presentation of musical, dramatic and sports events.

The Pentagon demonstration marked the debut of a revolutionary Plumbicon closed-circuit color TV camera described by Halpern as a "major breakthrough in color television production." The camera was specially built for color closed-circuit TV work by Philips for TNT.

The color Plumbicon camera is based upon a revolutionary camera

(Please turn to page 11)

New Headquarters for the Company . . .

Walter Reade-Sterling Opens 34th St. Theatre

A building in New York's fashionable Murray Hill section, which for decades housed a utility sub-station, has become the home both of New York City's newest motion picture theatre, and the New York headquarters for the far-flung Walter Reade-Sterling, Inc. organization.

The theatre is the 34th St. East, latest of the deluxe cinemas operated by the circuit which now numbers nearly 50 theatres under a rapid ex-

pansion program, and also engages in the production and distribution of theatrical, television and 16mm film. In the three stories above the theatre are the new consolidated Manhattan offices of the company.

The building was acquired by the company about a year ago. All that remains now is the shell—the entire interior has been rebuilt to house the modern theatre and offices.

The exterior has a facade of heavy granite stone blocks on the street level, and bricks on the upper three floors. A modern marquee, built by Artkraft Strauss of New York, marks the theatre entrance. Access to the office area is through the theatre lobby. Visitors can reach the self-service elevator without passing the ticket-taker.

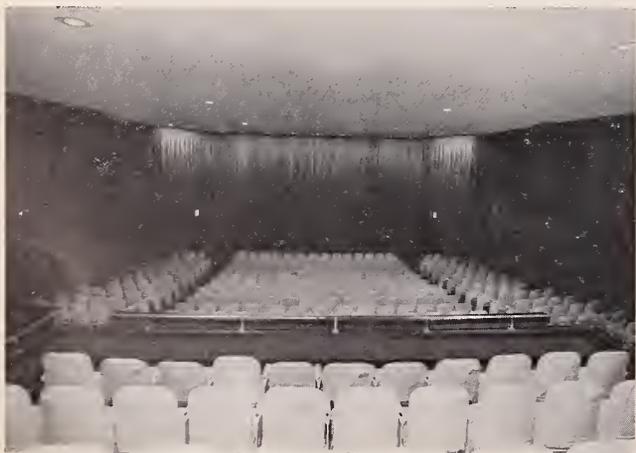
The new building not only gives



Taking its place in a graceful background, the new 34th St. East complements its surroundings.



Glass doors lead from the foyer to the main corridors, well-lighted by recessed fixtures.



The gentle slope of the auditorium assures good visibility from all parts of the house.



Wide, attractive corridors afford movie-goers ample room for locating seats and facilities.

Walter Reade-Sterling its fourth deluxe New York cinema for the presentation of specialized film—the others are the DeMille on Seventh Avenue and the twin Baronet and Coronet on the East side—but also for the first time brings under one roof the theatrical film, television and 16mm film, and theatre exhibition offices which formerly occupied separate offices in New York.

The company's executive offices continue in the Mayfair House in Oakhurst, N. J., approximately 60 miles from New York City.

John J. McNamara, A. I. A., was architect for the theatre and offices, and Holby & Hewes of New York City were the general contractors.

The theatre, with a seating capacity of about 500, is a stadium type, with a mezzanine or loge area slightly raised above the rest of the orchestra. The dominant color is an unusual lavender, which has been carried through in the curtain, carpeting and the accoustical walls. Griggs push-back seats, used throughout, are white, providing a sharp color contrast. A single large gold sunburst dominates each side wall.

Entrance from the street leads to an outer lobby, with a cashier behind the counter-level desk. Four modern ceiling fixtures spotlight the cashier; other lighting is provided by ceiling recessed lamps. Another set of glass doors leads into the inner lobby, which provides access both to the elevator, and to the theatre auditorium.

Rest room facilities, the manager's office, telephone booth and the elevator are all situated off the inner lobby. Modern paintings have been hung along the walls, and just before the several steps leading up to the auditorium are a drink, a candy, and a cigarette machine, each recessed into the wall.

The projection booth is a half-floor up, above the loge area. The curtain, which wraps around the front portion of the side walls, opens from the center.

The offices of executives and department heads of the Walter Reade-Sterling organization are located on the top floor of the building. Advertising and sales staffs are on the third floor: film inspection, storage, editing, and shipping rooms and stock and mail facilities are on the second floor.

Capitol Motion Picture Supply Corporation of New York City provided seats, projection and sound equipment; Doolittle-Allen Co. of Trenton, N. J., carpeting; King Displays, Inc. of New York City, advertising displays. **iP**

INTERNATIONAL PROJECTIONIST

Big - Screen Color Television

(Continued from page 9)

tube completely different from the image orthicon tubes previously used in color television cameras. Compared with image orthicon types of color cameras, the Plumbicon color camera is only about one-third their size, thereby providing ease of operation, greater maneuverability and production economy hitherto impossible in color television programming. A Plumbicon color camera has the advantage of requiring only about five minutes of preparatory "warm-up" time, whereas image orthicon cameras need as much as one hour. Furthermore, these cameras, because of the Plumbicon tube characteristics in combination with an improved optical system, can operate at a light level two-thirds less than that required previously.

The new Color Eidophor projector, for which TNT is the exclusive distributor in the United States and Canada, solves three major engineering problems, according to Mr. Halpern, which have slowed progress in closed-circuit color TV communication—bright illumination, true color, and clarity of picture detail.

Plumbicon cameras for closed-circuit color television will be manufactured and marketed by North American Philips Company, Inc. TNT is the exclusive distributor to the U.S. government and to industry in defense and other government work. Philips, in conjunction with Gretag Ltd., a subsidiary of Ciba of Switzerland, also developed the Color Eidophor projector.

iP

R. Goldblatt, 81, Dies in New York

Robert Goldblatt, former founder of the Motion Picture Projectionist Society died recently at the age of 81.

In 1907 he and a number of other projectionists in New York gathered around his Star Theater, where he was an operator, and founded what is now IATSE Local 306.

Mr. Goldblatt for many years was projectionist at the old Bijou Dream Theater in New York City.

His family, consisting of a wife, children and grandchildren, survive. They still operate the Music Hall Theater in Tarrytown, New York, which he started fifty years ago. Besides being a charter member of 306, he was also an honorary member of the 2530 Club. **iP**

April, 1964

Norelco

projection
equipment

Available from
leading theatre supply
dealers

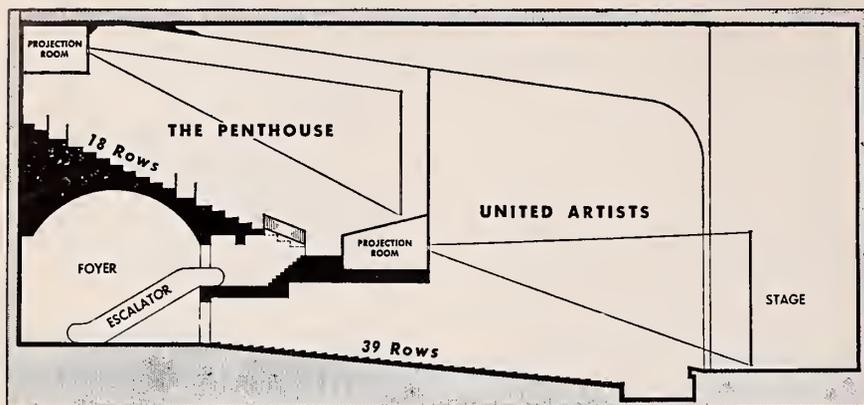
North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

UA Opens 'Theatre-Within-A-Theatre' in Louisville



This sketch of the interior of the United Artists Theatre in Louisville, Ky., shows the relative locations of the 2,000-seat auditorium and the 810-seat Penthouse.

Projection Make-ready for Drive-ins

(Continued from page 5)

(d) *Projection lenses.* Do not attempt to disassemble modern sealed-gasket projection lenses. Clean only the two exposed surfaces. First, wipe away dust with a soft camel's-hair brush kept for the purpose, then breathe a film of moisture on the glass and wipe gently with lens tissue, using a circular motion. *Lens-cleaning fluid, not alcohol, should be used for removing greasy stains from lenses.* Pure grain alcohol is indeed satisfactory if you can get it, but commercial denatured alcohols usually contain oily and tarry substances. Unless you own a still, stick to lens-cleaning fluid.

(e) *Soundhead optics.* Without removing or disturbing the adjustment of the optical tube, wipe the exposed lenses with lens tissue wrapped around a piece of toothpick. Wipe the exciter lamps, photocell lenses, and photocell tubes with a clean cloth or lens tissue. Avoid getting fingerprints on the glass surfaces.

7. AMPLIFIERS

All amplifier racks and cabinets and sound power supply units should be wiped free from dust. It is very important to avoid getting dust into the tube or transistor sockets, so do not remove the tubes before cleaning.

Check all fuses in these units. All tubes and rectifier bulbs should be checked for tight connections. As a rule, it is not necessary to open up rheostats, potentiometers, sound switches, changeover faders, etc. for inspection unless a later sound check reveals trouble. That is properly a job for the sound service engineer, as is also the testing of amplifier tubes.

B. LUBRICATION

Preliminary: Assure yourself that the water supply for lamp and aperture cooling is functioning properly. Recirculators require special attention — flush out the tubing, reservoirs, and circulating pumps according to the manufacturer's instructions before filling with pure water for operation.

1. GENERATORS

Fill grease cups half full of bearing grease with a grease gun or other suitable means. If bearings are over-filled, wipe off excess as it is forced out during an hour of "running in" the machine. Keep grease off the commutator and brushes

2. ARC LAMPS

Suprex (simplified high-intensity) type (Peerless Magnarc): Introduce a few drops of projector oil into each oil cup or bearing oil hole. Do not overoil. Use no graphite grease.

Rotating-positive high-intensity type (Strong): Use the manufacturer's heat-resistant lubricant containing metallic powder. Add just a drop or two of the thoroughly shaken lubricant to positive and negative feed-head oiling points. *Use no graphite, grease, or projector oil inside the lamp.*

Caked metallic powder in the positive carbon drive mechanism, indicated when the manual carbon-feed handle cranks hard, should be removed by taking the assembly from the lamp and spinning the drive rollers under kerosene. The motor gear-box is sealed and seldom requires greasing.

(Please turn to page 14)

The United Artists Theatre in downtown Louisville, Ky., by imaginary architecture and engineering, has been converted to a theatre-within-a-theatre.

The United Artists Penthouse Theatre occupies the balcony, and the United Artists Theatre occupies the lower floor. Then Penthouse has 810 seats and the United Artists Theatre has 2,000 seats.

Fourth Avenue Amusement Company Inc., the lessee from the United Artists Corporation, had direct supervision of remodeling and construction. The Fourth Avenue Amusement Company operates six theatres in Louisville: the Rialto, Uptown, Penthouse and United Artists, and the Twilite and Skyway, both drive-ins.

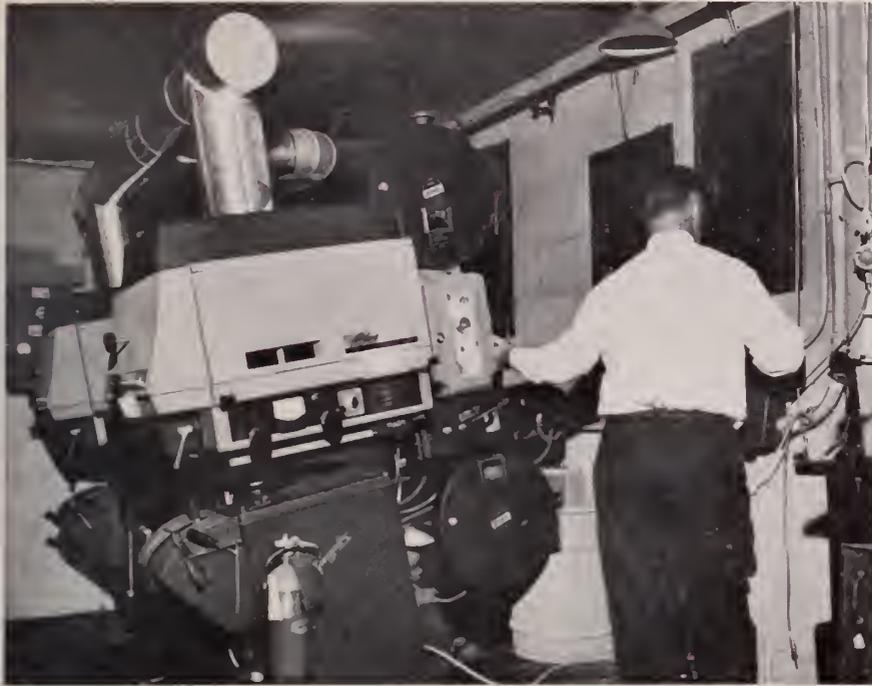
The company is headed by D. Irwin Long. Louis Arru is executive vice president and Robert E. Gross is purchasing director and supervisor. The company relinquished its lease to the Brown Theatre, the film road show house. The Fourth Avenue company has transferred the 70/35 equipment to the Penthouse Theatre, and will operate on a road show policy.

Walter C. Wagner and Joseph H. Potts were the architects on the project. They built a wall from the balcony rail to the ceiling, and constructed another projection booth on that same wall for the United Artists Theatre on the lower floor.

The Penthouse uses the existing projection room up near the ceiling, and is a stadium type of theatre. The Penthouse booth is equipped with Norelco 70/35mm projectors with Ampex stereo sound system. The 35mm projectors and sound system were moved from the original booth to the United Artists Theatre. The Penthouse screen is 42 ft. wide x 22 ft. high; projection throw is 74 ft. For the convenience of patrons of the Penthouse Theatre, an escalator connects it to the lobby floor.

According to president Long, the Fourth Avenue Amusement Company had decided to build a new theatre on the outlying shopping areas. The location of an expressway was a major factor in Long's decision to stay downtown. He said since the opening of a new bridge, people from Indiana will have quicker access to downtown Louisville. The Penthouse Theatre opened with "Lawrence of Arabia." **IP**

Arc Lamps for Virginia Drive-In



The new Strong Futura projection arc lamps just installed at the Wilder Drive-In Theatre, Norfolk, Va., are shown in operation by W. H. Poore, projectionist.

Ballantyne Has Banner Year

Ballantyne Instruments & Electronics, Inc. wound up 1963 with gross sales doubled and net income quadrupled from those of 1962. Ballantyne is a division of ABC Vending Corp.

J. Robert Hoff, executive vice-president and general manager of Ballantyne said, "This record year has been the result of the introduction of our complete equipment finance package for shopping center theatres, deluxe downtown theatres, and small and large drive-in theatres. Sales of our Flavor-Crisp pressure frying equipment have also shown dramatic growth. As of today, we have a backlog of theatre contracts in excess of \$2,000,000, which is equal to our entire business in this division in 1963. Therefore, 1964 should produce even greater gains in gross business and net income."

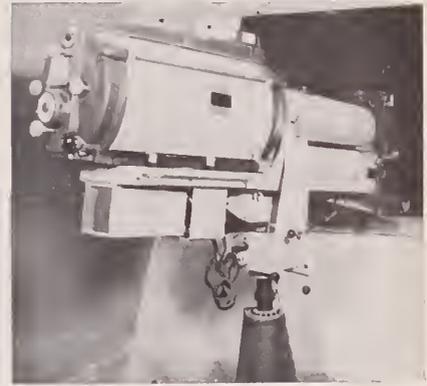
Mr. Hoff said that over 20 theatres were installed during the last four months of 1963, climaxed by seven theatres being opened in December alone, which is normally a month that theatre owners shun for business reasons. A first was probably set with the simultaneous opening of two shopping center theatres in Youngstown, Ohio for the Broumas circuit late in December.

Edward J. Nelson, vice-president and assistant general manager of

Ballantyne, said all-in-one package, completely financed theatre installation contracts will be set in the next few months. In at least two instances, both an indoor and a drive-in theatre are involved in the same city.

Each equipment package can be

New 'Trouper' For Chicago's McCormick Place



A recent addition to what is probably the world's largest installation of carbon arc lighting equipment, is that of a short throw Super Trouper follow spotlight put into use at the 5000-seat Crown Theatre in Chicago's exposition building, McCormick Place. The installation now includes 12 follow spotlights, three slide projectors and two motion picture projection arcs.

purchased on a delivered and installed basis using factory trained supervisory engineers working with RCA and Altec service companies, IATSE projectionists and stagehands, chair and carpet specialists.

1963 marks the 31st year Ballantyne has supplied equipment to the theatre industry. **ip**

HEYER-SHULTZ METAL REFLECTORS

Top Screen Illumination

Will Not Break, Pit or Tarnish

No Replacement or Spare Reflectors Required

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

THE VERY FINEST



IN
PROJECTOR PARTS

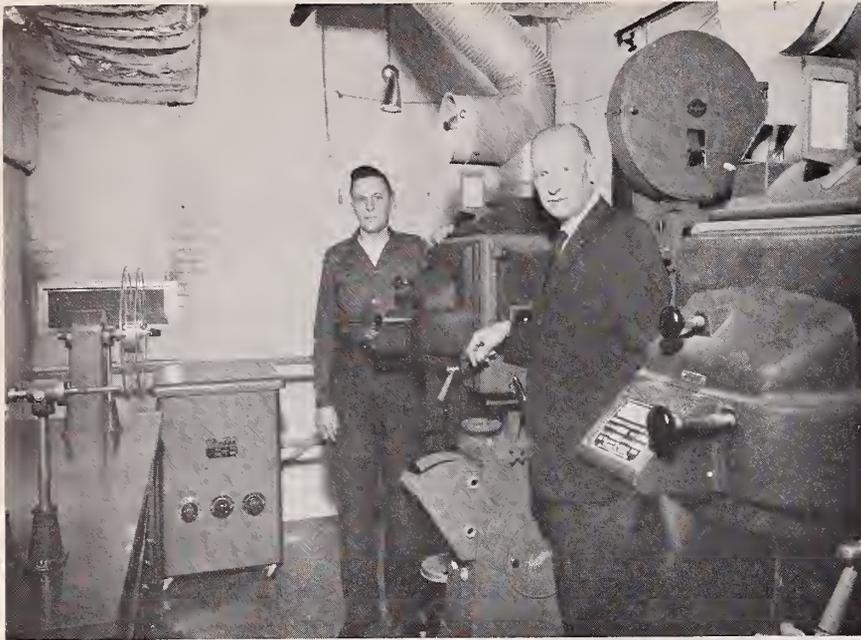
The ultimate in precision, long life and dependability—they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.

LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



Atlanta Theatre Displays New Lamps



Installation of Strong projection arc lamps and Bi-Powr rectifier in another of the new shopping center theatres is that at The Lenox Square, Atlanta, Ga. Pictured with the equipment is John McCarthy, projectionist, and H. W. Rutherford, right, manager of the Lenox Square.

Cinerama, Altec Service Conclude Agreement

NEW YORK — Negotiations have been successfully concluded between Gerhard Lessman, Vice President of Cinerama, Inc. and R. E. Pierce, Operating Manager of Altec Service Corporation, a subsidiary of Ling-Temco-Vought, Inc., giving Altec the responsibility of supervising the installation of equipment in new Cinerama theatres through the continental United States. Installation responsibility will include screen, curtains, projection and sound systems.

At his Anaheim, Calif. office, George L. Carrington, Jr., General Manager of Altec Service Corporation stated: "We are extremely proud to have been selected for this large responsibility. We feel that our continued policy of primary attention to the motion picture industry, our engineering knowledge and experience on all of the latest techniques has, again, proven of value to the trade." **iP**

Soldier Develops New Projection, Filming Process

Korea — A postage stamp picture on an envelope-sized screen are things of the past because of a new motion picture filming process and revolutionary projecting technique copyrighted by Pfc. Clarence B. Fletcher, on duty here with the U. S. Army.

The process features the use of the anamorphic lens, similar to the image-squeezers of cinemascope, and either a telephoto, wide-angle or normal lens in 8mm filming. The zoom lens (of the same type which allows TV to move quickly from normal views to close-up) and the anamorphic lens are used simultaneously during projection to give a permanently fixed and focused picture regardless of the projector's location.

Super-Cogitation-8 is a boon to TV producers and has potentialities for C-Z movie makers using the 8mm film process. **iP**

Projection Make-ready For Drive-ins

Continued from page 12

3. PICTURE MECHANISMS

Follow the manufacturer's instructions, depending on make and model. Use oil liberally on the gear side of old-style mechanisms, but guard against soiling the projector. Oil the rear shutter bearings. Refill automatically lubricated mechanisms with fresh oil after flushing out old oil. Lubricate the *cleaned* gear teeth (A3) with a light application of gear grease, except in automatically lubricated mechanisms. Use gear grease on the chains of chain-drive mechanisms and takeups. (Gear grease is sticky — oil or ordinary grease is thrown off when the machine runs.) Bearings of the Motiograph AA require no lubrication at any time. Flush out and refill oil wells of Simplex-type intermittents, but do not risk soiling the machine by overfilling. Inject grease into Motiograph intermittents, AA as well as the H and K models. On the operator's side, place one or two drops of projector oil in the idler oil holes. Lightly oil the gate carriage, lens focusing device, and framing carriage parts.

4. SOUNDHEADS AND MOTOR

Lubricate drive-gear bearings, universal transmissions, and projector motor according to the manufacturer's instructions. Gear teeth should be lubricated with grease, as in B3. **iP**

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica

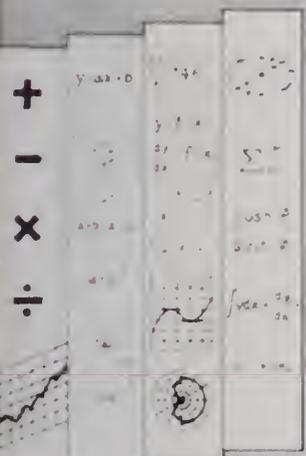
by Christie

CARBONS, INC.

BOONTON, N. J.

basic mathematics

by NORMAN H. CROWHURST



VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics—regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name
Address
City Zone State



**YOUR FORMER PATRONS ARE
WATCHING A BRIGHT PICTURE
IN THAT LITTLE BLACK BOX**

Actual brightness readings with Panavision brightness meters on numerous TV tubes of various vintages show an average brightness of 13.4 foot lamberts.

5 TIMES BRIGHTER THAN THE AVERAGE DRIVE-IN SCREEN

Although technical groups recommend a minimum of 4.5 foot lamberts for drive-in screens, surveys disclose that the actual measurements read as low as 1 foot lambert and only as high as 4 foot lamberts.

If you hope to bring back those patrons you must have a screen brilliance that at least competes with TV.

Your Strong Dealer can show you how the new type projection lamps will do it.

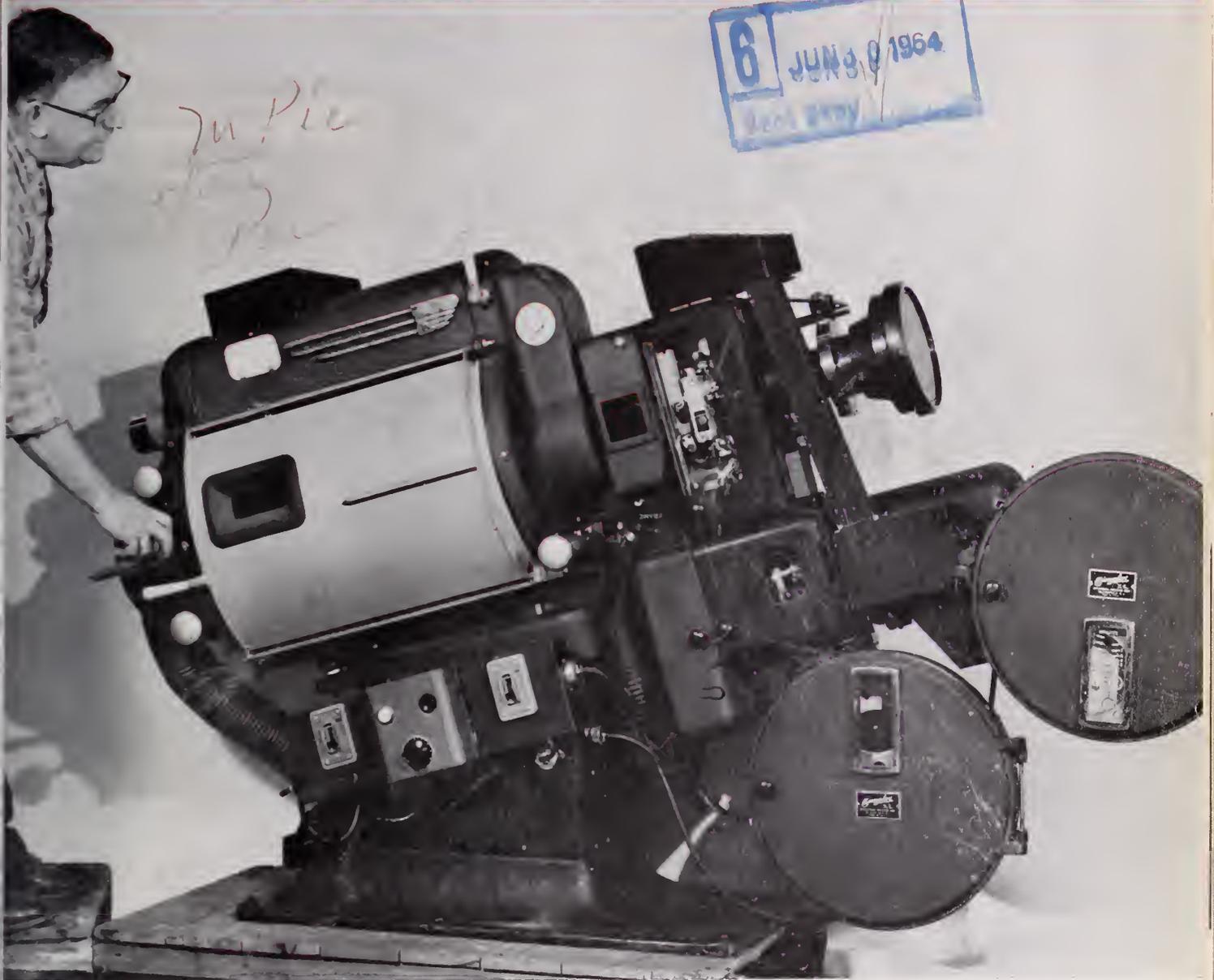
Send for literature now.

THE *Strong* ELECTRIC CORPORATION

31 City Park Ave.

Toledo, Ohio

INTERNATIONAL PROJECTIONIST



The rather unorthodox Simplex X-L shown above is an adaptation by Detroit's Jam Handy Organization to project three dimensional images on an hemispheric screen in the Wrap-Around Theatre System. (See story on Page 8).

MAY
VOLUME 39
40c A COPY

1964
NUMBER 5
\$3.00 A YEAR

Library of Congress
Order Division (0368X)
Washington 25, D.C.



A Scene From America's Projector Carbon Center...



X-ray reveals breaks and voids in positive projector carbon cores

“The x-ray eyes of our inspectors are your assurance of perfect projector carbon cores”

—says **VERYL JOHNSON**
“National” Sales Engineer

You can't judge a movie by its title. And you can't judge a projector carbon solely from the outside. That's why carbon inspectors in our plant in Fostoria, Ohio, test every carbon *from the inside out*—with modern x-ray equipment. As an extra safeguard, our inspectors are paid a premium for every imperfect carbon they reject and scrap.



Veryl Johnson

Shown above is our x-ray room, through which all positive carbons must pass on a belt containing from 6 to 20 carbons, depending on size. The assignment is to weed out carbons with voids or

breaks in their *rare earth cores*—the key to uninterrupted burning and maximum light quality.

As a further inspection safeguard, operators of this x-ray equipment stay keen and alert by changing off *every 30 minutes!*

Quality manufacturing and precision testing are only a part of the NATIONAL projector carbon story. For more than 45 years we have provided the motion picture theatre industry with unsurpassed technical service.

Our Sales Engineers are equipped with, and are specialists in using, today's most modern test devices for assuring *more* screen light per projector carbon dollar!



“National” is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Ave., N. Y., N. Y. 10017 • In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL
PROJECTIONIST



Volume 39

May 1964

No. 5

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murroyhill 7-7746
(Area Code 212)

IN THIS ISSUE

Equalizing Sight and Sound	4
The Cover Story . . .	
Wrap-around Theatre	8
WR/S Opens Unique Theatre	10
Wayne Theatre Opening	12
Wonderama Augments Capabilities	14
And a new feature . . .	
Sound Track	6
By J. G. Jackson	

News Notes—Technical Hints—Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA—McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND—Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE—Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month . . .

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE
YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Equalizing projectors for sight and sound

Noticeable changes in projection quality on changeover can be prevented through competent operation, matching of equipment.

AMONG THE DEFECTS in projection considered especially annoying by filmgoers are bad focus, uneven and discolored screen illumination, picture jump, improper sound volume, and noticeable sudden changes in the quality of the projection when changeovers are made. The last defect is unavoidable when the others are present because it is unlikely that both projectors would be malfunctioning in the same way and to the same degree.

The use of more than one projector in a theatre installation is necessary, of course, for uninterrupted performances. A few very large theatres have three, or even four, projectors, providing even more opportunity for projector imbalance to show up at changeovers. And even the most subtle changes in pictures and sound quality are noticed by movie patrons.

Nearly every motion-picture audience includes a few individuals who are aware of the fact that two projectors are normally employed, and they know *just enough* about the projection process to determine (by glancing up toward the projection room) which of the two projectors is malfunctioning. It bodes our craft no good when such a patron informs the manager which projector is performing like a mechanical lemon.

"Projectionists" versus "Operators"

IP has frequently repeated the truism that "competence is the only commodity the projection craft has to sell." for without competent handling of the sight-and-sound process there is nothing worthy of the name *projection*. We therefore find it incredible that the denizens of certain projection rooms simply don't give a damn how the picture looks or sounds so long as film travels through the mechanism. We hesitate to call such fellows *projectionists*; they are "operators," and not competent ones, either!

Like anyone else, a projectionist is not personally enthralled by each and every picture that comes along. But a good projectionist never forgets that the motion-picture industry strives to cater to *all* tastes. *There are all kinds* of audiences; and the films that would bore one audience may enchant another, and *vice versa*. Because

every audience deserves our best efforts, *every* film must be projected as well as it can be projected. This involves the ethics of our craft. It does not seem quite ethical to take special pains with an "art" film which draws a small, select audience, and allow a western that packs the house to run out of focus just because the hackneyed plot isn't worth a twist of the focusing knob!

Laying aside his personal preferences in the matter of film fare, therefore, the truly *professional* projectionist views the picture as an optical image, and the sound as an electro-acoustic reproduction. He may privately damn the short-sightedness and inanities of Hollywood, but he is not satisfied *as a projectionist* until the image and its accompanying sound reproduction are as good as film and equipment allow him to make them. Fortunately for the industry in these days of a return of the public to the movies, the vast majority of projectionists adopt this professional attitude, and there is nothing "sloppy" about their work.

Watch that Focus!

Poor focus stamps projection as "sloppy" as does nothing else. When one projector is consistently operated out of focus, the audience is made painfully aware of the mechanics of the process at every changeover. For every eighteen or twenty minutes of a sharp, easy-to-view image, there is an equal interval of eye-straining blur. The audience indirectly pays our salaries: is this the best we can do for them?

The maintenance of sharp focus is an important facet of the projectionist's art, a job that requires a watchful eye and a skilled hand. *There's no such animal as an automatic focusing device*—you have to perform the operation yourself. Focus should be checked (1) at the commencement of each reel and (2) again when the reel is about halfway through. Arc currents in excess of 100 amperes may require more frequent focus checks, especially if short-focus lenses be used.

It's the "operators," not the "projectionists," who set the focus once at the beginning of the day and expect it to hold until midnight. The "operators" place

Please turn to Page 7

New...from **EASTMAN**...Type A704—the uniform magnetic sound recording film



Capture depth...resonance...vibrant highs...get true audio fidelity

Brilliant tone quality is yours with Type A704—Eastman's new magnetic sound recording film. Why? "R-type" binder's the answer. Entirely new, chemically stable, extremely wear-resistant, it permits smoother, more homogenous oxide coatings, resulting in suppression of surface noise and intermodulation distortion. At the same time, oxide build-up on both recorder and pick-up heads is minimized.

And, most important, "R-type" binder permits uniform oxide coatings of superb magnetic characteristics. Both

high output and low print-through result in *superb* reproduction quality—true audio fidelity.

Another advantage is "Lifetime Coding" which provides an accurate means of logging bias settings, re-use and purchase data.

AVAILABLE NOW: 16, 17½ and 35mm widths—complete range of cores, windings. For further information about EASTMAN Magnetic Sound Recording Film, Type A704, as well as new EASTMAN Sound Recording Tapes, contact:

Magnetic Products Sales Division

EASTMAN KODAK COMPANY 343 State St. 200 Park Ave. 130 E. Randolph Dr. 6706 Santa Monica Blvd.
Rochester, N.Y. New York, N.Y. Chicago, Ill. Hollywood, Calif.

Sound Track

by J. G. Jackson

Starting in the June, 1964 issue of *International Projectionist*, contributing editor, J. G. Jackson will conduct a column to be carried under the heading "Sound Track." This will afford readers an excellent opportunity to express their views on a variety of subjects dealing with projection technology and the industry in general.

Dear Readers:

This column has been suggested for the purpose of getting the viewpoints of projectionists throughout the world. We will discuss one subject at a time and when sufficient information is gathered, we can make some form of recommendation to the standards committees of the industries. In this way the voice of the projectionist can be carried to the powers that be in the production end of the industry.

The first topic I wish to discuss is, I think, very pertinent to all projectionists, "Curtain Cue Marks on 35mm Film." The deplorable condition of film received in the theatres is nothing short of shameful. Every one puts on his own marks by scratch, punch or grease pencil, with the result no one can tell which one to use.

Surely we as Projectionists of 1964 can find a solution to this wanton mutilation of valuable film stock.

My own suggestion is; a curtain cue be placed on the film at a distance from change over to suit a slow curtain and the mark to be a thin straight line. In this it would not be confused with the motor cue and we who have fast curtains will simply delay a second or two before striking the curtain switch. When the cue is set at a standard distance from change over there is no excuse for anyone putting any extra marks on the film.

So let's go, brothers, drop a line to Sound Track and give your suggestions and views as to what kind of a mark would you like to see and how many feet from change over.

I can well remember the silent days of the roaring twenties when there were no cue marks of any kind

William Dozier, Greenway Prexy, Addresses SMPTE Conference

William Dozier, President of Greenway Productions, Inc., Hollywood television production organization, was guest speaker at the 95th Technical Conference of the Society of Motion Picture and Television Engineers (SMPTE) April 13 at the Ambassador Hotel in Los Angeles. His subject was "The State of Television . . . An Appraisal."

Long active in the motion-picture and television industries, Mr. Dozier for four years until last January was senior vice-president in charge of production and West Coast operations for Screen Gems, Inc. Prior to his association with Screen Gems, he was vice-



W. Dozier president in charge of network programs for CBS-TV in Hollywood.

A native of Omaha, Neb., Mr. Dozier attended Nebraska schools and received his bachelor's degree from The Creighton University, Omaha, in 1929. He was studying law at the University of Southern California in Los

on the film. Each projectionist had to check the film and look for some specific point of action at about where to start his motor. Later the film exchanges produced a cue sheet which was put in the tin with the film. When sound came in the projection craft demanded something better so the standard motor and change over cues were put on when the film was printed.

Now it is high time we made ourselves heard again and get the producers to give us a standard curtain cue as well.

So come on boys — "Sound off" and let me record your voice on the Sound Track.

J. G. Jackson

Sound Track Editor

P.S. Address your cards and letters to Sound Track, c/o International Projectionist, 1645 Hennepin Ave., Minneapolis, Minnesota 55403.

Angeles in 1935 when he first entered the entertainment business, representing writers with the Phil Berg-Bert Allenberg talent agency. After six years with Berg-Allenberg, he joined Paramount Pictures as head of the studio's story and writer department.

Held RKO Office

In 1944, Mr. Dozier was appointed executive assistant to the late Charles Koerner, then vice-president in charge of production at RKO. In 1946, he joined Universal-International as associate head of production, and in 1949; moved to Columbia Pictures as a producer.

Mr. Dozier left Columbia to work as executive assistant to Samuel Goldwyn, where he remained until he joined CBS Television in 1951 as a member of the New York program executive staff.

In February, 1952, he was named executive producer in charge of dramatic programs, in which capacity he guided such programs as "Studio One," "Danger," "Suspense" and "You Are There." In January, 1955, he was transferred to the West Coast and was elevated to the post of director of network programs, Hollywood.

Returned to Hollywood

Mr. Dozier returned to RKO in the fall of 1957 as vice-president in charge of production in Hollywood. He returned to CBS Television City in November, 1957, and on April 1, 1958, became vice-president in charge of all Hollywood programming. During his administrative regime at CBS, such Hollywood-originated programs as "Gunsmoke," "Have Gun — Will Travel," "Playhouse 90," "Rawhide," "Climax" and "Perry Mason," several of which are still on the air, came into being.

He married actress Ann Rutherford in 1953. Mr. Dozier's son, Robert, by an earlier marriage, is a well-known motion-picture and television writer, whose current credit is the screenplay of Otto Preminger's film, "The Cardinal." He also has a daughter, Deborah, 15, whose mother is actress Joan Fontaine, to whom Mr. Dozier was married from 1946 to 1950.

iP

Equalizing Sight and Sound

Continued from Page 4

their trust in focusing scales and marks on the lens barrel, and seldom bother to look at the screen. The "projectionists" not only use their eyes at frequent intervals, but enlist the aid of low-power binoculars or screen telescopes when their projector lenses have focal lengths longer than 5 inches.

It goes without saying, of course, that bad focus is not always the projectionist's fault. A conscientious projectionist really suffers when a "fuzzy" print comes his way. The projected picture can never be clearer than the image printed on the film; and the larger the screen, the worse an out-of-focus picture looks. Excessively high arc currents produce out-of-focus effects by aggravating the rapid flutter and buckling of the film at the aperture; and the use of lenses under 4 inches E. F. makes the picture very difficult to keep in focus, as is well known in these days of VistaVision and cropped apertures for non-anamorphic projection upon wide screens.

These *unavoidable* causes of blur nevertheless cast no aspersions upon the projectionist's competence when conditions are the same in *both* projectors, as they should be.

The use of *different* makes, models, or "speeds" of projection lenses in the projectors can cause sufficient difference in the appearance of the pictures projected by the two projectors to make changeovers perceptible *even when two lenses have exactly the same focal length*. It is extremely unwise, for example, to use an uncoated lens in one machine and a coated lens in the other. The projectionist, in such a case, may be the victim of necessity; but such a state of affairs is not good for the exhibition business. These remarks apply in equal force to CinemaScope anamorphic attachments.

Very similar to this is the use of different kinds of arc mirrors in the two lamps—or even one new and one old mirror of the same brand and specifications. Except for a brief period of testing and comparison, a dichroic ("cold") mirror should never be

paired with a silver mirror. The light from one machine may be dimmer than that from the other, and of a perceptibly different color—slightly more yellowish, bluish, pinkish, or greenish. A change of screen-light color at the changeovers is most noticeable during the showing of black-and-white prints.

Difference in arc-lamp adjustment also cause mismatched light, but the projectionist should not rely wholly on the tape-measure and the alignment rod, necessary as these aids are. Small differences in mirror focal length, arc current, mechanism shutter transmission, and port-glass transmittance can result in a brighter light from one machine even when the geometric focus (distance from the positive crater to the center of the mirror) and the working distance (center of mirror to film aperture) are the same in both machines, and both lamps are in perfect optical alignment.

1. Nevertheless, the *first step* in equalizing the light from both pro-

Please turn to Page 9

ValLEN for
CURTAIN CONTROLS,
TRACKS and SPECIAL
OPERATING DEVICES
VALLEN, Inc.
AKRON 4, OHIO

DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSOORFF CARBON CORP. East McKeesport, Pa.



As Disastrous As No Spare in the Desert, Is No Spare in the Booth

For want of an extra mirror, business can be lost by shut-down.

Always have a spare **TUFCOLD FIRST SURFACE COLD DICHROIC REFLECTOR**

Better yet, also replace your old reflectors now with these modern, long-service reflectors with the harder than glass, flake and peel-proof front coating.

THE COATING IS GUARANTEED FOR 2 YEARS!

The Strong Electric Corporation
31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

The Cover Story . . .

'Wrap-around' Theatre Amazes Audiences

AUDIENCES ACROSS the United States and as far distant as New Delhi, India, have been enjoying the sensation of being "inside" a projected motion picture instead of just looking "at" a picture. This effect is achieved by the use of a lens whose angle matches the broad angle of vision of the human eye—plus the screen which curves around and above the spectators.

Better viewing for larger audiences in the special type of traveling theatre in which the show is given, however, called for changes. Under the guidance of veteran Jam Handy Organization (Detroit) projectionists, members of IATSE Local 199, the changes were made to effect several improvements.

The standard projector was given a lower base so that the equipment would not obstruct the view of any

of the 175 spectators who now can be seated in the Wrap-Around Theatre. Projection is done close to the screen because of the optical qualities of the lens. The theatre is a large portable dome that is easily transported and inflated with compressed air on a show site in quick time.

The top magazine also now is installed below the lens, instead of on top of the projector. The exhaust, which was on top of the projector, now is below; only clean, warm air escapes from a filter.

So the projectionist may operate the projector while seated and out of the way of front-row spectators; re-wiring of all controls also had to be done.

The Wrap-Around system has an interesting history, going back to the day during World War II when the Navy called on Jamison Handy, now president of The Jam Handy Organization, to help create a lens that would simulate natural human observation as realistically as possible by means of motion pictures.

The need was urgent, because new developments—such as aircraft moving at vastly greater speeds than ever before—called for a new training device with a much greater angular view of sky and earth. The final design of the lens, which contains 11 elements of glass of different composition, required more than a year of computations by optics engineers and mathematicians.

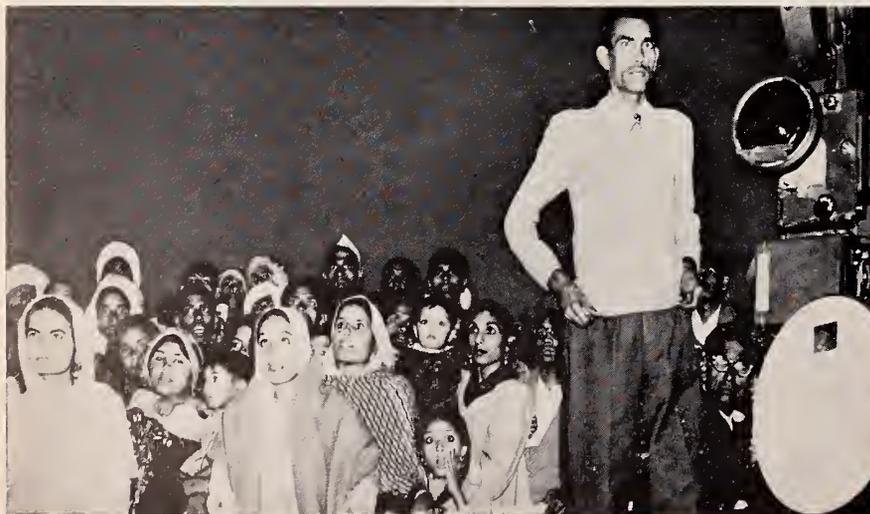
A lens similar to the projection lens is also used in the making of the picture, so there is no distortion when the picture is projected on the hemispheric screen. Obviously, any photo taken of the Wrap-Around Theatre in operation shows distortion; but that is not the way the picture is seen by the audience.

The spectators travel along, so they feel, on highways, on roller coasters, under Niagara Falls, or wherever the Wrap-Around cameramen take them. The result is a "you are there" and perfectly natural, if thrilling, visual experience. The latest picture that is being used is appropriately titled "Excitement."

IP



Because of the optical qualities of the projected image on a hemispheric screen, flat photography makes the projection appear distorted. Not so in the theatre, where viewers are transported via three-dimensional effect to any place the camera leads.



Spectators at the World Agricultural Exposition in New Delhi, India, registered appropriate amazement at the images projected by a prototype "wrap-around" projector on an hemispheric screen. Recent improvements by Detroit's Jim Handy Organization have made the projection system suitable for large enclosures.

Trailer Hailed Great Assist To Theatres, Dealers

Theatre patrons, managers and equipment dealers are responding enthusiastically to the new 35mm "talking" trailer produced by Strong Electric Corporation for theatres installing the new Futura projection arc lamps.

The trailer calls attention to the great improvement in the brilliance of the projected picture. "takes the patron into the projection room", showing the installation, depicts by means of a split screen effect the extent of the increase in brilliance, and then extends an invitation by the management to the patron to see the lamps in actual operation in the projection room.

Theatre men say that the trailer creates much good will among the patronage by extending the invitation to see the new lamps and by emphasizing their efforts to keep equipment up to date for the better viewing and greater pleasure in film offerings. Patrons seem to gain appreciation of the theatre's efforts toward that end and more respect for the financial investment involved in upgrading.

Equipment dealers say that availability of the trailer shows appreciation of the purchase and indicates the dealer's continuing interest in the theatre after the purchase. Theatre



Contrasts in clarity of projection are obvious in the Strong trailer.

managers also see their dealer as being interested in helping "sell" the new equipment to his patrons and so increase boxoffice as to make the purchase even more profitable.

The trailer is available at no cost to all theatres installing Futura lamps. Arrangements for a 2-week booking can be made by addressing a request to The Strong Electric Corporation, 76 City Park Avenue, Toledo, Ohio 43601. **IP**

INTERNATIONAL PROJECTIONIST

Altec Engineers Checked Out on Century



Altec service engineers recently completed training sessions at the Century Projector Corp. factory in Long Island City. The workshop covered all Century's domestic projectors and the firm's all-transistor sound systems. Pictured (left to right) are Altec engineers Hans Newberger, Russell R. Giveans, Harry Randel, F. W. "Bill" Boettcher, Joseph Raho, Doug McLean and Ralph Siegal.

Equalizing Sight and Sound

Continued from Page 7

jectors is to line up the lamps according to the manufacturer's instructions, and with his recommended alignment tools (available through dealers and service companies). The centers of the mirror, arc crater, light cone, projector aperture, and projection lens will then all lie on the same *straight line*—the optical axis, — and the suggested optimum focus and working distances will have been established.

- The individual arc currents are then checked. Trim both lamps with new, dry carbons, making certain that you have the same positive and negative carbon protrusions beyond the burner jaws in both lamps. "Burn in" both lamps for about a minute, establish the same arc gap, and note the current consumed by each by reading the ammeter. The difference, if any, should not exceed 2 or 3 amperes. If a greater difference in current consumption exists, and it is certain that the ammeters are reading correctly, adjustments should be made in the rectifier transformers or the motor-generator ballast rheostats.

- Project blank light to the screen

(both projectors running, but without film) and change over from one machine to the other several times in rapid succession to detect visible differences in the brightness, distribu-

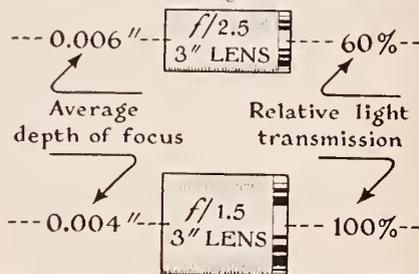


FIG. 1—Lenses of different speeds have different light transmissions and different optical characteristics even though their equivalent focus (E.F.) is the same. The lenses in a 2-projector installation should therefore be identical in speed, type, and make as well as in E.F.

tion, or color of the screen illumination. The most exact determinations require the use of a light meter or photographer's exposure meter, but the equalization is close enough if no difference can be detected *visually*.

Arc Focus and Color of Light

If a difference can be seen, the working distance of the mirror in
Please turn to Page 18

Walter Reade/Sterling Opens Un

Art Gallery, Split-level Entry Featured in New House

NEW DIRECTIONS in theatre design are very much in evidence at the Continental, a new first run house in the Forest Hills Section of Long Island, opened recently by Walter Reade/Sterling, Inc.

Featuring a split-level entrance and its own roof top parking facility, the Continental seats 600 and specializes in quality foreign and domestic films.

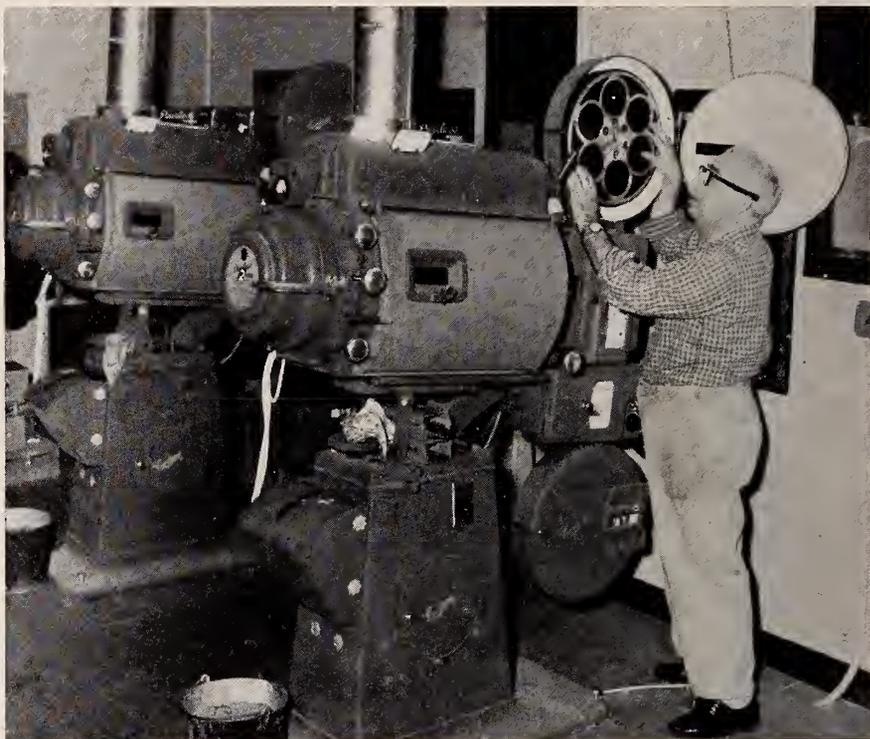
Built as part of a \$5,000,000 expansion program which includes two other new deluxe theatres in New York City, and one in Camden, N.J., the Continental was opened March 20th.

The dominant interior innovation is the split-level construction. Patrons, upon entering the theatre foyer, have the choice of walking down a short flight of stairs to the orchestra level, or up a short flight of stairs to the twin mezzanine sections. This is similar to entering a conventional split-level home, where stairs lead down to the family room, and up to the living quarters.

The patron may also drive his car up a ramp along one outer wall of the theatre to the roof atop of the second story of the building, where there are accommodations for 300 cars. A special roof-top entrance brings him right into the theatre lobby.

The unique theatre building was designed by House and Bresin, A.I.A. architects of Jackson Heights, L.I., with John J. McNamara, A.I.A., as consulting architect for the interior theatre construction.

Like Walter Reade/Sterling's Coronet Theatre in Manhattan, the Continental also has an art gallery in its lounge, where local artists and sculptors display and sell their work. The lounge is reached by a separate stairway off the foyer, and also contains facilities for serving coffee to patrons. There are rest room facilities both off the main lounge, and the mezzanine lounge. The manager's of-



Sol Rosenberg, a projectionist at the new Continental Theatre in Forest Hills, Long Island, is shown loading the theatre's 35mm Century projectors, which are equipped to reproduce multi-channel audio.

office is located at the rear of the orchestra entry lounge.

The mezzanine has been split by projection booth facilities. On either side of the booth are seating for 60 persons in six-row depth. All seats are Griggs push-back on the orchestra floor, and Griggs spring-back in the mezzanine. Blue is the main color throughout the theatre. The orchestra seats are all white, and those in the mezzanine have white frames with blue covering.

Especially woven Kharagheusian blue carpeting is used through the theatre. All interior decorations were furnished by Doolittle-Allen Company of Trenton, N.J. The marquee was erected by Artkraft Strauss, utilizing Adler plastic snap-lock letters. The screen is a 22 foot by 44 foot seamless Technicoat Pearlite, with mobile

masking permitting adjustment to any 35mm ratio.

Another feature of the theatre is an Austrian shade contour curtain, which like the wall treatment, utilizes Blue Bengaline material. Unlike most theatres where the curtain draws to the sides, the Austrian curtain rises in folds from the floor to the top of the masking.

Sound and projection were furnished by Joe Hornstein Company, utilizing Century projectors and transistor multi-channel sound. The theatre can project all 35mm wide-screen processes.

Located near the center of Forest Hills, the Continental was the Walter Reade/Sterling organization's first house in the rapidly-growing Queens Borough of New York City. **IP**

The Theatre in Long Island



Departing from the traditional "box office," the Continental vends its tickets from this attractive semi-circular counter just inside the front entrance.



This is the unique "split level" entrance of the Continental. After obtaining their tickets, patrons can choose between walking up to the balcony level or down a few steps to the orchestra.

"Demountable" Seats Premiered In California

A new instantly demountable spectator luxury seat which provides multi-purpose use of theatre-in-the-round seating areas is now in use on the Pacific Coast. It is a product of Pacific Seating Corp., San Pedro, Calif.

Among the first installation of the new "Demountables" is at the Valley Music Theater in the San Fernando Valley near Hollywood.

In addition to their portability features "Demountables" provide the widest upholstered chair now on the market — adding an extra 3" of seating space to every chair.

One man can disassemble and stack 100 "Demountables" in a single hour, the company states. The chairs and mounting units can be reassembled just as quickly **iP**

Altec Announces New Managerships

R. E. Pierce, Operating Manager of Altec Service Corp., recently announced the two new following appointments:

Fred Hall is now Manager of the Northeastern Division of Altec, with Jack Guirrep acting as Mr. Hall's assistant. The Northeastern Division covers the greater New York area, part of New York State, and all of the New England states.

Jim Eves has been elevated to Manager of the Eastern Division. This Division serves part of New York state, New Jersey, Pennsylvania, Maryland, the District of Columbia and Virginia. **iP**

Automatic Devices Acquires Ohio Firm

Automatic Devices Co., Allentown, Pa., manufacturer of stage and drapery tracks and curtain machines, recently announced it has taken over the facilities of Vallen, Inc., of Akron, Ohio. The Akron firm produces a similar line of products.

According to company officials, all the combined facilities will be consolidated in an enlarged Allentown plant. The acquisition will require a 50 per cent expansion in floor space, according to Automatic Devices, President, Abram Samuels. **iP**

Skouras Theatres Opens New House In Shopping Center

Skouras Theatres have opened a new 900-seat house in Wayne, N. J., at the Preakness Shopping Center. The new theatre, named appropriately for the city in which it is located, was erected at a cost of \$265,000.

The air-conditioned auditorium is decorated in blue and white, a color scheme begun in the lobby and foyer. Stage curtains are gold; auditorium seats are in blue and gold.

In the projection booth are two Simplex XL's, with Ashcraft Corelit lamps and rectifiers. The sound system is Ampex multi-channel magnetic and optical.

Architect Drew Eberson gave the building a variegated color fieldstone, granite and glass facade, and integrated the interior to provide a smooth flow of traffic through the various areas leading to and from the auditorium. The Wayne's concession stand is in walnut, and stands in a lobby whose floor is in black flagstone and carpeting.

Downlighting in lobby and foyer accent the soft blue and white vinyl wall covering. The accompanying photos are views of the new Skouras house.

The grand opening was held early this year, and featured the showing of "Four for Texas."



Two Simplex XL's, with Ashcraft rectifiers and lamps, serve the new Wayne Theatre in the Preakness Shopping Center, Wayne, N. J.



Bold block letters, backlighting on the marquee of the Wayne Theatre, attract shoppers and passing motorists.



A bright setting combines with modern appointments to make the Wayne Theatre's lobby most attractive.



Polished wood backs of the auditorium seats lend rich contrast to the blue and gold decor. The "business end" of the seats are deep cushion upholstery, however.



Investment Opportunity

The plant your company builds in 1984 will be designed by this youngster.

But long years of training must come first. Years of patience, love and planning. Years of peace and freedom. For in any but a free and stable society, how can young people develop into the responsible, productive citizens our country needs?

You have an investment in this boy.

To protect this investment, you can join with other leading American businessmen to promote the Treasury's Payroll Savings Plan for United States Savings Bonds. The Treasury Department's Plan works for stability in our economy . . . strength in the defenses of

our liberties . . . prudence and industry in our thinking.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in all the children who dream of someday working in steel and stone and space to make our land more beautiful and more productive. You are investing in the builders of our tomorrow, in America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director.

Or write today directly to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



In response to many requests from readers, International Projectionist has secured additional information on the Wonderama process described in an earlier issue. Intended for use in smaller theatres, Wonderama (formerly called Arc 120) is the invention of Leon W. Wells, and has been developed by Leon J. Bronesky.



Leon Bronesky, developer of the Wonderama process from an invention of L. W. Wells, is shown adjusting the adapter lens on standard projection equipment at the Strand Theatre, Plainfield, N. J.

"With the Small Theatre in Mind" . . .

Wonderama Augments Capabilities

The incontrovertible fact that "Movies Are Getting Better All the Time" is further reinforced by a new process described briefly in a recent issue of International Projectionist, and known as Wonderama.

Contrary to the initial fears of some in an industry which is becoming "process-oriented," Wonderama is not a new entry to compete with Cinerama, Dimension 150, or any other wide-screen process. It has been designed specifically with the small theatre in mind, according to its developer, Leon J. Bronesky, and Walter Reade/Sterling, holder of Wonderama rights.

Walter Reade Jr., chairman of Walter Reade/Sterling, said at a recent demonstration at his company's Strand Theatre in Plainfield, N. J. that total conversion would cost approximately \$3,000. The specialized lens is intended to be lent exhibitors by distributors handling Wonderama films.

Reade said the Wonderama process charges 10 cents royalty for every ticket sold, no matter what the price of the seat may be.

He said the Strand's per ticket price of \$1.25 had increased for "Mediterranean Holiday" to \$1.50, and that he expected the picture would run about six weeks, in comparison to two or three weeks for an unusually strong feature.

Any 35 or 70mm film can be reproduced optically for the Wonderama lens, at a cost similar to that for printing a standard 35mm film.

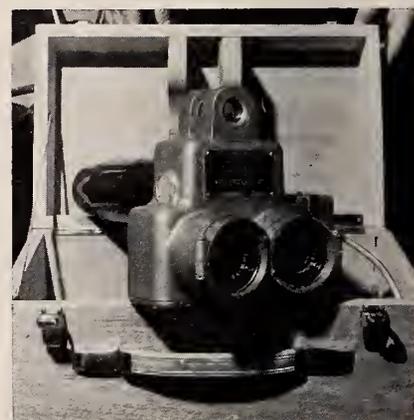
The original negative is returned unaffected.

The Strand Theatre has a deep-curved screen—61 feet wide and 21 feet high. The Strand shows "Mediterranean Holiday" at 2.65 to 1 aspect ratio picture on the screen.

To replace a flat or slightly curved screen with a deep-curved screen can be done between the close of a night performance and the start of the next night performance. The screen can be adapted in about six hours; the lens can be adapted to any projector in approximately the same time. In this way the theatre owner need not interrupt normal operation.

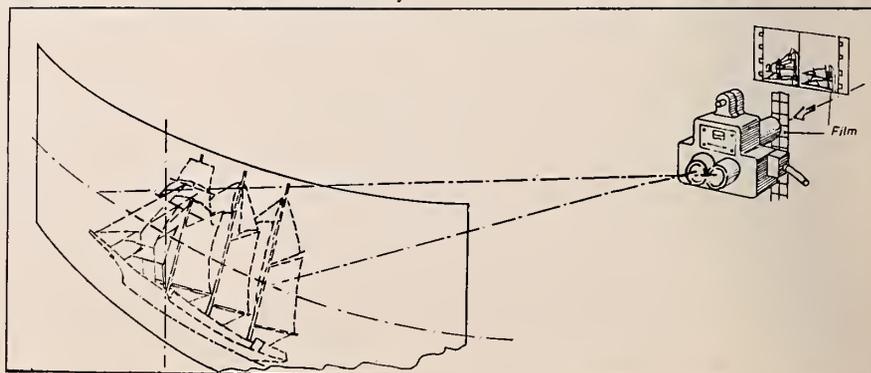
The Strand's Simplex X-L projectors and Ashcraft lamphouses were used in the normal 140-ft. throw for the Wonderama presentation. All that requires attention in most theatres is the lens and screen variations.

Lenses are now available for immediate "Mediterranean Holiday"



Available by arrangement with distributors, the Zeiss Ikon Wonderama lens adapts standard projection equipment for use with Wonderama films.

bookings. These lenses are being tool-ed and ground by Zeiss Ikon works in Germany. Walter Reade/Sterling is now negotiating with an American firm to make the lenses. **IP**

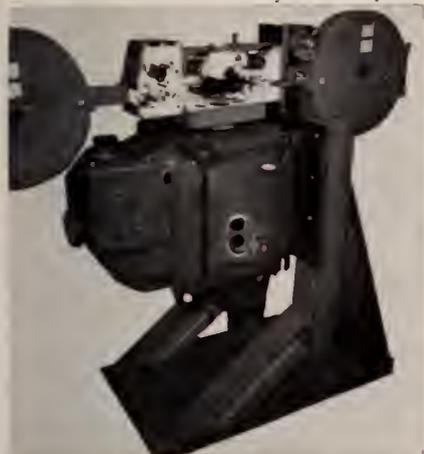


The Wonderama image, and how it is projected, is portrayed in the outline drawing above.

Century Introduces New 10-hole Pull Down Projector

Century Projector Corporation recently announced a new 70mm, 10-hole pull down projector.

The Spacearium Projector, designed and manufactured by Century, is



one of the most unique projectors ever used for the public exhibition of motion pictures. The projector was made for Cinerama Inc. and is used

in the Cinerama-KLM Royal Dutch Airlines Exhibit at the New York World's Fair.

Reportedly the largest motion picture projector ever built, the Spacearium uses 70mm film with a 10 perforation frame (1.370" - twice normal size). Film speed is twice normal — or 225 feet per minute at 24 frames. As used at the World's Fair, it projects 18 frames per second, equal to a film speed of 168.75 feet per minute.

Six-channel Sound

The projector is complete with a 6-channel magnetic sound reproducer employing the already proven Hydraulic Flutter suppressor, as modified from a Century standard 70mm sound reproducer. A 6-channel Ampex magnetic pick-up head is used.

The film sprockets, including the intermittent sprocket, are double the size of standard 70mm sprockets. The webbed back starwheel is the same as is used in standard 70-35mm projectors.

The new Century direct drive is used with a poly "V" belt from the 1/4 lip, motor to the main drive shaft which rotates it 1440 RPM in synchronism with the double rear shutters.

The water-cooled film trap and the film gate are designed to handle the larger (circular) aperture plate. A unique feature added to the intermittent movement is a film stabilizer - operating independently, but in conjunction with the "fixed" film trap and gate shoes.

Loop Stabilizers

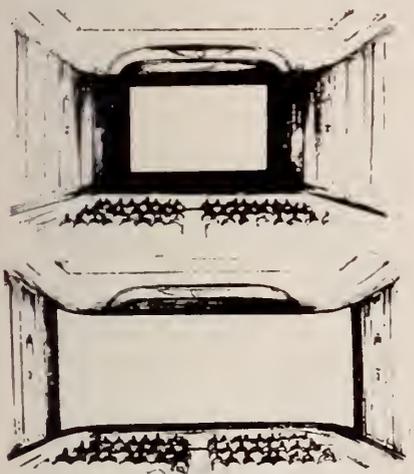
At this high film speed and greatly enlarged film loops, special mechanical film loop stabilizers are employed, thereby minimizing film loop noise.

The gear train has been generally patterned after the design of the Century 70-35mm projector. Changes in the gear train have been made, where necessary, to accommodate larger sprockets and facilitate higher film speeds.

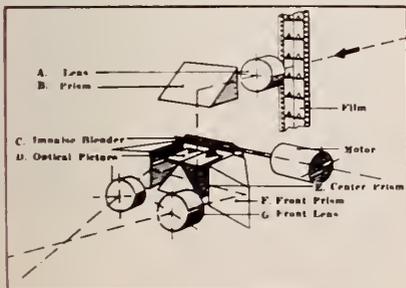
The higher film speeds (feet per minute) require a special motor driven take-up. This take-up is essentially the same as is used on the Century standard 70mm projectors, except that it is separately motor driven. The take-up motor can be turned on prior to starting the pro-

Please turn to Page 17

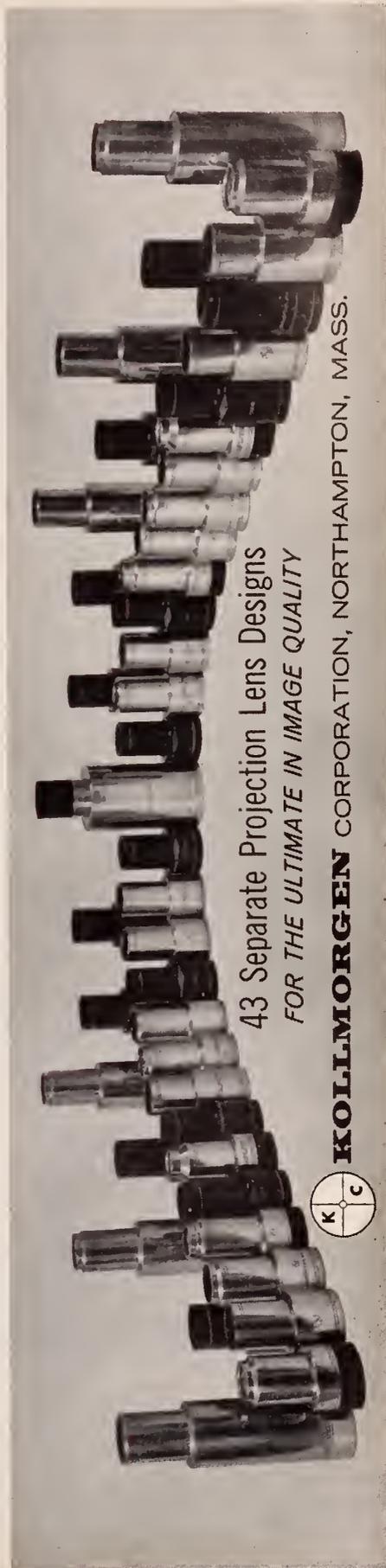
35 and 70mm



These illustrations compare the average small theatre screen (top) and the required adaptation for Wonderama (bottom).



Optical handling of the dual film used in Wonderama is represented in this illustration.



43 Separate Projection Lens Designs
FOR THE ULTIMATE IN IMAGE QUALITY



KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.

Eastman Kodak Fair Pavillion Pulling Crowds

ONE OF THE MOST POPULAR and well-attended exhibits at the New York World's Fair is quite obviously going to be the Eastman Kodak Pavilion. This was made abundantly clear at a preview of the Pavilion given representatives of the press at the Fair grounds a week before the official opening on April 22.

In spite of the drizzling rain that refused to cease except at rare intervals, a large contingent of the press turned out for the advance tour. And they were vocally impressed by the wealth of exciting and informative things to observe and hear in the Kodak Pavilion.

Foot-long Goldfish

The Pavilion itself is a two-level, free-form structure some 400 feet long and over 200 feet wide. The lower level is open on all sides and houses the main motion picture theatre, numerous exhibit areas and various plants and sculptured fountains (complete with goldfish at least a foot-long) and several rest areas.

The upper deck, reached by several staircases, contains another theatre, rest areas and some fascinating walkways open to the sky where visitors will be able to take pictures against unique backgrounds, including a "moonscape" and a panoramic view of the Fair itself.

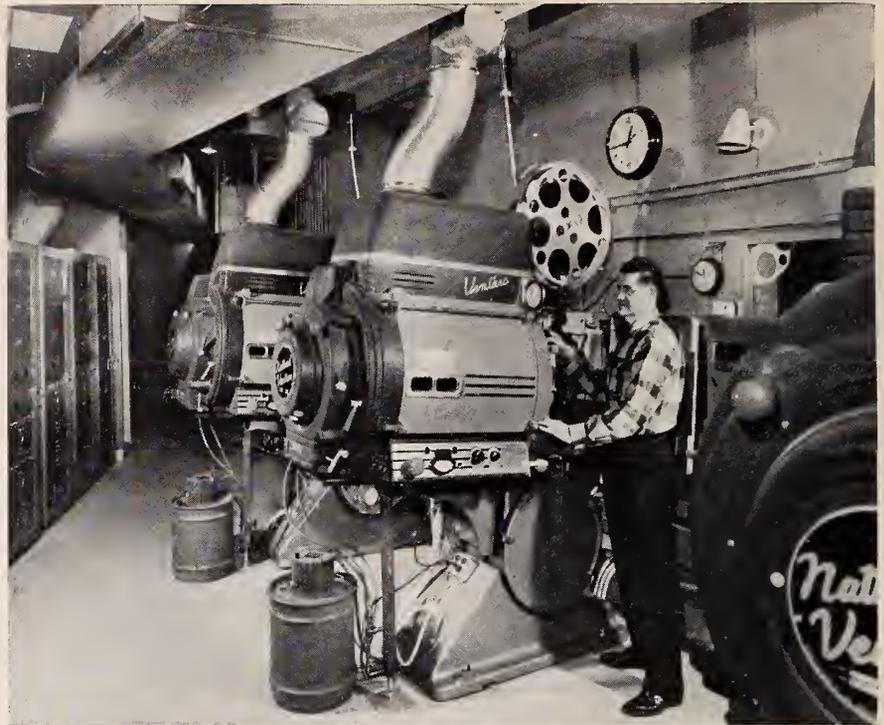
This upper deck is topped by a circular picture tower surrounded by five huge color prints, each of which measures 30 by 36 feet. The tower is illuminated day and night by a special lighting system and is visible from afar as one approaches the Fair grounds.

Film Featured

A major attraction of the Kodak Pavilion is a new 20-minute film called "The Searching Eye," which the press was shown in the ground level theatre upon arriving at the Pavilion. The picture was produced by Saul Bass & Associates of Hollywood and takes as its theme, in the words of Bass himself, "the idea of seeing."

To carry this out Bass devised this scheme: A 10-year-old boy walks along the beach and observes the ocean, pebbles, sea birds, sand castles and other sights, and his responses to them are of wonder and delight. The point is made that man learns through his experiences with nature

New Equipment for Hollywood's Cinerama Dome



Installation of the first three Ventarc lamps and associated Strong rectifiers for the projection of the new single lens Cinerama system was recently made at Pacific Theatre's Cinerama Dome Theatre, Hollywood. Shown in the projection room is chief Projectionist Tom Ginther, IATSE Local 150 (Theatre) and IATSE Local 165 (Studio), who has been a projectionist in Hollywood since 1934. Twenty two more of these blown arc type lamps are being installed for this form of exhibition in other cities throughout America. The Ventarc lamps and rectifiers were sold by National Theatre Supply.

and at the same time acquires an acceptance of reality.

Tour de Force

The theme is developed in poetic fashion with brilliant imagery, and most impressive are the cinematic devices that Bass has employed. Through masking, the large screen on which the picture is projected changes shape from a smallish triangle to the full width of a 70mm image. Cameras were taken under water as well as in the air, and other techniques employed include a split screen (on occasion into six parts) and "time-lapse" photography to show flowers grow from a bud into full bloom in seconds. "The Searching Eye" offers the viewer an extraordinary experience — it dazzles the eye and stirs the imagination.

A second film is shown in the Dome theatre on the second level. This takes the audience "inside" the atom and demonstrates how modern chemistry "makes the good things in life even better."

Highlights of the exhibit area on the ground level are as follows:

A display of photographic equipment in the Information Center.

An "Adventures in Photography"

exhibit in which the amateur photographer is shown how to improve his technique.

An actual model of the Tiros weather satellite to demonstrate the part that space photography plays in round-the-world weather forecasts.

An exhibit called "The History of Photography" which contains objects on loan from the George Eastman House collection in Rochester.

And so on. What the narrator of "The Searching Eye" says of life itself could apply to the Kodak Pavilion — "So much to see, so much to learn, so much to know." **iP**

Kollmorgen Releases New Lens Catalog

The Kollmorgen Corporation has just released its new Projection Lens Catalog, #K 7-01. The new brochure includes descriptions of the new short focal length lenses, under 2 inches, and the new "Magna-Com" focal length adapter of 2.78 inches diameter. The Kollmorgen 4 inch diameter lenses have been tested and recommended for 70 mm use and are already being applied successfully by many projectionists for 70 mm installations. **iP**

Spacearium - - -

Continued from Page 15

jector, thereby keeping film loops constantly under tension, and helping to prevent film breakage.

A special Ashcraft Super Cinex Arc Lamp is used with the Spacearium Projector. Because of the closely controlled air flow and arc stabilization, operation of carbons in a vertical position is entirely satisfactory. Special precautions are taken to collect the copper drippings and prevent them from falling on the Bausch & Lomb Balcold Reflectors.

The projectors as used at the World's Fair are mounted to project vertically with a special lens supplied by Cinerama. This lens projects a 360° picture onto a complete hemisphere. (The included angle from one side of the picture to the other is 160°.)

Obviously, the screen is in the form of an overhead dome - giving a 360° image. If the projector were to be used in a horizontal position a complete visual angle of 160° horizontally and vertically is possible.

Century believes that this new projector marks another milestone in motion picture history and adds another first to Century Projector Corporation's contributions to motion picture engineering advancements.

iP

India Depends Increasingly Upon Its Own Films

In 1963, a total of 298 feature films were produced and certified for exhibition in India, compared to 312 in 1962, and a record 320 in 1960, the Scientific, Photographic and Business Equipment Division, Business and Defense Services Administration reported recently.

Eleven full-length color films were completed in 1963; however, industry sources report that approximately 50 color films are currently under production with about 20 expected to be completed in 1964. The demand for color films is increasing, both for domestic screening and for export, despite their higher cost.

Production costs for feature films rose about 20% in 1963 and are expected to rise even more in 1964 because of higher fees for top stars and an all-round increase in wages and material costs. Many producers continue to experience difficulties in raising funds for film production.

Overall film production in 1964 is not expected to vary greatly from recent years. Despite India's position

as one of the world's largest movie producers, revenue from exports remains fairly small, amounting to about \$2.5 million during the first 9 months of 1963 and about \$3 million for all of 1962.

Of 136 foreign feature films imported into India in 1963, United States films accounted for 65, the U.S.S.R. 19, United Kingdom 15, Italy 14, with 23 coming from other countries. This was a sharp drop from the 221 foreign films imported in 1962, of which 144 were from the United States. **iP**

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence

**America's
headquarters
for all
theatre equipment
and
supplies**



National
THEATRE SUPPLY COMPANY

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity,
distortion free.

*Low installation cost,
minimum space needs.

*Increased reliability,
less maintenance.

*No vacuum tubes, no
photoelectric cells.

***and the only American-made 70 mm 35
theatre projection systems**

SEE
YOUR CENTURY . . . for bigger, brighter projection.
DEALER

CENTURY PROJECTOR CORP.

New York 19, N. Y.

Equalizing Sight and Sound

(Continued from page 9)

the "dim" lamp should be adjusted by trial and error to see if shortening or lengthening this distance by small increments steps up the brightness to the level obtained with the other lamp. (It may be necessary in the case of some lamps to move the entire lamphouse forward and back on the projector lamp table.) As a rule, moving the mirror closer to the mechanism distributes the light more evenly over the screen; moving it farther away increases the brightness at the center of the screen. The arc (crater) position must be readjusted each time the working distance is changed, of course; and

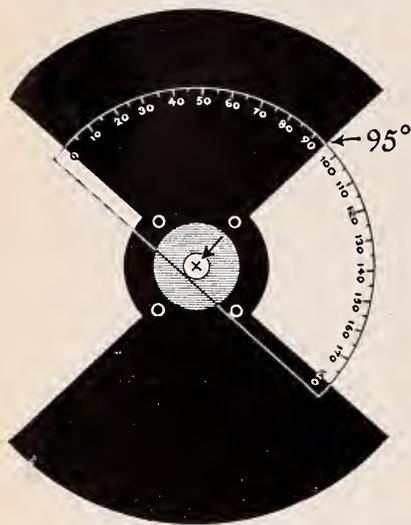


FIG 2—The light transmission of a 2-blade shutter depends upon the angular width of the blades, measured with a protractor. The shutters in both projectors of an installation should have blades subtending the same number of degrees.

you should wait until both lamps are perfectly adjusted before setting the arc-indicator cards or arcscope screens.

Very slight brightness differences can often be eliminated by adjustment of the arc (geometric focus) in one of the lamps; but this method should not be relied upon to "iron out" gross differences because changing the arc focus changes the color of the light. **IP**

B & K Opens First Chicagoland House Since Late 30's

The first new Balaban & Katz theatre to be erected in the Chicago area in 27 years is due to open this fall at a site adjoining a shopping center in suburban Oak Brook, Ill.

Ground-breaking ceremonies last month were attended by Oak Brook Mayor, Ted A. Mehlman, David B. Wallerstein, president of Balaban & Katz, Richard M. Bennett of Loeb, Schlossman & Bennett, architects, Douglas Kramer, vice president of Draper and Kramer, Inc., agents, and Miss Helen De Witt, executive secretary of the Oak Brook merchants association.

Also on hand were Norman Cohn, president, and Bernard Blake, vice president of the Inland Construction Company of Morton Grove, contractors for the project.

The design and decor of the new theater will conform generally to that of the shopping center it adjoins. **IP**

Ampex Names Robt. Hill Ad Sales Promotion Mgr.

Robert G. Hill, former manager of advertising for Columbia-Geneva Division, U.S. Steel, has been named advertising and sales promotion manager for Ampex Corporation, it has been announced by Thomas E. Davis, marketing division manager.

In his new post, Hill is responsible for advertising and sales promotion of video, instrumentation, computer and professional audio products in a wide range of markets including broadcasting, industry, defense, aerospace and medicine.

The holder of more than 20 awards for advertising achievements, Hill was named "Industrial Advertising's Man of the Year" for 1957, the only Westerner so honored in the 32-year history of the award. The award is presented annually by the national sales and advertising magazine, Industrial Marketing, Chicago.

He is a graduate of San Francisco City College. **IP**

Stadium Theatre Opens in Bayside

A 1400-seat, stadium-type theatre opened its doors last month in Bayside, Long Island, N. Y.

Operated by Fabian Theatres, the new house was equipped by Capitol Theatre Supply Co.

The screen was supplied by Hurley Screen Company. Adler Frames and glass were used and General Register supplied ticket machines.

ERROR

International Projectionist is doubly regretful about its error in reporting the recent 25-30 Club dinner dance in New York. It was erroneously reported that Local 306 makes up the bulk of the club's roster; in fact, most of its members are not New York area people, but belong to locals all over the U.S., Canada, England and New Zealand. It is also regretful that more of these members couldn't attend the party, as it was reportedly one of the nicest functions yet held by the group.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON[®] products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

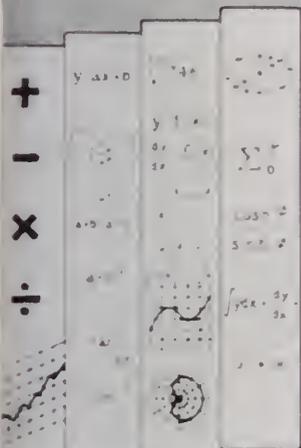
BOONTON, N. J.

basic mathematics

By NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you toward your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name
Address
City Zone State

The *Beautiful* New
Strong
FUTURA
PROJECTION ARC LAMP

A Product of
The *Strong* Electric Corporation

31 City Park Avenue • Toledo, Ohio 43601

Phone: (419) 248-3741

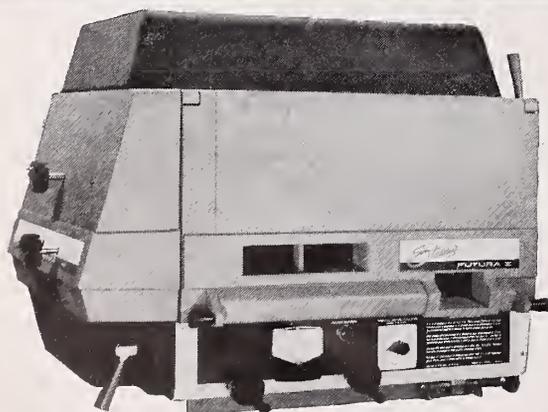
Brochure on request

WIDER USE

Matches the optical requirements of all 35mm and 70mm projectors. A single knob allows instant change between film widths. A calibrated scale with reference pointer facilitates precise reset of burner focus . . . a Strong exclusive.

GREATER CONVENIENCE

Unit construction permits instant removal of components for cleaning and inspection. 25% lower silhouette permits easy installation in low-ceiling projection rooms.



The FUTURA II

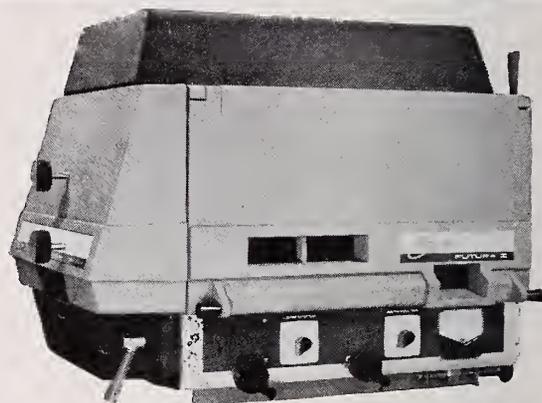
with automatic crater positioner for 13.6mm carbon trim burning at 120 to 160 amperes, or for 11mm carbon trim burning at 100 to 125 amperes.

MORE LIGHT

for all indoor theatre screens up to 65 feet and drive-in screens up to 120 feet.

LESS COST

to buy and less to use. Efficient utilization of standard 20-inch carbons insures THE GREATEST AMOUNT OF LIGHT EVER DELIVERED PER CARBON DOLLAR. Permits projection of an extra reel per carbon.



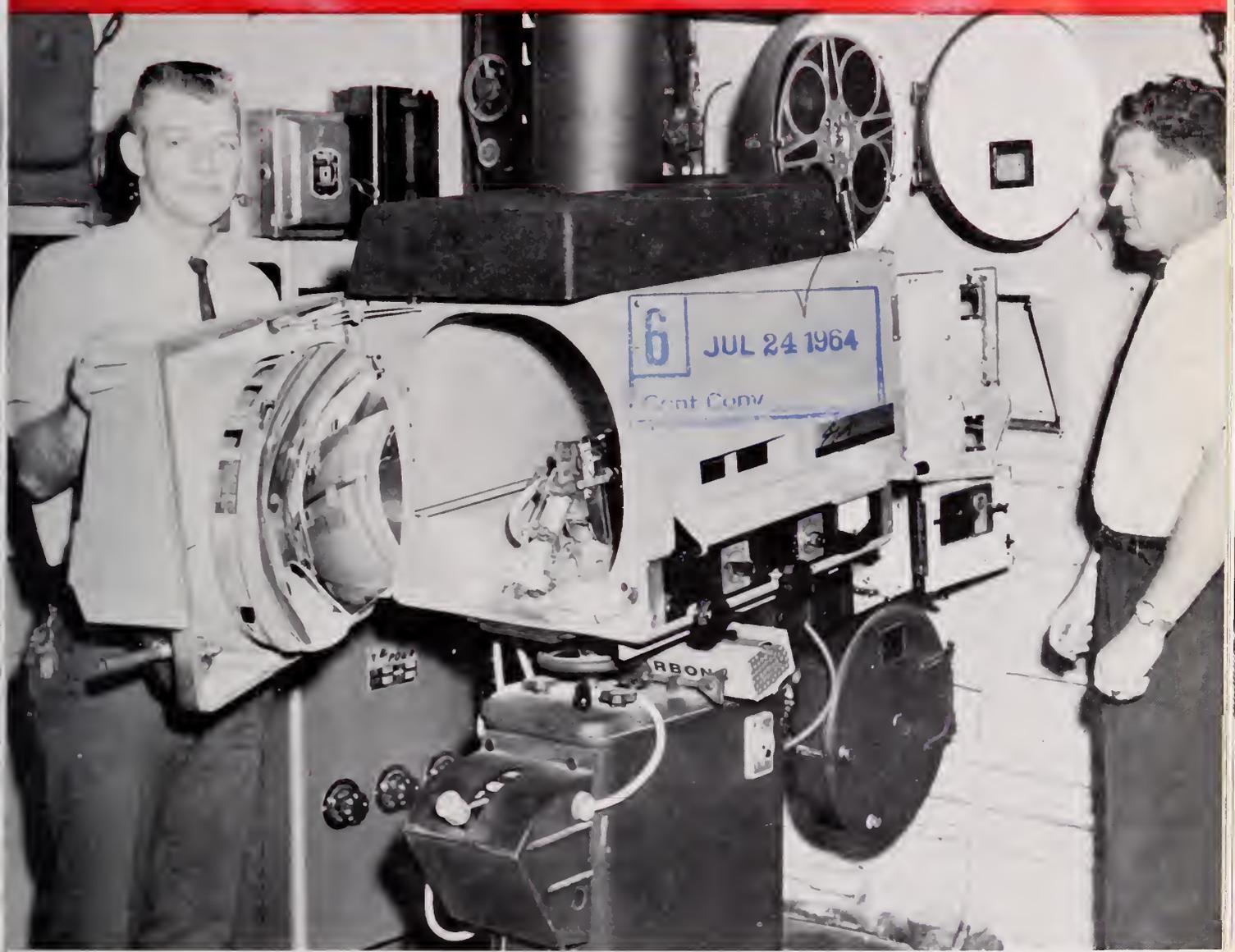
The FUTURA I

for utmost economy in operation with standard 11mm carbon trim burning at 75 to 105 amperes.

MORE FEATURES

New type relocated arc imager system eliminates parallax. Big 18-inch first surface Strong Tufcold reflectors used in lamps operating above 95 amperes assure lower aperture temperatures. Silvered reflectors used in lamps burning under 95 amperes. Streamlined ammeter for reading arc current. Automatic trimming light. Inside dowser system.

INTERNATIONAL PROJECTIONIST



Larry Collins, manager of the 41 Drive-In, Macon, Ga., and projectionist Andrew Nobler, Jr. examine one of their new Strong Futura I projection lamps. Greatly increased brightness at negligible cost has been realized since installation of the Futuras. See story on page 18.

JUNE
VOLUME 39
40c A COPY

1964
NUMBER 6
\$3.00 A YEAR



Library of Congress
Order Division (0368X)
Washington 25, D.C.



If you aren't using 'National' projector carbons you're missing two bonuses:

- 1. Bonus brilliance**
- 2. Bonus burning time**

The longer your throw and the wider your screen, the more you need the two big bonuses that go with "National" projector carbons!

So why short-change yourself? Why settle for less when you can fill your screen with today's brightest light and get longer screening time per inch of carbon burned?

Specify "National"—and you specify the projector carbons that have been the standard for quality screen illumination since 1917.



"National" is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST



Volume 39 June 1964 No. 6

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Proper Projection	3
New Construction Methods Cut Expense	4
Lenox Square Theatre	6
Sound Track By J. G. Jackson	8
Hollywood at the N. Y. Fair	9
Characteristics of Film	12

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixan's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



PROPER PROJECTION

To insure proper lamp operation, and to prolong the life of the lamp, these procedures should be strictly followed:

Optical surfaces should be kept scrupulously clean. A regular program for cleaning them each morning before the day's operation begins is an important part of projection room routine.

Only lens tissue should be used for cleaning optical surfaces. A full supply of this material ought to be on hand. If the supply is unavoidably exhausted, silk or soft flannel materials may be used, never cotton. If the dry lens tissue does not effect complete removal of stubborn dirt, it may be moistened slightly with carbon tetrachloride.

The floor of the lamphouse should be kept clean, carbon dust and copper particles swept out regularly.

Feed relay contact points should be checked regularly, and cleaned with fine sandpaper if sparking appears. Continued arcing across the relay points indicates that the resistor bridging them has deteriorated, and should be replaced. If relay contact action is faulty, noise may be



introduced into the sound. This calls for cleaning the relay points, readjusting their tension, and, in extreme cases, for installation

of filter condensers, connected either across the points or from each point to ground.

Commutator action of the arc feed motor may also create noise in the sound if the commutator is dirty or in poor condition, or if the brush tension is incorrect. In such cases the commutator should be cleaned, sanded or repaired; or the brushes should be adjusted or replaced. It may also be necessary to connect filter condensers across the brushes, or from each brush to ground.

All moving parts should be kept carefully lubricated at all times, in accordance with the manufacturer's instructions.

Optical adjustments should be checked frequently. Any improper adjustment will show up immediately in reduced or incorrect screen illumination.

Only the correct size carbons should be used, and each carbon should be carefully inspected before it is inserted in the lamp. Carbons must be kept in a dry place.

Maintaining a steady arc at all times is one of the most important responsibilities of the projectionist.

Film Maintenance

Things to watch:

Improper packing and rough handling in shipment.

Excessive tension at the projector aperture, and incorrect take-up action.

Improperly adjusted sprocket idlers, loose splices and poorly made splices, which allow the film to run off the sprocket, thus embossing sprocket teeth impressions on it or actually tearing it.

Rewinding should be done at the rate of 1,000 feet in six minutes—no faster.

Reels should not be overloaded with excessive footage.

Proper tension must be maintained on the upper reel.

Film should be stored only in a clean, humid atmosphere.

Undercut or worn sprocket teeth.

iP



Construction, Remodeling on Upswing . . .

New Methods Cut Expense

A theatre construction boom is in full swing, Theatre Equipment Dealers Assn. members were told at a recent meeting in Chicago.

Mel Glatz, design, construction and maintenance engineer for National General Corporation Theatres, said theatres of conventional design are being erected particularly in key locations and shopping centers.

"Experimental theatres, properly located, improved product and population trends have reestablished faith in the industry," he said. "This renewed faith was backed up by hard cash to the tune of \$97 million in new construction in 1963, plus another \$15 million on refurbishing and reequipping older theatres.

"It is predicted that in 1964 there will be considerably more new theatre construction and many more remodeling projects — possibly at a combined amount near \$130 million.

The expert told the dealers that . . . "While the industry has lost an audience to other forms of entertainment and sports media, except for rare occasion, it is starting to feel the effects of the population explosion.

Population Increase

"You are aware of this great population growth, but to bring it into full and proper focus, may I remind you of a few significant statistics and predictions.

"In 1950 the U. S. population was 152.3 million. In 1960 the figure was 180.7 million. We are approaching 1965, and the prediction is 195.1 million. The prediction continues by estimating that the population figure in 1970 will be 211.4 million; and by 1980, only 15 short years away, the figure will reach 252.1 million.

"No doubt much of the new faith

in the industry is based correctly on these figures.

"While on statistics," he continued, "the migration of population should be of some significance to you in planned marketing.

"It is predicted that during the sixties this migration west will increase, with the migration south being a close second.

"It is estimated that by 1975, the majority of the population will live in only 20 super cities!

"Considering these facts and predictions — plus your realization that there are eight to ten thousand theatres in the nation badly needing remodeling — new equipment — new furnishings — your future appears bright!

"It appears that for those who can adapt and qualify, they are on the threshold of the biggest, most rewarding opportunity they will experience in a lifetime.

"The question becomes: What Does It Take to Qualify?

"You Must Become a Hard-Headed Realist, and realize that many of the items and services you are offering your customers are as obsolete as most of our ancient theatres. In fact, some product and methods are the

same as were being offered and sold in the thirties!

"I believe . . . that our production end of our business is also way in advance of our physical properties and equipment, and that there are relatively few theatres which can present this product to the customer as it should be presented, and give the customer the full impact of what has been put on the film.

New Attitude

"The attitude of 'you make it, we'll sell it' was discarded 15 years ago by most every other business.

"In modern business, those disliking change have gone. Those preferring to remain status quo, have not been able to maintain their status quo.

"Those who welcome change, who adopted and initiated new concepts in product and marketing, are the Successes of today in modern business. This must be your philosophy, as of now.

"The industry needs an organized research program of your customers' needs, and those of the demanding public. The whole picture must begin and end with the public's likes and dislikes. I am not speaking of equipment and furnishings only — but of the composite theatre — the completed end results.

"There are literally hundreds of exhibitors wanting and needing new facilities — remodeling — equipment. Most of them haven't the slightest idea of how to begin, or where to

start, or what they will need, or with whom to counsel, who can really guide them and who really knows.

"With no new, up-to-date guidelines and requirements to go by for today's streamlined functional theatre an inexperienced person is bound to make costly errors and come up with obsolete facilities.

View the Future

"Here, again, research by a group such as yours can be invaluable to the industry. Guess work—personal opinion—tradition must go. Everything must start with the customer and end with the customer—his needs, his likes, his way of life; and with vision to the future.

"My company has been very active in this new expansion program: has completed several new projects, both conventional and drive-in theatres. And there are many more in the planning stage. We need many replacements of obsolete facilities, not only in metropolitan areas, but in towns of 25,000 to 100,000 population, as well.

"The tremendous cost of these completed projects has made our officials consider each project more carefully. It would be my guess that others interested in expansion and improvement are finding the same condition.

"It would also be my guess that for every new project under way or completed, there are at least twenty to thirty more which are desired and needed, but which have been shelved or halted.

"In my company, those of us in the design and construction field have been challenged by our top management to do something about this problem: to produce a new, deluxe conventional theatre for \$300, per seat, complete in every respect, fully equipped, exclusive of land cost. The past completed theatres have been costing between \$400, to \$600, per seat. This means cutting the cost of an average 300-seat, equipped theatre by \$50,000.00 to \$100,000.00.

Can Be Done

"This, you may say, is impossible. Yet, every indication is that it can and will be done.

"It can not be done by some of our ancient standards.

"Getting back to the challenge of creating a greatly reduced cost on our new theatre . . .

"We cut our over-building height by 30' by using the former attic space to mount draperies and tracks. This eliminates a valance and also

cut out another 14,000 cubic feet from the auditorium, helping on heating and air conditioning requirements and future costs. This also improves the picture presentation.

"Electrical systems can and are being simplified, primarily in the projection booth, and simplification of the main distribution system. While some of this may create a few extra steps for theatre personnel, it saves thousands of dollars in first cost and later maintenance.

"Catwalks through the attic have been eliminated by discarding old standards—new engineering and adapting new type fixtures. This item, alone, saves approximately \$3,000.00.

"New approaches to traffic patterns of patrons entering and exiting also conserve precious square feet, by putting normally waste space to work.

"A unique use of common materials has eliminated plaster or acoustical materials for auditorium side-walls not covered by draperies.

New Products

"Special products have been developed in conjunction with standard, inexpensive T Grid acoustical ceiling products, which eliminate the appearance of the grids, making possible a one-hour rated ceiling at 25% less cost from normal methods.

"Why can't we get manufacturers to consider the problems and the cost he creates in the use of his product? The market is large enough to warrant consideration.

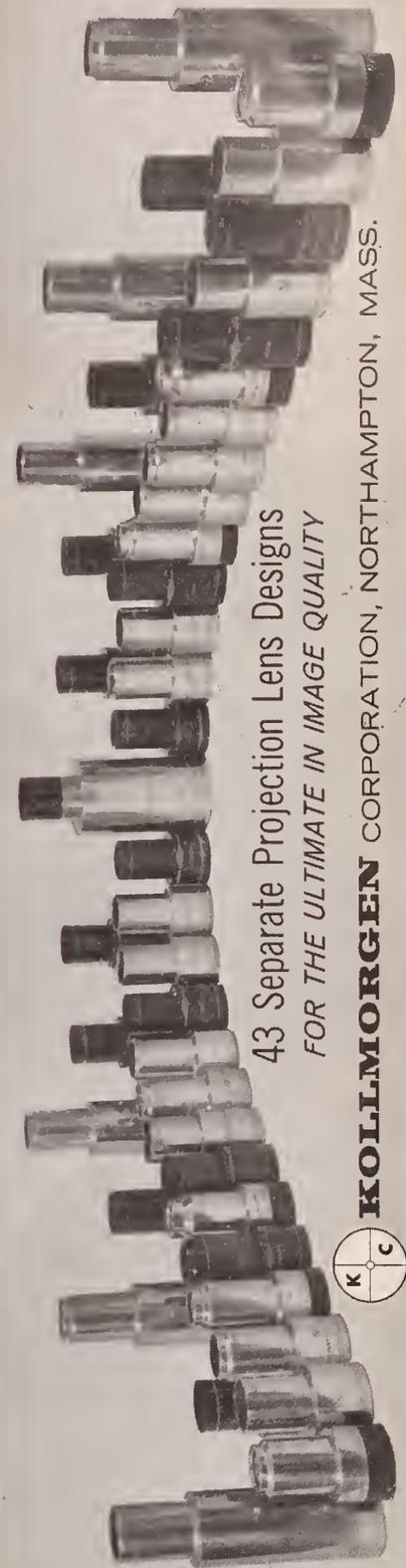
"If you will recall my previous remarks, nowhere have I mentioned eliminating, changing or cheapening any item or phase of the composite theatre which would diminish in any way the esthetic atmosphere—the comfort—the functional qualities—the maintenance—the ability to present motion pictures as they should be presented. Because all of these are primary, and are of extreme importance.

"I have not covered drive-in theatres. Here again, most are still in the cow pasture stage. Prestige is seriously lacking.

"We need improvements, studies, research, and cost reductions in every phase of the composite theatre, tuned to today's and tomorrow's needs: functional design of building, use of materials, boxoffice equipment and security control, floor coverings, lighting and electrical, seating, adver-

(Please turn to page 18)

35 and 70mm



43 Separate Projection Lens Designs
FOR THE ULTIMATE IN IMAGE QUALITY



KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.

Lenox Square Has The Modern Look

In the April 1964 issue of *International Projectionist*, the projection lamps newly installed in the booth of the Lenox Square Theatre, Atlant, Ga., were described (page 14). Here is additional information on the new theatre.

LUXURY AND COMFORT abound in the new Lenox Square Theatre, Atlanta, one of Georgia Theatre Co.'s new "showcase" houses.

From its distinctive marquee—said to be the largest straight-line model in the U. S.—to its deep pile gold carpeting in the auditorium, the Lenox Square is truly an example of what modern architecture and furnishings can do for a motion picture house.

The marquee is 58 feet long, with 19-foot openings accommodating ten lines of ten-inch letters, six lines of 17-inch letters and four lines of 24-inch letters. The letters, in all sizes, are red plastic. The theatre name is formed of molded, 48-inch letters, protruding from a blue plastic background.

The entrance lobby is 30 feet wide and 120 feet long. Walls on one side are paneled in walnut, while the other side is in vari-colored Vicratex wall covering. The 40x60 ft. display frames are inserted between uprights which serve to divide the orange,

canary and turquoise panels. One half of this entire area is floored with vinyl, while the other half is carpeted. The carpet here, as elsewhere throughout the theatre is in a solid-color design composed of orange, canary and beige yarns. A 30-foot settee is built into the rear wall of the lobby space, fitted with 12 vari-colored foam rubber cushions.

A modern concessions counter is built-in, holding many varieties of candies in the center section, and with soft drink dispensers for grape and orange drinks. An icemaker is attached to Coca-Cola dispensers. A large popcorn machine which has been vented occupies one end of the side counter. On a background made of pegboard is a pictorial display of the products sold, composed of four panels of plastic, shaped to resemble film strips, with lighted, colored photographs of the actual items sold protruding from these plastic panels.

The lobby also houses two drink- ing fountains, public telephone pay

stations and modern furniture. A 16-foot circle of modern lights, in matching colors, beautifies each end of the lobby, while the central portion is illuminated by hidden lights focused on the refreshment area.

There are 700 rocking chair seats in the auditorium, installed on a staggered floor plan. The seats are upholstered with nylon over foam rubber cushioning, plus springs, with double-width, upholstered armrests. Carpet in the auditorium extends to the stage and up three steps and over the entire stage to the screen location. Walls are draped in gold damask around the entire auditorium, broken only by five hidden lighting devices on each side wall.

The close-in curtain and screen masking are controlled automatically from the projection room, and the dimmer for auditorium and stage lights is also controlled from the booth. In the projection room, the latest in 70-35mm projection equipment was installed, using all-transistor sound. The arc lamps are powered by rectifiers, and three sets of



A much smaller version of the main marquee lights the passage from foyer to lobby and advertises coming attractions, channels waiting, exiting traffic.



An ultra modern lobby provides ample waiting space for patrons. Cheerful lighting and a 30-ft. settee, part of which shows lower right, are features of the Lenox Square's lobby.

lenses provide for the different picture sizes. The projection room is beautifully equipped with all of the special devices needed for the handling of 70mm film, as well as a spotlight, public address system, magnetic tape recording and background equipment, as well as record players. The auditorium is equipped with five wall speakers on each side and five stage speakers are located in back of the 16x19-foot screen.

Comfort for Patrons

A spacious ladies' lounge, carpeted and decorated by an Atlanta department store, is adjacent to the women's restroom, the latter being tiled from floor to ceiling in a canary motif. A dressing room for cashiers and concessions attendants is connected to the ladies' room. The men's room is of the same spacious design, in a cocoa color. The ushers' dressing room is attached to this space.

The Lenox Square Theatre is conditioned throughout for summer cooling and winter heating by three separate units.

J. B. "Bill" Finch of Finch, Alexander, Barnes, Rothchild & Paschal, was architect for the theatre.

President of the Lenox Square Shopping Center, one of the most outstanding in the nation, is Edward E. Noble, and John D. Smith is vice-president and general manager. Smith said, regarding the theatre.

"Something More"

"We are happy to have Mr. John Stembler, president of Georgia Theatres Co., and E. E. Whitaker, the company's general manager, and their associates with us as the firm they represent is congenial with the aims of our other tenants—to continually strive to make Lenox Square more than a market place."

Carrier air conditioning units were used; other suppliers are as follows: Bigelow, carpeting; soft drink dispensers, Coca Cola Co. and Jet Spray; Scotsman, ice machine; popcorn machine, Star; seats, Heywood-Wakefield; screen, Technikote; speakers, Altec; marquee, State Neon; and letters, Bevelite.

Century provided projectors and sound reproduction, employing Strong lamps and rectifiers and Bausch & Lomb and Kollmorgen lenses. **IP**



Georgia Theatres' new Lenox Square Theatre, located in an Atlanta shopping center, uses its giant marquee to attract customers. State Neon, Atlanta, supplied the marquee, which uses Bevelit letters.



Rocking chair type seats and ample leg room complete the picture of comfort and luxury in the Lenox Square auditorium. The interior is done in gold, accented by both carpeting and drapes.



A colorful backdrop for the Lenox Square's refreshment counter simulates film strips with individual "frames" highlighting pictures of the treats.

Sound Track

by J. G. Jackson

Nashville, Tenn.

Dear J. G.:

I'm told that light imbalance is mainly caused by using projectors of different makes or models. Does this always occur?

Ralph Agar

• • •

Dear Ralph:

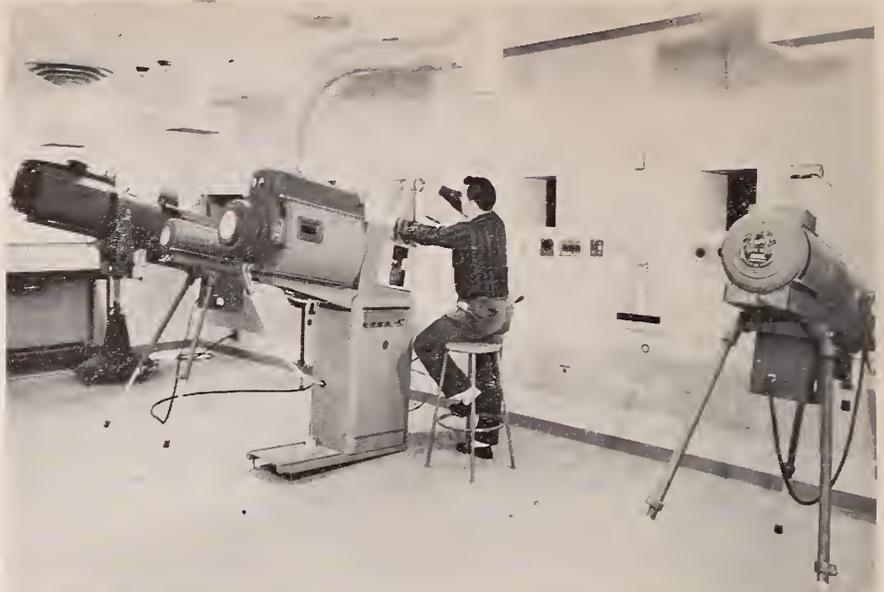
The use of different makes or models of projector mechanism on the two machines does not necessarily cause an inequality of screen-light balance, but whenever a light mismatch is obtained from a hybrid installation, do not fail to check the size of the openings in the shutter case and heat shield of the "dim" machine. It may be that these openings are too small to allow the light beam to pass through the aperture unobstructed.

An obstinate case of brightness mismatch may require a recheck of the reflectance of the lamp mirrors and even if the angular width of the shutter blades in each of the projectors. Remember, it is the *angular width* of the shutter blades in *degrees* that affect shutter light transmission, not the actual size or diameter of the shutter in inches. Angular width, which should be *exactly* the same for the shutters of both projectors, is measured with a protractor, obtainable at almost any dime-store stationery counter.

Because the optical plate glass in the projector ports may absorb 8 or more per cent of the light, a noticeable brightness mismatch will occur if the glass is present in one of the ports and absent from the other. The average observer is able to detect a brightness difference in the neighborhood of 4 or 5 per cent.

More subtle causes of faulty picture equalization which make changes perceptible to the audience in-

College Boasts Modern Projection Room



One of the finest equipped, roomiest projection rooms in any institution of learning is that of Ball State College, Muncie, Indiana, where a Strong Xenon projection lamp has just been installed for 16mm film projection along with two Strong Carbon Arc projectors for both 3 1/4" x 4 1/4" slides and 35mm slides. Shown operating the Eastman projector is Robert E. Jolliffe. Two Strong Super Trouper Carbon Arc follow spotlights complete the booth equipment.

volve the lateral-guide flanges and the intermittent movements. It is certainly true that if the picture projected by one machine is more or less jumpy, the difference in projectors will be noticed. We can state categorically that, unless the picture has been badly photographed or carelessly printed on the film, or the print is in poor physical condition, there is seldom any excuse for picture-jump or side-weaving.

The test for camera or printer jump is simple, although it cannot be carried out during a performance for an audience. The picture must be racked out of frame, with the frameline placed across the middle of the screen. The bottom half of the picture will occupy the top half of the screen, and the top half of the picture, the bottom half of the screen. If these two "picture halves" are seen to weave and jump *independently* of each other, and the frameline, itself, is rocksteady, the camera used for photographing the picture caused the jump. If, however, the two halves of the picture and the frameline all jump together *in the same direction*, either the projector is at fault or the sprocket holes of the print are worn out.

Address your cards and letters to Sound Track, 1645 Hennepin Ave., Minneapolis, Minn., 55403

After 35 Years



George H. Mayer (left) is all smiles as he retires after 35 years with Union Carbide Corporation's Carbon Products Division. For the past decade, Mr. Mayer has been headquartered in Atlanta, responsible for the sale of arc carbons for motion picture projection throughout the southeastern United States. Extremely active in the Atlanta Men's Garden Club, he was a driving force in the local beautification program that has led to the planting of countless trees and shrubs. Looking on is his wife, Becky, as he receives a retirement gift and good wishes from C. J. Chapman, vice president, marketing, for the Carbon Products Division. Mr. Mayer is also an active member of the Variety Club.

Filmland Goes To The Fair



This sketch of the Hollywood pavilion at the World's Fair shows the main facade of the 75,000 sq. ft. exhibition area, which contains selected famous movie sets and many other features.

Hollywood Pavilion Dazzles Fair Visitors

Famous Hollywood sets actually used in outstanding pictures, a 1000-seat theatre in which audiences can watch the shooting of a film on a simulated sound stage, and a Motion Picture Museum of memorabilia from the treasure chests of the major studios, are highlights of the Hollywood Pavilion at the New York World's Fair.

The exhibit reflects the color, glamour and excitement of the Hollywood motion picture industry. Occupying a 75,000 square foot exhibition area, the Hollywood Pavilion is operated by George Murphy & Associates, with Trans World Financial Company participating as financial manager.

Utilizing all the magic of the world of Hollywood as its theme, the Pavilion has as its entrance a replica of the facade and forecourt of Grauman's Chinese Theatre, most publicized movie palace in the world. This ambitious recreation is complete with the footprints and handprints of Hollywood's most-renowned stars.

Broadcasts, telecasts and a non-stop schedule of other entertainment is spotlighted in the Pavilion lobby, which features a Gallery of Stars and a Reception Court. There is also a Celebrity Rendezvous, where visiting stars can sign 100 autographs at a time on a multiple writer.

Visitors have an opportunity to

roam through the throne room from "Cleopatra", the candy shop from "West Side Story", the court room from "The King and I", the French street from "Irma La Douce" and many other original sets from celebrated Hollywood motion pictures of the past, present and future. Authenticity is the keynote of the presentation of these fully-dressed movie sets, further enhanced in many instances by the use of dress extras and musical backgrounds.

The skills and techniques of movie-making are given full play in the large Sound Stage Theatre where visitors see the actual shooting of a film in a demonstration presented twice every hour. There is a break-away fight scene with top motion picture stunt men, and a love scene that turns into a three-way comedy between ingenue, juvenile and director. The climax of this "inside look", narrated by a well-known movie personality, is an audience participation scene that gives every Pavilion visitor a chance to boast that he has been in the movies.

Hollywood nostalgia, in the form of well-remembered props, costumes and jewelry, as well as models, designs and stills for classic films, are displayed in a rotating exhibition in the Motion Picture Museum. One section of the Museum is devoted to mementoes of the career of the late

Cecil B. DeMille, master of spectacles.

Also scheduled are Hollywood Fashion Shows and promotions for new motion pictures to be conducted with the flavor of a Hollywood Premiere. In a replica of an old-fashioned penny arcade, visitors can be photographed in a Star Cut-Out and place their footprints in clay to commemorate their visit. In a Music Gallery, leading recording stars make personal appearances and autograph their latest records as gifts for Pavilion guests.

A series of billboards displaying outdoor advertisements for many of the most famous films of the last 25 years ring the entire Pavilion enclosure. The Hollywood theme is excitingly evident in both the Hollywood Garden Restaurant and the cocktail lounge, the Hollywood Celebrity Room. **IP**

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

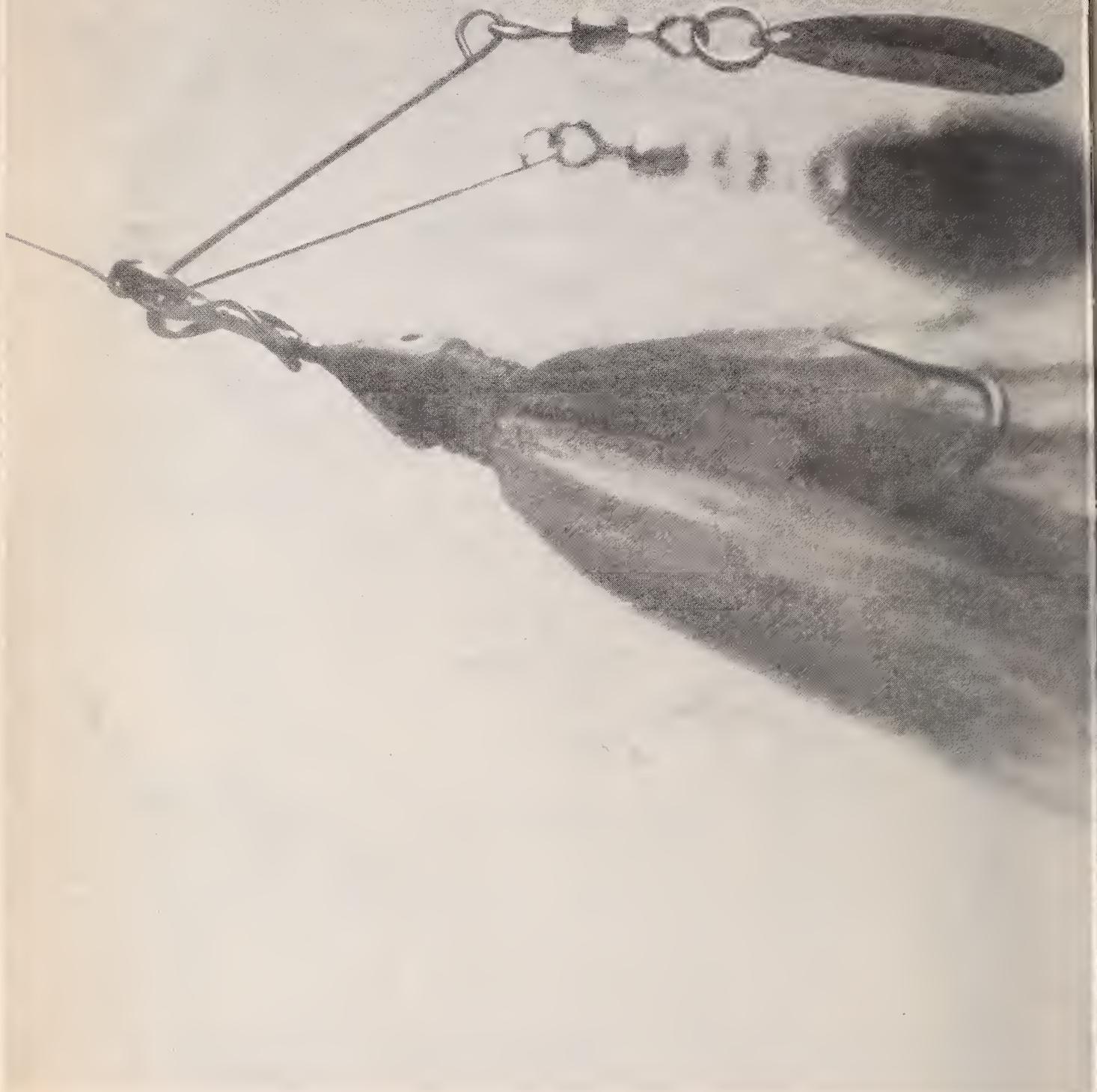
OUT OF PRINT MITCHELL MANUAL AVAILABLE!

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
Box 410, Route 5
Woyzoto, Minnesota 55391



When the bait's right...the fish bite!



Today's audiences respond to quality showmanship . . . quality built on sharp negatives and sharp prints. That's why it pays to GO EASTMAN all the way—negative and print-stock. And always give the laboratory time to do its job right. For the purchase of film, technical queries and service, write or phone: Motion Picture Products Sales Department, **EASTMAN KODAK COMPANY**, Rochester, N.Y. 14650, or the regional sales divisions, 200 Park Ave., New York, N.Y., 130 East Randolph Drive, Chicago, Ill., 6706 Santa Monica Blvd., Hollywood, Calif.

EASTMAN FILM





When the bait's right...the fish bite!



Today's audiences respond to quality showmanship... quality built on sharp negatives and sharp prints. That's why it pays to GO EASTMAN all the way—negative and print stock. And always give the laboratory time to do its job right. For the purchase of film, technical queries and service, write or phone. Motion Picture Products Sales Department EASTMAN KODAK COMPANY, Rochester, N.Y. 14650, or the regional sales divisions, 200 Park Ave., New York, N.Y., 130 East Randolph Drive, Chicago, Ill., 6706 Santa Monica Blvd., Hollywood, Calif.

EASTMAN FILM

Of prime importance to the projectionist:

Characteristics of film

OF PRIME IMPORTANCE to the theatre projectionist are the nature and working qualities of the film he projects. And by the term *film* we refer to perforated and processed motion-picture positive stock which consists of a plastic base coated with one or more thin layers of gelatine emulsion. Now, the terms used here are strictly projection terminology inasmuch as "film" and "emulsion" have somewhat different meanings to the photographic engineer.

The word "film" in photographic jargon refers only to the hardened gelatine coating which carries a photographic image in the form of dispersed silver or salt grains, or as colored organic dyes. This "film" may be coated upon glass, paper, or transparent plastic; and to facilitate the formation of a coating of uniform thickness, it is applied not directly to the supporting material,

but to a "substrate," or thin bonding layer, of clear pre-coated gelatine.

The substrate and gelatine film, taken together, are what the projectionist calls "emulsion" (as when he speaks of scratches in the emulsion, or of scraping off the emulsion preparatory to splicing a print). To chemists, however, an emulsion is a uniform dispersion of a very finely divided liquid or solid in a liquid—a milky suspension of microscopic silver bromide grains in a solution of gelatine for example. Such a solution-like emulsion of light-sensitive silver salts hardens to a pellicle—or photographic *film*—when spread out upon a smooth support material and allowed to "set" in the dark.

An actual photographic emulsion is made by adding solutions of silver nitrate and sodium bromide to a warm solution of gelatine. A chemical reaction occurs in which these

two salts are converted to the desired insoluble silver bromide and to soluble sodium nitrate, a by-product.

Small amounts of chlorides and iodides may be introduced into the gelatine solution to make emulsions of special photographic properties, while panchromatic and infrared negative emulsions require the addition of sensitizing dyes. Without these special dyes, the film would be sensitive only to blue, violet, and ultraviolet rays, and all yellow, orange, and red objects would photograph as black!

To make negative emulsions "faster," or more light-sensitive, they are ripened for prescribed periods of time at high temperatures before being coated upon the base material. Because the ripening process also increases the size of the silver-salt grains, the fastest films are inclined to give "grainy" images. The positive emulsions employed for release-print films are neither sensitized to the longened wave lengths of light nor ripened for increased photographic speed. They are thus "slow" and red-blind, but also remarkably fine-grained.

Gelatine, so necessary to the manufacturer of photographic films, is an unusual substance. It can absorb (FIG 1) large amounts of water without dissolving. The gelatine merely swells. Up to a limit, it can be repeatedly melted by warming and "set" by cooling.

Contrary to popular opinion, gelatine does not occur in nature. It is a derived protein made by chemical treatment of collagen, the principal protein of the connective tissue found in muscle, hide, and the ossein of bones.

Gelatine contributes to the photographic sensitivity of the silver bromide crystals, and it allows developers and other processing solutions to enter and leave the emulsion without dissolving it. It would indeed be difficult to find a satisfactory substitute for gelatine in photography.

The substrate, or thin bonding layer of gelatine directly coated upon the transparent base material is necessary because the emulsion, itself, is water-attracting, while the base is water-repelling. In order to obtain a coating of emulsion of uni-

PROPERTIES OF DIFFERENT TYPES OF MOTION-PICTURE FILM

PROPERTY OF BASE OR FILM	5-mil CELLULOSE NITRATE	5½-mil CELLULOSE DIACETATE	5½-mil CELLULOSE ACETO-PROPIONATE	5½-mil CELLULOSE TRIACETATE	4-mil CRONAR
Tensile strength (lbs/in ²)	15,000	10,000	11,000	13,900	16,000
Elongation at break (%)	10	20	10	5	70
Tear strength (grams)	65	45	55	60	180
Rigidity (10 ⁵ lbs/in ²)	6.5	4.0	4.2	5.3	5.5
Flexibility (folds)	16	7	16	15	20,000
Swelling, 30 min water	0.17	0.52	0.47	0.37	0.07
Per cent shrinkage:					
2 yrs. storage	0.30	0.40	0.35	0.25	0.05
2 yrs projection use	0.60	1.5	1.	0.40	0.05
Decomposition temp F (°)	300-380	375	400	450	700
Focus drift	Moderate	Great	Great	Moderate	Slight
Buckling effects	Slight	Great	Great	Moderate	Slight
Frame embossing	Slight	Moderate	Moderate	Moderate	Slight
Brittleness tendency	Slight	V. great	Great	Moderate	None
Rel projection life	1200	400	600	1000	10,000
Solubility in solvents:					
Alcohol & ether mixt	sol	sl. sol.	insol.	insol.	insol.
Acetone	sol.	sol.	sol.	sl. sol.	insol.
Methyl acetate	sol.	sl. sol.	sol.	sl sol.	insol.
Isoamyl acetate	sol.	insol.	insol.	insol.	insol.
Acetic acid (glacial)	sol.	sol.	sol.	sol.	insol.
Dioxane	sol.	sol.	sol.	sol.	insol.
Chloroform	insol.	sl. sol.	sl. sol.	sl. sol.	insol.
Methylene chloride	sl. sol.	sol.	sol.	sol.	insol.

form thickness, therefore, a special type of clear gelatine having both "water-loving" (hydrophilic) and "water-dreading" (hydrophobic) properties is chosen for the all-important sublayer.

What about the plastic film-base material, itself? A gelatine film, alone, would be too fragile and dimensionally unstable to serve as a motion-picture film. A relatively tough transparent support material must be used to give the film the necessary strength and rigidity. As a matter of fact, the qualities of the base are largely responsible for the working and handling properties of all the different available types of motion-picture film. When the

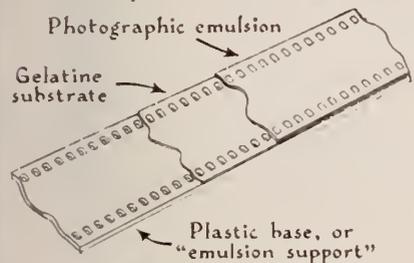


Fig. 1—Motion-picture film consists of a relatively thick plastic base upon which is coated (1) a thin transparent layer of bonding gelatine and (2) a somewhat thicker layer of photographic emulsion consisting of silver salts in gelatine. The emulsion of dye-coupler color film consists of three or more very thin layers.

projectionist blames a specific kind of film for poor splicing characteristics, excessive buckling, rapid wear of the perforations, etc., he usually (and rightly) blames the base material.

Two broad categories of film base, nitrate and safety, have been known since the early days of the art, but the chemical nature of safety base has been changed repeatedly to improve its working qualities and to make it comparable to nitrate base in strength, toughness, rigidity, flexibility, and resistance to the wear and tear of repeated projections. Even though it was preferred for half a century for professional motion-picture film because of its unequalled physical properties, nitrate base is dangerously inflammable—almost explosive—and liable to excessive shrinking and to spontaneous deterioration with the passage of time.

Nitrate base is a form of cellulose nitrate made by treating cotton or paper with strong nitric and sulfuric acids. The pure cellulose nitrate, called *Collodion*, is subsequently dissolved in a solvent (acetone or a cheap mixture of alcohol,

ether, and banana oil) containing "plasticizers" (camphor and tricresyl phosphate) to increase the toughness and pliancy of the material as well as to reduce the tendency to shrink and become brittle.

The common name of the completed base material is *celluloid*, first manufactured by John Wesley Hyatt in 1872. The first celluloid photographic film was produced in 1887 by Hannibal Williston Goodwin of Newark, N. J., who received an order dated September 2, 1889 from Edison for one roll of such film at \$2.50. A year earlier, however, Edison had obtained nitrate film from George Eastman, who must be regarded as the first manufacturer of a satisfactory nitrate film stock.

Safety motion-picture film is very nearly as old as nitrate stock, but until the late 1910's it was largely confined to amateur and other non-professional applications. The old-type cellulose diacetate safety base was first made on a large scale in 1908 by the German chemical firm of Bayer (the originator of aspirin). This base material is made by substituting acetic acid (or acetic anhydride) for the nitric acid of the usual celluloid-manufacturing process; and in order to make the safety film soluble in acetone and other common film-cementing solvents, the degree of acetylation was purposely limited by hydrolysis.

Aspirin and diacetate film base were an appropriate combination, for the costliness, low tensile strength, shrinkage, and excessive brittleness of the old-type safety film were productive of headaches aplenty. The professional motion-picture field had no choice but to reject diacetate film from the outset, and in spite of widespread dissatisfaction with the dangers of nitrate film.

By using other organic acids in conjunction with acetic acid, a num-

ber of "mixed-ester" celluloses have been obtained and used as film base. The best known are cellulose acetobutyrate and acetopropionate, the latter having constituted the safety film of Eastman Kodak manufacture from 1937 to 1948. Although somewhat more satisfactory than diacetate base, acetopropionate film lacked the strength and durability.

The big breakthrough in safety film was the discovery of German scientists that a cellulose somewhat more highly acetylated than the diacetate* furnishes a material for film base which more nearly resembles nitrate base in working properties while retaining the advantage

(Continued)

**America's
headquarters
for all
theatre equipment
and
supplies**

National
THEATRE SUPPLY COMPANY

THE VERY FINEST PROJECTOR PARTS

ARE MADE BY

There's nothing like them for precision manufacture, close inspection, efficiency in operation, dependability and long life. Obtainable from your Theatre Supply Dealer.

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636

of non-inflammability. This is the so-called triacetate* base which is now universally used for theatre-release prints, but first manufactured as early as 1939 by the German photographic firm of Agfa. Production of triacetate film was curtailed during World War II, but was resumed in 1948 when Eastman Kodak led the way by adopting it as a replacement for nitrate, the manufacture of which was totally discontinued in 1950.

All of the professional 35-mm negative and positive film stock regularly supplied to the industry in both Europe and America is now made of triacetate safety base. Representative are the acetate film stocks manufactured by Agfa (Leverkusen), Agfa (Wolfen), Ansco, Dupont, Eastman Kodak, Ferrania, Gevaert, Hauff, Ilford, Kodak Ltd. (London), Kodak Pathe, Lainer & Hrdliczka, Mimosa, and Perutz.

In general, triacetate film is almost as good for projection purposes as nitrate; and, of course, it possesses the supreme advantage of being completely safe under all conditions of use and handling. Acetate film burns much less readily than paper or wood, and it will not support combustion at all when wound up in a roll: it is, in fact, completely devoid of fire danger.

Triacetate film is superior to nitrate in at least a few other ways, e.g., it does not decompose on long-term storage, and it shrinks a bit less than nitrate with age. Modern triacetate film is almost (but not quite) as strong as nitrate film, and it is almost (but not quite) as long-wearing in use.

Triacetate is undeniably a big improvement over diacetate and acetopropionate in regard to brittleness, but even though initially very pliant, repeated projections cause it to be-

come more brittle than nitrate film. This has been as much of a nuisance with TV stations using 16-mm film as with theatres using standard-gauge prints. The tear strength of brittle triacetate film still in usable condition is scarcely 30 to 40 grams, whereas that of fresh triacetate stock of the same thickness (approximately 5½ mils) is close to 60 g (ASTM method D689-42T at 45 per cent relative humidity).

Also, triacetate film is a trifle more liable than nitrate to permanent deformation by mechanical stress when it is heated, as by the arc-lamp beam at the aperture of a projector. Nitrate film also softens when heated, but instead of softening at relatively low temperatures (viz. 200 degree F, the soft-base), it retains a fair degree of rigidity until the temperature approaches close to 300 degree F, which is high enough to be dangerous in the case of old nitrate prints.

Softening of triacetate film makes it more liable to become permanently buckled by projection with powerful arc lamps, and it becomes increasingly brittle each time it is heated and cooled.**

Even though nitrate film is no longer manufactured, and is prohibited by law in most European countries it is useless to deny the fact that the desirable projection qualities of fresh nitrate stock are still the ideal toward which improvements in acetate film are aimed.

Acetate Results

When it comes to old, well-seasoned prints, acetate films give better screen results than nitrate films which have also been much used. This is because well-worn nitrate film shrinks and deteriorates physically more than acetate does.

The greatest amount of linear shrinkage of nitrate film seen by the writer was 1.7 per cent in some used theatre prints made during World War I. Film as shrunken as this really "sings" on the sprockets, making such loud buzzing and crackling noises that the projectionist may fear imminent breakage. Careful control of the nitration process and the use of superior plasticizers resulted, in later years, in nitrate positive stock which shrank only about 0.30 per cent after a 2-year storage period under ideal conditions, or 0.60 per cent after 2 years of wear and tear in the theatres.

Triacetate Shrinkage

The frequently repeated statement that triacetate film is practically immune from shrinkage is, of course, completely untrue. It shrinks less than nitrate; but the usual triacetate base formulated for theatre-release positive *does* shrink appreciably and it becomes more brittle than nitrate.

Tests on different brands of triacetate projection film reveal that this type of film shrinks 0.25 per cent after 2 years of storage and about 0.40 per cent after 2 years of heavy projection duty in theatres. In other words triacetate shrinks about 80 per cent as much as nitrate after 2 years of storage, or 65 per cent as much after a like period of normal projection use. It must be kept in mind, however, that different samples of different brands of film show a wide variance in the rate of shrinkage.

Special Base

A special triacetate base has been formulated for motion-picture negative which shrinks up to 0.18 per cent after 2 years of storage, and never seems to exceed the low shrinkage of 0.20 per cent no matter how long it is stored! This type of base is unfit for projection purposes, however, because the heat of the arc lamp expels the plasticizers and causes it to become excessively brittle.

The shrinkage of release-positive stock is an important factor in the design of projector sprockets, especially the intermittent sprocket. The perforations of freshly made 35-mm positive raw stock are spaced 0.187 inch from the edge of one sprocket hole to the film cements and dimensional change. In some ways polycarbonate resembles acetate. There are no good solvents for Cronar, which is formed into film by extrusion when molten. Polycarbonate, on the other hand, can be dissolved in certain liquids and "cast" in the usual way onto the polished surface of a slowly revolving drum. There is some question as to whether polycarbonate is sufficiently rigid for motion-picture film, and to date it is used chiefly for graphic arts sheet film in applications requiring an extremely thin base and freedom from dimensional change under varying conditions of temperature and humidity. **IP**

* A 10-octave frequency range means that the lowest frequency is doubled, the resulting product likewise doubled, etc., for a total of 10 times. The mathematical formula is $a = 512b$, in which a is the high-frequency limit and b is the low-frequency limit.

*** The Greek letter π ("pi") represents a definite transcendental number which cannot be exactly expressed as a rational integer. Approximately equal to 3.1416, it is the ratio of the circumference of a circle to its diameter. Its reciprocal ($1/\pi$) equals 0.3183, approximately. See Chapter 30 of Mitchell's *Manual of Practical Projection* for an easy-to-understand explanation of a few common mathematical terms with which the projectionist should be familiar.



Screen luminescence was "better than new" after a 12-year-old Planetarium dome was repainted with velvet coating. Glare was eliminated. The dome is 65 feet in diameter, with a nine-foot horizon line and an apex at 41.5 feet above the center of the floor.

Planetarium Dome Is Rejuvenated By New 3M Velvet Coating

Housekeeping problems in a planetarium are compounded by its scientific orientation. This is especially true in the matter of screen luminescence, as demonstrated recently at the Morrison Planetarium of the California Academy of Sciences, San Francisco:

"Painting the 12-year-old dome with a virtually perfect light-diffusing coating has enabled us to screen a better presentation today than at any time in the planetarium's history," according to Alvin C. Gundred, supervisor of instrument shops and technical advisor of the planetarium. "That screen surface is better than new."

After a dozen years, it became apparent that the domed screen of this planetarium, opened to the public in November, 1952, was losing some of its luster. Quality of the projected images deteriorated so that the

loss was readily noticeable to the experienced staff, Gundred said.

This problem of screen luminescence is particularly acute for a planetarium, where spectators must be able to see images of stars and planets clearly from extreme viewing angles. Depending on the seat location, an imperfect screen surface can create either:

- 1) Dull images caused by a loss of surface reflectance, or
- 2) A flared effect from too much reflectance at extreme viewing angles.

Attention to image presentation qualities of a screen is part of the continuing maintenance function performed by Gundred.

He supervised much of the four-and-a-half year program for the building and installation of the projection instrument of this planetarium. Since then, he has been re-

sponsible for continuous maintenance and calibration of the instrument and of scientific exhibits.

Quality maintenance has been a vital factor in the establishment of a record of perfect performance—Morrison Planetarium has never cancelled a show because of mechanical failure of its projection equipment.

This is noteworthy because the instrument complex contains 141 projectors which cast images of some 3,800 individual stars and planets. Operation of this equipment utilizes 321 separate lenses, 301 operating bearings, 158 gears and 220 relay switches interconnected with more than four miles of wire.

Years of continuous operation took their toll on the surface condition of the dome. To achieve glare-free luminescent surfaces in both the white and the black areas of the planetarium interior, Gundred selected a single coat of 3M brand velvet coating (Series 200). This material is an air drying lacquer designed for spray application and full coverage of any primed surface with a single coat.

The 3M velvet coating is designed specifically to diffuse incident light while retaining a high reflectance capacity. In the case of the white lacquer applied to a domed screen of a planetarium, this means that spectators watching a star image virtually head-on from the projection angle are not bothered by glare.

But the same image seen by persons on the other side of the room reflects more brightly and more exactly than ordinary flat paints. Result: the screen image remains uniform throughout the auditorium.

The only pre-painting preparation necessary—aside from scaffolding—was to vacuum the top of the dome. Morrison Planetarium has a two-inch-thick pad of fiberglass above its dome to deaden echos and to protect the acoustical quality of the room. Lectures are carried to the audience through the perforated screen of the dome via 40 speakers.

The screen perforation is a pattern of one 1/16" hole every 1/4". The vacuuming removed dust from above the screen, eliminating the chance of having holes plugged because lacquer adhered to dust. **IP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica

by Christie

CARBONS, INC.

BOONTON, N. J.

Three Execs Appointed In Kodak Ad Dept.

Appointments for three Eastman Kodak advertising executives have been announced by A. Dexter Johnson, director of advertising and an assistant vice-president of the company.

Robert W. Brown has been appointed manager of advertising services. He will be responsible for Kodak's editorial service bureau, the photo services and the photographic illustrations divisions, advertising production and scheduling and, in addition, will supervise advertising budgeting, research, personnel, and media co-ordination.

Leo W. Young has been appointed manager of consumer advertising. His responsibility will be concerned with the advertising of still and movie equipment, amateur film, and other photographic products and services in the consumer area.

Robert W. Edwards has been appointed manager of professional and industrial advertising. He will be concerned with the supervision of advertising in professional, industrial, commercial, and scientific areas and with the advertising of other Kodak products for specialized markets. **iP**

J. R. Stiffler Named SMPTE Staff Engineer

Joseph R. Stiffler has been appointed as assistant staff engineer for the Society of Motion Picture and Television Engineers (SMPTE). In this new position, Mr. Stiffler will be primarily responsible for augmented quality-control procedures in the SMPTE test-film program, and will assist in the development of new test films. His appointment was announced June 2 in New York.

For three years until his appointment to the SMPTE headquarters staff, Mr. Stiffler was employed in the Thin Film Solid State Electronics Program at General Telephone and Electronic Laboratories in Bayside, N. Y. At General Telephone he was directly involved in the research and development of a solid-state television display panel.

Mr. Stiffler, before joining General Telephone, was in the systems engineering department of Mergenthaler Linotype Co., where he assisted in research on a photocomposition system and an infrared electro-optical scanning system.

His educational background includes work at the University of Denver, Syracuse University, the State University of New York and the Air

Force Photographic and Electronics School. Mr. Stiffler holds a New York State vocational teachers license for professional 35mm motion-picture projection. **iP**

S.O.S. Home Office In Midtown Manhattan

Alan C. Macauley, President of S.O.S. Photo-Cine-Optics, Inc., New York City, has announced moving the home office to a larger, more convenient location at 387 Park Avenue South in Midtown Manhattan, two blocks from Fifth Ave., and minutes from Times Square, Grand Central, Eastside Airlines Terminal and Penn Station.

The new headquarters has over 18,000 square feet on one floor with the newest most modern Display Room in the industry, and completely separate warehousing facilities under the same roof.

The 38-year-old company with its newly expanded operation, is the largest professional motion picture equipment organization, with coast to coast offices, devoted entirely to sales and service. According to Macauley, the move was scheduled to be completed June 30. **iP**

Radiant's Screen Surface Used in New Process

Preview Production, Inc., of Van Nuys, California, selected Radiant Mfg. Corp's new silica-textured screen fabric, "Micro-Flect" as the projection screen material to be used in demonstrating their new type optical process called "Cine-Depth".

Micro-Flect is created by "Deep-Bonding" the smallest, optically pure glass beads ever used on a screen surface, to a specially prepared double-coated plastic base. This assures brightness at all viewing angles and makes the viewing of color movies and slides a fresh, stimulating and delightful experience. Among the advantages of Micro-Flect is its resistance to fungus and flame.

Micro-Flect is being used in Radiant's new 1964 line now available--the Radiant PictureMaster, FilmMaster and the two-second opening "AutoMaster". **iP**

EPRAD Elects Elmer Wilschke Vice President

Elmer O. Wilschke, who joined EPRAD, Inc., September, 1963, has been elected vice president of the Toledo, Ohio manufacturing firm, according to Al Boudouris, president of EPRAD, Inc.

In addition to his duties as vice president, Wilschke will continue in

his capacity as general manager.

Boudouris credited Wilschke as playing a significant role in the development of EPRAD's CARCHEK Electronic Boxoffice Cash Control System for use by the Theatre Industry.

Wilschke, one of the original E.R.P.I. engineers, served in various capacities in this country and abroad until the formation of Altec Service Corporation, at which time he was Eastern Division Manager. During the war, he was plant manager of Altec-Lansing Company and after the war served as general operating manager for Altec Service Company. **iP**

Strong Equipment Is Widely Used at Fair

Visitors to the World's Fair can see Strong Electric Corporation products used in every section of the fair, the U. S. Government, industrial, foreign, state, amusement and transportation areas.

Many of the larger exhibits are employing Strong carbon arc follow spotlights, incandescent follow spotlights, carbon arc projection lamps, Xenon projection lamps for automated programming, and rectifiers for the projection of film presentations or lighting of live stage, water and ice shows.

They include the U. S. Federal Government, IBM, United Air Lines, Dupont, the Hall of Science, Better Living exhibit, Spanish Pavilion, the Texas Pavilion, and amphitheatre using a total of 57 equipments. **iP**

Supplemental Lens Now Available for Omnicar

The new Birns & Sawyer Telebar supplemental lens is designed to enhance the capability and versatility of the famous Omnicar telephoto lens family by extending the effective focal length of Omnicar lenses ranging from 300mm through 1000mm by 70%.

For example, the regular 500mm Omnicar telephoto lens increases its effective focal length to 850mm when used with the Telebar supplemental lens. The regular 1000mm Omnicar is increased to 1700mm when used with the Telebar.

The Telebar, a fluoride-coated, two-element Achromat lens, provides an extremely sharp image. One end of the Telebar housing is threaded to fit the existing adapter locking ring provided with the Omnicar telephoto lens. A rear locking ring located on the housing secures the lens assembly to the adapter. **iP**

Cinerama Exhibits Quartet Of New Facilities, Techniques

In the past few weeks a quartet of unusual new motion picture ideas have been put on public display by Cinerama, Inc. These range from portable movie theaters and ultra-wide screen drive-ins to experimental film processes at the World's Fair. In total, they reveal a major step forward in the art of motion picture production and exhibition and indicate the pattern of much future development for the entertainment industry.

On April 27th, in the small town of Richmond, England, just outside of London, the world's first mobile movie house was premiered. Much like a circus tent, the plastic-treated canvas portable movie house will stay several weeks at a location, then moved many miles away to a new locale. Intended for use in the less-populous areas of the world, Cinerama has 50 of these thousand-seat tent theaters in the planning stage for Europe, Africa, the Middle and Far East, and the United States.

Cinerama has just opened the motion picture industry's first such drive-in theater, overcoming the many problems presented by the need for a huge screen and ultra-powerful projection equipment. Pacific's Century Drive-in, an 1100-car outdoor theater in Inglewood, California, opened in late April featuring the world's largest motion picture screen. Audiences have been enthusiastic about the open-air results, and a great many additional Cinerama drive-ins are scheduled for the exhibition program.

At the New York World's Fair, Cinerama is responsible for two of the most startling film techniques ever shown anywhere. At the Federal Pavilion, the film company has created for the United States Government a new exhibition system in which the audience, seated in large open vehicles, is carried through a ¼ mile-long "tunnel" comprised mostly of 120 movie screens of various shapes and sizes.

At the Transportation and Travel Pavilion, Cinerama is showing its much-heralded "Spacearium-360 degree" film process, in which viewers seated in swivel chairs look up into the inner-side of a massive domed screen, as the picture surrounds them on all sides and above.

Both of these revolutionary World's Fair movie techniques pioneered by

Cinerama may be considered "environmental" films, where the spectator becomes an active participant in the film situation, and viewers must actually learn a new way of looking at life-through-movies to get the full benefits of these experimental Cinerama systems. But each contains many elements which will certainly be translated, in the near future, into commercial reality on an international scale. **iP**

New Carbon Boasts High Amps, Low Voltage

ElectroCarbons, An-Lee, Inc., has announced a new carbon that has been years in the laboratory and in the experimental field and is now available for the trade—a heavily tungsten-impregnated carbon that will allow a much higher amperage at a very reduced voltage. Example: The conventional 11mm carbons now on the market have recommended amperages of 100 to 120 amps in the 60 to 65-volt range, burning at 21" per hour at the 120

amps. The new Lee Artoe carbon has an amperage range of 100 to 140 amps in the 48 to 56-volt range, burning rate at 21" per hour at the 140 amps. At the same burning rate (21 inches per hour) the new carbon will give 25 per cent additional light. At the same amperage range, the new carbon will give a 40 per cent reduction in burning rate. ElectroCarbons says that the development of this Lee Artoe carbon now allows the drive-in theatres using an 11mm carbon to get an extra 25 per cent more on the screen without increasing carbon cost or spending large sums of money to convert the booth to the large lamp-houses using the 13.6mm carbons. This new carbon is available in the 10mmx20 size, the 11mmx20 size, the 13.6mmx20 inch and 13.6mmx22 inch size only. It is manufactured by Ship Carbon Co. of Great Britain. **iP**

National Studios Expands Color Lab

Herman Rosenberg, president of National Studios, Inc., announced that with the starting of their 52nd year, they have greatly expanded their color department. **iP**

ask your dealer
for the reflector

WITH THE 2-YEAR COATING GUARANTEE

Strong **TUFCOLD**



The first surface reflector with the harder than glass, flake and peel-proof front coating.

Guaranteed twice as long, they actually cost much less per month than any others.

Replace your old reflectors now. Your dealer has the size you need.

THE *Strong*
ELECTRIC CORP.

31 CITY PARK AVENUE • TOLEDO, OHIO 43601
PHONE: (419) 248-3741

Sloan Circuit Will Build 1350-Seat House

Plans for construction of a 1,350 seat theatre at Northland, the world's largest regional shopping center, in the Detroit suburb of Southfield, were confirmed by Eugene Sloan, of the family operating the Sloan Circuit here. This marks the implementation of over ten years of plans for a major theatre at Northland. Plans for the theatre, first announced by the Wisper and Wetsman Circuit, at the three major centers planned by J. L. Hudson Company, date back several years earlier, to start of plans for Eastland—a theatre still un-built.

The new house will be called the Northland Cinema, with Eugene Sloan as president of the company of the same name, and Irving Goldberg of Community Theatres as secretary. Ownership will be divided between the members of the same "syndicate" which owns the downtown first run Adams Theatre and the suburban Terrace in Livonia, including also Richard Sloan, Adolph Goldberg, Lew Wisper, and William Wetsman.

Operating policy will be first run, with some foreign films. The new house is projected as the "midwest's version of Radio City Music Hall" by Richard Sloan. **iP**

Reeves Sound Industries Names Nemeck to Post

Boyce Nemeck has been elected Vice-president of Reeves Industries, Inc. (AMEX). Nemeck is also President of Reevesound Co., Inc., Long Island City, New York, a wholly-owned subsidiary of Reeves Industries.

Nemeck is widely known in the field of photographic technology and motion picture engineering. During the second world war, Nemeck served as Chief of the Equipment Specifications Branch and Assistant to the Director of the Pictorial Engineering and Research Laboratory and after that as Executive Secretary of the Society of Motion Picture Engineers. In both positions, Nemeck made important contributions to national and international standardization of motion picture equipment.

As President of Reevesound Co., Inc., Nemeck has guided the company's efforts in the design, engineering and installation of several unique systems including the Inflight motion picture system design, now in use by two major Airlines and those of a number of major exhibitors at the World's Fair. **iP**

The Cover Story...

Futura I Lamps Increase Brightness For 1¢ An Hour

THE INSTALLATION OF STRONG FUTURA I arc lamps at a Macon, Ga., drive-in has produced a dramatic improvement in screen light at very little cost.

The 41 Drive-In Theatre, part of Georgia Theatre Circuit operations, noted a drastic change when the lambert measurements at the center and side of the screen was doubled with the new Strong Futura I arc lamps installed. The lamps burned at 97 amperes as compared to the former installation which burned at 85 amperes. The increase in carbon costs per hour amounted to only 1 cent.

The Georgia Theatre Circuit has been striving constantly to increase its all around efficiency in its theatres and has decided that the first

place to increase efficiency is in the projection booth. At the 41 drive in this included replacing old type arc lamps with new Futura I. Unbiased observers measured the foot lambert readings with the old equipment and found 2½ foot lamberts at the center and 1½ foot lamberts at the side. This is well under the recommended level of light on the screen. With the new equipment the foot lamberts read 5 at the center and 4 foot lamberts at the side. This is an 80 percent light distribution which exceeds standards accepted even for indoor theatres.

Operating costs for the Futuras were computed at 36 cents per hour as compared with 35 cents for the former lamps. **iP**

New Methods Cut Expense

Continued from page 5

tising panels, displays, sound and projection, and all items connected therewith, air conditioning and heating, maintenance, merchandise of by-products, and the equipment.

"At least until you get started, I heartily recommend that you support to the fullest those manufacturing concerns which have been desperately attempting to create new and improved products—and we really have quite a few.

"There is a new and improved screen that most objects will not break through.

"There are new lamphouses employing new principles.

"While considerable improvements have been made in some U. S.-built projectors, the major advancements have been by foreign companies.

"The Xenon lamp appears to have a bright future.

"There are new theatre seats available.

"Improvements and new approaches have been made in change letter displays.

"Transistorized sound is a definite and great improvement. However, we need factory-assembled plug-in units, eliminating the tremendous on-site assembly costs; and, of course, this principle of simplicity should be a major consideration of any future equipment and furnishings." **iP**



DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.



ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence

basic mathematics

by **NORMAN H. CROWHURST**

**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

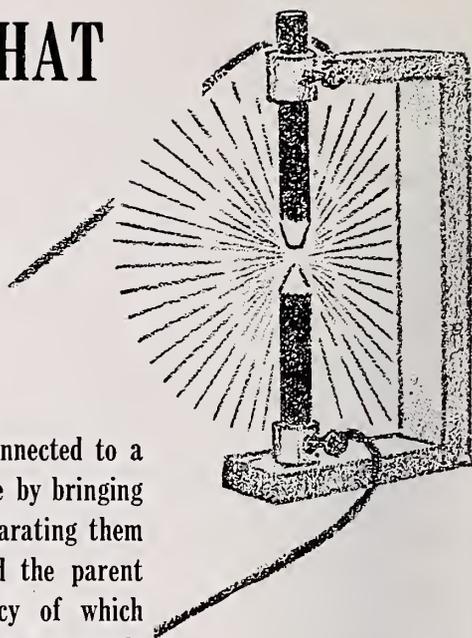
City Zone State



WE WONDER WHAT

Sir Humphrey Davy

would have thought of
the new **FUTURA**



In 1800, using charcoal electrodes, connected to a battery, he produced a brilliant flame by bringing the electrodes together and then separating them by a short gap. He had discovered the parent of today's carbon arc, the brilliancy of which has never been surpassed by another man-made light source.

But just as the Wright brothers' first plane has been replaced by today's jets, so too have most previous projection arcs been outdated by Strong's Futura. It provides that extra measure of light for today's big drive-in and indoor screens—the greatest amount of light ever delivered per carbon dollar.

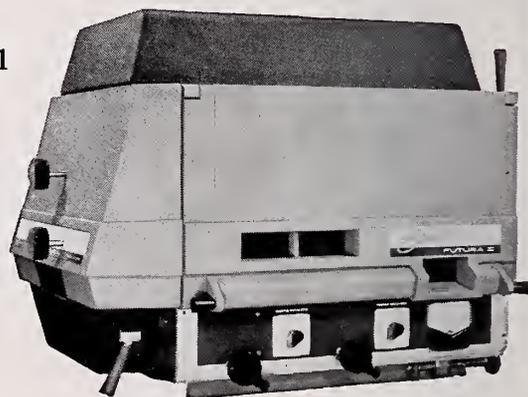
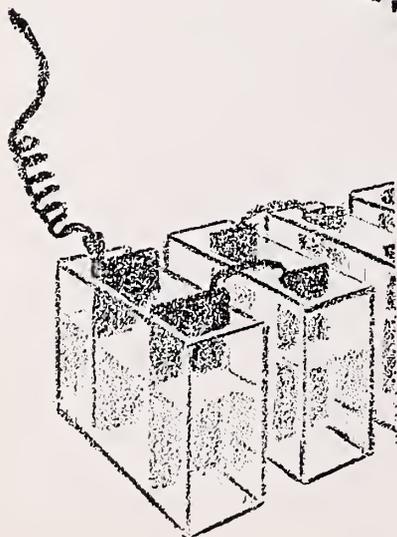
The Futura costs less to buy and less to use with all 35mm and 70mm projectors, and any Strong dealer can prove it.

SEND FOR BROCHURE

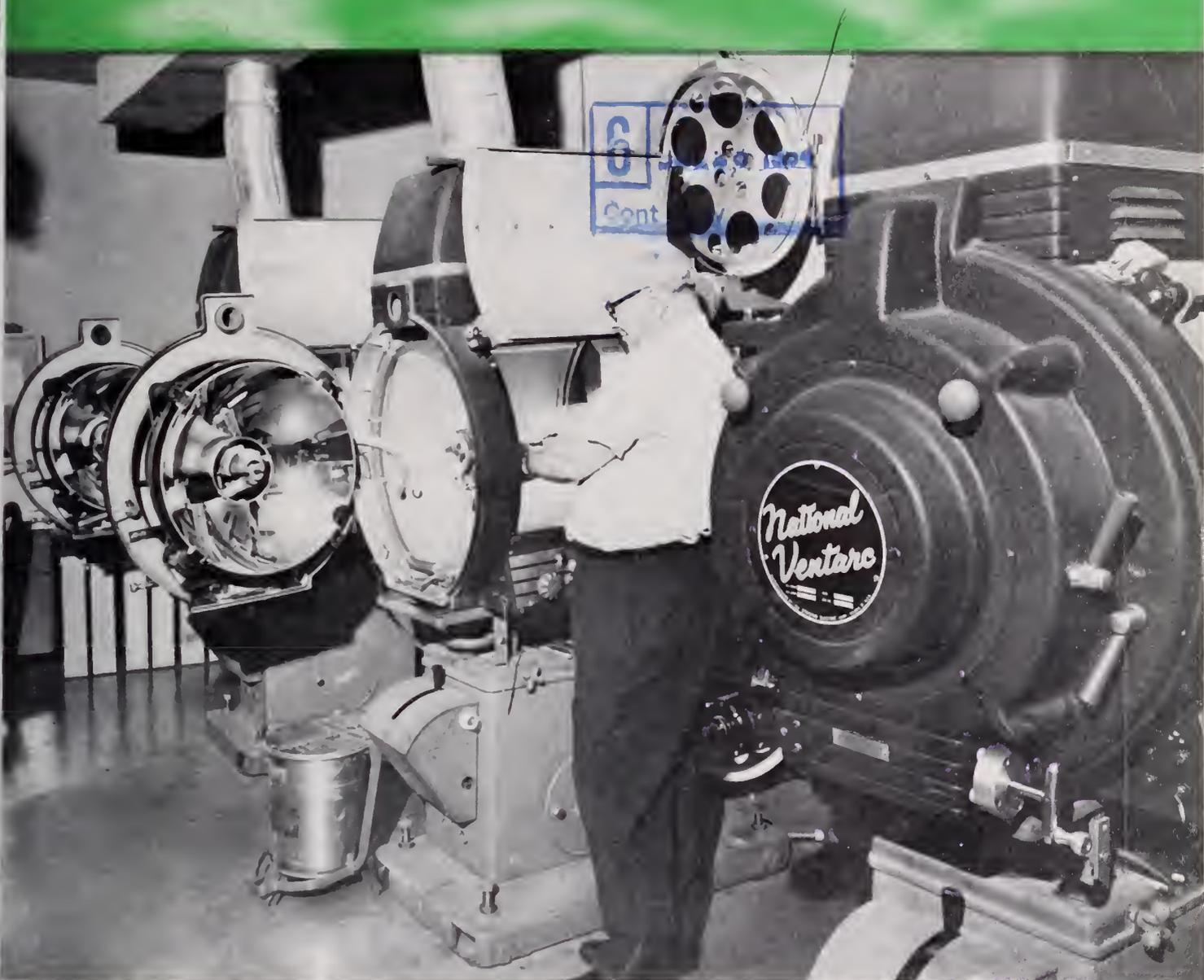
The *Strong* Electric
Corporation

31 City Park Ave. • Toledo, Ohio 43601

Phone: (419) 248-3741



INTERNATIONAL PROJECTIONIST



One of the first theatres to install the new method of Cinerama presentation is The Warner in New York City. As for all other theatres presenting this technique, there have been installed National Ventarc projection lamps. Joseph Brandfon is shown with three of these blown arc type lamps in the Warner projection room. The lamps were installed by National Theatre Supply.

JULY
VOLUME 39
40c A COPY

1964
NUMBER 7
\$3.00 A YEAR



I.A.T.S.E. CONVENTION ISSUE



If you aren't using 'National' projector carbons you're missing two bonuses:

- 1. Bonus brilliance**
- 2. Bonus burning time**

The longer your throw and the wider your screen, the more you need the two big bonuses that go with "National" projector carbons!

So why short-change yourself? Why settle for less when you can fill your screen with today's brightest light and get longer screening time per inch of carbon burned?

Specify "National"—and you specify the projector carbons that have been the standard for quality screen illumination since 1917.



"National" is a registered trade-mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST



Volume 39

July 1964

No. 7

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

I.A.T.S.E. Convenes	4
I.A.T.S.E. Works on Consent Decree	5
Autoscope System Tried	6
Sound Track by J. G. Jackson	8
Queens Theatre Revamped	12

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixan's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

I.A.T.S.E. CONVENTION

As this issue of IP comes off the press, I.A.T.S.E. will be meeting in Louisville, Ky. at the group's 47th annual convention. More than 1,100 delegates were expected to be in attendance as the vital issues facing the International Alliance are discussed and acted upon.

On the agenda are some items that may be casting shadows on that assemblage at Louisville's impressive Convention Center. Chief among these, of course, are the unemployment problems common to many locals. Matters of grave importance to the 60,000 or more members of I.A.T.S.E. are being covered in reports ranging from the status of efforts to ease the industry's tax burden to presentations of data on a nation-wide closed circuit medium and a newly proposed pension plan.

I.A.T.S.E. President Richard F. Walsh, as convention chairman, will be conducting the sessions according to plans drafted during the week-long meetings of the board of directors that preceded the convention. With people of this caliber hard at work on the problems that face the organization, there can be no doubt there will be some break-throughs soon to cheer the membership.

It is most appropriate that this convention is being staged in Louisville, for it was there 30 years ago, with the nation climbing out of the depths of depression, that I.A.T.S.E. first visited the city. Viewing how small an organization convened then, and how great their problems were, and reflecting on the progress that has been made in the ensuing years, one quickly finds many achievements of which to be proud. And in this respect there is sufficient reason to believe any shadows that may lurk will be dispersed before long.

A Legal Decision

The Stanley Warner Theatre in Norwalk, Conn., agreed to pay \$330.00 a week to the Union for the manning of the projection booth. The Union chose to employ three men, and to divide the \$330.00 among them.

The theatre then decided to eliminate winter matinees, and the Union agreed to receive \$220.00 week instead of \$330.00. The Union was still to have the exclusive control of the number of men and the number of hours, and kept three men working. These projectionists made application for unemployment compensation for each third week that they didn't work, and their applications were granted. After an appeal by the theatre, the Commissioner of Unemployment Compensation sustained the granting of the applications, holding that the men were entitled to receive benefits because they were idle each third week, under the reduced operating schedule initiated by the theatre.

The theatre took an appeal to Superior Court, claiming that their reduced hours of employment were agreed to by the projectionists. The Court ruled, in part: "A voluntary cessation of employment does not entitle a person to the benefits of the Unemployment Compensation Act. It would appear that the plaintiffs chose unemployment and they were not involuntarily unemployed."

IP



I.A.T.S.E. Convenes in Louisville . . .

Role of Labor Stressed

The staff of International Projectionist extends greetings to I.A.T.S.E. and its convention delegates at Louisville. May the next half century be as spectacular as the last.

THE FORTY-SEVENTH ANNUAL convention of the International Alliance was called to order July 20 at Convention Center in Louisville, Ky., with an estimated 1,100 delegates in attendance.

The assembly was preceded by a week of planning sessions and regular business transactions by the General Executive Board, held at the Louisville Sheraton Hotel, the convention headquarters.

The 14 district organizations of I.A.T.S.E. also held sessions during the week-end preceding the conventions opening day.

Third Visit

This year marks the third occasion on which the Kentucky city has been chosen as the scene of the I.A.T.S.E. biennial gathering. The first was 30 years ago—June 4-8, 1934—at a time when America was struggling to climb out of the depths of depression. Wage cuts and unemployment were the chief problems before that convention, and much hope was being pinned on the new wage and price codes which had been worked out, industry by industry, under the auspices of the National Recovery Administration.

The second Louisville convention—June 3-6, 1940—grappled with the effects of significant changes on the national and world scene. Much to the regret of officers and members of the Alliance, the N.R.A. codes had been declared unconstitutional by the Supreme Court, thus upsetting years of constructive effort to achieve economic stability. Employment however, was showing improvement, largely because of war production.

Many Changes

The return to Louisville this summer focuses attention on the further tremendous changes which a quarter of a century have brought. The threat of world domination by Fascism has been put down, at tragic cost. The threat of Communist subversion in the United States

and Canada also has been largely overcome, but this type of dictatorship has engulfed more than half the world, reaching almost to our boundaries, and compels us to live in perpetual hazard of total devastation by atomic war. Fortunately, a combination of unequalled military preparedness and wide, sober satesmanship have held off the threatened catastrophe so far. However, America faces a new challenge in the form of apostles of military recklessness who have risen to alarming political prominence.

Rise of TV

Within the entertainment industry, the years since I.A.T.S.E. last met at Louisville have brought the rise of television as a major entertainment medium. Although TV has given employment to thousands of I.A. members, it also created grave problems, diminishing the number of motion picture theatres and for a time shaking the movie industry to its very foundations. Recent years have seen this crisis pass. New theatres now are being built, and much of the lost audience has been recovered. By pushing organizing in many directions, I.A. membership has been maintained near an all-time high of around 60,000. Numerous locals, however, are troubled periodically by employment problems, and the advancement of automation looms as a challenge to our industry as well as to all others.

Employment

Many of the matters to be considered by the delegates at Louisville will have a bearing on the employment situation. Reports will be received regarding steps taken in an effort to ease the industry's tax burden, to overcome the continuing depressive effect of the anti-trust degrees, to curb runaway film production and to prevent loss of work by updating some of our union procedures and requirements.

Reports also will be received on new progress in the closed circuit TV field, on gains made in nationwide contract negotiations, on the start of a pension plan available to all locals, on a coordinated approach to common problems of entertainment unions throughout the Western Hemisphere, and on numerous other matters affecting the welfare of the Alliance and its members. **iP**

Ampex Develops Moving Movies

Ampex Corporation has announced the development of what it calls Travelvision: a self-contained system providing motion pictures to passengers in airliners, trains and other media of public transport.

Also a part of the system is optional high-fidelity music for individual passengers.

In the Ampex system, first-run motion pictures, recorded on high quality video tape, can be played back through TV receivers located at various parts of the vehicle. Aboard ship, or in train compartments, receivers can be installed to provide private viewing.

In announcing the development, C. Gus Grant, vice president of operations at Ampex added that on-board cameras could be used to transmit scenic views while enroute. **iP**

IATSE Continues Work for Consent Decree Modernization

The IATSE is continuing its efforts to win a reopening and modernization of the industry consent decrees in the Paramount anti-trust case, despite a rebuff by the anti-trust division of the Department of Justice.

A report on the steps taken "to overcome the continuing depressive effect of the anti-trust decrees" is scheduled to be made to the IA's 47th convention to be held in Louisville, Ky., beginning July 20.

IA made representations to the Justice Department last year in an effort to obtain the government's support for modification of some of the Paramount decree restrictions which the union regards as hampering industry progress and expansion and thus curtailing employment opportunities.

It has been especially anxious to obtain relaxation of decree restrictions on the expansion of divorced theatre companies, contending that the circuits, discouraged from adding theatres, are investing in diversified interests outside the industry, to the

Replacement for Memphis' Strand Is Scheduled

The first four-walled theatre to go up in the Memphis area in eight years is due to go up soon in the Eastgate Shopping Center. It is being built for Paramount Gulf Theatres, a New Orleans chain which is losing its lease to the downtown Memphis location of their Strand Theatre.

The new house will seat around 1,000, and will be equipped to handle all current popular projection techniques, plus a few not yet on the market, according to Paramount Gulf President Kermit Carr. Single lens Cinerama, 35/70mm conversions, D-150 are a few of the processes that will be displayed in the new first-run policy house. Stereophonic sound will also be installed, Carr said.

Strand Theatre manager Lloyd Bailey is scheduled to take over the as yet un-named theatre when the company's lease expires at his present location Oct. 1.

The new house will occupy a building 30x165 feet, of which over 2,500 square feet will be devoted to a carpeted lounge, concession stand and rest rooms. New York architect Henry George Greene is in charge of the project, on which construction is getting underway. **iP**

detriment of those employed in it, as well as those who might be attracted to it by increased employment opportunities.

The Justice Department displayed no interest at the time in sponsoring or agreeing to the suggested decree changes. Without its cooperation, decree changes are unlikely to be approved by the Federal court.

Other subjects scheduled to come before the IA convention include the international union's cooperation in endeavoring to obtain repeal of the remaining 10% Federal tax on theatre admissions over \$1, and the Hollywood unions' efforts to curb runaway film production.

The IA has requested the House Ways and Means Committee, which is scheduled to start hearings July 20 in Washington on a new excise tax bill, for permission to be heard on repeal for the admission tax. Lester Isaac, IA international representative, will present the union's case against the tax when the hearing is granted. **iP**



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.



Autoscope System Tried in Southwest

By David Hamrah
I.A.T.S.E. Local 423

THE AUTOSCOPE SYSTEM was conceived and built by Tom Smith, I.A. member from Local 280, Denison, Texas, and his brother Bob. They have been working on this system for the past ten years.

The booth is built in a three-story building. On the ground floor is located the generator and amplifier. On the second floor is the projection system and on the third floor, or penthouse, is located the optical system. The entire feature film is put on a 40" reel. This reel has an 8" hub.

The feed reel and take-up reel each have an idler roller (fig. A.), that works on a floating principle and keeps the film at a proper tension at all times. The film then goes under and over a series of large (1½" diameter) wooden rollers to a metal chute (fig. B.). This chute is located just over the lamps to protect the film from the heat. The projector head (fig. C.), used in this set up, is a Simplex Excel with two modifications.

Directly back of the aperture is mounted a frosted glass to spread the light. In front of the aperture is a holder to take a hand-ground 1" by 1½" lens to unsqueeze the Cinemascope frame. This lens is used for Cinemascope as there are no other lenses in the projector.

This system uses Simplex sound head and amplifier. The Strong (90) lamps, using 75 amps, are mounted at right angles to the projector head. The light is reflected to the aperture by a highly polished mirror. This mirror is mounted on a swivel and is used to change over from one lamp to the other. Directly above the 40" feed reel is mounted a pair of rewinds. These rewinds are used in making up the program, i.e., transferring the film from the shipping reels directly to the 40" reel.

A mirror (fig. D.), is mounted on an angle in front of the projector head where the conventional lenses are normally used. This mirror reflects the picture to a large cluster of

lenses. The optical system is mounted in the penthouse directly above the projector.

There are 260 long focal-length lenses, one for each mirror and screen. These lenses are mounted in a lens tube four inches long and have a ¾" diameter. The lenses for the inner circle of screens have a 26" focal length, the outer circle a 32" focal length. The lenses are aimed at a series of mirrors 1½" by 3½" in size and are mounted on steel plates. These mirrors are angled off through four portholes, each porthole covering 65 screens.

The screens are set in two circles. The inner circle is 200' from the booth, the outer circle is 50' beyond and has a five' higher ramp elevation. The screens are 3' by 5' and made of a plastic material. The screens are set 4' from each other, and mounted in a wooden frame for easy replacement. The speakers are mounted on posts and are in easy reach as in the conventional Drive-In.

Local 423 in August signed its first contract with the Circle Drive-In Theatre. Under terms of the one-year agreement, some concessions were made because the project is experimental. The projectionist spends an average of 15 minutes per day checking the mirrors for alignment. **IP**

Weis Co. Plans Drive-in Car Comfort Units

A new drive-in theatre that will eventually accommodate up to 1,200 vehicles is planned in Macon, Ga. by Weis Theatres of Savannah and Macon.

A revolutionary new item will be added to facilities: a temperature control unit for each car that will blow hot in winter, cold in summer.

Another modern trend in outdoor presentation will be observed in that the new theatre, named for the company that operates it, will be run on a strict first-run policy.

Other features include a 65-ft. Cinemascope screen, and a modern concessions pavillion designed by architect William Finch. **IP**

Corpus Christi Theatres Plan Two New Houses

The construction of two movie theatres was recently announced by Bruce Collins Sr., executive vice president of Corpus Christi Theatres, part of Rowley United Theatres. Collins said one will be built in the Woodlawn Shopping Center by the Peterson Development Co. and the second one in the south side of the city. Each will seat about 600 persons compared to about 1,200 at the downtown theatres. **IP**

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

**OUT OF PRINT
MITCHELL MANUAL
AVAILABLE!**

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the baakseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books ore in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
Box 410, Route 5
Woyzato, Minnesota 55391

Ace Chemical's Merkur Started As Projectionist

Irving Merkur, a veteran of motion picture projection for nearly 50 years, and who started with Marcus Loew as an office boy and general helper, has become the "projectionists' projectionist" by developing and manufacturing tools for better picture presentation.



I. Merkur

Merkur got his first experience as assistant to Martin Berkowitz at the Eden Museum in New York and was one of the first projectionists to operate the Simplex projector in 1910. He was also chief projectionist for Reeves Sound. His extensive experience as chief supervisor of electrical engineering with the Grand Union organization gave him a background to apply to his design and manufacturing of the famous "Ace" products, such as the film cue-marker, hot splices, and Jefrona cement. His firm is Ace Chemical Co., a division of Ace Electric Company. It operates plants in Placid Park, N. J., and in Syracuse, N. Y. The Miami Beach factory, where Ace "Blue Star" film cement is made, occupies 2,000 square feet, and Merkur personally supervises this operation with a staff of over a dozen workers. **IP**

Non-slip Mat Available

American Mat Corp. of Toledo, Ohio, recently announced the development of their "Walk-Ezy" floor matting, available in a wide variety of runs and colors.

The new mat material is smooth, yet non-skid on top, and is cushioned underneath by a built-in foam layer. According to the manufacturers, it is resistant to wear over a long, hard use, and they add proudly that it cannot be penetrated by the ladies' high heels. **IP**

Twin Indoor Houses Slated For Toledo

Cinema I and Cinema II, the first new indoor theatres to go up in the Toledo area since before WW II, are now under construction in the city's Westgate Shopping Center development.

The two houses will share both roof and lobby, but the similarity will end there. The larger will seat 1,100 and will be equipped to show everything from 35mm to Cinerama. The smaller, more intimate house, will have seating for 750 and will not have Cinerama capability.

Redstone Management, Inc., of Boston operates the twin movie houses, adding these facilities to three outdoor theatres it acquired in 1963 from Theatre Operating Corp.

The theatres' site is a six-acre tract that will provide ample parking for patrons. The Toledo package is similar to one Redstone is putting up in Springfield, Mass. **IP**

Kollmorgen Appoints Salig to Sales Post

Louis F. Salig has been appointed manager of Projection Lens Sales at Kollmorgen Corp., Northampton, Mass., according to a recent announcement by company officials.



L. F. Salig

He will be specializing in the sales of standard and special purpose projection lenses, such as: 35 MM Snaplite lenses used for cinerama and other motion picture projectors; special lenses for studio television projectors; and lenses for film editing equipment.

Salig, a resident of Fairview, Mass., has been with the firm for 16 years, and has served in the general sales of all Kollmorgen industrial products. **IP**

Bausch & Lomb Promotes Three

Herbert J. Mossien, vice president and marketing manager of the Scientific Instrument Division at Bausch & Lomb, Inc., recently announced



E. F. Day

three new appointments.

Elbert F. Day is now head of the Commercial Contracts Department. Section heads of newly created posts are David Allen, Military Contracts Section and Robert Thomas, Photogrammetric Section.

Day joined B&L in 1948 as a sales correspondent. In 1951 he became assistant manager of Photographic Sales, section head of Defense Contracts in 1956, and three years later was named manager of the Photographic & Industrial Optics Dept. A native of Rockville, Conn., Day and his family reside in Pittsford, New York. **IP**

Dual Rectifier Is Announced

Two independent power sources, housed in one unit and interfaced to provide instant take-over in case of power failure, make up the new 2-in-1 rectifier manufactured by Kneisley Electric Co. of Toledo, Ohio.

Either rectifier will operate either lamp, and each is capable of sustaining both during changeover, according to company literature.

Long stack life is assured by the use of two 480 amp. silicon. Rectifiers have built-in minimizers to prevent sooting and pitting of reflectors and damage to carbon craters. Should an emergency arise, the minimizer is automatically by-passed. Three pole relays are also incorporated.

Individual lamp adjustment is provided by twin eight-position switches located on the face of the rectifier's panels, while 190/210/230-/250 AC taps are located behind a hinged door just below the fine current adjustment switches. **IP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON[®] products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica

by Christie

CARBONS, INC.

BOONTON, N. J.

Sound Track

by J. G. Jackson

Billings, Mont.

Dear J. G.:

We were interested in your explanation of the reasons for light mismatch in the last issue. But what about the difference in sound reproduction?

T. Cravella

• • •

Dear T. C.—

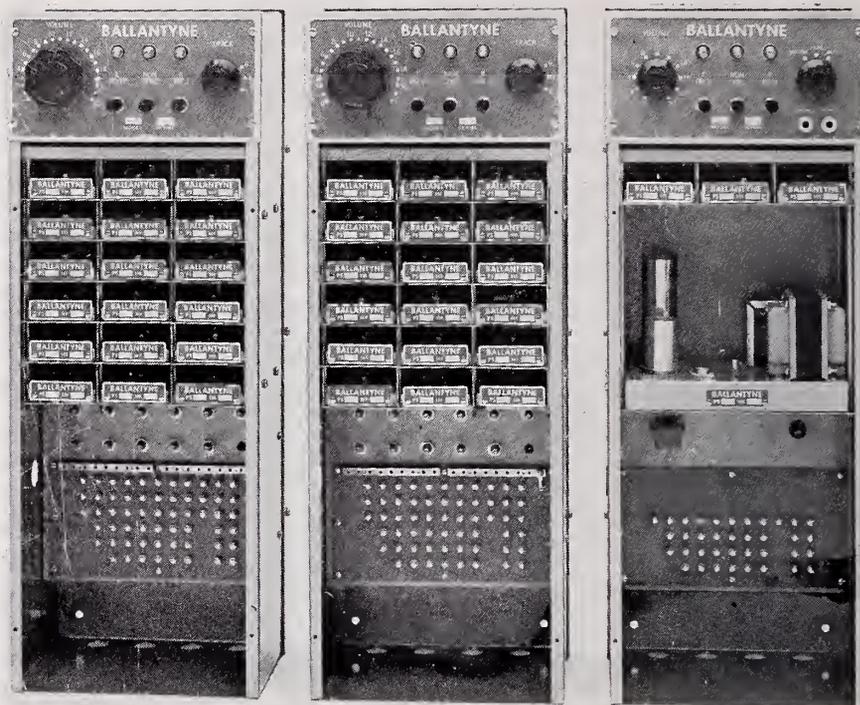
The sound reproduction can also call attention to the change from one projector to the other. This will occur if the sound from one projector is distorted or weaker than the sound from the other. Careful listening tests should be made of the sound-on-film reproduction (both optical and magnetic) obtained with each projector. Run tracks of good quality (preferably test films of piano music to test sound quality, continuous tones for output level), and do not depend on the projection-room monitor. Use earphones or send an experienced listener to check on the sound from the auditorium.

Most modern sound systems employ small potentiometers for the photocell load resistance in the optical soundheads or their preamplifiers. The outputs of the two soundheads are matched by painstaking adjustment of these potentiometers while identical test loops are run simultaneously.

Certain old-style systems depend upon exciting-lamp rheostats to adjust exciter voltage, and hence the brightness of the scanning beams. The correct procedure is to adjust both exciting lamps horizontally and vertically for maximum output, and then match the two outputs by reducing the greater one.

Just as the average observer can detect brightness differences as small

New Ballantyne Amplification System



Shown above is the complete Ballantyne transistorized amplification system. Each cabinet measures only 26¼ in. high, 10 in. wide and 7½ in. deep.

Ballantyne Marketing Transistorized Amplifiers for Higher Quality

as 4 per cent, the average listener can, under favorable conditions, detect loudness differences as small as ½ decibel. The outputs of the two projectors should, therefore, be matched to within ½ db. Sound matching as close as this is greatly facilitated by the use of an output meter, of course.

Many projectionists depend upon their sound-service engineers to equalize the sound outputs. Professional sound engineers have the experience, knowledge, and equipment to do the best job. But if one projector falls off in output at a time when the engineer is not available, the output of the "louder" projector can be temporarily reduced to match the other by wrapping several turns of clear film around the photocell, holding it in place with rubber bands. Under no circumstances should an exciter be deliberately thrown out of focus to attenuate output: distortion of the sound may result.

Address your cards and letters to Sound Track, 1645 Hennepin Ave., Minneapolis, Minn., 55403.

A new, all-transistorized amplification system featuring greatly improved sound quality and flexibility in use has been announced by Ballantyne Instruments & Electronics, Inc., Omaha, Neb. Ballantyne is a division of ABC Vending Corp. Company officials said that while the transistorizing gives many features, the improvement in sound quality is most outstanding. They described the sound as true hi-fidelity with great clarity and presence.

The new amplification system is manufactured in three units. Each unit measures only 7½" deep x 10" wide x 26¼" high. The system eliminates all photo cells, vacuum tubes and relays. As a result of the use of transistor components, there is no problem of heat dissipation. A second feature is enormously improved reliability, because the transistors used in the Ballantyne amplifier are designed to operate well within power requirements, with a very safety factor. The new amplifier has undergone a thorough program of installation testing which began early last summer in theatres that include the shopping centers at Poughkeepsie, N. Y., Johnstown, Pa. and Youngstown, Ohio.

IP



Investment Opportunity

A dozen years from now these boys will be riding trail for real—herding cattle to help feed your children.

Till then, how much patience and love and planning must go into their training? How much effort into keeping our society free and our economy stable, so young people can develop into responsible, productive adults?

You have an investment in these boys. To protect it, you can join with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U. S. Savings Bonds. The Treasury Department's Plan helps to encourage the habits of self-reliance and thrift we so need in all our

citizens . . . it helps us maintain that love of individual liberty which is basic to the well-being of our nation.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the young people who will help feed the world a decade from now. You are investing in all the ranchers and herders and farmers of America's tomorrow. In America's future. In freedom itself.

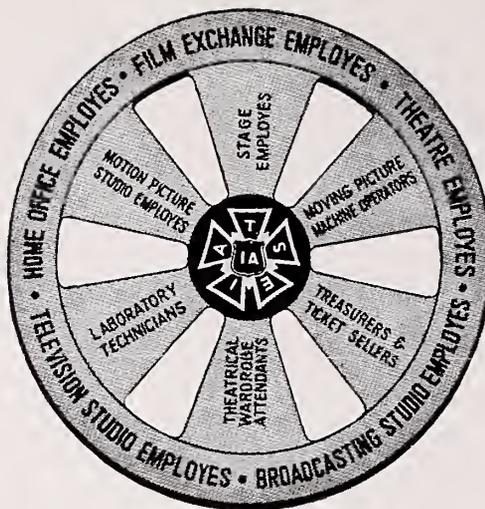
Don't pass this opportunity by. Call your State Savings Bonds Director. Or write today directly to the Treasury Department, United States Savings Bonds Division, Washington, D.C. 20226.



In your plant...promote the PAYROLL SAVINGS PLAN for U.S. SAVINGS BONDS



The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine.



THE
INTERNATIONAL ALLIANCE OF THEATRICAL STAGE
EMPLOYEES AND MOVING PICTURE MACHINE
OPERATORS OF THE UNITED STATES AND CANADA

Names and Addresses of Local Secretaries and Business Agents

(These listings are all operators officers. Future listings will include mixed locals.)

ALABAMA

236 BIRMINGHAM—W. H. Neal, Jr., P. D. Box 847. Tele.: 409 N. 90th St. Bus. Agt.: J. B. Colley, 4110 N. 43rd Ave., Zone 7.

236-A BIRMINGHAM—Chester Hawes, Jr., P. D. Box 962. Tele.: 1140 12th St. N., Zone 4. Bus. Agt.: Otis Howard, 813 Center Place, S. W.

519 MOBILE—R. E. Merris, P. O. Box 638, ZIP 36601. Phone: 473-4742. Bus. Agt.: T. J. Mayher, 111 Elinor.

ARIZONA

294 PHOENIX—Charles B. Kendall, 1317 W. Holly St. Bus. Agt.: Edward A. Dougherty, 3243 E. Cypress St. Zone 8.

CALIFORNIA

150 LOS ANGELES—C. Y. Crowe, 1800 S. Vermont Ave., Zone 6. Bus. Agt.: Arthur C. McLaughlin, 1800 S. Vermont Ave., Zone 6.

162 SAN FRANCISCO—Edward H. Ponn, Room 302, 230 Jones St., Zone 2. Tele.: 58 Havelock St. Bus. Agt.: Henry Meyer, 2343 46th Ave.

165 HOLLYWOOD—(Motion Picture Studio Projectionists, Moving Picture Machine Operators)—Richard B. Frisbie, 1065 N. Fairfax Ave., Room 100. Zip 90046. Tele.: 4951 Alcovue Ave., North Hollywood. Bus. Agt.: Leo S. Moore, 3851 Motor Ave., Culver City.

169 ALAMEDA COUNTY—Frank E. Hester, 5848 Foothill Blvd., Oakland, Zone 5. Tele.: 2599 Kelly St., Hayward. Bus. Agt.: Ralph P. Thiers, 2769 Parker Ave., Oakland, Zone 5.

252 SACRAMENTO—Thomas J. Farrell, P. D. Box 2149. Tele.: 4001 Ramsey Drive, North Highlands. Bus. Agt.: Leslie E. McMillin, 10222 Sally Court, Rancho Cordova.

297 SAN DIEGO COUNTY—J. W. Abrams, 3921 Park Blvd., Zone 3, San Diego. Tele.: 4565 Wightman St., San Diego. Bus. Agt.: George L. Abrams, 3623 Third Ave., San Diego, Zone 3.

428 STOCKTON—Carl W. Howe, Sr., P. D. Box 909. Tele.: 3745 Webster Ave., Zone 4. Bus. Agt.: A. W. Southwick, 3411 Delaware, Zone 4.

431 SAN JOSE—Edward M. Collinson, P. D. Box 754. Tele.: 1680 Los Padres Blvd., Santa Clara. Bus. Agt.: Fred E. Skinner, 261 S. 4th St., Zone 12.

521 LONG BEACH—Alonzo S. Bennett, P. O. Box 273. Tele.: 1103 E. First St., Zone 2. Bus. Agt.: Stanley B. Wedell, 6740 Monaco Road, Long Beach, Zone 8.

577 SAN BERNARDINO, RIVERSIDE, POMONA and REDLANDS—E. J. Stejskal, P. D. Box 273, Pomona 91769. Tele.: 2204 Titus, Pomona. Bus. Agt.: M. D. Krausman, 1549 W. Drange Grove Ave., Pomona.

599 FRESNO—Marlin C. Young, P. D. Box 511. Tele.: 530 N. Hughes Ave.,

Zone 5. Bus. Agt.: Edward C. Irvin, 3546 E. Picos Ave., Zone 26.

CANADA

173 TORONTO, Ont.—Graydon Hulse, Labour Temple, 167 Church St., Zone 2. Tele.: 20 Rossander Court, Scarboro, Ont. Bus. Agt.: A. L. Pat Travers, 304 Broadway Ave.

257 OTTAWA, Ont.—W. Murray Hall, P. D. Box 122. Bus. Agt.: John Maccauley, 547 Laurier Ave., West Ottawa.

262 MONTREAL, Quebec—Pierre Handfield, 60 Jardins Ste Dorothee, Ste Dorothee. Bus. Agt.: Marcel Desrocher, 482 Wood Ave., Westmount.

299 WINNIPEG, Man.—E. L. Turner, P. D. Box 143. Tele.: 1084 Ashburn St., Zone 10. Bus. Agt.: Lawrence Hackie, 458 Melbourne Ave., E. Kildonan.

302 CALGARY, Alta.—Stan R. Sadler, 205 Labor Temple. Tele.: 82 Gladview Crescent. Bus. Agt.: Burt Roebuck, 121 24th Ave., N. E.

303 HAMILTON, Ont.—H. W. Usher, 69 Weir St., South. Bus. Agt.: H. W. Usher.

348 VANCOUVER-VICTORIA, B. C.—Frank M. Smith, 1356 Seymour St., Vancouver. Tele.: 4395 Williams St., Barnaby. Bus. Agt.: D. A. Cooper, 907 Fifth St., New Westminster. Victoria Representative: W. More, 1276 Vista Heights, Victoria.

371 EDMONTON, Alta.—M. L. Adamson, 9921 113th St. Bus. Agt.: A. H. Godgkinson, 8763 Strathern Drive.

CANAL ZONE

686 BALBOA—E. F. Forbes, 6718 15th St., N., St. Petersburg, Fla. 33702. Bus. Agt.: F. M. Ditenburg, P. O. Box 162.

COLORADO

230 DENVER—R. E. Waller, P. D. Box 302, Zone 1. Tele.: 777 High St., S. Bus. Agt.: Charles P. Weber, 991 S. Holly St., Zone 22.

448 PUEBLO—Syd Jefferson, P. O.

Box 1185. Tele.: 1619 Iroquois Road. Bus. Agt.: Lloyd M. Cloer, 914 Van Buren Ave.

CONNECTICUT

273 NEW HAVEN—George Smith, P. D. Box 639, Zone 3. Tele.: 91 Parker Place, Zone 12. Bus. Agt.: Ernest V. DeGross, 147 Beacon Ave., Zone 13.

277 BRIDGEPORT—Merrick Parrelli, 104 Glendale Ave., Zone 6. Bus. Agt.: John Martin, 234 Dexter Drive, Zone 6.

486 HARTFORD—D. I. MacDonnell, P. O. Box 486, Zone 1. Tele.: 159 Manchester St., Zone 12. Bus. Agt.: Peter J. DeCarli, 521 S. Quaker Lane, Zone 10.

DELAWARE

473 WILMINGTON—Walter D. Sullivan, 8 Lyons Ave., Overview Gardens, New Castle. Bus. Agt.: John Maisel, 104 W. 28th St.

DISTRICT OF COLUMBIA

224 WASHINGTON—Malcolm E. Sparrough, Plaza Theatre Bldg., 1336 New York Ave., N. W. Tele.: 5702 84th Ave., Carrollton, Hyattsville, Md. 20784. Bus. Agt.: Fred C. Kelly, 7100 Cedar Ave., Takoma Park, Md.

FLORIDA

316 MIAMI—Frank A. Lewis, P. O. Box 284, Zip 33101. Tele.: 3751 N. W. 1st St. 33126. Bus. Agt.: Paul G. Robertson, 857 N. E. 145th St. 33161.

316-A MIAMI—Calvin C. Marks, 51-125 Edison Center Station. Tele.: 2490 N. W. 60th St. Bus. Agt.: Harold J. Jones, 1645 N. W. 65th St.

511 JACKSONVILLE—A. J. Rehkopf, P. D. Box 4224. Tele.: 1639 Pearl St., Zone 6. Bus. Agt.: Douglas D. Tidwell, 7017 Castilla Ave., Drange Park.

GEORGIA

225 ATLANTA—C. B. Baldwin, P. D. Box 365, Zip 30301. Tele.: 1226 Dak-

land Terr Bus. Agt.: W. G. Means, 1130 Hancock Drive, N. E.

ILLINOIS

110 CHICAGO — Ralph R. Mooney, Suite 2105, 188 West Randolph St., Zone 1. Tele.: 645 N. Taylor, Oak Park. Bus. Agt.: Clarence A. Jajas, Suite 2105, 188 West Randolph St., Zone 1.

288 EAST ST. LOUIS - BELLEVILLE — Andrew J. Foehrkalb, 108 S. Charles St., Edwardsville. Bus. Agt.: Lloyd Smith, 7330 Carr Drive, Belleville.

323 SPRINGFIELD — Wilbur F. Wepner, 13 Verna Drive. Bus. Agt.: William L. Rasar, 1934 S. Lincoln.

374 JOLIET — Harold J. Brown, P. O. Box 1050. Tele.: 135 E. Jefferson. Bus. Agt.: Leo O'Connor, 1107 Loral Ave.

433 ROCK ISLAND - MOLINE, Ill. - DAVENPORT, Iowa — George A. Stoddard, 914 23rd St., Rock Island 61201. Bus. Agt.: Edward A. Short, 3620 18th Ave., Rock Island.

INDIANA

194 INDIANAPOLIS — Lawrence A. Mulry, Jr., 1105 Prospect St., Room 311, Zone 3. Tele.: Box 38-1, 9880 W. 10th St., Zone 31. Bus. Agt.: John E. Mulry, 2706 Shakespeare Drive, Zone 27.

367 EVANSVILLE — Otis Potter, 1107 S. Boeke Road 47714. Bus. Agt.: Otis Potter.

373 TERRE HAUTE — Roy V. Barrett, P. O. Box 373. Bus. Agt.: Thomas A. White, 3000 N. 11th St.

466 FORT WAYNE — H. E. Thompson, P. O. Box 381. Tele.: 620 W. Oakdale Drive 46807. Bus. Agt.: Paul M. Merrill, 3042 Swift Drive.

IOWA

286 DES MOINES — George A. Hartnett, 3933 41st St., Zone 10. Bus. Agt.: Verne Warner, 3108 S. W. 13th St. Place, Zone 15.

355 SIOUX CITY — Burt P. Martin, P. O. Box 834, Zone 5. Tele.: Alhambra Apts., Apt. D4, Zone 4. Bus. Agt.: J. R. Marksbury, 425 Center St., Zone 3.

433 DAVENPORT — (See Rock Island, Illinois).

KANSAS

404 TOPKA — Paul L. Anderson, 929 Randolph Ave. Bus. Agt.: C. W. Burgess, 211 Courtland Ave.

414 WICHITA — Robert H. Heagler, P. O. Box 741. Tele.: 208 S. Glenn. Bus. Agt.: Lyman L. Covey, 2650 N. Poplar.

KENTUCKY

163 LOUISVILLE — John Dahl, P. O. Box 422, Zone 1. Tele.: 4206 S. 3rd St. Bus. Agt.: Jess Hopewell, 5405 Westhall Road.

163-A LOUISVILLE — Andrew E. Wade, Jr., 3311 Greenwood Ave. Bus. Agt.: Andrew E. Wade, Jr.

LOUISIANA

222 SHREVEPORT — Cecil G. Parker, Sr., P. O. Box 721. Tele.: 107 Pennsylvania Ave. Bus. Agt.: N. S. Laird, 837 Linden Ave., Zone 27.

293 NEW ORLEANS — V. C. Mathis, P. O. Box 50293, Zip 71150. Tele.: 412 N. Causeway Blvd., Metairie 70121. Bus. Agt.: L. N. Chateau, 4959 Lafayette St. 70122.

293-A NEW ORLEANS — H. Bucksell, 1938 Dules St. Bus. Agt.: David A. Segue, 3419 Live Oak Place.

MAINE

458 PORTLAND and LEWISTON — Leslie S. Way, P. O. Box 1894, Zone 2. Tele.: 75 Allen Ave. Bus. Agt.: George E. Francis, 288 State St., Portland.

MARYLAND

181 BALTIMORE — Irving Whitehill, 404 W. Baltimore St., Room 3. Tele.: 3304 Parkington Ave., Zone 15. Bus. Agt.: Maurice Rushworth, 1159 Granville Road, Zone 7.

181-A BALTIMORE — Robert E. Johnson, 566 Mosher St. Tele.: 2212 Whittier Ave., Zone 17. Bus. Agt.: George H. Oouglass, 901 N. Fremont Ave.

MASSACHUSETTS

182 BOSTON — Ralph S. Frazier, 45 Winchester St., Zone 16. Tele.: 8 Angus St., North Quincy. Bus. Agt.: Ralph Frazier.

186 SPRINGFIELD — Ovila C. Lattinville, P. O. Box 835. Tele.: 35 Emerald Road, Zone 9. Bus. Agt.: Edward J. O'Connor, Jr., 109 Melha Ave., Zone 4.

245 LYNN-SALEM — Frank O. Halleran,

30 Chestnut St., Peabody. Bus. Agt.: L. F. Barber, 9 Shirley Rd., Lynn.

256 LAWRENCE — Clarence Bell, 61 Waverly Rd., North Andover. Bus. Agt.: William Walsh, 11 Boston St.

334 NEW BEDFORD — Alfred A. Landry, 35 Bentley St. 02746. Bus. Agt.: Edward Patrick, 51 Newton St. 02740.

382 HOLYOKE — Henry Oesnoyers, 439 Beech St. Bus. Agt.: Henry Oesnoyers.

397 HAVERHILL — Edward M. Foley, 3 Maple Ave. Bus. Agt.: Edward M. Foley.

424 FALL RIVER — Thomas R. Nasser, Jr., 818 Robeson St. Bus. Agt.: Anthony J. Salvo, 5 Merritt Ave., Riverton, R. I.

437 BROCKTON — Joseph K. Hooker, 25 Belcher St., Holbrook. Bus. Agt.: Vincent Buckley, 13 Merritt St., West Bridgewater.

452 PITTSFIELD — William L. Volin, 332 South St. Bus. Agt.: Edward J. Rogers, 338 Dalton Ave.

546 LOWELL — Sidney E. LeBow, P. O. Box 854. Tele.: 11 Belmont St. Bus. Agt.: Sidney E. LeBow.

MICHIGAN

199 DETROIT — John Lindenthal, 2988 E. Grand Blvd., Zone 2. Tele.: 23147 Firwood, East Detroit. Bus. Agt.: Roy R. Ruben, 2988 E. Grand Blvd., Zone 2.

472 FLINT - OWOSO — Ray Field, P. O. Box 243. Flint, Zone 1. Tele.: 936 Alford St., Flint, Zone 3. Bus. Agt.: Ray Field.

MINNESOTA

219 MINNEAPOLIS — Rodolph A. Peterson, 2806 W. 88th St., Zone 20. Bus. Agt.: Wallace J. Yutzy, 5508 Kellogg Ave., Zone 24.

356 ST. PAUL — Charles B. Ludwig, P. O. Box 63, Zone 2. Tele.: 1466 Berkeley Ave. Bus. Agt.: Harold L. Miller, 2863 Stillwater Road.

509 DULUTH — Russel Gran, 5714 Wadena St. Zip 55807. Bus. Agt.: Harold G. Olson, 231 N. 4th Ave., W. Zip 55806.

MISSOURI

143 ST. LOUIS — Wilburn Routsong, 520 N. Grand Blvd., Room 201, Zone 3. Tele.: 9030 Rosemary, Zone 23. Bus. Agt.: Herbert Butz, 520 N. Grand Blvd., Room 201, Zone 3.

170 KANSAS CITY — Fred H. Shirley, Jr., 108 Railway Exchange Bldg., 705 Walnut St. 64106. Tele.: 7306 Elm, Raytown, Zone 33. Bus. Agt.: Shannon W. Jones, Railway Exchange Bldg., 705 Walnut St., 64106.

170-A KANSAS CITY — William Walker, 907 Freeman Ave., Kansas City, Kan. Bus. Agt.: John H. Adams, Jr.

447 SPRINGFIELD — James L. Wilson, P. O. Box 1513. S. S. Station. Tele.: 840 E. Tracy St. Bus. Agt.: Elmer H. Nuttleman, 311½ E. Walnut St., Apt. 201, Zone 4.

465 JOPLIN — R. L. Long, P. O. Box 465. Tele.: 910 W. First St., Webb City. Bus. Agt.: G. W. Wilson, 415 Ninth St.

559 ST. JOSEPH — Gerald P. Barsh, 3513 S. 11th St. Bus. Agt.: Ed A. Harris, 1911 S. 17th St., Washington.

NEBRASKA

343 DMAHA — Richard G. Smith, P. O. Box 465, Downtown Sta., Zone 1. Tele.: 12366 Shirlev. Bus. Agt.: Floyd R. Gibson, 2220 Fort St.

NEW JERSEY

244 ESSEX COUNTY — Patrick Fazzini, 31 Halsey St., Newark. Tele.: 85 Albe-marle Road, Colonia. Bus. Agt.: Harry Schocket, 150 S. Harrison St., East Orange.

310 ATLANTIC CITY — Vincent J. Sheeran, P. O. Box 572. Tele.: 600 Linden Ave., Pleasantville. Bus. Agt.: Augustus Hilton, 11 N. Osborne, Margate.

359 MERCER COUNTY — R. Douglas Hewitson, P. O. Box 506, Trenton. Tele.: 24 Lee Ave., Trenton. Bus. Agt.: Walter W. Hoffmann, 1612 Riverside Drive, Trenton, Zone B.

384 HUDSON COUNTY — Arthur McMahon, 130 Central Ave., Jersey City, Zone 6. Tele.: 82 Liberty Pl., Weehawken. Bus. Agt.: Ralph DeMea, 9008 57th Ave., North Bergen.

418 CAMDEN — Samuel J. Berger, 626 Federal St., Zone 3. Tele.: 24 Park Drive, Bellmawr. Bus. Agt.: Frank Hauss, 157 Paris Ave., Audubon, Zone 6.

NEW YORK

233 BUFFALO — Carl F. Patterson, 498 Pearl St., Zone 2. Tele.: 81 Delwood Road, Kenmore. Bus. Agt.: K. J. Kavanagh, 498 Pearl St., Zone 2.

253 ROCHESTER — Walter A. Knopf, 1109

Monroe Ave., Zone 20. Bus. Agt.: Frank Coniglio, 35 Bouckhaart Ave., Zone 9.

285 TROY — Earl V. Cooney, Box 147, West Sanl Laks. Bus. Agt.: Geo. L. Nuzent, 12 Plum Ave.

306 NEW YORK — Ernest Lang, 362 W. 50th St. Bus. Agts.: (New York) Steve O'Inzillo, 362 W. 50th St. (Brooklyn) Harry Garfman, 250 Ashland Place, Brooklyn, Zone 17.

314 SCHENECTADY — Joseph Rogers, P. O. Box 70. Tele.: 27 Windsor Drive, Scotia. Bus. Agt.: Patrick Smith, 847 Stanley St., Zone 7.

324 ALBANY — Norman L. Wirz, 46 Hillcrest Ave. 12203. Bus. Agt.: Andrew Antoinette, 677 Central Ave.

337 UTICA — Rocco Monaco, 609 Steele Place, Zone 3.

376 SYRACUSE — George F. Raaflaub, 1145 Glen Cove Road, N. Bus. Agt.: Walter Scarfe, 306 Clarence Ave., Zone 5.

396 BINGHAMTON — C. E. Nicholas, 1447 Upper Chenango St. Bus. Agt.: Earl Tuttle, 39 Linden St.

640 NASSAU and SUFFOLK COUNTIES — W. R. Lord, 22 Pine St., Freeport, L. I. Bus. Agt.: Charles Washburn, 22 Pine St., Freeport, L. I.

650 WESTCHESTER and PUTNAM COUNTIES — Michael J. Nugent, 53 S. Broadway, Room 502, Yonkers, Zone 2. Tele.: 186 Park Ave., Yonkers. Bus. Agt.: Anthony Dente, 53 S. Broadway, Room 502, Yonkers, Zone 2.

OHIO

160 CLEVELAND — Robert A. Dolan, Suite 506, Warner Bldg., 2300 Payne Ave., Zone 14. Tele.: 16701 Larchwood Ave. Bus. Agt.: Perry L. Carter, Suite 506, Warner Bldg., 2300 Payne Ave., Zone 14.

228 TOLEDO — T. O. Liggett, P. O. Box 1602, Central Sta. 43603. Tele.: 662 Forsythe St. 43605. Bus. Agt.: A. F. Paris, 804 Kipping Drive, Zone 12.

248 DAYTON — Robert C. Kennedy, P. O. Box 222, Zone 1. Tele.: 1524 Laird Ave. Bus. Agt.: Wilmer Rousch, 2034 Malcolm Drive.

327 CINCINNATI — Henry Williams, Room 506, Palace Theatre Bldg., 12 E. 6th St. Tele.: 2636 Ida Ave., Zone 9. Bus. Agt.: Earle Wagner, 3815 Edwards Rd., Norwood.

327-A CINCINNATI — Chester C. Pryor, 3621 Eaton Lane, Zone 29. Bus. Agt.: Edward Taylor, 907 Mound St., Apt. 11.

352 SPRINGFIELD — Robert W. Mills, P. O. Box 357. Tele.: 2430 Mayfair Drive. Bus. Agt.: Lloyd M. Blue, 918 Grant St.

364 AKRON — S. W. Galloway, P. O. Box 364. Tele.: 177 Benson Rd. Bus. Agt.: J. A. Shuff, 133 Alden Ave., Zone 13.

386 COLUMBUS — William M. Sillins, 36 W. Gay St., Suite 211-212, Zone 15. Tele.: 2811 Halstead Rd., Zone 21. Bus. Agt.: Ned R. Welch, 59B Garden Road, Zone 2.

388 WELNGTOWN — Cecil H. Cook, P. O. Box 1384. Tele.: 726 Crestview Dr. Bus. Agt.: George A. Amreihn, 217 E. Avondale Ave.

576 MANSFIELD — Harvey Kibler, P. O. Box 112. Tele.: 680 S. Main St. Bus. Agt.: A. F. Ebsenhand, 908 Benedict Ave.

671 CANTON — Ray A. Bederman, 1540 Spring Ave., N. E., Zone 4. Bus. Agt.: Russell T. Goodwin, 915 5th St. N. W.

OKLAHOMA

380 OKLAHOMA CITY — R. L. Jack, P. O. Box 380, Zone 1. Tele.: 2228 W. Park Place. Bus. Agt.: Kenneth Lyons, 5105 S. Lee St.

513 TULSA — Claude H. Keith, P. O. Box 513. Tele.: 2912 W. 40th St. Bus. Agt.: Carnie A. Burton, 2803 East 1st Place.

OREGON

159 PORTLAND — C. W. Christenson, 4806 S. E. 52nd Ave., Zone 6. Bus. Agt.: S. E. Phillips, P. O. Box 275, Lake Oswego

PENNSYLVANIA

171 PITTSBURGH — Luther W. Thompson, 918 B. F. Jones Building Annex, 311 Ross St., Zone 19. Tele.: 3215 Eastmont Ave., Zone 16. Bus. Agt.: Martin Torreano, 918 B. F. Jones Building Annex, 311 Ross St. Zone 19.

307 PHILADELPHIA — George Feldman, 1317 Vine St., Zone 7. Tele.: 1605 West End Drive. Bus. Agt.: Abbott Oliver, 1317 Vine St., Zone 7.

307-A PHILADELPHIA — Herman K. Williams, 5925 N. 21st St., Zone 38. Bus. Agt.: Charles Polk, 15 S. Ruby St.

325 WILKES-BARRE — Kenneth A. Thomas, 91 Downing St., Plymouth. Bus. Agt.: Kain Jacobs, 197 Old River Road.

488 HARRISBURG — Paul N. Hipple, P. O. Box 1408. Tele.: 317 Linden St., Marysville. Bus. Agt.: E. Richard Bennett,

317 S. Front St.

585 ALLENTOWN — Harry C. Hohl, P. O. Box 1205. Tele.: 2119 Washington St. Bus. Agt.: LeRoy Rau, 235 Water St.

621 ERIE — Michael Campagna, P. O. Box 435. Tele.: 333 E. 25th St., Zip 16050. Bus. Agt.: Edward P. Krayer, 3506 Cherry St.

661 READING — LeRoy Wagner, 389 Oak Terr., West Reading. Bus. Agt.: LeRoy Wagner.

682 LANCASTER — Laird A. Hall, P. O. Box 645. Tele.: 111 S. Pearl St. Bus. Agt.: Laird A. Hall.

RHODE ISLAND

223 PROVIDENCE — Sydney T. Clarke, 1 Gooftall Pl., Riverside, Zone 15. Bus. Agt.: H. F. Slater, 675 County Road, Barrington.

SOUTH DAKOTA

556 SIOUX FALLS — Roy E. Munson, P. O. Box 327. Tele.: 932 N. Spring Ave. Bus. Agt.: Executive Board, c/o K. L. Lewis, 1603 S. 10th Ave.

TENNESSEE

144 MEMPHIS — J. W. McAfee, P. O. Box 947, Zone 1. Tele.: 4707 Coro Road. Bus. Agt.: A. G. Shelton, 191 Elm Ave.

259 CHATTANOOGA — W. R. Hundley, P. O. Box 1002. Tele.: 1815 Everglades Blvd., Zone 11. Bus. Agt.: Robert B. Lowry, 6109 E. Brainerd Rd., Zone 11.

405 KNOXVILLE — C. V. Warwick, P. O. Box 974. Tele.: New Beverly Church Rd. Bus. Agt.: John McLean, Lakeland Drive, Lenoir City.

626-NASHVILLE — Stanley E. Hime, P. O. Box 626, Nashville 2, Tenn. Tele.: 4117 Lone Oak Rd. Bus. Agt.: Ben C. Thomas, 1240 Kenmore Place.

TEXAS

249 DALLAS — Harvey O. Hill, Jr., P. O. Box 1584. Tele.: 4319 Hall. Bus. Agt.: Harvey O. Hill, Sr., 8647 Grove Land.

249-A DALLAS — S. R. Tankersley, 2409 South Blvd. Bus. Agt.: S. R. Tankersley.

279 HOUSTON — Lewy Evans, 1815 Walker Ave. 77003. Bus. Agt.: E. J. Miller, 1815 Walker Ave. 77003.

279-A HOUSTON — Willie Monie, 3272 E. Alabama Ave., Zone 4. Bus. Agt.: Willis L. Beal, Jr., 3002 Chimira Lane, Zone 51.

305 GALVESTON — W. M. Scott, P. O. Box 305. Tele.: R. O. 1, Box 934 Hitchcock. Bus. Agt.: A. J. Warren, 4415 Ave. R.

330 FORT WORTH — B. Y. Coffman, P. O. Box 543, Zone 1. Tele.: 7348 Grapevine Hwy. Bus. Agt.: V. O. Huffines, 509 Haynes St.

407 SAN ANTONIO — Henry Villapadierna, P. O. Box 501. Tele.: 1509 N. W. 23rd St. Bus. Agt.: John D. Dennis, 224 E. Courtland.

597 WACO — Ray J. Morrow, Tele.: 2911 Waco Drive. Bus. Agt.: H. L. Tulloch, 145 Brewster Drive.

UTAH

250 SALT LAKE CITY — Carl E. Peterson, 3145 E. 2920 South. Bus. Agt.: James F. Sullivan, 2237 Broadmor St.

VIRGINIA

370 RICHMOND — Howard S. Powers, Jr., P. O. Box 1681. Tele.: 7620 Elkhart Rd. Bus. Agt.: John W. Aders, 105 N. Allen Ave.

370-A RICHMOND — Allie Laury, 502 S. Harrison St. Bus. Agt.: Allie Laury.

550 NORFOLK — Alonzo T. Hughes, P. O. Box 632, Zip 23501. Tele.: 56 Chat-ham Rd., Portsmouth. Bus. Agt.: Alonzo T. Hughes.

550-A NORFOLK — Albert W. Sprueill, P. O. Box 1942. Tele.: 2819 Beaumont Ave. Bus. Agt.: J. P. Omohundro, 1440 Poescher St.

WASHINGTON

154 SEATTLE — Gerald Lloyd, Room 124, Labor Temple, 2800 First Ave. Tele.: 18649 S. E. 128th St., Renton. Bus. Agt.: Ken Oowling, 7931 California Ave., S. W.

WEST VIRGINIA

500 CHARLESTON — Franklin C. Schooner, P. O. Box 5, Zone 21. Tele.: 2104 W. Washington St., Zone 2. Bus. Agt.: Ray T. Cummings, 100 Arlington Ave.

WISCONSIN

164 MILWAUKEE — Oscar E. Olson, 454 Cawker Bldg., 108 W. Wells St. Tele.: 604 W. Mequon Rd., 112 N. Mequon, Bus. Agt.: Oscar E. Olson.

460 RACINE — O. C. Cavan, 1015 Po-mayne Ave. Bus. Agt.: John Ozowski, 3015 Kearney Ave.

Queens Theatre Gets \$100,000 Face-Lifting

A \$100,000 refurbishing and remodeling of the Strand Theatre in the Astoria section of Queens, N. Y., was recently completed by veteran theatre operator Sidney Dreier, including full external face lifting with a new marquee, front and boxoffice.

The interior design, including new fireproof fiberglass gold curtains by Chevron Fiberglass and fiberglass walls is strikingly but simply decorative, featuring floor to ceiling electrified panels on the orchestra floor. Even the ceiling over the loge portion of the 1000-seat house features special lighting effects and was supervised by Harry Pear of National Theatre Supply.

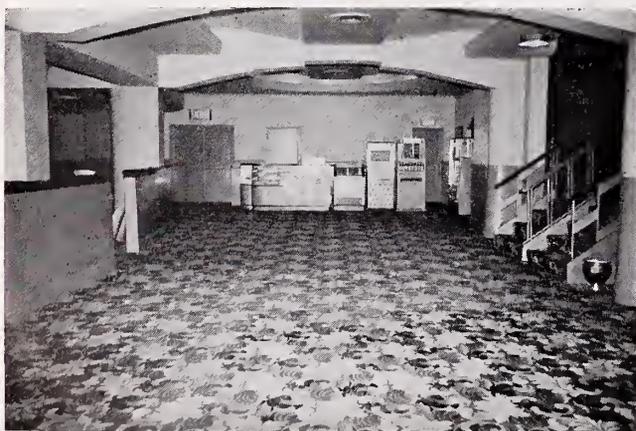
Booth installation was under the direction of Bill Nafash of N.T.S., and includes Ashcraft Corelight lamphouses with water circulators and new rectifiers. A red floral pattern carpeting of Alexander Smith is a matching companion for the Phil Furst seating in the auditorium, allowing 40 inches from back to back for maximum seating comfort. Seats in the loge are in midnight blue as is the wall color. Orchestra curtain design was achieved by Manhoff Studios. The marquee, using Wagner letters, was installed by Joseph Berman Neon Co. of Brooklyn. The new front was the work of Superior Front Co. of the Bronx.

Dreier recently acquired the Julius Joelson circuit

in the Bronx in association with Harry Brandt. He is a director of the Independent Theatre Owners Association of New York, and operates the first-run art house Astor in Brooklyn, also in partnership with Brandt. **IP**



An old friend with a new face — that's the Strand theatre in the Astoria section of Queens, N. Y. Joseph Beoman Neon Co. of Brooklyn furnished the new marquee shown in the photo above.



A broad, graceful lobby greets Strand theatre patrons, and offers a variety of concessions from a convenient area away from traffic.



Red floral carpeting, by Alexander Smith, compliments the subdued tones of the Phil Furst seating in the Strand auditorium.

'Environmental' Film Premiered at NY Fair

An unique "environmental" film program, *The American Journey*, is being shown at the United States Pavilion at the New York World's Fair.

The film presentation, produced by Cinerama, Inc. under a contract with the United States Fair Commission, actually has its audience moving through 130 screens depicting the 100-year history of America.

United States Fair Commissioner Norman K. Winston said the spectacular production will be in operation continuously at the Federal Pavilion. Some 2,500 viewers an hour can be accommodated at this revolutionary motion picture show. Fifty-five views at a time can sit in open conveyances and be whisked through an unusually designed theater that looks something like a big, winding tunnel . . . only this tunnel is comprised mostly of 130 movie screens of various sizes and shapes.

There are 12 of these 55-seat vehicles, with a car departing from the staging area every 30 seconds to carry viewers through the 13½ minute show. Each contour seat in the moving conveyance is individually-equipped with stereophonic speakers in the headrest. In this way, the story-line narrative, music, and sound effects are molded into the varied tempo of the visual adventure. One of the vehicles is equipped with seats having five-channel selector speakers, so viewers can elect to hear the narration in either French, German, Spanish, Italian or English.

New Drive-in Added To Skouras Circuit

The newest addition to the Skouras Theatres Circuit, the Plainfield All Weather Drive-In Theatre, located at Oak Tree Road and Route 27, Edison, New Jersey, had its opening March 25th. The theatre accommodates 1100 cars, and includes a luxurious 1000 seat indoor auditorium with electronically controlled air conditioning and heating to provide year-round viewing comfort.

A streamlined refreshment pavilion is accessible from both the indoor and outdoor viewing areas. A patio provides seating for patrons who wish to dine outdoors in warm weather and watch the picture on the drive-in's huge screen at the same time.

The kiddies have not been forgotten in this new indoor-outdoor entertainment palace. **IP**

INTERNATIONAL PROJECTIONIST

No Spectacle 3D Process Due This Fall

In bygone days when red-and-blue bespectacled audiences gasped at three-dimensional wild beasts seemed to leap from the screen at them, everyone recognized the entertainment potential of 3D viewing. But one objection was the inconvenience of the little cellophane "glasses" audiences had to wear. Another was the loss of useable seating due to a degradation of 3D effect at the sides of the audience.

Before the end of the year, Marks Polarized Corp. of Whitestone, N. Y. intends to market a three-dimensional process that can be used to overcome both these major objections while adding a dynamic new presentation medium for motion pictures.

Using standard projectors mounted in tandem and borrowing an idea from live stage technology, the Marks organization has developed what they consider to be the most revolutionary advance in motion picture excitement since talkies.

The major difference in the new process is in where, not how the dual images are projected. Two parallel concave screens are employed, the rear screen a solid reflecting type upon which the background image is projected, and the front screen scrim-like affairs to receive foreground images. Because the screens are polarized, images intended for the rear screen will filter through its openings without being reflected. Likewise, any "bounce-back" from the rear screen is rejected.

Company spokesmen say they will probably license their patented process after its introduction later this year.

Low Cost, Simple Zoom Lens Made

A Northrop Corp. scientist recently demonstrated a new zoom lens that is regarded a real breakthrough in

precision optical design.

Glenn Wooters, who developed the mathematical formulae that led to the production of a prototype this year, gave a public showing of a system with one moving part capable of magnifying images ten-fold. **IP**

Ballantyne System Installations Listed

In theatre sales Ballantyne is emphasizing its all new 6-4-1 transistorized sound system for small and large conventional theatres. This system has already been installed in shopping center theatres in Poughkeepsie, New York, Johnstown, Pa., Youngstown, Ohio and the RKO Orpheum in Denver, Col. It features greatly improved sound quality and flexibility. Company officials describe the transistorized system as true hi-fidelity with great clarity and presence.

The equipment finance package, in addition to Ballantyne, includes: Nor-elco projectors, Ideal seating, Williams and Technikote screens, Mohawk carpet, General Register, Johnson coin changers, Strong arc lamps and rectifiers, Neumade film handling equipment, Bausch & Lomb, Kollmorgen or Super Kiptar lenses, Goldberg reels and Metropolitan Stage wall and stage draperies. **IP**

ASHCRAFT
CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH RECTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

HEYER-SHULTZ METAL REFLECTORS

Top Screen Illumination

Will Not Break, Pit or Tarnish

No Replacement or Spare Reflectors Required

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

Committees Named For SMPTE Meet Sept. 27-Oct. 2

C Russell Dupree, of J. A. Maurer, Inc., has been named General Chairman of arrangements for the 96th Technical Conference of the Society of Motion Picture and Television Engineers (SMPTE) scheduled this fall.

Arthur J. Miller, of Du Art Film Laboratories, will serve as vice-chairman of arrangements. The conference will be held September 27 through October 2 at the Commodore Hotel, New York City.

These and other appointments were announced by Conference Vice-President George W. Colburn.

Others who will serve on the various committees are: Dominick J. Capano, Sheldon Kaplan, Frank Bucci, Herbert De Groot, Calvin M. Hotchkiss, Stan Appenzella, Robert Nothdurft, Donald H. Horton, Saul Jeffee, John E. Asher, Jack Haber, Harold J. Freedman, Robert Crane, Charles Austin, Peter P. Cardasis, Pat Mule, Edward A. Winkler, and Harold Jones.

Program Chairman for the SMPTE conference is John J. Kowalak of Moviellab, Inc., 619 West 54th St., New York. The deadline for abstracts of papers is June 17; reading copies of these papers must be submitted no later than August 5.

Topic areas for technical papers to be presented during the week-long conference are new techniques for World's Fair projection; cinematography; motion pictures and television for education; special effects and optics; laboratory practices; medical motion pictures and television; instrumentation and high-speed photography; television engineering and production; 3mm and small-format films; space technology, and sound recording.

Kodak Sales Post to Messner

NEW YORK—Frederick W. Messner, technical sales supervisor of Eastman Kodak Company's Northeastern Sales Division, has been appointed division sales manager for professional products. He succeeds Louis J. Parker, who was appointed assistant to the general manager of Eastman Kodak Stores.

Succeeding Messner as technical sales supervisor is James A. Ungerman, now serving as professional technical sales representative in the Northeastern Sales Division. **iP**

Congress Rules Luminous Intensity Now Called 'Candela'

A recent Act of Congress (PL 88-165) changed the name of the unit of luminous intensity from candle to candela. This action should bring usage in this country into conformity with that of the rest of the scientific world. The size of the unit was not affected by this action.

The International Committee on Weights and Measures agreed in 1946 to new definitions of the units of electricity and of light, to go into effect January 1, 1948. In anticipation of this action, legislation was introduced in the U. S. Congress to alter the legal definitions of the electrical units and to adopt legal definitions of the unit of light.

The unit of luminous intensity (luminous intensity is commonly called candlepower) was defined by both the International Committee and Congress as 1/60 of the luminous intensity of 1cm² of a blackbody at the temperature of freezing platinum (1769 °C IPTS). The name selected for this unit for international usage was candela, the Latin word for candle, but in conformity with common usage in this country it was translated as candle and incorporated into law.

As international usage of the term candela grew, it became obvious that possible confusion would be lessened if a common terminology were employed. As an example of the ambiguity that has grown up, the National Bureau of Standards has been using candle on its domestic calibration reports, but candela in reports to the International Bureau of Weights and Measures.

Furthermore, the Illuminating Engineering Society of this country has been using candela since 1959. To clarify this situation, NBS backed legislation which resulted in the change to candela and which should bring about uniformity of usage. **iP**

Wenzel Projector Company Sold

The acquisition of the Wenzel Projector Co. by Edward H. Wolk Co. was announced recently. Both Chicago firms have been in the motion picture theatre equipment business for more than 40 years.

Fred J. Wenzel, president of the firm his brother founded, announced his retirement at the same time the sale was noted. He had guided the firm since Mack Wenzel died in 1941. **iP**

DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSORFF CARBON CORP. East McKeesport, Pa.

Norelco
p r o j e c t i o n
e q u i p m e n t
Available from
leading theatre supply
dealers
North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

America's
headquarters
for all
theatre equipment
and
supplies
N.T.S.
National
THEATRE SUPPLY COMPANY

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

basic mathematics

by NORMAN H. CROWHURST

VOLUMES 1 through 4 COMPLETE

FROM COUNTING THROUGH CALCULUS ... A MODERN, UNIFIED APPROACH TO MATHEMATICS AND ITS USES

 RIDER

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I, you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

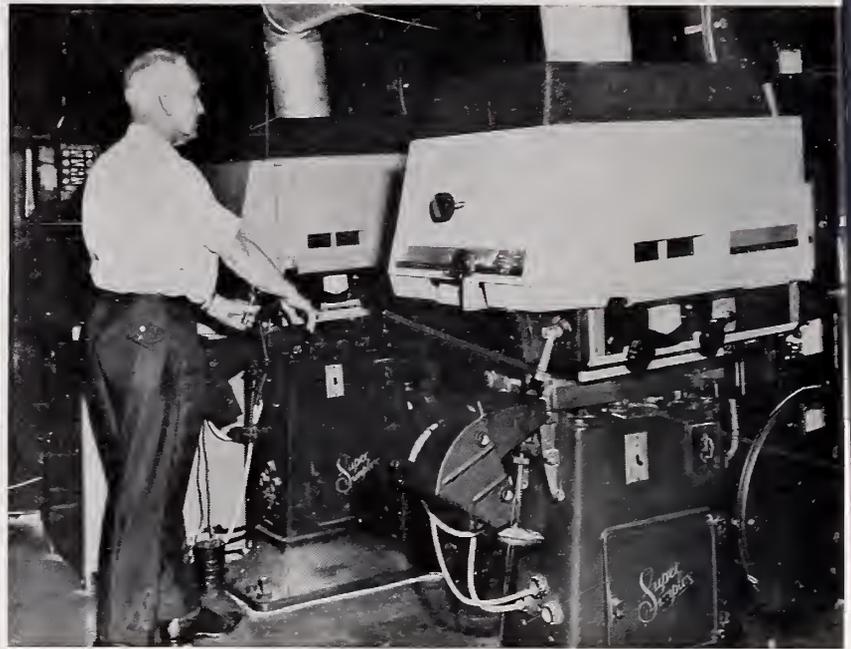
Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

THE LIGHT METER PROVED IT!



BEN HUR DRIVE-IN THEATRE CRAWFORDSVILLE, INDIANA

Strong Futura Projection Lamps Deliver **4 TIMES THE LIGHT**

—says Trueman T. Rembusch, one whom should know

We recently installed Strong Futura II Lamps and Bi-Powr Rectifiers in our Ben Hur Drive-In Theatre at Crawfordsville, Indiana.

Light meter readings were taken of reflected screen light from several positions. The new Strong lamp delivered four times the light of our old lamp -- current being consumed by new lamp was only about twice as much. Certainly an amazing result.

I was very impressed by the "Strong Tuf-Cold" Reflectors in the Strong Lamps.

In a check found the "Strong Tuf-Cold" Reflectors about two times as efficient as the rear coated mirror.

Yours truly,

SYNDICATE THEATRES, INC.

Trueman T. Rembusch
President

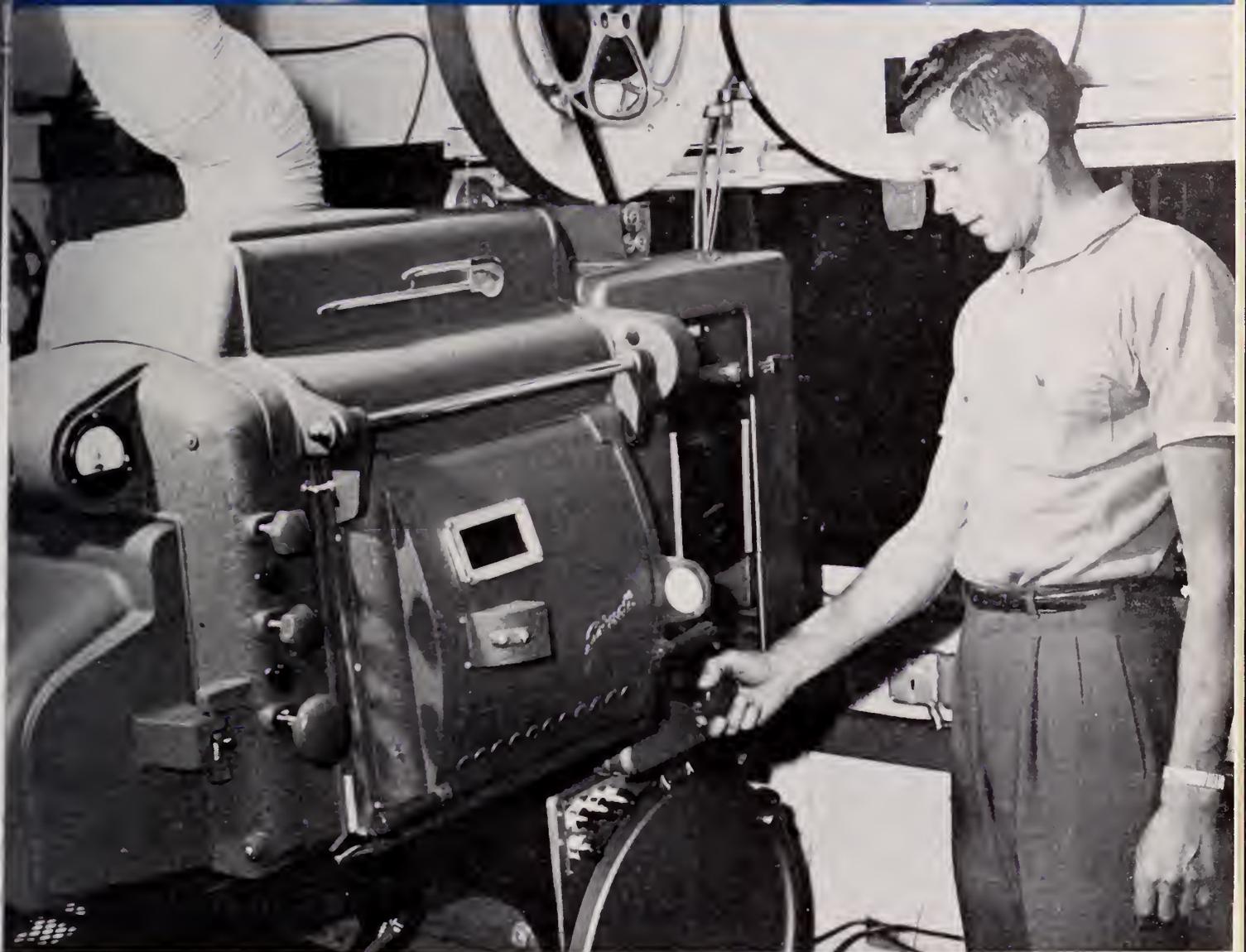
You, too, should get Futuras and enjoy the advantage of the extra measure of light available for 35mm and 70 mm projection to big drive-in and indoor screens...the greatest amount of light ever delivered per carbon dollar.

Send for brochure

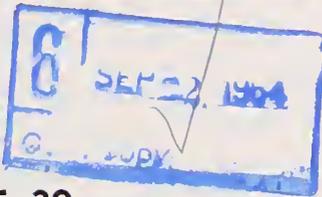
The *Strong* Electric Corp.

31 City Park Avenue, Toledo, Ohio 43601 • Phone: (419) 248-3741

INTERNATIONAL PROJECTIONIST



Admiring the new Ashcraft Core-lite lamps recently mated to Norelco 70mm projectors at the Fox Aladdin Theatre, Denver, is chief projectionist Les Reimer. Operating figures show that the resulting high quality is attended by significant cost reductions. (See story on page 11).



AUGUST
VOLUME 39
40c A COPY

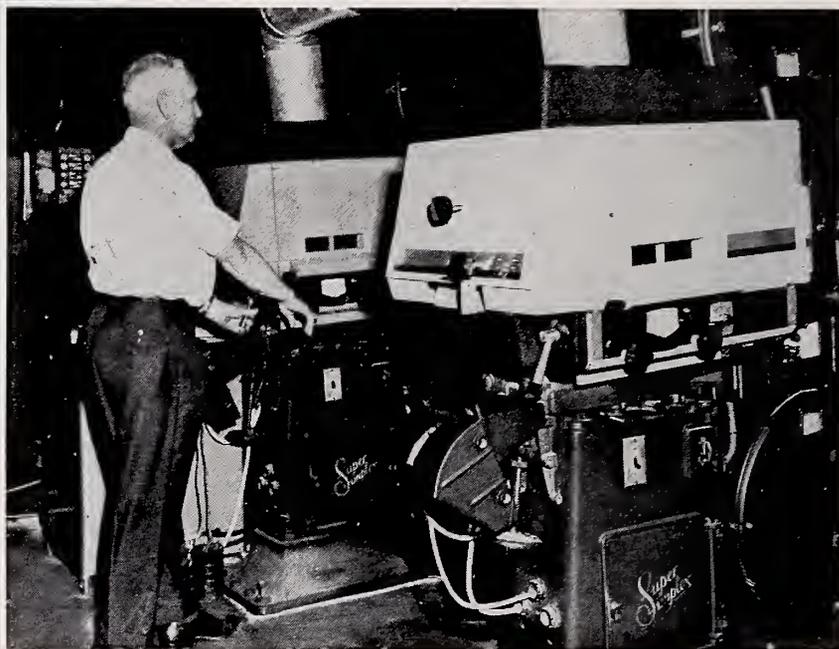
1964
NUMBER 8
\$3.00 A YEAR



Library of Congress
Order Division (0368X)
Washington 25, D.C.

M. P. E. - 1000

**THE
LIGHT
METER
PROVED
IT!**



BEN HUR DRIVE-IN THEATRE CRAWFORDSVILLE, INDIANA

Strong Futura Projection Lamps Deliver
4 TIMES THE LIGHT

—says Trueman T. Rembusch, one who should know

We recently installed Strong Futura II Lamps and Bi-Powr Rectifiers in our Ben Hur Drive-In Theatre at Crawfordsville, Indiana.

Light meter readings were taken of reflected screen light from several positions. The new Strong lamp delivered four times the light of our old lamp -- current being consumed by new lamp was only about twice as much. Certainly an amazing result.

I was very impressed by the "Strong Tuf-Cold" Reflectors in the Strong Lamps.

Yours truly,

SYNDICATE THEATRES, INC.

Trueman T. Rembusch

Trueman T. Rembusch
President

You, too, should get Futuras and enjoy the advantage of the extra measure of light available for 35mm and 70 mm projection to big drive-in and indoor screens...the greatest amount of light ever delivered per carbon dollar.

Send for brochure

The *Strong* Electric Corp.

31 City Park Avenue, Toledo, Ohio 43601 • Phone: (419) 248-3741

INTERNATIONAL
PROJECTIONIST



Volume 39

August 1964

No. 8

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York 17, N. Y.
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

House Committee Hears Appeal	4
Lincoln Art Theatre Opens	6
From Broadway To Main Street	6
IATSE Convention Report	10
The cover story:— ASHCRAFT Corelite Lamps	11

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis 24, Minnesota. Editorial offices, 1645 Hennepin Avenue, Minneapolis 3, Minn. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions. \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE
YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



IATSE Approves Strong Measures at Convention

Delegates to the I.A.T.S.E. convention in Louisville, Ky. voted to ask Congress to investigate the adverse effects of the divorcement action of 1949, which separated production, distribution and theatre exhibition operations by law.

Characterizing the 15-year-old Consent Decree as "outmoded," the convention called upon Richard F. Walsh, IA president, to take appropriate action in the legislative field to have the decree altered or removed so that distribution groups could be free to build more and newer theatres, but urged that such action be independent of exhibitor action because of possible management-labor legal involvements.

The same resolution also asked for Federal subsidies for American film producers.

In other action the convention also went on record as opposing any tariff cut on finished positive film imported from abroad. Richard Gramaglia, New York Laboratory Technicians, Local 702, joined by Hollywood laboratory spokesmen spoke urgently on the subject.

Other resolutions called on the Government to process documentary, training and information films through industry laboratories; urged strong medical legislation and sought repeal of restrictive labor legislation.

Efforts to make local union affiliation with districts voluntary were defeated despite the eloquent efforts of Steve D'Inzillo, New York Projectionists Local 306, to bring about passage of this resolution.

Several resolutions which sought to increase the number of International vice presidents, one of whom would specifically represent motion picture studios, were deferred for further study and action by the convention.

AFL-CIO COPE (Committee on Political Education) director Alexander Barkin called upon the convention to participate actively in the November elections in behalf of labor-oriented candidates who will fight to protect and implement labor's rights and gains. **IP**

Unanimous Vote For R. F. Walsh at I.A.T.S.E.

Richard F. Walsh was elected unanimously to a 12th term as president of I.A.T.S.E. at the group's convention in Louisville.

In addition, a series of resolutions read in the meeting praised Walsh's activities over the years in behalf of the organization.

Other officers elected unanimously and without opposition were: Harlan Holmden, general secretary-treasurer; first vice president, James J. Annan, Ramsey, N. J.; second vice president; Harry D. Abbott, Philadelphia; 3rd vp, Orin M. Jacobson, Tacoma, Wash.; 4th vp, John A. Shuff, Akron, Ohio; 5th vp, Leo R. Up'on, St. Louis, Mo.; 6th vp, George J. Flaherty, Hollywood, Calif.; 7th vp, Edward J. Miller, Houston, Tex.; 8th vp, Hugh J. Sedgewick, Hamilton, Ontario; 9th vp, Jerry Tomasetti, Brooklyn, N. Y. Trustees: William N. Scanlan, Lynn, Mass.; R. E. Morris, Mobile, Ala.; George W. Brayfield, Olden, Colo. Delegates to AFL-CIO. Fred Jienicke, Seattle, Wash.; Richard Hancox, Jersey City. Delegate to Canadian Labor Congress, William G. Dale, Toronto.



SPECIAL IA GAVEL — Bruce J. Colville (left), business representative of Hollywood Studio Property Craftsmen's Local 44, gives a very special gavel to International President Richard F. Walsh at the recent IATSE convention in Louisville, Ky. It was made by Vern Tinsdale of Local 44. The head is laminated from white maple salvaged from a miniature used in filming "Mutiny of the Bounty" and black walnut from one of the chests used in "Cleopatra." The handle is of birch from "The Greatest Story Ever Told" and walnut from a character chair in "My Fair Lady."



**It's no box office secret
that more ticket purchasers keep
coming back when you sell this triple-
feature "performance package"...**
**1. A good movie! 2. The finest screen
lighting! 3. A comfortable theatre!**

Play it safe—light up with "National" projector carbons. Guarantee your patrons a brighter, clearer picture.

If you want proof of the importance of a well-lighted screen presentation—just try dimming the screen light for a few minutes!

The spontaneous and noisy reaction of your audience will quickly tell you how movie patrons feel when screen lighting isn't up to par.

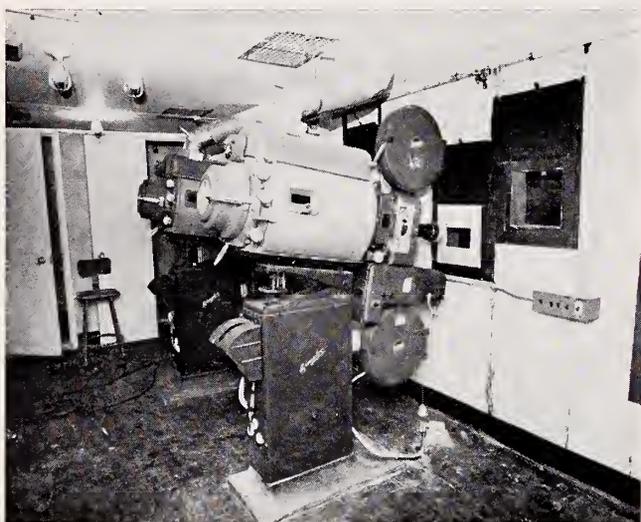
You'll save money, too, because "National" carbons are *slower-burning!*



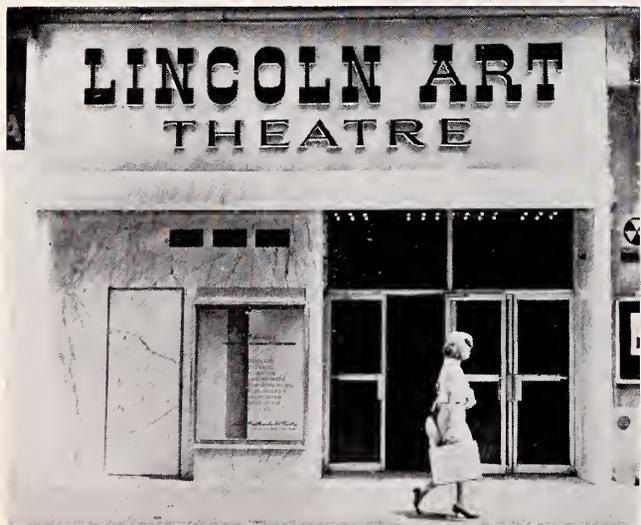
"National" is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017
In Canada: Union Carbide Canada Limited, Toronto

Lincoln Art Theatre Graces West 50's



Simplex equipment is featured in the projection booth of the Lincoln Art Theatre.



An attractive front combines the modern sleekness of marble and glass with the dignity of broad-serif letters reminiscent of the 1860's.

New York's newest motion picture theatre, the Lincoln Art, located at 225 West 57th Street, was dedicated at its opening July 21 to President Abraham Lincoln by Joseph E. Levine, president of Embassy Pictures.

Decor of the 570-seat theatre is Lincolnian and Victorian.

Architect for the theatre, which has a modern front of veined marble and plate glass, was William Ely Kohn. Interior decoration was by Yale R. Burge, Inc. Building and general contractor was Lasberg, Inc.

Decorative focal points inside the Lincoln Art Theatre are enlarged prints of Lincoln, made from old newspaper clippings. Included are scenes of the White House ballroom and the President's inaugural parade. An impressive Lincoln bust stands on a pedestal in the entrance area. A large standing portrait of Lincoln, from a little known engraving, keynotes the first-floor lounge.

Furniture, in deep, vibrant colors, is in Victorian style. Period mirrors and consoles, in gilt, are highlighted by ruby-red damask and striped olive-green flock wallpapers. Featured in the lower lounge are a Franklin stove and iron furniture of the Civil War period. The large chandelier in the lobby is also typical of the gaslight fixtures of the period. Boldly patterned carpets enhance the mid-1800 mood.

The ticket booth, adapted from one used in a Victorian opera house, is of panelled mahogany, with etched-glass front panels and brilliant lacquer-red, flock wallpaper.

Other appointments are as follows: carpeting, Alexander Smith, by National Theatre Supply; chairs, American Seating Co.; curtain controls, ADC; screen, Technikote; sound, National Theatre Supply; amplifiers, Simplex Altec; changeovers, Tide; film cabinets, Neumade; generators/rectifiers, Ashcraft; lenses, Bausch & Lomb, Kollmorgan; pre-amplifiers, Simplex Altec; projection lamps, Peerless Magnarc; projectors, Simplex-X-L; rewinders, Neumade; sound heads, Simplex-X-L; speakers, Altec; splicers, Neumade; signs, Artkraft Strauss Sign Corp.; and ticket machines, General Register.

The Lincoln Art Theatre runs through the complete block from 57 to 58th Street. Lobby and entrance area is on the main floor of the 12-story building, facing 57th Street. The auditorium is on the site of what was a parking lot facing 58th Street.

IP

LBJ Hosts As Kodak Receives Award For Foreign Success

President Johnson presented Eastman Kodak Company with an Export "E" Award recently at the White House.

William S. Vaughn, president and chief executive officer of the company, accepted the award in Washington at a special ceremony sponsored by the Department of Commerce to mark the 500th "E" Award presentation.

Kodak received the award for "success in export markets." Principally due to higher export sales, Kodak has earned a total of almost \$500 million in foreign exchange for the United States during the past five years, a report indicated.

That sum represents the amount by which Kodak receipts from abroad exceeded expenditures for imports, additional dollar investments in foreign subsidiary companies, and dividend and royalty payments to foreigners.

Sales to export dealers and to Kodak associate companies outside the United States during 1963 totaled \$140.2 million, about 10 percent higher than those recorded in the preceding year. Exports accounted for about 13 percent of the company's total sales in 1963, compared with 12 percent in 1962.

A report submitted by the company at the request of the Department of Commerce indicates that Kodak's exports increased \$45.7 million or 56 percent from 1957-62. In that same interval, total U. S. exports of merchandise increased 6 percent and total U. S. gross national product rose 25 percent. **ip**

Stodter Retires; SMPTE Names Bernhard to Post

Lewis A. Bernhard, Jr., has been named executive secretary of the Society of Motion Picture and Television Engineers (SMPTE). He succeeds Col. Charles S. Stodter, who is retiring after serving the Society since 1956.



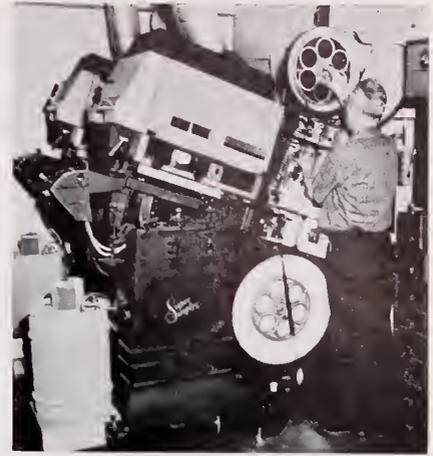
L. Bernhard

Bernhard comes to SMPTE from the Society of Plastics Engineers, where he had been administrative manager since 1955. During his nine years with the plastics society, Bernhard saw membership triple in number. Mr. Bernhard, in addition to membership promotion, was responsible for publications promotion, technical conference management and business affairs of the plastics group.

A native and resident of Stamford, Conn., Mr. Bernhard holds a degree in chemistry and business administration from Fordham University. Before entering Fordham, he served as a Navy petty officer first class during World War II.

Mr. Bernhard was employed as laboratory chemist at St. Joseph's Hospital in Stamford and in the quality-control department of Mach-

American Theatre



Charles W. Wainwright, Local #55, I.A.T.S.E., is shown threading up for the first show after the recent installation of new Strong Futura projection arc lamps at the American Theatre, Roanoke, Virginia.

lett Laboratories, Springdale, Conn., before joining the Society of Plastics Engineers.

The retiring SMPTE executive secretary, Col. Stodter, retired in 1954 after a 30-year Army career, the last four years of which he served as chief of the Army Pictorial Service. Following his retirement from the Army, Col. Stodter was engaged in communications research at the University of Pennsylvania.

SMPTE, founded in 1916 as the Society of Motion Picture Engineers, is a professional organization of engineers and executives in the fields of motion pictures, television, photo-instrumentation and high-speed photography. **ip**



The gallery features groupings of period furniture and authentic wall hangings.



The brilliance of the Technikote screen is apparent in this view from the rear of the auditorium.

Theatrofilm Brings B'way to Main St.



Through the medium of Theatrofilm, the capturing on film of action on the live stage, top companies are now able to "tour" without leaving home base. In a scene from "Hamlet," one play recently rendered in the new medium, we see (left to right) such stars as Richard Burton as the Melancholy Dane; Alfred Drake as a modern Claudius; Hume Cronyn as Polonius; and Eileen Herlie as Gertrude, Hamlet's "father's brother's wife, and — were it not so — my mother."

Play's The Thing --- On Theatrofilm

By Charles Washburn

The original cast intact, exactly as seen on Broadway, now becomes a fact for the first time in American theatricals. Even the smallest as well as the biggest roles go on tour. The original scenic production, too, takes to the road. Thanks to Theatrofilm cameramen, the Richard Burton *Hamlet* comes direct to sticks, stony points and stellar cities from the Lunt-Fontanne plush Broadway theatre.

The viewer will be in a down-front seat in some 1,000 picture houses seeing a performance at less than one-third (not counting the extra \$10 to \$25 he'd have paid scalpers) the Manhattan tariff.

More than this, he'll be "mingling with the old time throng" because there are shots of the audience, the pushing and shoving at the stage door for Burton autographs, and the commotion at the box office just for standing room. Everything for the road showing, through the genius of cameramen and what is called Electron-O-Vision, except the loss of buttons torn from the clothing by the wild drama lovers. Shakespeare never before had anything to even approach it.

If The Bard's astral body is hanging around, the chances are he will stay out of his tomb long enough to appreciate what is the most important technical treatment ever afforded a

stage play. No strange screenwriters to overshadow Shakespeare on the house boards; no misspelling his name on banners nor hams in his great "Hamlet."

Let's look behind the scenes while cameras grind the first true transition of stage to screen.

Occasionally we see a closeup of Burton, which is more than the New York balcony seat-holder in New York ever sees; but this only for a few seconds — the play must go on.

All around are cameras, somewhat comparable to videotape devices, but now concerned with making an exact replica of the Broadway performance.

Hamlet is on view to a New York audience. What they are seeing is

exactly what you'll see in Cherry Valley or Valley Forge. The play isn't on location, nor are there studio sets. It is in a theatre and it shall remain in the theatre — on the new Theatrofilm. The real, diamond-studded live gathering applauds. The cameras silently click Broadway as Broadway has never been clicked before. Even audiences unknowingly, are lensed in all their eager enthusiasm.

See photo on
page 14

Electron-O-Vision is an independent New York corporation formed this year. William Sargent, Jr., is president; Alfred W. Crown, is executive vice president. William Colleran directed this film duplicate of the John Gielgud production. William Sargent, Sr., is treasurer; Albert W. Ham, is secretary. These are the master minds behind a specially-developed electronic process for photographing and recording stage production.

Available light from the stage is adequate, thus no display of equipment is ever visible to the audience. As for Theatrofilm, it is a registered trademark. The finished product can be shown on any standard motion picture projector without special equipment. The picture is made on high speed film, using special cameras operated by specially-trained operators; while, as in this case, Burton's *Hamlet*, is being performed to a live, cheering throng.

Motion picture houses everywhere can show the production. Only four performances per engagement are currently scheduled, on a reserved seat basis. In most cases the seats will not be especially reserved by number.

Warner Bros. have assigned a large staff to the distribution and promotion of this extraordinary film. Benj. Kalmenson, Warner executive, is directing its far-flung distribution.

Not to be overlooked in the managerial setup are Richard Lederer, executive vice-president and director of Warner advertising and public relations, and Morey (Razz) Goldstein. Goldstein headed the Chicago conference. Joe Hymas is national publicity manager.

Others include: Ernie Grossman, studio publicity director; Max Stein, field coordinator; Jules Lapidus, Ralph Iannuzzi, Robert L. Conn, Ollie Williamson and Al Grubstick. Haskell M. Masters and Robert E. Myers.

IP

Walter Reade-Sterling Acquires San Francisco First-run Theatre

The Bridge Theatre, first-run specialized motion picture house in San Francisco, became a unit of the Walter Reade-Sterling, Inc. organization on August 1st, it was announced jointly by Walter Reade, Jr., Chairman of the Board, and Maury A. Schwarz, of The Bridge.

Schwarz will continue to operate the theatre, with the supervision of Walter Reade-Sterling. Reade said that the arrangements were consistent with his company's growth program, and that when other opportunities presented themselves, his company would continue to add theatres in other major cities, beyond its present East Coast base of operations.

Without interruption to its regular performance schedule, The Bridge will be refurbished, and its projection and sound equipment rechecked, to maintain it as one of the West Coast's best and most comfortable cinemas. Reade said, The Walter Reade-Sterling organization operates 50 theatres in the New York-New Jersey areas, and is also one of the nation's largest independent producers and distributors of motion pictures for theatres, television, education, and non-commercial use.

Strong Products Used Widely at Fair

Visitors of the World's Fair can see Strong Electric Corporation products used in every section of the fair, the U. S. Government, industrial, foreign, state, amusement and transportation areas.

Many larger exhibits are employing Strong carbon arc follow spotlights, incandescent follow spotlights, carbon arc projection lamps, Xenon projection lamps for automated programming, and rectifiers for the projection of film presentations or lighting of live stage, water and ice shows. Exhibits include those of the U. S. Federal Government, IBM, United Air Lines, Dupont, the Hall of Science, Better Living exhibit, Spanish Pavilion, the Texas Pavilion, and amphitheatre, representing a total of 57 devices. **IP**

Space Journey Film Thrills Fair Visitors

"To the Moon and Beyond," a motion picture filmed and shown in the Cinerama 360-degree Spacearium process, is being shown by co-sponsors Cinerama, Inc. and KLM Royal Dutch Airlines at the Transportation and Travel Pavilion of the New York World's Fair.

The inner surface of a 70-foot high dome provides the screen for an audience of 700 seated below. A modified 70mm projector, using a special lens, is situated on the auditorium floor at the center of the dome, rising slightly above yet surrounded by the audience. This projector throws its huge images onto the dome, while viewers are surrounded by the film. The audience, in seats which tilt up to 35 degrees, experience the sensation of soaring toward the moon, over it and then beyond it into outer space.

Spectators see the formation of galaxies and stars systems through the consolidation of gaseous matter—the prevailing theory of how all life began. This space journey, on an expanded time scale, deals in terms of millions of light years and gives its audience a look at things which no man of our era will ever see firsthand.

Narrated by Rod Serling, the film runs 15 minutes and was produced by a variety of methods. About half of it was filmed via animation techniques and with scale models, while the other portions represent live-action photography. Another exciting segment of the film is a combination of microphotography and the specialized production of optical effects, to depict force fields and nuclear energy, because viewers actually experience the sensation of entering the heart of an atom.

Trans-Lux Corp. is operating the exhibit for Cinerama during the two-year run of the Fair. Graphie Films of Los Angeles did the actual photography under the guidance of Cinerama producer Jeremy Lepard and

Tulsa Installation



Four of the new Super Trouper carbon arc follow spotlights developed by The Strong Electric Corporation, Toledo, have just been installed in the auditorium of the City Assembly Center, Tulsa, Okla. Shown operating one of these powerful spotlights is Gene W. Johnson.

Fair Operators Will Be Paid \$3 Million

More than 225 members of Operator's Local 306 of the IATSE employed by exhibitors at the World's Fair will be paid almost \$3,000,000, it is announced by Harry Garfman, Brooklyn and Queens business representative of the union. He also said an additional \$100,000 will be paid into the union's pension and welfare fund during the run of the Fair through 1965.

Contracts call for a total of 34 hours between 10 a.m. and 10 p.m. daily. The pay scale ranges from \$6 per hour for 8mm, 16mm, and 35mm operation to \$7 hourly for 70mm operation. Projectionists work five shifts per week, six hours per shift. Overtime is paid at time and a half.

A 15 per cent payment is given to the organization's welfare and pension fund, and vacations are set at one week for every six-month period of employment. Supervisory projectionists come under a special classification and receive \$7.50 per hour for 8, 16 and 35mm, and \$8.50 hourly for 70mm.

executive producer Arthur Finston. There are three shows an hour of "To The Moon & Beyond" at the T & T Pavilion, with an admission charge of 75c for adults and 25c for children. **IP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

BOONTON, N. J.

IATSE Convention

from page 4

Geodesic Dome For Las Vegas Cinerama House

convention took the following action:

Put I.A. on record as favoring elimination of the remaining Federal admissions tax of 10 per cent on prices over \$1;

Voted support of a bill now in Congress which would require film producers to label their films made or acquired outside the U.S. with the country of origin;

Voted down a proposal to expand the executive board by the addition of two vice presidents, one of whom would represent east and west coast film studios, and all of whom would be elected by regional district caucuses, instead of by the entire IA convention, as at present;

Referred a resolution opposing the election of Sen. Barry Goldwater as President to the leadership of IA for implementation through the AFL-CIO Committee on Political Education (COPE);

Approved action against student workers at universities' stagings of professional shows;

Passed a strong resolution asking the IA administration to study the legality of the individual projectionist's right to refuse to run non-IA films.

The convention adjourned shortly after the conclusion of one of the most dramatic sessions in its long history. A growing campaign to overturn a 1963 videotape agreement signed by Walsh and motion picture-TV studios in Hollywood, by six Hollywood locals, exploded in the waning hours of the convention on a report by the Grievances Committee, chaired by Vice President E. J. Miller, which supported Walsh's action.

The complaining unions hit the floor for one hour of statement stressing in all their presentation that Walsh had gone beyond the authority of the Constitution in unilaterally signing a contract without involvement or approval by the interested locals.

Opponents of the president's action included John W. Meyers, Film Editors; Herb Aller, Cameramen; Don Haggerty, Film Technicians; Hefry Villardo, Makeup Artists; Clayton Thompson, Scenic Artists; Russell Ashley, Sound; G. Erickson, Makeup Artists; and Ernest Bachrakh, Still Cameramen.

Hollywood spokesmen stated that the Grievance Committee hearing preceding full convention consideration,

which disallowed verbatim transcript of the proceedings, outlawed additional observers beyond five from each local, and foreshortened statements by interested parties, were part of improper procedures. Points of order were raised which questioned conduct of the hearing, and also asked that President Walsh relinquish the chair during the ensuing debate.

Lehners referred to the contract as a "secret tape deal," an allegation which Walsh was later to stoutly deny in his 30-minute reply to the Hollywood spokesmen. "He acted in the name of expediency," Lehners charged. "We do not question his motives, but his authority." Walsh replied by reiterating his firm belief in local autonomy, which he stressed would be preserved. Quoting I. A. bylaws to support his action in what he characterized a special situation requiring the direct intervention of the I.A. president, Walsh cited his 22 years of service to the Alliance and asked dramatically whether he had ever abused his authority to the detriment of the Alliance? Stoutly denying that he had signed the 1963 videotape agreement in secret, Walsh asked the convention for its vote of confidence and was supported by more than 10 to 1.

In other action the I.A. approved a bylaw which strengthens jurisdictional definitions, and arms the I.A. for future possible conflicts over jurisdiction with other internationals. The convention, at the request of President Walsh, retained its so-called "special laws" which were initially devised eighteen years ago to root out subversives among the membership. Although several delegates spoke against that portion of the President's Report which sought the retention of the "special law" because of the apparent stigma which it implied, the convention heeded Walsh's request.

In closing the convention, Walsh, speaking directly to the Hollywood locals of District Two, spoke of working harmoniously and cooperatively with them, and promised to work out their problems amicably and in the best interests of the I.A. His final remarks did much to cool down the rancor engendered by the heated debate which had transpired earlier in the afternoon. It was announced that the 48th Biennial Convention will be held in 1966 in Detroit. **IP**

The world's first "stressed-skin" aluminum dome designed for a motion picture theatre will soon be built in Las Vegas, Nev., according to Cinerama President William R. Forman.

The Mahon geodesic dome was developed by the western division of the R. C. Mahon Company, steel and aluminum fabricators, in Terrance, California. The company will start construction of a 1000-seat theatre for exhibitor Harry Nace later this month.

Predicting that Mahon Dome will be "the shape of things to come," Forman said that the geodesic structure is the most practical form of exhibition for Cinerama. A partial sphere offering a self-supporting building with maximum column-free floor space, it affords an unlimited versatility potential for attractive interiors. The new engineering principle of a sphere within a sphere offers an interior acoustical dome which also supports fixtures and fireproofing.

Forman pointed out further that its unique safety factors give the dome a considerable edge over the conventional theatre. Its light weight construction and resiliency reduce earthquake inertia loads on supports, preventing collapse or shattering. Its spherical shape and high tensile strength make it resistant to hurricane winds of over 125 miles per hour. Its redundant construction gives it greater fire resistance; a large portion of the dome could be destroyed without total collapse. It is designed for 40 pounds per square foot loading making it impervious to snow as deep as four feet.

The weight of the entire structure is one-thirtieth of the only other Cinerama dome in existence, a pre-cast concrete structure at the corner of Sunset and Ivar in Hollywood.

"We envision many of these Mahon Dome Cinerama theatres," said Forman. "Supporting its own weight without space-wasting, vision-inhibiting pillar or suspensions, it is the ultimate in design and beauty for Cinerama, and is one of the most economical buildings in motion picture history."

Perry Neuschatz, AIA Architect, designed the projected Las Vegas structure for Nace. It will be constructed by the E. L. Parmer Construction Company of Phoenix, Arizona. **IP**

The Cover Story . . .

Ashcraft Scores with New Core-Lite Lamps

The installation of Ashcraft Core-lite lamps with existing Norelco 70mm projectors has resulted in improved quality and cost reduction at Fox Inter-Mountain's Alladin Theatre in Denver.

The Fox Alladin is a combination hard ticket and show case run, and has been one of Denver's top outlets for 70mm runs for several years. The theatre is equipped with Philips (Norelco) projectors. Before the recent Core-Lite installation used F:2.0 condenser type high intensity arc lamps burning 13.6mm x 22-inch positive and 1/2 x 9-inch negative carbons at 160 amperes.

The decision to install Ashcraft Core-lite lamps was made after comparative tests were run in the theatre. The Core-lite arc lamps were burned at 100-105 amperes using 11mm x 17 1/2-inch high-intensity positive, and 11/32 x 9-inch negative carbons. Center screen lighting increased 12 per cent, and screen side lighting increased 41 per cent. This increase in overall screen lighting is even more significant when the size of the screen is taken into consideration. Both 70mm and CinemaScope projected pictures are in excess of 50 feet in width.

After 30 days, operation with the Core-lite lamps, Joe Stone, who supervised the installation for National Theatre Supply Co.'s, Denver Branch,

came up with a compilation of savings in the cost of operating the Core-lite lamps. The savings in cost of carbons and current is in excess of \$900.00 per year—enough to enable the Core-lite lamps to "pay for themselves" in less than four years of operation. Such savings were good news to Mel Glatz, Fox Inter-Mountain purchasing agent, who was already happy with the improvement in screen lighting.

New S.O.S. Printer Features Improvements

Alan C. Macauley, President of S.O.S. Photo-Cine-Optics, Inc., recently announced the development of a new Model B TEL-Amatic Printer.

The new device is an improved continuous contact sound and picture printer for double 8mm and 16mm films, having been equipped with a semi-automatic 21-scene light change which assures perfect exposure. In addition, feed and take-up shoes now replace the pad rollers. Many more features never before achieved in the low cost professional printer field are described in a folder available from S.O.S., 387 Park Avenue South, New York, N. Y. 10016; or 6331 Hollywood Blvd. Hollywood, Calif., 90023. lamp, when used with 70mm projectors, is that no intermediate optical elements or changes in lamphouse positioning is necessary when changing from 70mm to 35mm projection.

National General Opens \$350,000 House

A gala opening night July 15 marked the opening of the new \$350,000 Fox Theatre in Orange County, Calif.

The 838-seat deluxe showcase is located in the Rossmoor Shopping Center. It is the latest addition to National General Corp.'s, Fox West Coast operation.

The opening also provided an opportunity for scholarship fund-raising activities by the Rossmoor Women's Club.

According to National General Corp. president and chairman Eugene V. Klein, the theatre is part of plans to extend the company's Western and Mid-western operations, which now encompass 217 conventional and drive-in theatres in 16 states. **ip**



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.

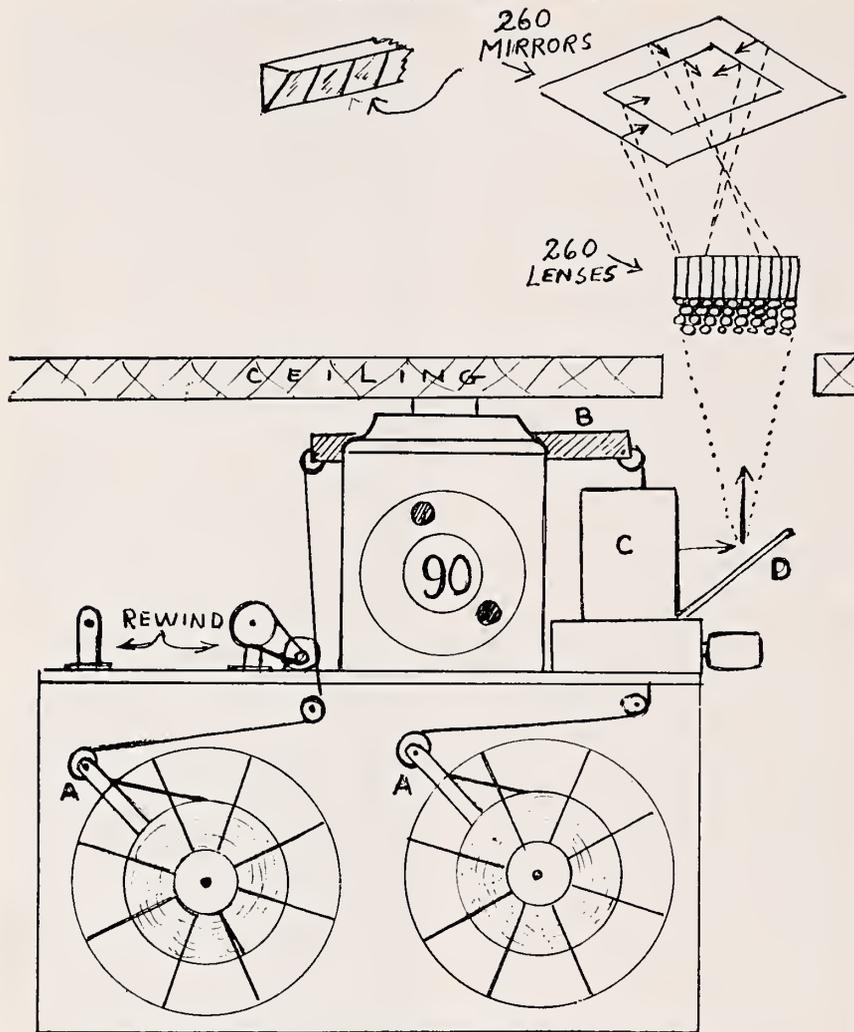


**America's
headquarters
for all
theatre equipment
and
supplies**



National
THEATRE SUPPLY COMPANY

Autoscope System Diagram



HOW IT'S DONE WITH MIRRORS (260 of them) in the central projection building.

24

In response to many reader inquiries, the illustration above depicts the operation of the novel Autoscope drive-in theatre projection system. David Hamrah's article describing this unique method was reprinted in the July, 1964 IP from the original story in the I.A.T.S.E. Bulletin.

Trans-Lux Names Linn to Washington

Byron R. Linn has been appointed director of Trans-Lux theatre operations for Washington, D. C., it was announced by Thomas E. Rodgers, vice president in charge of theatres for Trans-Lux Corporation. Linn was formerly vice president, film buyer and booker for the Comerford Theatre Circuit.

He will handle the activities of three Washington theatres, the Trans-Lux, the Trans-Lux Plaza and the Trans-Lux Playhouse, the latter to serve as his headquarters.

Ballantyne Sales Mount

First-half sales of Ballantyne Instruments and Electronics, Inc., divi-

sion of ABC Consolidated, are 109% ahead of a year ago. Profits in the first six months exceeded all 1963. **IP**

Stiftel Named To SMPTE Staff

Joseph R. Stiftel has been appointed assistant staff engineer for the Society of Motion Picture and Television Engineers (SMPTE). In this position, Mr. Stiftel will be primarily responsible for augmented quality-control procedures in the SMPTE test film program. He also will assist in the development of new test films.

For three years prior to his appointment to the SMPTE headquarters staff, Mr. Stiftel worked in the Thin Film Solid State Electronics Program at General Telephone and Electronic Laboratories. At General Telephone he was directly involved in the research and development of a solid-state television display panel. **IP**

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

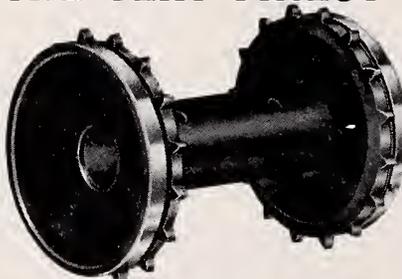
ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

THE VERY FINEST PROJECTOR PARTS

ARE MADE BY

LaVezzi

There's nothing like them for precision manufacture, close inspection, efficiency in operation, dependability and long life. Obtainable from your Theatre Supply Dealer.



LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



Battery-Powered Projector Marketed By Viewlex, Inc.

A battery powered filmstrip slide projector designed to be used independently of any outside power source was announced by Viewlex (AMEX) of Holbrook, Long Island, N. Y.

Light enough to be carried easily, the unit is enclosed in its own sturdy dispatch type carrying case which



Viewlex, Inc. has announced a new lightweight portable filmstrip and slide projector, shown above. The unit is self-storing and will operate on standard 110 VAC, or any 6 VDC source, including its own rechargeable battery.

serves as a projection screen as well. The Viewlex Battery Powered Filmstrip Slide Projector can be set up in seconds and used anywhere. The unit can also be operated from any standard power outlet, including a car battery.

Designed initially for use by the Peace Corps in areas where electrical power was not readily available, the Viewlex Battery Powered Filmstrip Slide Projector proved to be an invaluable teaching tool.

The Viewlex Battery Powered Filmstrip Slide Projector, which as its name applies can be used either with filmstrips or conventional color slides, receives its energy from a 6-volt wet cell Viewvolt spill-proof battery. A recharger also built in will rejuvenate the battery in 12 hours or less. The Viewvolt battery can be recharged at least 500 times. Each charge is good for a full hour's projection.

The Projector can be used with a variety of lamps and lenses, from "small-screen" projections to "long throws" filling large conventional screens. Size of the unit, encased, is 17 x 17 x 5-inches. Its weight is 25 pounds. The complete unit, ready for use, sells for under \$150.

E. Lachman Dead at 56

Edward Lachman, president of Carbons, Inc., Boonton, N. J., died during his attendance of the convention of the Allied Theatre Owners of New Jersey, at the Concord Hotel Kiamesha Lake, N. Y., Aug. 4, at the age of 56.

To projectionists, exhibitors, dealers and others in the trade as well as the trade press, Ed was the epitome of warmth, friendliness and enthusiasm in his business as well as in his social activities.

Under his leadership and guidance Carbons, Inc., enjoyed considerable growth with the recent establishment of the XeTRON division, which distributed motion picture sound equipment and power supplies. His plans for a well-rounded expanded organization began to take form as he added to his staff several well known engineering and executive people in the industry and embarked on a program of sizeable expansion



Mr. Edward Lachman

for XeTRON and Lorraine Carbons.

Mr. Lachman started in the business in Chester, Pa., where his father had a theatre. He was once associated in exhibition with Wilbur Snaper in New Jersey. At the time of his death he owned the State Theatre, Boonton, N. J.

Surviving Ed are his wife Rosabella, his elder son, Edward, Jr. and twin sons Wayne and Robert.

**ask your dealer
for the reflector**

WITH THE 2-YEAR COATING GUARANTEE

Strong **TUFCOLD**



The first surface reflector with the harder than glass, flake and peel-proof front coating.

Guaranteed twice as long, they actually cost much less per month than any others.

Replace your old reflectors now. Your dealer has the size you need.

THE *Strong* **ELECTRIC CORP.**

31 CITY PARK AVENUE • TOLEDO, OHIO 43601
PHONE: (419) 248-3741

Execs Ink Theatrofilm Pact



Benj. Kalmenson (seated), executive vice-president of Warner Bros., signs Theatrofilm distribution pact as (L. to R.) William Sargent, Alfred W. Crown and Mory (Razz) Goldstein look on. Sargent is president and Crown is executive vice-president of Electronovision Productions, Inc., developers of Electronovision Productions, Inc., developers of Theatrofilm. Goldstein is vice-president and general sales manager of Warner Bros. (See story on page 8).

G & G Theatres Takes Over Strand

The Strand Theatre, Milwaukee's leading hard-ticket house, was acquired this week by G. & G. Theatre Corp., New York. G. & G. is owned by Herbert L. Golden and Leonard S. Gruenberg.

Gruenberg was formerly Eastern Division Manager for RKO Pictures, and subsequently Vice-President of NTA. Golden, now in the investment and the finance business, was formerly Vice-President of Bankers Trust Company and United Artists Corporation.

The 850-seat Strand Theatre, was formerly operated by Joseph Seiter's Prudential chain. The Strand recently closed after a lengthy run of "Cleopatra." It has played such road show film attractions as "Ben Hur," "Lawrence of Arabia," "West Side Story," "South Pacific," "Oklahoma!," "Exodus" and "Mutiny on the Bounty."

The theatre is being managed for G. & G. by Jerry Gruenberg, who formerly headed the Prudential and Joseph Gran theatres in the Milwaukee area.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

DIAMOND

TRADEMARK

PROJECTOR CARBONS

Better
Light!

Lower
Costs!

RINGSDORFF CARBON CORP. East McKeesport, Pa.

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

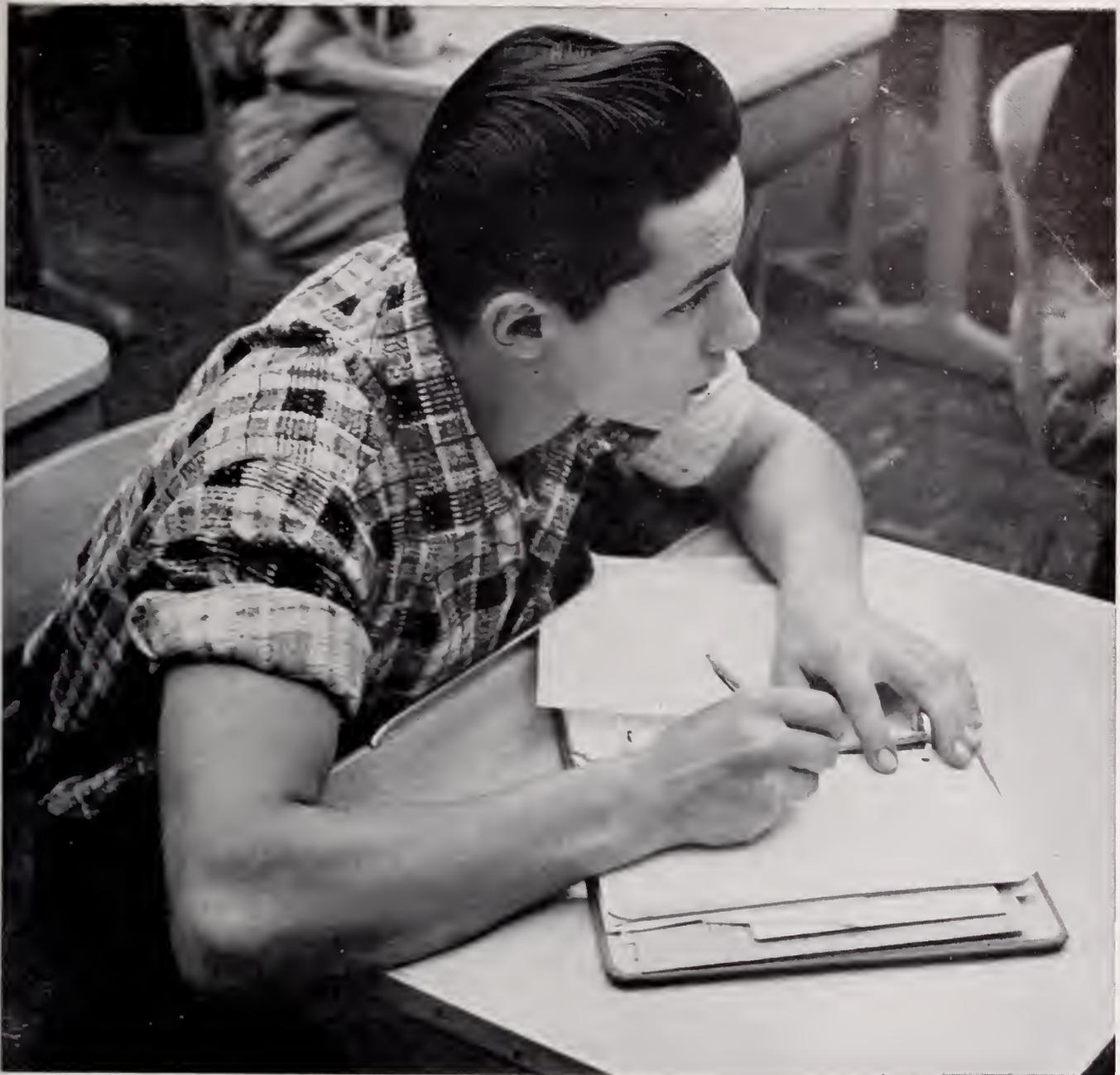
- *True high-fidelity, distortion free.
- *Low installation cost, minimum space needs.
- *Increased reliability, less maintenance.
- *No vacuum tubes, no photoelectric cells.

***and the only American-made 70 mm 35
theatre projection systems**

SEE
YOUR CENTURY DEALER ... for bigger, brighter projection.

CENTURY PROJECTOR CORP.

New York 19, N. Y.



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



• The U. S. Government does not pay for this advertisement. The Treasury Department thanks, for their patriotism, The Advertising Council and this magazine. •

There is only **ONE** Projection Lamp
To Light the **LARGEST** Screens!
INDOOR THEATRES! • DRIVE-IN THEATRES!

The
Ashcraft **SUPER**
CORE-LITE

The Ultimate in Projection Lamps!

Engineered for the Projectionist!

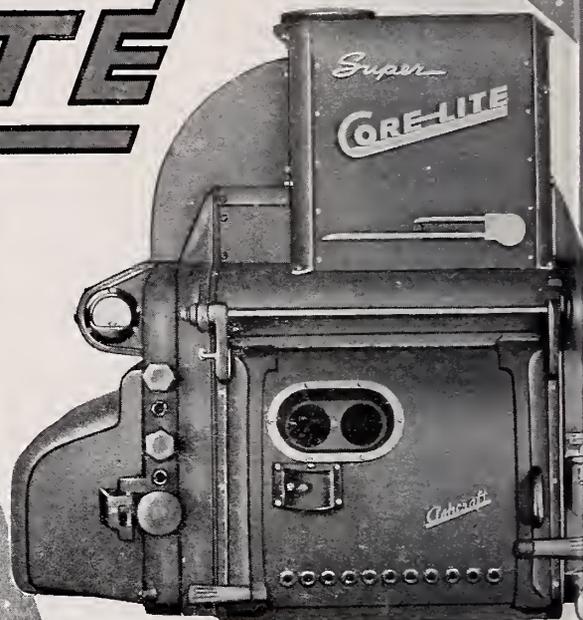
**OPTICALLY AND MECHANICALLY
PERFECTED TO PROJECT THE MOST
BRILLIANT PICTURE POSSIBLE!**

THE SUPER CORE-LITE PROJECTS:

**MAXIMUM LIGHT • MAXIMUM
LIGHT DISTRIBUTION!**

THE RESULTS ON THE SCREEN:

**PERFECT FOCUS • PERFECT DEFINITION • PERFECT
RESOLUTION • PERFECT WHITE LIGHT PRODUCES
TRUE COLOR REPRODUCTION!**



**CURRENTLY
OPERATING ON
DRIVE-SCREENS
70mm to 175 feet
35mm Cinemascope
to 165 feet**

C. S. ASHCRAFT MANUFACTURING CO., INC.

36-32 THIRTY-EIGHTH STREET, LONG ISLAND CITY 1, NEW YORK

SOLD EVERYWHERE IN THE UNITED STATES BY LEADING AUTHORIZED THEATRE SUPPLY DEALERS

INTERNATIONAL PROJECTIONIST



M. P. ...

6 OCT 26 1964
Cont Copy

Here's a helicopter view of the Kodak Pavilion at the New York World's Fair. Its 400-foot long sloping surface matches a lunar landscape. Five 30-by-36 foot color prints ring the 80-foot picture tower, and can be seen for miles by day and night. (See story on page 16).

SEPTEMBER
VOLUME 39
40c A COPY



1964
NUMBER 9
\$3.00 A YEAR

See SMPTÉ Technical Exhibit Directory on Page 8

The *Beautiful* New
Strong
FUTURA
PROJECTION ARC LAMP

A Product of

The *Strong* Electric Corporation

31 City Park Avenue • Toledo, Ohio 43601

Phone: (419) 248-3741

Brochure on request

MORE LIGHT

for all indoor theatre screens up to 65 feet and drive-in screens up to 120 feet.

LESS COST

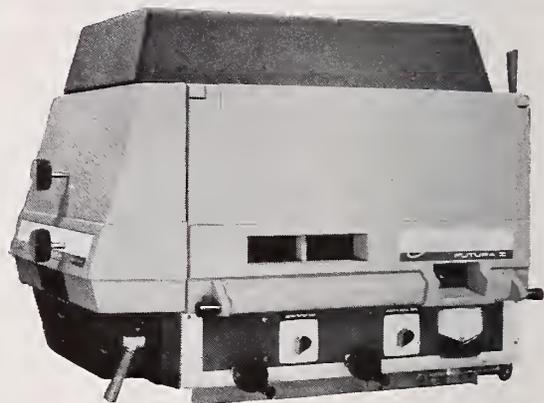
to buy and less to use. Efficient utilization of standard 20-inch carbons insures THE GREATEST AMOUNT OF LIGHT EVER DELIVERED PER CARBON DOLLAR. Permits projection of an extra reel per carbon.

WIDER USE

Matches the optical requirements of all 35mm and 70mm projectors. A single knob allows instant change between film widths. A calibrated scale with reference pointer facilitates precise reset of burner focus . . . a Strong exclusive.

GREATER CONVENIENCE

Unit construction permits instant removal of components for cleaning and inspection. 25% lower silhouette permits easy installation in low-ceiling projection rooms.



The **FUTURA I**

for utmost economy in operation with standard 11mm carbon trim burning at 75 to 105 amperes.



The **FUTURA II**

with automatic crater positioner for 13.6mm carbon trim burning at 120 to 160 amperes, or for 11mm carbon trim burning at 100 to 125 amperes.

MORE FEATURES

New type relocated arc imager system eliminates parallax. Big 18-inch first surface Strong Tufcold reflectors used in lamps operating above 95 amperes assure lower aperture temperatures. Slivered reflectors used in lamps burning under 95 amperes. Streamlined ammeter for reading arc current. Automatic trimming light. Inside dowser system.

INTERNATIONAL PROJECTIONIST



Volume 39 September 1964 No. 9

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAL GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Xenon Projection Lamps	4
SMPTE Exhibit Directory	8
Heyer-Schultz Reminisces	14
Tri-State's Golden Anniversary	15
The Cover Story - - -	
Giant Kodak Prints for Fair	16
Ashcraft Lamps Debut in St. Louis	17

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

The exhibitor owners meet this fall.

The Theatre Owners of America annual convention first. September 28, 29, 30, October 1. The meet in Chicago, Conrad Hilton Hotel.

The TOA is the 17th annual convention. National Association of Concessionaires will trade show.

Allied States Association of Motion Pictures Exhibitor, October 19, 20, 21, 22. The equipment manufacturers hold the trade show. The Allied 35th annual convention.

Its TOA and Allied members will be well advised to attend. For these are times when no theatremen can afford to miss the opportunity to get into first-hand contact with fellow theatremen for the discussion of mutual problems and swapping ideas, as well as for on-the-ground participation in discussions and formulation of programs of action which are the business of these annual get-togethers.

The projectionists urged to attend, particular at the Allied equipment manufacturers and the dealers here at the trade show. They will have the opportunity of looking at the latest in theatre equipment for four-wall houses and drive-ins.

The aroused interest in projection and sound techniques may stimulate more concentration by exhibitors on the important details of equipment for screen presentation.



**Society of Motion Picture
and Television Engineers**

Attention to that detail definitely seems to belong on the agenda of these exhibitor conclaves. None of the exhibitor leaders and none of their organization's membership that all theatres are giving the public the kind of screen presentation (from the technical standpoint). Thoroughly efficient management should proved.

Because plant improvements beget their kind. And newer accessories in the department of projection and sound stimulate theatre attention to other phases of the theatre—including seating, decoration and better housekeeping around the lobby, foyer and rest rooms as well as the auditorium.

The conditions of exhibitor should be intensely concerned with the vital matter of film supply and rental cost. They chooses to back and forth between exhibitor and distribution. The way is life for the motion picture industry .

The national exhibitor conventions, for the long years, they lacked entirely one important ingredient. This is organized discussion of the way and means of pleasing the customer better and thus getting more customers of the individual theatre.



A Resume . . .

Xenon Projection Lamps

By Don V. Kloeppel

(Reprinted from the Journal of SMPTE, June, 1964)

The motion-picture industry has depended primarily upon two sources of light for projection purposes—the incandescent lamp and the carbon arc, each of which has certain disadvantages.

The incandescent lamp has an adequate life span, consistent with its cost. It is easily replaced and aligned, and it uses alternating current, which is universally available. A major disadvantage, other than limited output, is the color of the light it emits. Across the visible spectrum, incandescent light is deficient in the short or “blue” wavelengths, and the amplitude of the longer or “red” wavelengths is high. The result is a yellow light, rather than pure white light, which is desirable because it more closely resembles average daylight (Fig. 1).

The carbon arc overcomes these difficulties. The light emitted is blue-white, approaching the color of daylight (Fig. 1). Also, it is the most powerful source of artificial light known, therefore the size of motion-picture screens under carbon arc illumination can be determined more by such factors as heat dissipation, optical design, and motion-picture film properties than by the limits of carbon-arc brightness.

A disadvantage is that carbon arcs must be vented because the carbon and core materials decompose, forming gas and ashes. Also, they require elaborate feed mechanisms to keep the positive crater properly positioned in relation to the optical system to prevent screen illumination changes in color, brightness and distribution. Current changes also affect the color of the light.

The xenon high-pressure projection lamp emits light that is essentially flat across the visible spectrum (Fig. 1).

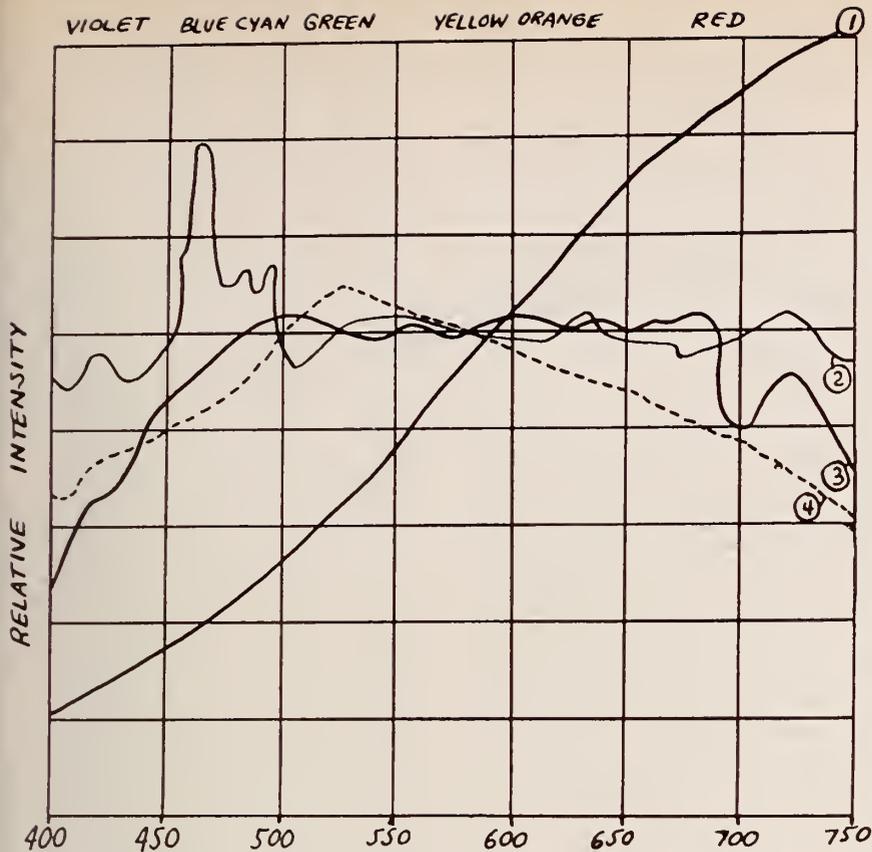
Other distinctive characteristics under typical operation in laboratory and studio review rooms are described below.

The warranted life of a typical xenon high-pressure lamp is 1500 hr. This warranty can be given only if auxiliary equipment meets the requirements established by the manufacturer. The rated life is based on an off-cycle of 20 min, such as would be the case in most theaters. Film roll sizes in studio and laboratory review rooms are quite likely to be small. If the lamps were extinguished at the end of each roll, the on-off cycle would be increased. Damage to the lamps would result, due to the increased number of ignitions. One report stated that, when on-off operation was abandoned and the lamps left burning continuously for a 13-hr. period each day, lamp life increased from an average of 750 hr. to over 1800 hr.

Xenon lamps require a direct-current power supply with a no-load voltage of at least 72v and an a-c ripple content of less than 17%. Practical operation has indicated that useful life will be further increased with ripple lower than that figure. In fact, most well-regulated power supplies have far less ripple; in some cases less than 1%. Several manufacturers have designed power supplies for xenon lamps that meet these requirements. They have included relays to provide 220-v d-c for the igniter and also some means of increasing the d-c current while the lamp blackens due to decomposition of the tungsten electrodes.

Sixty percent of the installations surveyed included rectifiers designed for xenon service. Forty per cent had modified existing rectifiers and generators by adding ballast resistors and, in some cases, increased filtering.

The xenon arc appears to be inherently unstable during the first few minutes of operation after ignition. Flicker was reported during that period in every installation reached by the survey. After a short time, the



flicker disappears and the arc is completely steady during the rest of the burning period. One possible explanation is that the high ignition voltage produces minute irregularities on the surface of the cathode. As the cathode heats up, these bubbles smooth out. The problem is not considered to be serious as it is usually possible to pre-heat the arc before screenings. This is good practice with the carbon arc as well.

Because the xenon arc lamp radiates its light in all directions, an auxiliary mirror is placed in front to reflect light radiated in a forward direction back to the main mirror. The superimposition of this real but reversed image of the arc requires extremely careful adjustment if distribution on the screen is to be uniform. Further, the discharge between the electrodes is bell-shaped. If the major portion of the arc is to be utilized, some optical rectification is necessary for good screen distribution. One such optical rectifier or corrector is the Zeiss-Ikon Honeycomb lens. A single element corrective lens designed to spread the light evenly across the aperture is also used. That these devices are practical is evidenced by reports of up to 90% side-to-side screen light distribution, compared to the center of the screen.

It was discovered in the first the-

ater installations of xenon lamps that the violent igniter discharge caused a brief cracking in the sound system. To overcome this both lamps were ignited before the performance and the "off" lamp current was decreased. Such operation ended the sound problem without materially affecting the life of the lamps. Shortly before the changeover, the current was increased to normal and the change from one projector to another effected without a noticeable change in screen brightness. Later, a relay was inserted in the igniter circuit which shorted the amplifier input, interrupting the sound for about 0.1 sec. during ignition. A sound interruption cannot be tolerated in a review room. Films being viewed are subject to very critical visual and aural examination. A recorded foreign noise, a poorly looped splice or a projector sound system defect will in most cases prompt intensive investigation. Most of the installations surveyed reported igniter noise problems. Of course, if both lamps are left on during the entire performance, there is no problem. A more sophisticated approach might be to investigate the effectiveness of improved shielding around the first stage of the preamplifiers, the addition of a suitable low-pass filter in the first stage grid, or a small r-f

(Please turn to page 6)



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.



Rand Named Marketing Director Union Carbide

M. M. Rand has been named director of marketing for the Carbon Products Division of Union Carbide Corporation. Succeeding him as marketing manager for electrode and metallurgical products is Robert D. Kennedy.



M. M. Rand

Rand joined Union Carbide in 1948 following graduation from Michigan State University with a B. S. degree in chemical engineering. After serving in the production and development departments, he joined the electrode products marketing group in 1954, and since January, 1962, has been marketing manager for electrode and metallurgical products.

Kennedy was graduated from Cornell University in 1954 with a B. S.

Xenon Projection Lamps

Continued from page 5

The true average temperature of the xenon arc is rated at 9000K, while the plasma ball Kelvin temperature is even higher. The color temperature measured at the center of the arc is

degree in mechanical engineering, and joined Union Carbide in 1955. Following assignments as a field sales engineer, he was project engineer on mechanical products from 1959 until 1961, when he was named division sales manager for electrical and mechanical products in Chicago. Since June, 1963, he has served as product manager for electrical and mechanical products in New York. rated 6200-6500 K, while the color temperature of the total radiation is about 150 K lower due to proportional electrode radiation.

The color temperature of the high-intensity carbon arc is rated at 5400 K.

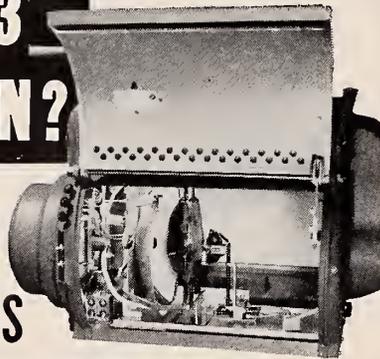
Bearing in mind the disparity between the true temperature in degrees Kelvin of a blackbody radiator, and the apparent color temperature of light radiating from a non-blackbody, it is difficult to refer to such light in terms of the absolute scale. It is even more difficult to measure this apparent "color temperature" accurately. The problem was covered quite thoroughly by Crandell, Freund and Moen.

A wide difference of opinion concerning the color of xenon light compared to carbon-arc light was indicated by the survey. Color temperature readings were generally inconclusive. When viewed side by side under identical conditions, the xenon light appeared to have a lower apparent color temperature than the carbon arc. The addition of a filter comparable to a Wratten CC10 to the xenon output produced a visual match with the carbon arc light of equal brightness. This led to the conclusion that the xenon light is minus green when compared to carbon arc light; yet when a 16mm projector equipped with a 450-w xenon lamp was added to the comparison it appeared to have a much higher apparent color temperature than either the 1600-w xenon or the carbon arc. The material and design of the optical system is perhaps responsible for the difference in apparent color temperature, and is the subject of further investigation.

Results of the survey indicate that the xenon-arc lamp, operated under conditions that meet the manufacturer's warranty, is a satisfactory high-intensity light source for motion-picture projection. It is constant in color and intensity and requires little adjustment or maintenance, other than routine cleaning of the optics. It can be operated over a wide current range without change in color. It requires no attention while operating, thus the projectionist can pay more attention to sound level, focus, framing threading and handling of film, and to other projection details that all add up to better motion-picture presentation. **IP**

CAN YOU MATCH ONE OF THESE 3 TO YOUR SCREEN?

Strong X-16 XENON ARC PROJECTION LAMPS



- 900-watt model for screens up to 23 feet wide (matte—Cinemascope Aperture) or 28 feet wide (high gain—Cinemascope Aperture)
- 1600-watt model for screens up to 29 feet wide (matte—Cinemascope Aperture) or 36 feet wide (high gain—Cinemascope Aperture)
- 2500-watt model for screens up to 35 feet wide (matte—Cinemascope Aperture) or 43 feet wide (high gain—Cinemascope Aperture)

- Steady, flickerless, pure white light is independent of voltage variations of the power line supply.
- Extremely even distribution of light throughout the total screen area.
- "Push-Button repeatability" of intensity and color temperature.
- Excellent color film reproduction.
- Focus remains constant.
- Projects practically no heat to the film or aperture plate. No cooling required.
- Cleanliness assures maximum life for the projector.
- Simple operation. No moving parts in the light source.
- Maintenance and current costs are approximately the same as for carbon and current costs for operating a carbon arc lamp of equivalent light output.

Send for brochure. Demonstration in your theatre on request.

THE *Strong* ELECTRIC CORPORATION
31 CITY PARK AVENUE • TOLEDO 1, OHIO

Indoor House Completes N. J. Cinema Center

Walter Reade-Sterling's new Community Theatre located adjacent to the Eatontown Drive-In Theatre at the Eatontown Traffic Circle on Route 35 in Eatontown, N. J., held a gala opening August 26th.

The entire area is known as the "Eatontown Cinema Centre" with both the Community and Eatontown Drive-In Theatres operating concurrently.

Early American

The new 900 seat Community Theatre which fronts on Monmouth Parkway is of early American design, and is a virtual duplication of the organization's Community in Cherry Hill, N. J., which opened a year ago and has received architectural awards for its designs and decor. The Eatontown Community is shingle-roofed with red sidings, and has a white colonnade front. Although the decor is colonial, the theatre has the most advanced projection and sound equipment. Among the many patron conveniences are push-back seating with extra wide rows to assure ample leg room.

Another First

Public officials of Eatontown and Monmouth County joined celebrities of the motion picture industry at a reception and buffet dinner at the Crystal Brook Inn prior to a special preview.

The "Eatontown Cinema Centre" complex is another first for the Walter Reade-Sterling organization, comprising both a major conventional roofed theatre and a year-round outdoor theatre within the same area, accommodating over 1200 cars. Although major first-run films are shown simultaneously at both theatres, occasionally each theatre plays different attractions.

The Community, the first to be built by the Circuit in Monmouth County in many years, raises to more than 50 the number of theatres for the Walter Reade-Sterling organization, and represents another milestone in its expansion program. In

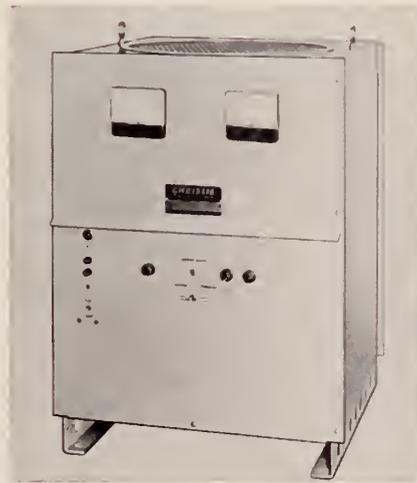
(Please turn to page 8)

Christie Electric Corp. Offers Broad Line of DC Power Supplies

Christie Electric Corporation is currently featuring a newly expanded line of DC Power Supplies designed specifically for operating Xenon and Mercury-Zenon Arc-Lamps. This versatile line now consists of 14 units, includes both highly regulated and manual units.

Covering lamp reading from 150 to 10,000 watts, each unit will operate any of two or more different lamp sizes, either Xenon or Mercury-Xenon. They include automatic regulation as well as extremely low current ripple and other special features for longer lamp life. Unique "slope control" in the Christie units automatically provides either regulated constant current, constant power, or increasing power.

This enlarged line is widely used in such applications as solar simulation, data display systems, scientific instruments, and projection systems, to name only a few. Further information can be obtained from Christie Electric Corporation, 3410 West 67th Street, Los Angeles, Cal., 90043.



Shown above is the Christie Electric Corp. Model CX5000-4S, 5 kilowatt power supply, which is capable of operating either Xenon or Mercury-Xenon lamps of ratings 450 through 5,000 watts. The unit has a maximum power output of 6,000 watts with a smoothly adjustable current range from 30 to 180 amperes. It provides a current regulation of $\pm 1\%$ and a current ripple of less than 1% .

* look into Stewart Filscreens ...the choice of experts

FILMSCREENS FOR SHOWMEN—Stewart Projection Screens—the choice of 15 major exhibitors at the New York World's Fair!

ULTRAMATTE—for commercial playhouses, theatre TV, viewing rooms ■ Seamless to 46 by 88 feet ■ Optical efficiency ■ Durable economy.

LUXCHROME 50—seamless rear projection ■ Superior image contrast in lighted rooms.

FILMSCREENS FOR FILM PRODUCERS—used by CBS Studio Center, Columbia, Desilu, Disney, Fox, Goldwyn, MGM, Paramount, Revue, UPA, Universal, Warners.

HI-TRANS—Academy Award background screen—highest calibre production "tool."

ULTRAMATTE gain white, and **LUXMATTE** white matte—front projection screens ■ Demanded by studios and film labs for viewing during production, dubbing, and scoring.

T-MATTE BLUE—rear-illuminated screen for latest travelling-matte process ■ Practical for large and small sets, major productions, or TV commercials.

FILMSCREENS FOR TV PRODUCTION
TV-BLUE—background screen ■ Favorite of networks ■ Versatile ■ Efficient.

LUXCHROME 60—neutral gray screen for closed-circuit techniques, backgrounds and rear projection viewing.

FILMSCREENS also designed for A-V, fairs, trade shows, exhibits, simulators, plotting and display systems, and special architectural requirements.

STEWART FILMSCREEN CORP.

1161 W. Sepulveda Blvd.
Torrance, Calif. 90503 (213) 326-1422

I want to look further into Stewart Filmscreens. Please send me additional information on:

NAME _____
STREET _____
CITY _____ STATE _____



EXHIBITS

Cinema Center

(Continued from page 7)

July, in conjunction with the General Cinema Corporation, the company opened the Cinema Theatre in the Blue Star Shopping Center near Plainfield. On August 1st, it acquired the Bridge Theatre in San Francisco, Calif., and on August 10th, took over the Fine Arts Theatre on New York's exclusive East Side. In 1963 Walter Reade-Sterling built or acquired seven new theatres.

A pioneer in the motion picture industry, with almost sixty years of theatre operation, Walter Reade-Sterling has been a leader in Monmouth County's entertainment field for decades. Its theatre operations are centered principally in New Jersey and New York, and includes seven first-run theatres in Manhattan and Queens.

Company	Booth	Company	Booth
Allen Products, Inc. Milford, Conn.	4	New York, New York Metro/Kalvar, Inc.	15
Amega Corp. Sun Valley, Calif.	19	New York, New York Motion Picture Enterprises, Inc.	20
Arriflex Corp. of America New York, New York	51, 52	Tarrytown, New York National Cine Equipment, Inc.	56
Boston Insulated Wire & Cable Co. Boston, Mass.	65	New York, New York Neumade Products, Inc.	53
Camera Mart, Inc. New York, New York	16, 17, 18	New York, New York Novatech Corp.	69
Camera Service Center, Inc. New York, New York	41	New York, New York Oxberry Corporation	60
Comprehensive Service Corp. New York, New York	59	Mamaroneck, New York Paillard, Inc.	6
Dage Television Co. Michigan City, Ind.	21	Linden, New Jersey Photo Electronic Research	50
Andre Debrie of New York College Point, New York	44, 45	New York, New York Photo-Sonics, Inc.	39
DuKane Corporation St. Charles, Illinois	14	Burbank, Calif. Plastic Reel Corp. of America	47
Eclair Corp of America Los Angeles, Calif.	61	Weehawken, N. J. Precision Laboratories Div.	55
Carlos H. Elmer Scottsdale, Arizona	38, 39	Brooklyn, New York Quick-Set, Inc.	7, 8
"Eumig" Elektrizitats und Metallwaren Industrie Vienna, Austria	23	Skokie, Ill. Revere-Wollensak Div., 3M Co.	1
F & B/Ceco, Inc. New York, New York	9, 10, 11 & 12	St. Paul, Minn. Roanwell Corp.	64
Fairchild Industrial Products New York, New York	49	New York, New York S.O.S. Photo-Cine-Optics, Inc.	54
Filmline Corporation Milford, Conn.	62, 63	New York, New York Sylvania Electric Products, Inc.	29, 30
Frigidheat Industries, Inc. Nashville, Tenn.	28	New York, New York Traid Corporation	38
General Camera Corp. New York, New York	22	Encino, Calif. Thomas Valentino, Inc.	24
Harwald Company Evanston, Illinois	58	New York, New York	
Heico, Inc. Stroudsburg, Pa.	27		
Karl Heitz, Inc. New York, New York	13		
Hi-Speed Equipment, Inc. Waltham, Mass	68		
Hollywood Film Company Hollywood, Calif.	40		
MGM Telestudios, Inc. New York, New York	48		
Macbeth Corp. & Subs. Newburgh, New York	46		
Machtronics, Inc. Palo Alto, Calif.	5		
Magnasync Corp. No. Hollywood, Calif	70		
Magna-Tech Electronic Co., Inc.	3		

Want
More Profits?

SELL LOCAL ADVERTISERS

**SLIDES
SLIDES
SLIDES**

Send
for complete
information

NATIONAL STUDIOS
42 West 48 Street, NYC

From Coast to Coast
From the
Music Hall
to
Graumann's Chinese
For Good Projection
It's Hurley All the Way

HURLEY SCREEN COMPANY, INC.
96-17 Northern Blvd., Corona, N.Y.C.
(See your theatre supply dealer)

Two Kodak Supervisors To Be Honored by SMPTE



Optical Design Director To Receive New Award

Dr. Rudolph Kingslake, director of optical design for Eastman Kodak Co., Rochester, N. Y., has been named to receive the 1964 Progress Medal Award of the Society of Motion Picture and Television Engineers (SMPTE).

The Progress Medal is the premier award of the 48-year-old professional society and recognizes outstanding technical contributions to the progress of motion-picture and television engineering. The award was announced by SMPTE President Reid H. Ray.

Formal presentation of the Progress Medal to Dr. Kingslake will be made during SMPTE's semiannual technical conference Sept. 27 - Oct. 2 at the Commodore Hotel in New York. Chairman of the award committee was Sidney P. Solow, vice-president and general manager of Consolidated Film Industries, Hollywood.

Dr. Kingslake, who received bachelor, master, and doctor of science degrees from the Imperial College of Science and Technology in London, has been awarded 10 patents in the field of optics, and is the author of numerous scientific papers.

Noted for his ability to write lucidly on technical subjects, he has contributed articles to several encyclopedias and is the author of the book, "Lenses in Photography," now in its second edition.



Dr. Kingslake came to the United States in 1929 to join the faculty of the University of Rochester as assistant professor of geometrical optics and lens design. In 1937, he joined Kodak and became head of the lens design department two years later.

He is a Fellow of SMPTE, of the Society of Photographic Scientists and Engineers, and of the Optical Society of America. Dr. Kingslake served as president of the OSA in 1947-1949. He is also a member of the Physical Society of London.



Earl L. Arnold, manager of the Film Emulsion and Plate Manufacturing divisions of Eastman Kodak Co. in Rochester, N. Y., has won the 1964 Herbert T. Kalmus Gold Medal Award of the Society of Motion Picture and Television Engineers (SMPTE).

The medal will be presented to Mr. Arnold in ceremonies during the Society's 96th Technical Conference, Sept. 27-Oct. 2 at the Commodore Hotel in New York.



Established in 1955 in honor of the developer of the Technicolor process, the award recognizes outstanding technical achievement in

color motion pictures for theater or television use. This year's award was announced by SMPTE President Reid H. Ray. Chairman of the award committee was Edward H. Reichard, chief engineer of Consolidated Film Industries, Hollywood.

A Fellow of SMPTE, Mr. Arnold has been engaged in the development of improved photographic emulsions since the mid-1920's. He has been general superintendent of the emulsion and plate manufacturing divisions of Kodak from 1937 to 1952, and manager of these divisions since 1952.

Mr. Arnold holds a degree in chemistry from Cornell University. He is an associate of the Photographic Society of America and a member of Sigma Xi, the Photographic Society of Great Britain, the Society of Photographic Scientists and Engineers, the American Chemical Society, and the American Association for the Advancement of Science.



*The revolutionary, proven
Xenon Light System for
Quality Motion Picture Pro-
jection.*

*xenosol features
these advantages:*

- **COLOR FIDELITY** — pure white-colored light—equally effective for black and white or color films.
- **ECONOMY** — far lower current consumption. Bulb guaranteed 1,500 hours — bulb averages 2,500 hours.
- **SUPERIOR QUALITY PROJECTION** — permanent adjustment. Even distribution of light over screen. Low temperature. No buckling of film.
- **TROUBLE-FREE** — uninterrupted performance — operates without routine maintenance. No carbons to change.
- **CLEAN OPERATION** — no residue from combustion — no waste gases, no ventilation required, lower cleaning and maintenance costs.
- **IMMEDIATE STARTING** — no burning in or heating up time — the lamps can be turned on just before changeover.

**CINE ELECTRONICS
SYSTEMS, INC.**

980 Madison Ave., New York 17, N. Y.

An Affiliate of City Investing Co.

CREATE THE RIGHT MOOD EVERY TIME WITH THE

Major Mood Music Library

MAJOR offers you a full forty-five hours of mood music for titles, bridges, backgrounds.

Write for Free Catalogue

THOMAS J. VALENTINO, INC.

Established 1932

150 West 46th Street CI 6-4675 New York 36, N. Y.

New...from EASTMAN



...Type A704—the uniform magnetic sound recording film

HEAR THE DIFFERENCE: “R-type” binder—an entirely new, smoother, homogeneous oxide layer—reduces tape noise and intermodulation distortion.

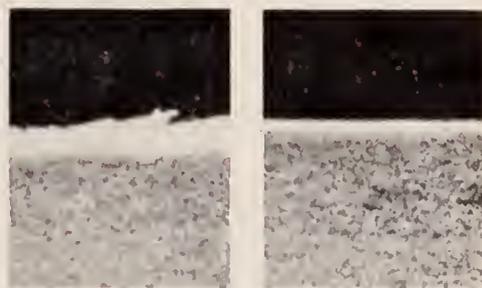
Extremely tough, wear-resistant, but without abrasiveness, it minimizes oxide build-up on recording and pick-up heads.

With its high chemical stability, it makes for long life, prolonged usefulness of the recorded library.

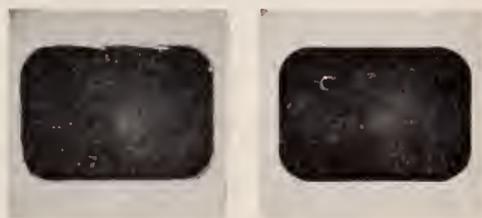
And, most important, new “R-type” binder permits uniform oxide coatings of superb magnetic characteristics. *Its high output and low print-through result in excellent reproduction quality—more vibrant highs, a more natural balance between highs and lows.*



SEE THE DIFFERENCE: Printed on the back of the new Type A704 film is the permanent legend “Eastman Kodak Co.,” together with a series of dispersion numbers. This “Life-Time Coding” provides a convenient, accurate means of indexing film by content, a useful reference for logging of optimum bias settings, re-use and purchase data. *What’s more, it is your assurance of highest quality.*



EDGE SLITTING exerts great influence on ultimate audio quality; uneven tracking introduces intermodulation distortion. Note loose particles on rough guiding edge shown in photomicrograph of conventional film *at left* compared to evenness of EASTMAN Magnetic Sound Recording Film *at right*.



PERFORATING affects audio fidelity. Note the superior perforations of the Eastman product *at right* compared to the uneven perforations of conventional film *at left*. Eastman perforating is known for quality, for conformance to high standards and for rigorous uniformity.

AVAILABLE NOW: 16, 17½ and 35mm widths in a complete range of cores and windings. For further information about EASTMAN Magnetic Sound Recording Film, Type A704, as well as the new EASTMAN Sound Recording Tapes, write:

Magnetic Products Sales Division

EASTMAN KODAK COMPANY

343 State St.
Rochester, N.Y.

200 Park Ave.
New York, N.Y.

130 E. Randolph Dr.
Chicago, Ill.

6677 Santa Monica Blvd.
Hollywood, Calif.

There is only **ONE** Projection Lamp
To Light the **LARGEST** Screens!
INDOOR THEATRES! • DRIVE-IN THEATRES!

The
Ashcraft **SUPER**
CORE-LITE

The Ultimate in Projection Lamps!
Engineered for the Projectionist!

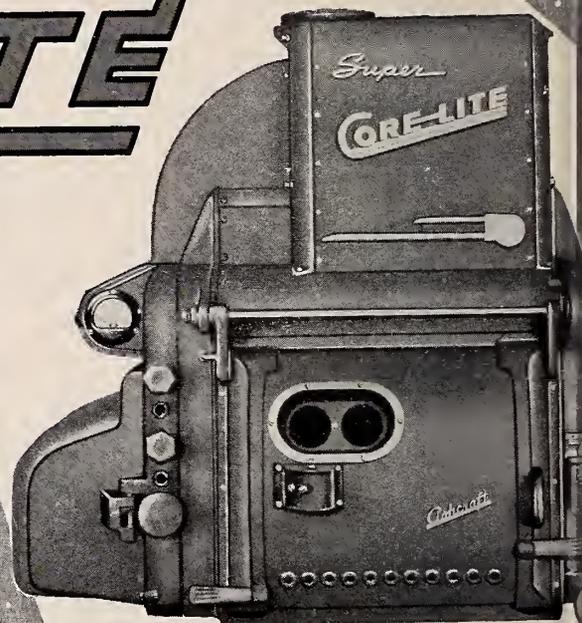
OPTICALLY AND MECHANICALLY
PERFECTED TO PROJECT THE MOST
BRILLIANT PICTURE POSSIBLE!

THE SUPER CORE-LITE PROJECTS:

MAXIMUM LIGHT • MAXIMUM
LIGHT DISTRIBUTION!

THE RESULTS ON THE SCREEN:

PERFECT FOCUS • PERFECT DEFINITION • PERFECT
RESOLUTION • PERFECT WHITE LIGHT PRODUCES
TRUE COLOR REPRODUCTION!



CURRENTLY
OPERATING ON
DRIVE-SCREENS
70mm to 175 feet
35mm Cinemascope
to 165 feet

C. S. ASHCRAFT MANUFACTURING CO., INC.

36-32 THIRTY-EIGHTH STREET, LONG ISLAND CITY 1, NEW YORK

SOLD EVERYWHERE IN THE UNITED STATES BY LEADING AUTHORIZED THEATRE SUPPLY DEALERS

Eastman Kodak's New Print Format Boosts 8mm Utility

An experimental format for 8mm motion pictures for educational, industrial, and commercial purposes was described by two Eastman Kodak Company men recently before the Society of Motion Picture and Television Engineers. Their report was made in response to growing interest in commercial 8mm prints in the trade.

E. A. Edwards and J. S. Chandler, both of Rochester, N. Y., said that their theoretical study of a modified 8mm format had the objective of getting the best quality sound and picture from 8mm film with minimum added cost. It provides a projected image with approximately 50 percent more area than present 8mm.

In a study of the four major functions of the film — pictures, sound, indexing, and guiding — they found that the present 8mm format uses only 47 percent of the film area

for picture image.

They were able to raise this to 63 percent for the experimental format. This was accomplished by reducing the size of the perforations and placing the perforations nearer the edge of the film. The sound track was also moved to the opposite edge of the film from the perforations.

After extensive testing they arrived at an 8mm strip of film with 36-mil wide perforations spaced 20 mils in from one slit edge of the film, a somewhat larger pitch of .1667 inches, and a magnetic sound track 30 mils wide along the other slit edge of the film. This leaves 228 mils down the center of the strip for the picture.

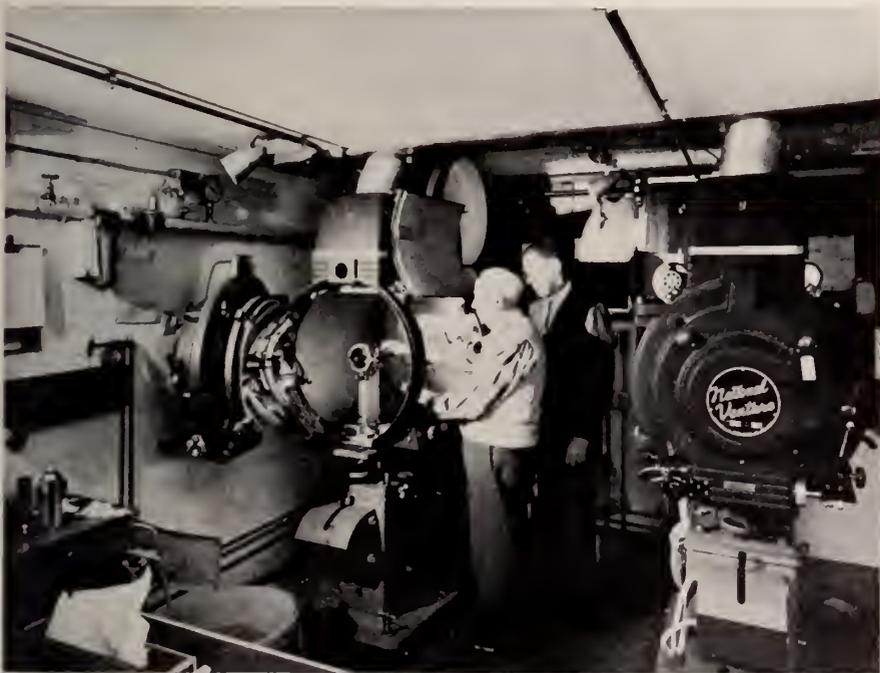
One of their objectives with the experimental 8mm format was compatibility, so 16 mm originals or masters can be reduction printed onto the 8mm film. According to their design, the 16 mm image will fit the width available on the new experimental 8mm film at a reduction of 1.8 to 1. **iP**

Handbook Describes Film Aging Blemishes

Over the years the National Bureau of Standards has conducted considerable research on the permanence of record materials, including both paper and photographic film. Recently, microscopic blemishes have been found on microfilms; apparently they had developed after the film was put in storage. Practically no information loss has been observed, but any potential threat to the permanence of Government records is a matter of concern not only to the National Bureau of Standards but to records officers throughout the Government. There is much to be learned from these blemishes and they are being studied in many laboratories.

A report on findings is contained in *Inspection of Processed Photographic Record Films for Aging Blemishes*, by C. S. McCamy, National Bureau of Standards Handbook 96, available for 25c from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. **iP**

New Process



New process Cinerama came to Washington when The Stanley Warner Uptown equipped its projection room with National Ventarc blown arc type lamps. Shown here is Kenneth R. Davis, manager, looking over the new equipment with Charles Sadtler, Sr., projectionist. Literature on this equipment will be sent to anyone addressing a request to The Strong Electric Corporation, 31 City Park Avenue, Toledo, Ohio, 43601.

OUT OF PRINT MITCHELL MANUAL AVAILABLE!

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
Box 410, Route 5
Woyzato, Minnesota 55391

HEYER-SHULTZ METAL REFLECTORS

Top Screen Illumination

Will Not Break, Pit or Tarnish

No Replacement or Spare Reflectors Required

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

Heyer-Schultz

Thirty years ago, on November 10, 1934, the Heyer-Schultz Precision Metal Reflector was developed and shortly thereafter was placed on the market in the form of Motion Picture Projection Arc Reflectors. In the years that have passed the facilities for this activity have found new fields in Government Research & Development projects such as searchlights, radar, ultra-violet and infra-red applications, solar furnaces, arc image furnaces, solar simulators, etc.

It all began when the late Charles E. Schultz, a local projectionist, ran into the problem of mirror breakage with the new reflector arc lamps he was operating. He took his problem to a friend, Earl B. Heyer, now president of Heyer-Schultz, Inc., who at that time was a machinist and an active member of a local camera club. The matter was discussed, a plan formulated and within two days the first prototype reflector was on test.



Heyer took his problem to a friend, Earl B. Heyer, now president of Heyer-Schultz, Inc., who at that time was a machinist and an active member of a local camera club. The matter was discussed, a plan formulated and within two days the first prototype reflector was on test.

The initial model to be made was a 7 5/8" elliptical reflector for use in the Peerless low intensity lamp, which at that time was being converted from the combination parabolic mirror/condenser arrangement. From there the next step was a reflector of 11 3/8" diameter for use in the 1 KW lamps and then the 13 1/2" and 14" sizes for use in the larger lamps.

These reflectors were constructed of a pre-formed to near curvature brass base material which was then lathe turned to optical precision, ground, polished, nickel plated, polished and rhodium plated. Due to the high degree of optical precision of this product it was able to meet the screen illumination requirements as established by the more reflective silvered back mirror, which was not optically ground.

The H-S Reflector was marketed through independent motion picture equipment distributors for several years until a national organization realized the merits of the product and took over its distribution. As Drive-In Theatres became popular and large screens for Cinemascope were necessary lamps were converted to burn larger carbon trims at higher amperages. Because these lamps were not originally designed with sufficient ventilation to handle this amount of heat and arc smoke the mirror breakage problem became paramount, with the result that the

H-S Metal Reflector was a MUST in many instances and a real economy item in less extreme cases.

With the advent of the larger screens more illumination was required and to fill this demand Heyer-Schultz, Inc. introduced its High Efficiency Aluminized Metal Reflector in 1952. This type reflector was 12% more reflective than the standard rhodium plated type and was made available for use in all lamps, including the then new 16" and 16 1/2" reflector lamps, as well as the 18" and 21" lamps that followed.

About this time numerous Government projects began to appear in which precision metal reflectors were specified, for use in searchlights, missile range shadowgraph photography, infra-red detecting devices, radar scanning reflectors and arc image furnaces, plus many other types made to special specifications for which the end use was not revealed. Current R & D work in precision metal reflectors is extremely active.

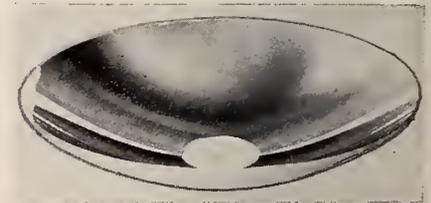
An unexpected by-product that resulted from this activity is the rehabilitation of H-S metal reflectors that have, in many instances, been in

Oxberry Moves To Expanded Facilities

Oxberry Corporation has relocated all offices, engineering and manufacturing facilities to a large plant in Mamaroneck, N. Y.

A. Kip Livingston, Executive Vice President, stated that "the increased activity in the company's current line of professional printers and animation equipment, as well as the firm's expansion into the film processing and lower priced animation equipment have made this move essential."

The new facilities also enable Oxberry to increase its activity in the development of special photographic equipment and embark on a more comprehensive program for reaching the world Markets with this professional equipment. **IP**



The famous shape of quality—a Heyer-Schultz reflector. This product was the development of the late Charles E. Schultz and Earl B. Heyer, now president of the firm.

regular use for more than 20 years. This refinishing operation restores the scratched reflective surface to its original lustre and durability for but a part of the new reflector price, thereby adding economy to dependability.

And it all started in a small town projection booth!



The home of Heyer-Schultz precision metal reflectors in Cedar Grove, N. J. is the scene of advanced research and development in behalf of the government.

Tri-State

On June 7th, Local 578, IATSE, was host to the Fiftieth Anniversary Convention of the Tri-State Association, which is composed of I. A. locals from western Pennsylvania, eastern Ohio and West Virginia.

Following the annual meeting, a banquet was attended by 140 members, including International President Richard F. Walsh, Assistant President Walter F. Diehl, Vice President Harry J. Abbott and Representative Maynard Baird.

At the banquet the local's only surviving charter member, Henry Bennett, was honored. Two other members, C. P. DeFere and H. D. Kelly, were honored for their 40 years' service. International Officers were presented with honorary membership cards in Local 578.



Celebrating the Tri-State association's anniversary (left to right) were: International President Richard F. Walsh; H. D. Kelly, secretary of Local 578; Richard J. Herstine, Business Manager of Local 578 and Sec'y of the Tri-State Association; Assistant President Walter F. Diehl.



Front (l-r): Philip Bordonaro, 4th Dist. Secretary; Vice-President Harry Abbott; Henry Bennett, charter member of Local 578; President Richard F. Walsh; Ass't. President Walter F. Diehl; Representative Maynard Baird. Second row (l-r): Richard D. Herstone, president Local 578; H. D. Kelly, secretary, Local 578, Ellwood Ohleger, Local B-11; Joseph Marchant, Local 113; Edward Krayner, Local 621; Patricia Daherty, Local 862; W. Huett Nestor, Local 239; David Cornwell, Local 386. Third row (l-r): Emmett Barnes, Local 566; Martin Torreano, Local 171; George Figard, Local 636; Denny Sigler, Local 566; T. P. Edkins, Jr., Local 3; Richard J. Herstine, Local 578; Henry Becker, Local 3; August A. DeFrere, Vice-President Local 578; William J. Howe, Local 287.

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Boy Road
Miami Beach, Florida

Maier-Hancock 816 Designed for Precision

Fast, strong, precision splices are promised the user of the Maier-Hancock Corporation's Model 816 portable hot splicer.

Designed for alternate use with 8mm, 16mm or 35mm film, the splicer features hardened chrome steel cutter blades and the patented "lifetime" scraper blade.

Features of the Model 816 will delight a technician. When he's working with 16mm sound film, two sets of pilot pins permit splicing with the perforations either toward or away from him. This eliminates the necessity of looping the film around the splicer—important when using "A" and "B" rolls. On the model 1635, the 16mm pilot pins retract and permit 35mm splicing. A neon pilot light warns that the unit is plugged in, acts as a safety feature. **IP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • *XETRON* POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

BOONTON, N. J.

Kodak Photographers Travel 150,000 Miles to Find Color Pictures for N. Y. World's Fair

Fourteen footsore but satisfied Eastman Kodak photographers recently completed a world-wide search for suitable pictures for the Kodak World's Fair Pavilion. The photographers traveled the equivalent of six times around the world in their search for 60 pictures which appear in color as 20 x 36 foot prints on Kodak's Picture Tower at the New York World's Fair.

Lincoln V. Burrows, Kodak's Director of World's Fair Planning, explains that the pictures "are intended to focus the attention of 70 million World's Fair visitors on the people and places of our world of contrasts. "By employing the universal language of photography we at Kodak hope to do our part in implementing the World's Fair theme of 'Peace through Understanding.'" he added.

Wide Search

The photographers, advised to contact local Kodak dealers and representatives for advice, began their travels in early 1963 and completed their assignments by late fall. A special Washington, D. C. ceremony launched the station-wagon-trailer accommodations for those photographers working on assignment in the U. S., Canada and Mexico.

The picture-taking project, largest of its kind ever undertaken, called for some bizarre travel arrangements ranging from jet planes and helicopters to Norwegian pack horses, Alpine cable cars and several hundred miles of hiking. For example, photographer Lee Howick flew by jet to Australia only to crawl by jeep over a dry river bed to photograph desolate but beautiful Palm Valley. Later, Howick's seven-hour trek to the Banawe rice terraces in the Philippines necessitated constant contact with telephone stations strung along the one-lane path.

Hawaiian Scenes

Ralph Amdursky, another Kodak photographer, captured Hawaiian rain forest beauty on film and then squeezed himself and his equipment into a helicopter to film native outrigger canoes crashing through the surf at Waikiki. On the other side of the globe, Neal Montanus set out one day to photograph the Matterhorn in the Swiss Alps and returned in the late afternoon without his picture but with a skier who had been rescued

from a crevasse. Montanus made his picture of the Matterhorn a few days later.

Eleven Kodak photographers contributed to the domestic phot caravan effort. Stopping their specially equipped trailer whenever they discovered a possible picture story, the men shot the steel mills at Bessemer, the French Quarter in New Orleans, as well as shrimp fleets in the Gulf of Mexico. In the West, Texas location shots included the Alamo as well as modern-day cattle ranches and the photographers, often working in pairs, also found time to capture on film Pueblo Indian life, the Rockies, Yellowstone National Park and the Grand Teton Mountain range.

The 60-odd pictures for the Kodak Picture Tower are illuminated night and day with special lights so brilliant that the color prints have the visual impact formerly associated only with transparencies.

Commenting on the photographs in their World's Fair context, Peter Braal, manager of Kodak's Photographic Illustrations Division, said, "The giant photographs are our World's Fair beacon — they are as appealing as the world we searched to find them." **IP**

G. M. Berggren Named by Kollmorgen

NORTHAMPTON, MASS.—Glenn M. Berggren has been appointed to the new position of Manager, Theater Equipment Sales at Kollmorgen Corporation.

Berggren, a graduate of the University of Rochester, will be responsible for the sale of standard and special purpose lenses, including 35MM Snaplite Projection Lenses.

He will take over all duties formerly held by Louis F. Salig, who has recently joined Pembrex Theater Supply Corp. in Los Angeles. **IP**

Lena Hudson, B & L Lens Designer, Retires

Miss Lena Hudson, lens designer in the Optical Systems Research & Development Department at Bausch & Lomb Incorporated, retired August 28 after more than 41 years of service.

Miss Hudson's career at Bausch & Lomb started in 1923 in the Scientific Bureau, following graduation from Syracuse University with a B. A. in Mathematics. Subsequently, she became associated with Dr. Wilbur



Lena Hudson Rayton in Photograph Lens Design, where she was involved with the design and development of lenses for camera fans and newspaper photographers.

She has also designed lenses for TV and movie cameras, plus those used in aerial photography. Her most recent contribution has been the design of the new Super Baltar Lenses, lately put on the market, three of which were used in the recent Moon Shots.

Miss Hudson is a member of the Optical Society of America, the Bausch & Lomb Early Settler's Club, and holds a number of patents and applications. **IP**

National General To Build 800-Seat Denver Showhouse

As a part of a major theatre expansion program, National General Corp. held ground-breaking ceremonies for its 220th motion picture theatre, an 800-seat showcase in the Lakewood section of Denver, Colo., it was announced by Eugene V. Klein, chairman and president of the Los Angeles-based theatre circuit operator and entertainment company.

Scheduled for opening early next year, the newest Fox Theatre is located in the center of a population area of 130,000 not served by a motion picture theatre, Klein pointed out.

Recently NGC announced construction of a shopping center theatre in Las Vegas, following the pattern set last year when NGC opened shopping center showhouses in Albuquerque, New Mexico, and in Palos Verdes, Northridge and Thousand Oaks in the Los Angeles metropolitan area, and also at Los Alamitos in Orange County. **IP**

Ashcraft Super Core-Lite Debuts in St. Louis Drive-ins

Three St. Louis Drive-In Theatres, all built in pre-Cinemascope days, have modernized their projection and screen lighting equipment by replacing all of the equipment previously used with new and improved equipment designed to give the most light possible per kilowatt of electricity used.

Mr. Barton Krueger, General Manager of the Wehrenberg Circuit of theatres, selected Ashcraft Super Core-Lite Arc Lamps to light the 52' x 104' screens in their Ronnie's Drive-In, located on Lindberg Blvd. in South St. Louis County, and in their North Drive-In, located on Highway 67 in North St. Louis County. In addition to Ashcraft Super Core-Lite Arc Lamps, Philips Norelco 35/70mm projectors with multiple magnetic and optical sound pickups were installed.

Trend Noted

The Holiday Drive-In, located on Page Blvd. in West St. Louis County, is owned and operated by Louis Jablaknow of Mid-America Theatres. They selected Ashcraft Super Core-Lite Arc Lamps and new Simplex XL projectors with high speed 5-to-1 ratio intermittent movements. The size of the Holiday screen is also 52' high and 104' wide.

All three Drive-Ins made these improvements in projection and screen lighting equipment within a thirty day period, which indicates a trend towards the upgrading of equipment in older drive-ins.

Specifications

The Ashcraft Super Core-Lite Arc Lamps in each of the three theatres burn at 145 to 160 amperes with 64 to 66 arc volts. The working distance between the cold type reflector and the film is 29½", an exclusive feature of Super Core-Lite Arc Lamps. 13.6mm x 18" positive rotating high intensity and 7 16" x 9 special copper coated negative carbons are used. The pure silver positive carbon jaws are water cooled.

Vast Improvement

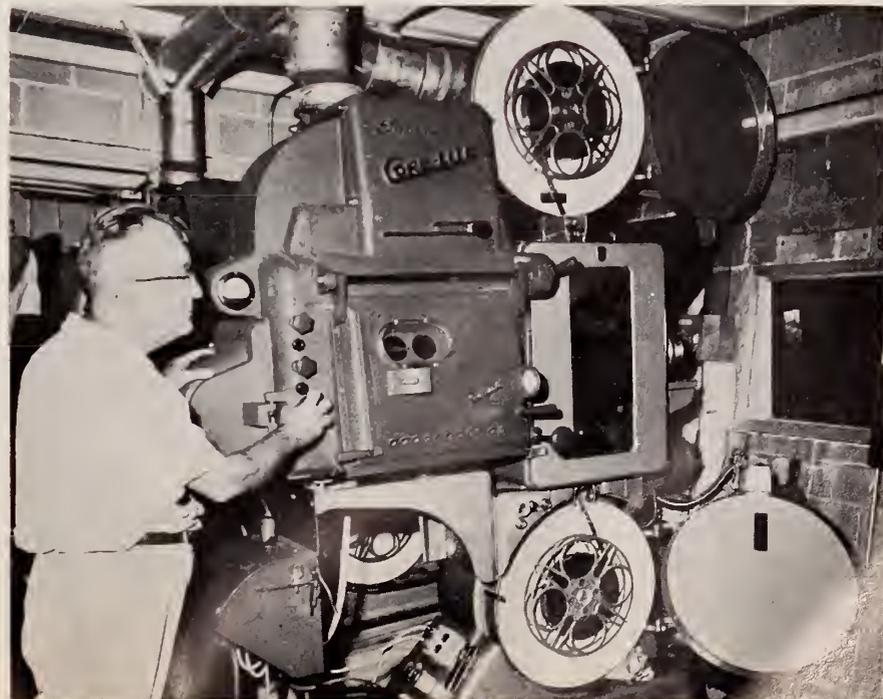
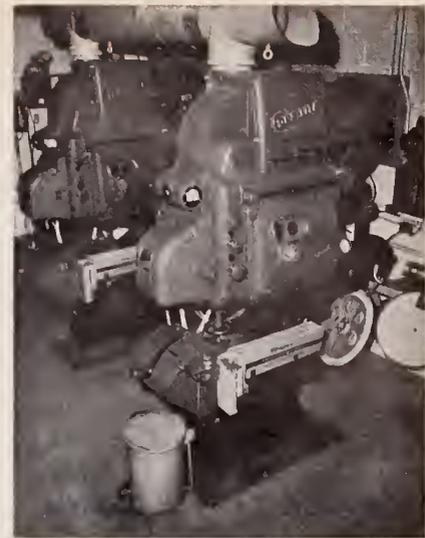
No change in current converters in the three theatres was necessary, since existing motor generator sets were of capacity well within the current and voltage range to operate the Super Core-Lite Arc Lamps.

The three installations were made under the supervision of Harry Hoff,

Manager of National Theatre Supply Company's St. Louis branch, who said, "The improvements in screen lighting in these three drive-ins is a decision of their aggressive managements to give the nearest possible approach to indoor projection quality for their drive-in patrons."



Three new Ashcraft equipment installations, all in St. Louis County, St. Louis, Mo., are shown in these photos. (Top) Ashcraft Super Core-Lite arc lamps, Simplex XL Projectors with 5-to-1 ratio fast pull down intermittent movements, and Simplex XL sound heads are used at the Holiday Drive-in on Page Boulevard (West); the owner is Louis Vablaknow, Mid-America Theatres. (Middle) Ronnie's Drive-in, on Lindberg Boulevard (South), uses the Ashcraft Super Core-Lite arc lamps with Philips Norelco 35/70 mm projectors. Owner is Wehrenberg Circuit Theatres, the manager is Ronald Krueger. (Bottom) At the North Drive-in on Highway 67, IATSE projectionist Irving Mueller is shown with the new Ashcraft Super Core-Lite arc lamps and Philips Norelco 35/70 mm projectors. .



Drive-in Theatre Mfg. Acquires RCA In-Car Speaker Business

The acquisition of the in-car speaker operations of Radio Corporation of America by Drive-in Theatre Mfg. Co. was announced recently.

The transaction includes all tooling, dies, drawing and the inventory of finished items. The tooling and dies include all models of the in-car speaker, both aluminum and plastic, and all models of junction boxes, both new and old style, as well as all component parts for the speakers and junction boxes.

Drive-In Theatre has announced that all speakers and junction boxes will be produced in strict accordance with RCA's drawings, and will incorporate all of the latest improvements developed by RCA. Exhibitors will continue to have the double payoff of top quality and long-operating life assured by RCA engineering, with equipment and parts produced from genuine RCA dies.

Speakers will be available as always in the deluxe Starlight finish or natural aluminum finish, and with straight or Koiled Kord. The popular, formed-aluminum screen guard grill and floating-action volume control knob, firsts from RCA, will be standard on all speakers.

The new style "Circlite" junction box will still be available with plastic diffuser strips in red, white or green, and may be purchased with or without downlight. Speaker baskets of strong, formed-aluminum rod are optional. Drive-In Theatre will continue to produce old-style aluminum junction boxes, with or without downlights, for drive-ins which still use this kind; the red or green plastic top replacements will be available and speaker baskets will be produced for this junction box.

Drive-In Theatre's production manager spent several days at RCA's Camden, N. J., plant, studying production techniques and conferring with engineers, preparatory to maintaining a policy of rigid quality control and dependable products. The aluminum foundries were also visited, to study methods and the formula of high-grade aluminum used. Every effort has been made to assure exhibitors that no substitutions will be made, according to company spokesmen.

Drive-In Theatre is in full production of the RCA line and can make prompt shipment of speakers, junction boxes and all parts. **iP**

Macon Projectionists' President Dead at 53

J. Clarence Norton, president of Local 507, I.A.T.S.E., Macon, Ga., died suddenly while vacationing in North Carolina, it was learned recently by International Projectionist.

At 53, Mr. Norton had served as president of the local for eight years. He also had been vice president of the Sixth District State AFL-CIO for three years.

He was projectionist at the Bibb Theatre in Macon. **iP**

Evro Co. Acquires Loew's Coney Island

A famous Coney Island landmark and theatrical showplace has been acquired from Loew's, Inc. by the Evro Theatre Corp., according to an announcement by Sam Kantor, president of Evro.

Loew's Coney Island building, on the corner of Surf and Stillwell Avenues, and the theatre will be refurbished under a modernization plan blue-printed by Kantor, who will operate the theatre.

Kantor was general manager with the Brandt theatre circuit for 27 years, and will continue his association with Harry Brandt in the buying, booking and advertising for the theatre. The theatre's name will be changed to the Shore and will operate on a first run policy. **iP**

25-30 Club Observes Special Occasions

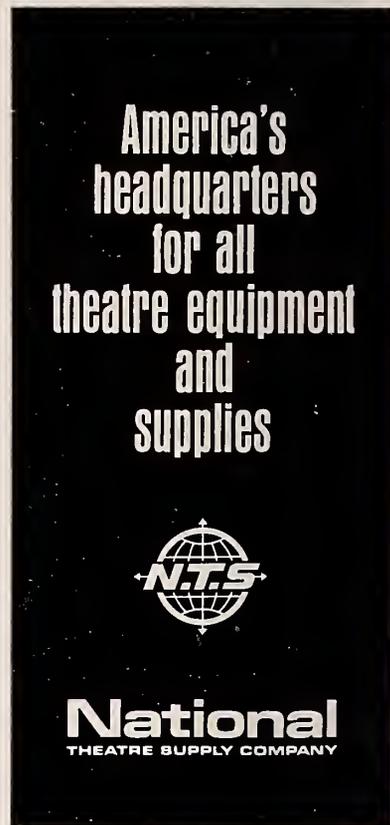
Two special events marked the pre-summer meeting of the Twenty-five—Thirty Club, held at the Hotel Claridge in New York.

The group was presented a statuette of Will Rogers, inscribed "Awarded to the Twenty-five—Thirty Club, Inc., for Meritorius Service." Through its "copper drippings" program started by president Morris I. Klapholz, 25—30 helps support the Will Rogers Memorial Hospital.

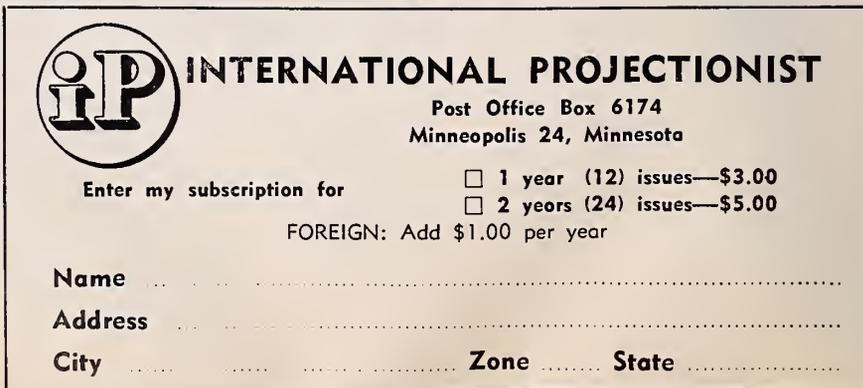
Another happy occasion was observed at the meeting — the Golden Wedding Anniversary of long-time member Sam Kirshenbaum and his wife, Rose. **iP**



DIAMOND
TRADEMARK
PROJECTOR CARBONS
Better Light! Lower Costs!
RINGSORFF CARBON CORP. East McKeesport, Pa.



America's headquarters for all theatre equipment and supplies
N.T.S.
National
THEATRE SUPPLY COMPANY



iP **INTERNATIONAL PROJECTIONIST**
Post Office Box 6174
Minneapolis 24, Minnesota
Enter my subscription for 1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00
FOREIGN: Add \$1.00 per year
Name
Address
City Zone State

basic mathematics

by NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

 RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics—regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I, you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4. \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State



What in the world does popcorn have in common with **'National' projector carbons?**

Plenty! Lobby-stand sales pay a welcome share of theatre overhead. Sales depend on theatre box office . . . and to build box office there is no substitute for a top-notch show supported by top-notch screen illumination. Yes, popcorn and "National" projector carbons do have a lot in common. Both give the customer his money's worth in entertainment and pleasure.

"National" projector carbons are an investment — never a house expense. They have been the last word in patron-pleasing lighting for nearly 50 years!

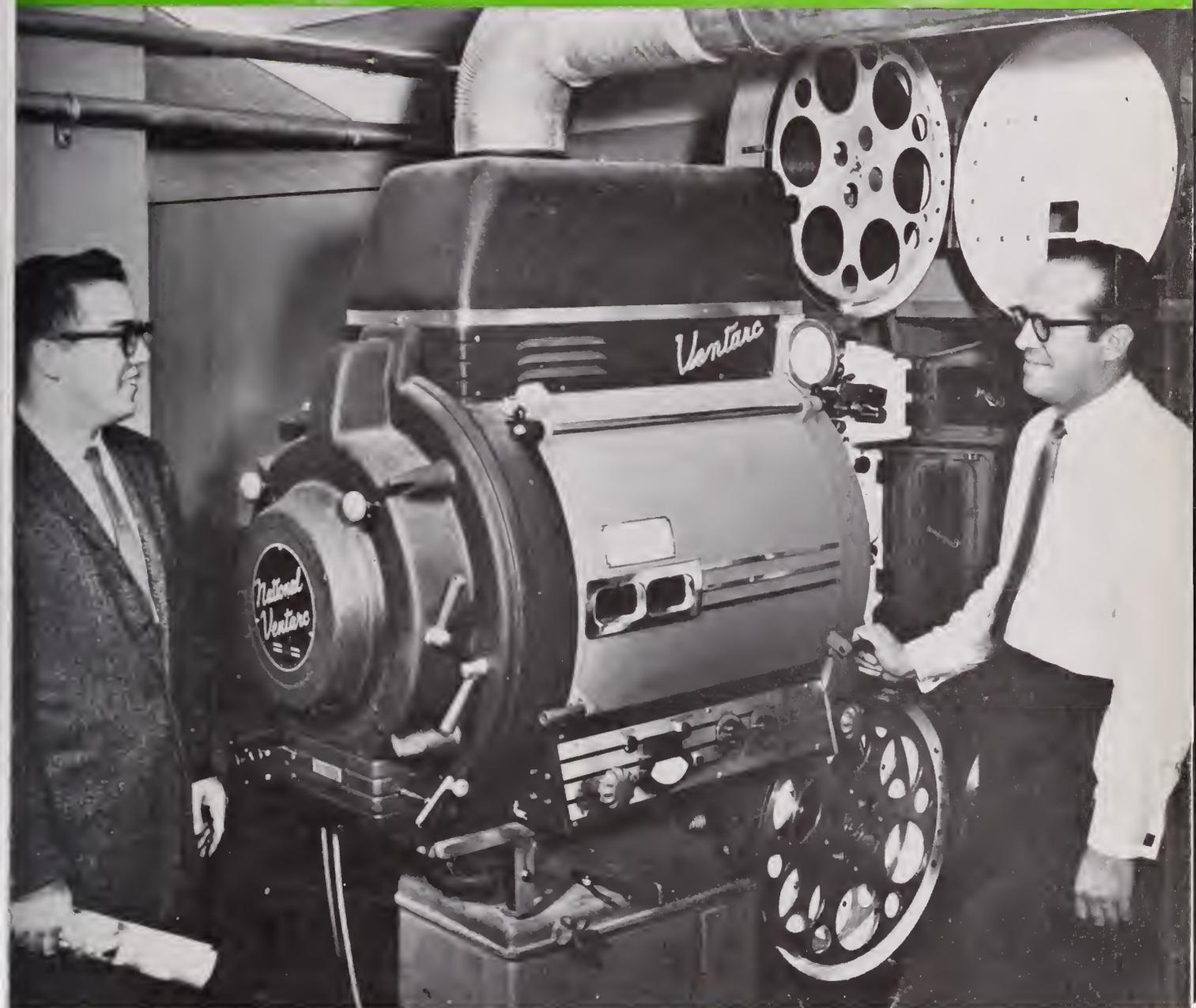


"National" is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST



The Martin Cinerama, New Orleans, has joined the ranks of theatres using the new method of Cinerama presentation. Paul J. Nosacka, Jr., assistant manager (left) and James E. Skelly, Jr., projectionist, are shown with the new National Ventarc projection lamps that deliver the abundance of light required by the modern technique. Ventarcs are widely accepted for Cinerama throughout the country.

6 OCT 28 1964
Cost Copy

OCTOBER

VOLUME 39

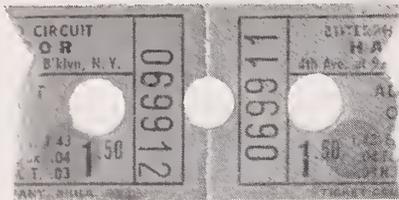
40c A COPY

1964

NUMBER 10

\$3.00 A YEAR





It's no box office secret
that more ticket purchasers keep
coming back when you sell this triple-
feature "performance package"...

**1. A good movie! 2. The finest screen
lighting! 3. A comfortable theatre!**

Play it safe—light up with "National" projector carbons. Guarantee your patrons a brighter, clearer picture.

If you want proof of the importance of a well-lighted screen presentation—just try dimming the screen light for a few minutes!

The spontaneous and noisy reaction of your audience will quickly tell you how movie patrons feel when screen lighting isn't up to par.

You'll save money, too, because "National" carbons are *slower-burning!*



"National" is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017
In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST



Volume 39 October 1964 No. 10

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Film Mutilators	4
Inflight Motion Pictures	6
Sound Track	8
IATSE Local Directory	9
Oxberry Animation Process	14
New National General Theatre	16

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Past Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



MONTHLY CHAT

CAN YOU TOP THIS?

Can anybody top this?

Projectionist John Stauffer and Exhibitor John Martina of the Cinema Theatre, Rochester, New York, are claiming a national record for a continuous run with 920 performances of "Irma La Douce" — from the same release print with never a break and no need to replace the original leaders.

Furthermore, after the print had played a total of 179,054 admissions, it was examined by experts at Eastman Kodak Company in Rochester and pronounced good as new — "still suitable for use in a first-run theatre."

The United Artists release was an imbibition print made by Technicolor on Eastman Fine Grain Release Positive, Type 5307. It ran for nearly 51 weeks starting in June, 1963, showing twice daily and four times on Saturdays and Sundays, a recognized world-wide record for *Irma*.

Experts' Opinion

The day of its final Cinema showing ("It could have run well over a year; it was still doing business when we took it out," said Martina) the exhibitor invited a team of motion picture experts from Kodak to take seats in the audience. They reported:

"The presentation was excellent and the screen image was remarkably free from dirt and abrasion."

Subsequently, the print was examined in Kodak laboratories where it was reported that "the release could still be classified as a new print."

The moral of the story for projectionists is clear. It was stated this way in the Kodak report complimenting Mr. Martina and Mr. Stauffer:

"The performance of this print emphasizes that the life of a motion-picture print is more frequently limited by accidental damage than by wear alone.

"When a print is run on equipment in reasonable repair and adjustment, handled in areas that are moderately clean and demonstrate good housekeeping, and used with reasonable regard for good practices, the life may be startlingly long.

Reduced Perforation Life

"On the other hand, perforation life may be reduced drastically by inadequate lubrication, worn sprockets, misalignment, etc. Image quality may be degraded rapidly by letting the film flop into dirty areas, acquiring dust that can scratch the image, running it against dirt and misaligned projector or rewind components and handling at improper tensions so that cinching is frequent.

"General performance may be degraded by careless cueing, inattention to lighting trim, sloppy splicing and repair."

That John Stauffer has a high regard for good practices is amply demonstrated by the record run of "Irma" in his theatre. When this was mentioned to his boss, John Martina's reaction was prompt and to the point: "Doesn't everybody?" Does everybody? **IP**



Human and Mechanical . . .

Film Mutilators Still at Large

by L. A. Pierre

In spite of the extensive changes that have taken place in our industry there are still many contributors to film damage in the mechanical department. One is improper magazine alignment. If the film tends to twist as it leaves the upper reel or leaves the sound head, the magazine needs adjusting. Damage from this source will appear, after long run, as checked or broken sprocket holes—which in time will lead to trouble.

Another cause of film damage is improper tension on reels. The upper reel tension should be only sufficient to restrain the film. The takeup reel should have only sufficient tension to start a full reel of film. Any additional tension will shorten the film's life. If the film "sings" on either the pulldown or the holdback sprocket, check first for misalignment or excessive tension.

Film sing might also be caused by badly worn sprockets, particularly upper and lower. All sprockets should be carefully checked with a magnifying glass at regular intervals for wear or hook, and replaced if visibly worn. It is inconceivable that some theatres may not have

converted to narrow (Fox) sprockets — in which case excessive damage to the film will be caused. All equipment — splicers, footage counters, etc. — should have narrow sprockets.

A greater source of film strain is created at the aperture than might be suspected. Better than four tons of pressure are exerted by the intermittent sprocket per hour, with tension at a safe minimum. The addition of one unnecessary ounce to aperture tension would add more than 500 pounds per hour to film and equipment wear. Equipment provided with adjustable tension should be maintained at a minimum possible

to avoid picture slippage at the aperture, which would appear as picture jump. A maximum of one pound pull-down pressure should be adequate for any film. If there are still in use projectors without tension adjusting, a method of testing and adjusting tension can be provided upon request. A clean film track is of utmost importance and should be checked frequently.

Magazine fire valve rollers are a major source of film damage, and should be inspected regularly to see that accumulated lint and dirt are not preventing their unrestricted operation. Where they are not readily accessible for cleaning, a short piece of film pushed through behind them will usually do a good cleaning job. A piece of dental floss or thread can also be useful in removing dirt that may be hard to dislodge at the roller ends.

With all film now fire resistant, fire valve rollers could well be re-



Example of extreme film abuse. At least four artists have contributed their efforts. The small scratch in the upper right hand corner should have been sufficient for all but no, some one hand scribed the circular marks. The large china marker X X X could not have been missed by anyone but obviously the fellow who added the lines thought not. The lines

continue through 17 frames of picture. It appears to be cue marker made. The large circle a hand in this work. The one small circle appears to be cue marker made. The large circle is very evidently hand scribed. The scratches are completely uncalled for. This pattern continued through the entire feature even on fade outs.

This splice is unique. Some operator has cut the film just short of meeting then cropped all corners. A white piece of blank film two sprockets long with all corners rounded is then cemented to the back of the film ends. It went through the machine okey but with a grand clatter

TRAILER REEL

These two film samples show producer's mutilation. The one with printing on the sound track was from a trailer but it is not uncommon to any subject and is not pleasant when reproduced on the sound system. The other is an extract from a first run picture and occurred at about one foot from the regular sound start.

duced to guide purposes. For that matter, there is no reason why the enclosed magazines could not be reduced to a properly supported shaft such as is generally used on 16mm equipment.

Excessive oil on the equipment or any place the film may contact can also contribute to film damage. All areas the film may contact should be kept clean and oil free.

Rewinds, too, may contribute to film damage. It is necessary that both heads be in true alignment to avoid the film's rubbing reel sides during rewinding. Enclosed rewinds are pretty much immune to misalignment. Rewind speed also deserves attention. Only in case of inspection or program makeup should less than five minutes per double reel rewind time be tolerated, and then only under constant observation. The faster the film is whipped past the reel edges the more damage can result.

Having touched on most of the sources of mechanical film damage let's check on the human element. Fortunately, most projectionists endeavor to avoid inflicting damage to the film either mechanical or personal. Not all those entrusted with the fragile strip of entertainment which is our livelihood have such scruples. Marking subsequent reel ends by any means for any reason except that the producers have failed to properly install standard cue marks that can be clearly seen, is deliberate film mutilation. If, however, the producer has failed to mark reel ends clearly, every effort should be made to locate the original markings. Then, with a marker such as "Clint Phare," scribe them. Any

other marking, punch, scratch or marking pencil is mutilation.

Subject ends are quite another thing. The variety of "signatures" on subject ends are as numerous as the film butchers who handle it. It is not enough that some previous "operator" has inscribed the film end at exactly the place a certain cue is desired. Some feel compelled to add their personal moniker. Some subjects come through with so many curtain cue marks it is impossible to determine which one is accurate. After removing a variety of crayon marks, one recent subject still was blessed with six scratch, punch and scribe marks that could not be removed.

Another subject, a first quality feature, had three superimposed markings at the same location, huge XXXX marks in red china marking pencil, scribed cue marks and -- worst of all -- several wavy crayon markings continuing through 17 frames of the film. To say that this was striking on a light black and white scene is putting it mildly.

A second screening of such film mutilation should be grounds for discharge without notice. There is no excuse for exposing the customers to such abuse even once -- but there sometimes is not sufficient makeup time to thoroughly check the new program.

Click patches are another means of film mutilation practiced by too many men in the booth. True, they are not exposed to the public, and do no particular damage to the film. The fault in this practice is that there are materials used for this purpose which leave an adhesive gum on the film when patches are removed or wear off that is next to impossible to remove. If click patches of a material which can easily and completely removed are used, this is the least objectionable means of personal cue markings. The "operator" who recently returned for circulation a print with two splices at four frame intervals at both motor start and changeover position was carrying a privilege a bit too far.

In summation; no projectionist has a right to put any markings of any kind on any film at any time, except to brighten up standard cue marks with an approved cue marker. If he finds it impossible to present a show without some additional visible marking -- and if his boss will permit such abuse -- he owes it to his

Please turn to page 6

KOLLMORGEN



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.

KOLLMORGEN
CORPORATION
NORTHAMPTON, MASSACHUSETTS

Inflight Motion Pictures Marks Third Anniversary

On Sunday, August 16, some 4,000 persons took in a movie—a big screen, full color production.

The remarkable point about this otherwise unremarkable event is that these movie-viewers were passengers in flight aboard 50 Trans World Airlines jetliners on air routes over four continents and one ocean.

And although most passengers probably didn't think of it as they saw the Oscar-Winning "Tom Jones," "The Chalk Garden" and other top films, they helped mark the third anniversary of the introduction of Inflight Motion Pictures, the internationally known feature of TWA's passenger services.

Three years ago, when TWA became the first airline to offer inflight entertainment to its passengers, a total of eight flights were equipped to show one film to a total of about 100 first-class passengers.

Today, all passengers, economy as well as first-class, on all TWA trans-Atlantic and international flights, and on all trans-continental nonstop StarStream flights in the United States, have the opportunity to attend a movie in flight. Last month TWA launched the first of its movie flights from Chicago to the West Coast.

In all, more than 21,000 film showings have been seen by TWA passengers in the three-year period—a little more than 3,000 the first year, 5,000 the second, and 13,000 in the past year. Currently, movies are being shown 1,500 times each month over the entire TWA system which covers Europe, North Africa and the Near and Middle East as far as Bombay, as well as the United States.

Inflight movies can be shown with the cabin fully lit without interfering with any other airborne service. The earsets can be worn comfortably during dining.

Anniversary film fare on August 16 for the TWA's domestic passengers include such other full-color films as Alfred Hitchcock's "Marnie," the wide-screen comedies "What a Way to Go" and "Move Over Darling," and the widely-heralded Tennessee Williams "Night of the Iguana."

Trans-Atlantic passengers saw the Jack Lemmon-Romy Schneider comedy "Good Neighbor Sam" and "The Chalk Garden," both in color.

TWA launched regular showings of Inflight movies on its interna-

tional routes after a brief schedule of showings on domestic flights. The movie-equipped aircraft were transferred back to the international fleet. For the first two years, Inflight movies were shown only in first-class on trans-Atlantic routes between New York and London, Paris, Madrid, Frankfurt and Rome; later on flights direct to Europe from the West Coast and flights originating at Chicago.

In May 1963, TWA extended the movie service to the economy class cabins of international flights. In August 1963, with more new Boeing StarStream equipment added to its fleet, TWA began showing Inflight movies in first class cabins on non-stop transcontinental flights, extending the feature to the coach cabins last April (1964).

During the 36 months of its operations, Inflight has presented 156 top motion picture attractions, at the rate of one new film a week, on the TWA system. Of these, 101 or 65 per cent were in full color. Sixty-four were shown in the full wide-screen aspect ratios of Cinemascope and Panavision.

Inflight Motion Pictures, Inc., is the culmination of five years of experimentation by its president, David Flexer, a theatreman from Memphis, Tennessee, who poured over a million dollars into developing the fully automatic, unattended and totally safe-guarded projection system. It became airborne with the cooperation of TWA, who provided the first facilities for experimentation and testing in the sky.

The projection system is comparable to the best deluxe theatre presentations, maintaining full values of color, screen size and sound. Featherweight earsets deliver the dialogue, music and sound effects to the individual passengers, so that others are not disturbed. Without sound, the screen, placed far forward in the cabin, is not distracting to anyone, reading, sleeping, or otherwise occupied. **IP**

Film Multitarors

Continued from page 5
profession to remove his trademark before he foists it on the next Brother.

Splicing can be a source of trouble and if poorly done is a form of mutilation. Improper splices can cause the picture to jump; weak splices may hold through the maker's run, but part at the next showing.

In the early days, it was regular procedure to run the end of the film over the tongue to moisten the emulsion, give it a swipe or two with a razor blade or pocket knife, then holding the two ends between thumb and fingers flow cement thru the joint for a very acceptable splice. Today's film is quite another thing. A good splice is pretty much a work of art. A firm, smooth, lasting splice combines these elements: a good film cement that will not wrinkle film, a piece of 80 grit production sand paper cut $\frac{1}{2}$ to $\frac{3}{4}$ " wide and about $1\frac{1}{2}$ " long, and a good film splicer. Do not wet the emulsion. With the film in place in the splicer, fold the sand paper once, and using the edge against the clamping finger, remove the emulsion. Then reverse the hands and remove the gloss from the other end film back. Apply cement generously, close the splicer for about three seconds, open splicer and firmly rub off surplus cement with a cloth or paper. Remove the film from the splicer and again rub off any surplus cement. This entire process will require about ten seconds, but must be developed in accordance with conditions and speed of the cement. A splice properly made following the above procedure will outlast the film. **IP**

West Coast Mourns Cappy DuVal, IATSE Business Representative

Funeral services for B. C. "Cappy" DuVal, International Representative of the IATSE, were held September 26 at Our Savior Lutheran Church in Los Angeles, Calif.

DuVal died suddenly and unexpectedly of a heart attack at his home in Inglewood, Calif.

A member of Hollywood Property Craftsmen's Local 44 since 1923, he served it as Business Representative for many years prior to joining the staff of the International union several years ago. At the time of his death, he was connected with the IATSE's West Coast office. He served also as a delegate to the Los Angeles Central Labor Council.

Since 1926, he had been a member also of Chicago Stage Employees Local No. 2. **IP**

I am a projectionist



As a young fellow of 19 I remember that Dad operated a 1926 Strong Standard low intensity arc lamp.



When I started operating in 1928 I had the Strong Hy-Lo.



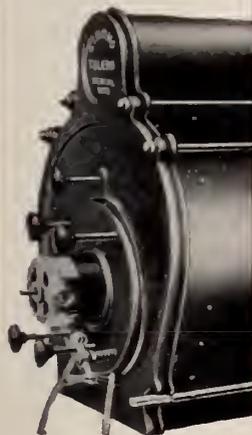
Five years later, in 1933, I ordered Strong Moguls.



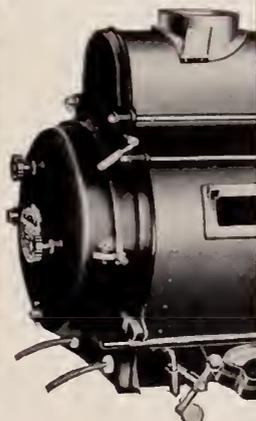
When in 1949 the Strong Mighty 90 was announced I bought a pair of the first ones available.



I believe that if anyone wants to make money in show business he must keep up with the times, so last month I installed new Strong Futuras. I know that it pays, because my box office reports prove it.



1926



1928



1933



1949



TODAY

You'd Better Contact—

THE *Strong* ELECTRIC CORPORATION

31

CITY PARK AVE., TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

Sound Track

by J. G. Jackson

Cinemascope and Wide Screen have for the past ten years been going through a period of adjustment, with each settling down to its own aspect ration.

In most theatres the Cinemascope picture is only a very few feet wider than the flat wide screen. In some, the depth is exactly the same for both Scope and Flat. Where there is a difference? It is only a matter of inches, so what's the percentage? How much better is Scope than Wide Screen, if at all?

Not more than one percent of the theatre patrons know the difference between Cinemascope and Wide Screen. Furthermore not one of them give a hoot whether the picture is in Scope or Wide Screen. I doubt if any customer buys a ticket to see a show just because it's in Scope. Let's face it, it is the story that brings the patrons to the box office, the Gimmick called Aspect Ratio has lost its appeal, if it ever had any.

I am not going to argue which is better, but I do think it is high time the industry accepted one or the other as a standard and make all release prints accordingly. Ten years of teething should be sufficient for the industry to arrive at a point of standardization.

Such a move would eliminate all the confusion of changing lenses, apertures and screen maskings countless times during a show. All of which does nothing to sell tickets at the box office.

I would like to hear from readers as to what they think would be best to accept as a standard.

Dear J. G.:

Regarding curtain-cues — I always use a red pencil to put them on and I rub it off when I ship out. The so called Kid and Drive In operators in some places in N.C. and S.C. are doing most of the change over cue damage.

Ernest Tipton
Gastonia, N. C.

Dear J.G.:

First, let me say that I am very happy to see an article such as yours back in the I.P. I feel that many projectionists enjoyed an article that was opened to comment. I know myself that I profited from the ideas

and comments that I have read in the past.

In answer to your comment in the last (May) issue of I.P. I would like to express my sentiments.

If the exchanges did cue the end of a feature for certain it would certainly cut down on what I call mutilating of film. However, I don't think this mutilating of film will ever end. Fortunately, I have never been employed in a theatre with this problem, but they must exist. These theatres are using undersized apertures for their anamorphic prints. Apparently these apertures are so small that the cue marks will be blocked from the screen. If these fellows would use a crayon or something that can be erased from the film after their use, it would certainly be appreciated by a great many in the craft. However there are a certain few that scratch the film from the cue in, thus enabling them to make a change-over. More than once I have cut these scratches out of an entire feature and then re-cued it. One, a real artist had the letter "R" scratched inside the cue marks. Whoever he may be he doesn't belong in a projection room. If some of these fellows who have a very small aperture would please use a crayon instead of scratching the film it would certainly be appreciated by a great number of projectionists.

James Burse
West Palm Beach, Fla.

Dear J. G.:

Your column in I.P. May 1964 was very good. We could certainly use a curtain cue and yours is a good suggestion. As for the change over cues, why the heck don't the operators just leave the prints alone without punching holes, scratches, etc. They are all right just as they are.

Lawrence Scheverer
New York

Dear J. G.:

As a regular reader of I.P., may I congratulate you on "Sound Track." It will allow conscientious Projectionists to contribute their ideas with the view of reaching an ultimate in projection standard throughout our industry and by so doing, adding to the enjoyment of that most important individual, the Patron.

Every theatre has different cur-

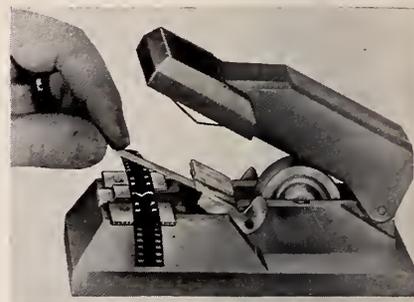
Address your cards and letters to Sound Track, 1645 Hennepin Ave., Minneapolis, Minn., 55403.

Dupage Automatic Dry Splicer Now in 16mm

An easy to use motion picture splicer, that splices and tapes both sides of your film at once, is now available in 16mm as well as 8mm models.

Designed for color and black and white film (sound or silent), these DuPage splicers combine three features to make splicing faster and better. Special strong, thin, film-backed tape is dispensed by a roll built right into the splicer.

The new 16mm all metal die cast model is \$12.95. 8mm models range from \$4.95 to \$7.95. (For additional information write DuPage Products, Box 295, Lombard, Ill. Request folder No. S-7).



Pictured above is the DuPage Automatic Dry Splicer, available in both 16 & 8mm sizes.

tain speeds, and — as found in Melbourne (Australia) — times range from 30 seconds down to 10 seconds closing time.

Because of these variations, these are my suggestions for a cueing system compatible to all requirements—

1. "The End" titles to be made to a standard 30 second length, where there is no cast-titling.

2. A series of inconspicuous count down numbers at 5 second intervals be printed in the top right corner starting at 25 seconds, then 20, 15 and 10 seconds from the end. These numbers should be printed on similarly to the framing guide lines originally printed onto the start of spools on Vistavision prints which went unnoticed to the general patron.

This should give plenty of latitude for any theatre anywhere and help in eliminating the most annoying mutilation of curtain cueing.

You may recall that big M.G.M. productions such as "King of Kings", "Mutiny on the Bounty", and "Ben Hur", had very long end and Intermission titles, about the length which has been suggested.

Clayton, Victoria, Australia

B. A. Quigley

IATSE DIRECTORY

Names and Addresses of Mixed

Local Secretaries and Business Agents

ALABAMA

92 **MDNTGDMERY** — Lillard T. Farris, Sr., P. O. Box 203, Zone 1. Tele.: 118 Truett Drive. Bus. Agt.: Lillard T. Farris, Sr.
413 **GADSDEN** — J. E. Forman, P. O. Box 441. Tele.: 2424 Scenic Highway. Bus. Agt.: Lewis L. Smith, 23D S. 6th St. Apt. 10-A.
506 **ANNISTON** — George W. McGuire, P. O. Box 421. Tele.: 715 E. 22nd St. 36201. Bus. Agt.: Leonard H. Gunn, 834 E. 22nd St. 36201.
537 **JASPER** — Harry P. Smith, P. O. Box 1026. Tele.: Rt. 6, Cullman. Bus. Agt.: Clarence C. Hamrick, P. O. Box 1026.
547 **FLORENCE, SHEFFIELD and TUSCUMBIA** — J. M. Stutts, P. O. Box 547, Sheffield. Tele.: 1400 25th St., Sheffield. Bus. Agt.: J. M. Stutts.
553 **DECATUR** — Grady Kirby, P. O. Box 1121. Albany St. Tele.: 1801 Wadsworth St. S. E. Bus. Agt.: Hugh W. Terry, 612 Third Ave., S. W.
793 **HUNTSVILLE** — Charter revoked. Road men contact Ben R. Nation, 6302 Marion Pike, N. W.
806 **TUSCALOOSA** — Earl Ford, P. O. Box 851. Tele.: 2303 16th St. Bus. Agt.: S. W. Kent, 54 Cedar Knoll.

ARIZONA

415 **TUCSON** — William D. Traweck, 3714 S. Lundy Ave. Bus. Agt.: Ronald McCarty, 2213 N. Belvedere Ave.
569 **DUGLAS** — Tom C. Millican, Rt. 1, Box 67, McNeal. Bus. Agt.: G. M. Gray, 1300 8th St.
731 **PRESCOTT** — C. O. Born, P. O. Box 1106. Tele.: 212 No. Mt. Vernon St. Bus. Agt.: C. D. Born.

ARKANSAS

204 **LITTLE ROCK** — Jack Schoemaker, 2125 McAlmont St., 72206. Bus. Agt.: Jack Schoemaker.
326 **HDT SPRINGS** — Rufus O. McMoran, P. O. Box 64. Tele.: 1607 St. Louis. Bus. Agt.: James T. Mosley, Rt. 6, Box 319-A.
328 **PINE PLUFF** — Everett J. Stanley, 1606 W. 18th Ave. Bus. Agt.: Herman Zappe, 1417 1/2 Olive St.
455 **FDRT SMITH** — Nicholas Kolb, P. O. Box 271. Tele.: 2205 South "N" St. Bus. Agt.: Gene Woods, 3921 S. West St.
817 **FAYETTEVILLE** — Roy Williams, P. O. Box 711 Tele.: P. O. Box 50D, Bus. Agt.: Harold L. Bausinger, Rt. 1, Box 296, Springdale.
826 **CAMDEN** — Troy S. Carver, 512 Jackson St. Bus. Agt.: J. L. Wilson, 1321 Rowald Drive.

CALIFORNIA

215 **BAKERSFIELD** — William Romley, P. O. Box 555. Tele.: 2407 Driller Ave. Bus. Agt.: Don Marshall, 2813 Berger St.
216 **MARYSVILLE** — Everett Reid 1310 Buchanan St. Bus. Agt.: Ben J. Rose, 890 Jones St., Yuba City.
241 **VALLEJO** — Edward R. Boyle, 1960 Evergreen Ave., Antioch. Bus. Agt.: Daniel W. Akin, 102 Claremont Ave.
409 **SAN MATED COUNTY and PALO ALTO** — Richard Rhodes, 2303 Wooster Ave., Belmont. Bus. Agt.: John Turturici, 270 Chestnut St., San Carlos.
420 **SANTA ROSA** — Charles Bauman, P. O. Box 474. Tele.: 752 Pine St. Bus. Agt.: Charles Bauman.
430 **EUREKA** — Leon H. Thomson, 226 Randolph Way, Fortuna. Bus. Agt.: Harry Bishop, 1414 Hays St.
442 **SANTA BARBARA** — John H. Gotchel, P. O. Box 413. Tele.: 304 Samarkand Drive. W. H. LeCompte, 545 Alan Road.
501 **CHICO** — M. E. Maxwell, 276 E. 6th Ave. Bus. Agt.: M. E. Maxwell.
504 **SANTA ANA** — George M. Hiam, 13801 Howard Circle, Garden Grove. Bus. Agt.: Frank Owen Smith, 231 Evergreen St., Anaheim.
560 **RICHMOND** — Charles W. Glum, P. O. Box 1043. Tele.: 658 33rd St. Bus. Agt.: Sam Jagard, 530D Barrett Ave.
564 **MOFFETT** — Charles C. White, 1675 Union Ave., Merced 95340. Bus. Agt.: Ervin Fetzler, 525 Millo St.
605 **VISALIA, PORTERVILLE, TULARE, HANFORD, CORDRAN, LINDSAY, DINUBA** — Frank Price, P. O. Box 281. Visalia. Tele.: 2608 S. Watson, Visalia. Bus. Agt.: Albert M. Cox, 512 W. Greshen, Visalia.

611 **WATSONVILLE, SANTA CRUZ, SALINAS, GILROY, HOLLISTER, MONTEREY, CARMEL, PACIFIC GROVE and SEASIDE** — Stan Dietrich, P. O. Box 584, Watsonville. Tele.: 44-D Crest Drive, Watsonville. Bus. Agt.: James Wilson, 228 Peyton St. Santa Cruz.
656 **EL CENTRO** — Paul R. Steward, P. O. Box 615. Tele.: 843 Woodward St. Bus. Agt.: Norman Morris, 1283 El Dorado St.
707 **HEMET** — Oerek H. Parker, P. O. Box 481, Riverside 92502. Tele.: 4275 Elmwood Court, Riverside. Bus. Agt.: Daniel Weisberg, 408 25 Brookside Ave., Beaumont.
709 **VENTURA COUNTY** — Edwin E. Griffith, P. O. Box 811, Santa Paula. Tele.: 1243 Newman St., Simi. Bus. Agt.: Willis Anderson, 438 W. Wooley Rd., Oxnard.
730 **BARSTOW** — Rudy Trotter, 1290 Flora Ave. Bus. Agt.: Charles A. Hall, 38714 Larkin Ave., Palmdale.
739 **REDDING** — Jerry Q. McGee, 289 Weldon St. Bus. Agt.: Jerry Q. McGee.
762 **SAN LUIS OBISPO** — W. Young Lewis, P. O. Box 691, Zip 93402. Tele.: 354 Lincoln Ave. Bus. Agt.: Lloyd E. Berry, 214 Esparto Ave., Shell Beach 93462.
796 **SUNNYVALE, MOUNTAIN VIEW, LDS ALDS, CAMPBELL, LDS GATOS** — Thomas G. Bracking, 693 Salberg Ave., Santa Clara. Bus. Agt.: Eugene Schloemer, 681 Clara Vista, Santa Clara.
811 **MARIN COUNTY** — George H. Whitton, Box 353, Novato. Tele.: 1141 Mirabella Ave., Novato. Bus. Agt.: D. L. Woodall, 8 Hacienda Ct., San Rafael.

CANADA

105 **LONDON, Ont.** — John McCully, 33 Dennis Ave., Lambeth, Ont. Bus. Agt.: Walter Drennan, 106 Price St.
295 **REGINA, Sask.** — Jack Garvey, 1001 10th Ave., E. Bus. Agt.: Roy A. Thom, 1928 Athol St.
300 **SASKATON, Sask.** — Ben Waldron, 804 8th St., E. Bus. Agt.: Robert Corrigall, 1002 7th St. E.
345 **BROCKVILLE, Ont.** — G. A. Wood, 44 Ann St. Bus. Agt.: C. J. Ford, 35 Jessie St.
357 **KITCHENER, STRATFORD, GALT, and GUELPH, Ont.** — J. Hoodless, 196 Duke St., East, Kitchener. Bus. Agt.: Douglas Linder, 32 Munroe Ave.
406 **MOOSE JAW, Sask.** — S. O. Stephen, 1229 Redland Ave. Bus. Agt.: Norman Gamble, 421 Main St. S.
432 **PETERBOROUGH, Ont.** — John O'Leary, 192 Hunter, Apt. B. Bus. Agts.: (S) Benjamin Clute, 34 Jackson Ave. (O) Frederick Cranham, 232 Hartley St.
435 **SAULT STE. MARIE, Ont.** — G. H. Stephen, 664 Queen St., E. Bus. Agt.: Harvey Annett, 166 Stanley.
438 **SHERBROOKE, Que.** — Leopold Dion, 24D Court St., Apt. 12.
440 **SAINT JOHN, N. B.** — Jas. A. Whitebone, P. O. Box 1045. Tele.: 537 Edward Ave., W. Bus. Agt.: Jas A. Whitebone.
461 **ST. CATHARINES, Welland Niagara Falls, Ont.** — C. A. Dentebeck, 536 Carlton St., East, St. Catharines, Ont. Bus. Agt.: B. McCullum, 9 Grapeview St., St. Catharines.
467 **FDRT WILLIAM and PORT ARTHUR, Ont.** — P. R. Wright, 104 McKibbin St., Port Arthur. Bus. Agt.: William Gardiner, P. O. Box 325, Port Arthur.
523 **QUEBEC, Que.** — George Gringras, P. O. Box 422. Tele.: 1376 Garnier St., Zone 6. Bus. Agt.: Jules Pacaud, 2266 Chouquette Ave.
528 **KINGSTON and BELLEVILLE, Ont.** — Roy Smith, 33 Westmorland Rd., Kingston. Bus. Agt.: Roy Smith.
580 **WINDSOR and CHATHAM, Ont.** — John B. Sherwood, R. R. 2, Maidstone, Ont. Bus. Agt.: Walter E. Bennette, 845 Rutland Rd., S. S. No. 1, Tecumseh, Ont.
582 **BRANTFDRD, Ont.** — Arthur C. Roberts, 319 Nelson St. Bus. Agt.: E. R. Pettifer, 52 Park Rd.
622 **FDRT HURON, Mich., and SARNIA, Ont.** (See Michigan).
634 **SUDBURY, Ont.** — D. E. Tighe, P. O. Box 341. Tele.: 1073 Hawthorne Dr. Bus. Agt.: A. J. Spalding, 12 Glover Ave.
699 **KIRKLAND LAKE and TIMMINS, Ont.** — Joseph Scalzo, Box 171, Hailyeyville. Bus. Agt.: Le Roy Jewell, P. O. Box 547, New Liskeard, Ont.

680 **HALIFAX - DARTMOUTH, N. S.** — G. G. Pring, P. O. Box 711, Halifax. Tele.: 51 Newcastle St., Dartmouth. Bus. Agt.: G. G. Pring.
848 **SYDNEY - GLACE BAY, N. S.** — F. J. McGuire, 49 Alexander St., Glace Bay. Bus. Agt.: F. J. McGuire.

COLORADO

62 **COLORADO SPRINGS** — Ronald W. AuBucon, P. O. Box 522. Tele.: 722 Bryce Drive. Bus. Agts.: (O) Jack Armstrong, 1432 Norwood; (S) Arthur Johnson, P. O. Box 184, Cascade.
184 **GREELEY** — John McCandless, 1311 12th Ave. Bus. Agt.: Wallace Sjoberg, 1426 5th St.
229 **FDRT COLLINS** — Gerald Elliott, 1308 Pitkin St. Bus. Agt.: Gerald Elliott.
602 **TRINIDAD** — L. R. Guye, P. O. Box 355. Tele.: 824 Pine St., Bus. Agt.: Tony Iocabelli, 1043 2nd St., Las Vegas, N. M.
608 **BOULDER and LONGMONT** — J. H. Shephard, P. O. Box 141. Tele.: 845 Pearl St. Bus. Agt.: E. C. Caywood, 181D Walnut St.
689 **GRAND JUNCTION** — F. E. Grumpp, P. O. Box 484. Tele.: 1127 Chipeta Ave. Bus. Agt.: Allan H. Wasson, 530 Chioeta Ave.
736 **LAJUNTA** — Olin R. Fenter, 1023 Raton Ave. Bus. Agt.: Charles O. Sexton, 519 Colorado Ave.

CONNECTICUT

301 **NEW BRITAIN** — Edward Regula, P. O. Box 852. Tele.: 126 Clinton St. Bus. Agt.: Harry Grischuk, 419 Myrtle St.
304 **WATERBURY** — Abe Fandiller, 219 Cooke St., Zone ID. Bus. Agt.: Ralph Di Pietro, Marie Hotchkiss Rd., Prospect.
350 **MERIDEN - MIDDLETOWN** — John T. McGlew, P. O. Box 463. Tele.: 15 Fair St. Bus. Agt.: John T. McGlew.
402 **TORRINGTON** — John Navin, 59 Lawdale Ave., Bristol. Zip 0601D. Bus. Agt.: Michael Scanlon, 15 Lawton St.
439 **NEW LONDON** — John S. Kane, P. O. Box 662. Tele.: 48 Main St. Bus. Agt.: Fred C. Nowell, 23 Sunshine Rd., Quaker Hill.
449 **STAMFORD, GREENWICH and DARIEN** — Vincent J. Mitchell, Jr., P. O. Box 669, Stamford. Tele.: 75 W. Broad St. Bus. Agt.: Kenneth D'Andrea, 104 McMullen Ave., Stamford.
453 **WILLMANTIC-STDRRS** — Gerard R. Lussier, 120 North St., Willimantic 06226. Bus. Agt.: Otis Fairbanks, P. O. Box 203, Willimantic.
459 **NORWICH** — Raymond C. Lamothe, 145 Ashland St., Jewett City. Bus. Agt.: Charles Oldham, R. F. D. 4.
479 **NORWALK** — Harry M. Johnson, P. O. Box 63. Tele.: County St. Bus. Agt.: George Brazil, 5 Sherry St.
662 **DANBURY** — Felix Tomaino, P. O. Box 986. Tele.: 75 Franklin St. Bus. Agt.: Robert L. McIntyre, 5 East Pembroke Road.

DISTRICT OF COLUMBIA

224-A **WASHINGTON** — William D. Williams, 1834 Ninth St., N. W. Tele.: 1260 Talbert St., S. E. Bus. Agt.: Ralph T. Dines, 51D Varnum St., N. W.
FLORIDA
60 **PENSACOLA** — J. S. Bainter, P. O. Box 1084. Tele.: 1304 N. "T" St. Bus. Agt.: Lloyd E. Joyner, 105 Georgia Drive, Oakcrest, Pensacola.
321 **TAMPA** — John B. Fette, P. O. Box 1463, Zone 1. Tele.: 1102 31st Ave., Zone 3. Bus. Agt.: 9323 Dartmouth Ave.
360 **GAINESVILLE** — V. F. Snellgrove, 722 N. W. 8th Place. Bus. Agt.: Tommy A. Ridgell, 1715 N. W. 16th Ave.
412 **BRADENTON - SARASOTA** — Joe E. Sanders, P. O. Box 1073, Bradenton. Tele.: 808 43rd St., W. Bradenton. Bus. Agt.: C. A. Manson, 2731 N. Lemon Ave., Sarasota.
552 **ST. PETERSBURG** — Claude R. Shorts, P. O. Box 920, Zone J. Tele.: 80D1 32nd Ave., N. Bus. Agt.: Francis L. Hill, 935 42nd Ave., N.
558 **DAYTONA BEACH** — Nelson Spock, P. O. Box 534. Tele.: 822 Valencia Rd. Bus. Agt.: M. E. Forsyth, Tourist Hotel.
623 **WEST PALM BEACH** — James A. Bursley, 1619 Julie Tania Drive. Bus. Agt.: R. J. Allison, 437 Summa St.
631 **ORLANDO, CAPE CANAVERAL, COCA and MELBURNIE** — Richard Gabel, P. O. Box 631. Tele.: 207 S. Hyer St. Bus. Agt.: Richard Gabel.
643 **LAKELAND** — Frank Walker, P. O. Box 612. Tele.: 1056 South Blvd. Bus. Agt.: Arthur Bowdren, 404 Palmoia Dr.
646 **FDRT LAUDERDALE, BOCA RATON, HALLANDALE, HOLLYWOOD** — Perry McCune, 5607 N. W. 25th St., West Hollywood. Bus. Agt.: Paul L. Robinson, Jr., 1219 Cordera Rd., Fort Lauderdale.
716 **PANAMA CITY** — Allen M. Douglas, P. O. Box 752. Tele.: 1605 Tyndall Drive. Bus. Agt.: Harold McKenzie, 1202 Christel Ave.

GEORGIA

32D **SAVANNAH** — L. Martin Boyd, P. O. Box 1941. Tele.: 117 E. Fairmont Ave. Bus. Agt.: R. O. Hardee, 907 Seiler Ave.
427 **RDME** — C. R. Chambers, P. O. Box 241. Tele.: 202 N. Elm St. Bus. Agt.: L. W. Van Horn, Wilkerson Rd.
507 **MACON** — Gilbert J. Poirier, P. O. Box 451. Tele.: 2828 Alta-Vista Ave. Bus. Agt.: Marion H. Sanders, 3740 Irwinton Rd.
518 **AUGUSTA** — F. B. Beaufort, Jr., P. O. Box 421. Tele.: 208 Summit Ave., W., N. Augusta, S. C. Bus. Agt.: F. B. Beaufort, Jr.
568 **COLUMBUS** — E. L. Gullatt, P. O. Box 455. Tele.: 2205 Summerville Road, Phoenix City, Ala. Bus. Agt.: George H. Reese, 2636 Walnut St.
824 **ATHENS** — James E. Wall, P. O. Box 161. Tele.: P. O. Box 352, Bogart. Bus. Agt.: Marvin Sexton, 175 Combs St.
837 **GRIFFIN** — Charter revoked. Road men contact R. E. Morris, International Trustee, P. O. Box 811, Mobile, Ala. 366D1.
HAWAII
665 **HONOLULU** — Tsutomu Hiramatsu, P. O. Box 498, Zone 9. Cable: 1403 16th Ave., Zone 16. Bus. Agt.: Sammy Arashiro, 1618 S. King St., Zone 9.
IDAHO
91 **BOISE, NAMPA, CALDWELL, TWIN FALLS, SUN VALLEY** — Charles R. Wiley, 4407 Clark St., Boise. Bus. Agt.: James Vortner, 6715 Platinum Drive, Boise.
463 **POCATELLO** — Earl Thomas, 752 Hemlock St. Bus. Agt.: Richard P. Gregersen, 3134 S. 5th.
629 **IDAHO FALLS** — Alden E. Hill, 3455 Teeples Drive. Bus. Agt.: Alden E. Hill.
663 **LEWISTON** — B. F. Hughes, P. O. Box 374. Zip 83501. Tele.: 1320 14th Ave. Bus. Agt.: Hobart D. Burns, 1010 13th Ave.
742 **WALLACE - KELLOGG** — Carmello Amato, Jr., 1171 Burke Rd., Wallace. Bus. Agt.: Carmello Amato, Jr.
ILLINOIS
156 **DANVILLE** — Claude H. Lovejoy, P. O. Box 144. Tele.: 6D1 Wayne St. Bus. Agt.: Claude H. Lovejoy.
166 **GALESBURG** — Leon S. Neblock, P. O. Box 42. Tele.: 633 Lincoln St. Bus. Agt.: Leon S. Neblock.
193 **BLOOMINGTON - NDRMAL** — Karl B. Blakney, P. O. Box 172, Bloomington. Tele.: 943 McArthur Ave., Bloomington. Bus. Agt.: Arthur W. Tucker, Hayworth, Ill.
207 **FREEDRIT** — Albert Staver, 1642 S. Highland Ave. Bus. Agt.: Karl Fritzenmeier, 308 1/2 N. Chery Ave.
217 **ROCKFDRD** — Lewis R. Hickox, P. O. Box 472. Tele.: 1420 Auburn St. Bus. Agt.: E. G. Sutphen, 1D12 16th St.
221 **AURORA** — Harold H. Nelson, 603 Spring St., Bus. Agt.: Frank L. Allen, 702 Jackson St.
268 **ALTON** — Roy C. Gunter, P. O. Box 133. Tele.: 1637 Rock Spring Park Drive. Bus. Agt.: Wallace Foster, 905 Washington.
317 **WAUKEGAN** — Milan D. Miloshevich, R. R. 2, Box 655A, Gurnee. Bus. Agt.: Maurice B. McCMahon, 421 Ridge-land Ave.
392 **Kewanee** — Darwin Davis, P. O. Box 214. Tele.: 515 Willow St. Bus. Agt.: Edward Lams, 500 West Prospect St.
419 **DECATUR** — H. J. Steele, 1313 E. Sedwick.
421 **HERRIN, Ill., and CAPE GIRARDEAU, Mo.** — Joe Pirka, 802 Baggott St., Ziegler. Bus. Agt.: Roy Brown, 710 L. Oak St., W. Frankfort.
425 **KANKAKEE** — James T. Schmidt, P. O. Box 182. Tele.: 210 S. Fraser Ave. Bus. Agt.: Oscar H. Schmidt, 410 S. Schuyler Ave.
434 **PEDRIA - PEKIN** — A. D. Dittmer 209 W. Melbourne Ave., Zone 5. Bus. Agt.: Ray Brian, 812 W. Maywood, Peoria.
482 **CHAMPAIGN and URBANA** — Richard Klemm, P. O. Box 327, Champaign. Tele.: 1204 Mimosa Dr., Champaign. Bus. Agt.: Owen Marshall, 209 W. University Ave.
483 **ELGIN** — John H. Sticking, RR No. 1, Box 51D, Dundee. Bus. Agt.: John H. Sticking.
522 **QUINCY** — George W. Fruehe, 2226 Madison St. Bus. Agt.: T. W. Volmer, 722 N. 24th St.
565 **CENTRALIA** — John W. Ramp, 703 Kensington, Mt. Vernon. Bus. Agt.: Art LaSalle, 3216 Central, Mt. Vernon.
600 **LaSalle, STREATOR, OTTAWA** — John Oberholz, 1414 Bluff St., Peru.
658 **JACKSONVILLE** — Albert H. Gourley, P. O. Box 173. Tele.: 201D Fulton. Bus. Agt.: Arthur McFarland, 301 Palton.
681 **GILLESPIE** — Elmer Dworsak, P. O. Box 45, Saunton. Tele.: 120 S. Wood, Saunton. Bus. Agt.: Wilfred Day, P. O. Box 16, Carlinville, Ill.

725 MATTOON - CHARLESTON — Wilmer J. Harper, 724 Oklahoma Ave., Mattoon 61938. Bus. Agt.: John Kruger, 1419 13th St., Charleston.

726 O'FALLON — Lloyd Smith, 513 Longview Drive, Bellevue. Bus. Agt.: Frank Mann, Bethel Road, Collinsville.

748 STERLING, ROCK FALLS and OXON — Chester L. French, 1029 Peoria Ave., OXON. Bus. Agt.: George J. Tuft, 1305 15th Ave., Sterling.

INDIANA

106 MARION — Arlington Hankins, P. O. Box 106. Tele.: 1009 Oxford Drive. Bus. Agt.: Glenn Weaver, 2104 Valley Ave.

133 HAMMOND — George J. Martin, 534 Conkey St., Suite 1. Zip 46324. Tele.: 938 Summer St. Bus. Agt.: Richard M. Parbst, 1143 Fisher St., Munster.

145 GARY — J. M. Hartscock, R. R. 3, Box 152, Crown Point. Bus. Agt.: George Sargent, 1030 Union St.

148 LOGANSPOUT — Richard O. Redinger, P. O. Box 502. Tele.: 1236 Woodlawn Ave. Bus. Agt.: Paschal P. Woodling, 1622 Miles St.

174 LAFAYETTE — Eugene Farrington, 3106 Prairie Lane. Bus. Agt.: Charles E. Colvin, 1900 Indian Trail Drive, West Lafayette.

187 SOUTH BEND — John E. Marker, P. O. Box 474, Zip 46624. Tele.: 210 Villageway. Bus. Agt.: Sylvester J. Bueche, 14413 St. Road 123, Granger.

263 RICHMOND - CONNERSVILLE — William J. Kyle, 205 N. W. "I" St., Richmond. Bus. Agt.: William J. Kyle.

292 MUNCIE - PORTLAND — James E. Rawlinson, 2804 Rosewood Ave., Muncie. Bus. Agt.: Fred Femeyer, 3031 Ivy St., Muncie.

372 VINCENNES — Ray Leech, P. O. Box 25. Tele.: 1321 Nichols St. Bus. Agt.: S. A. LaCoste, 1209 N. 12th St.

490 ELKHART - GOSHEN — Robert Bower, 5118 E. Jackson St., Elkhart. Bus. Agt.: LeRoy Lape, RR 4, Box 96, Elkhart.

494 FRANKFORT - CRAWFORDSVILLE — Claude C. Sheets, P. O. Box 168, Frankfort. Tele.: 507 Oelphi Ave., Frankfort. Bus. Agt.: L. R. Jackson, 251 W. Boone St., Frankfort.

539 ANDERSON — Horace D. Eubank, P. O. Box 241. Tele.: 812 West Sixth St. Bus. Agt.: Roy Shepherd, 1624 W. 9th St.

544 KOKOMO — George R. Plummer, P. O. Box 313. Tele.: 2542 Walker Ave. Bus. Agt.: Fred L. Grady, 518 1/2 W. Taylor.

570 MICHIGAN CITY - LAPORTE — E. L. Holm, P. O. Box 69, Michigan City. Tele.: 413 Derby St., Michigan City. Bus. Agt.: Sid Blande, 212 E. 10th St., Michigan City.

618 BLOOMINGTON, BEDFORD, COLUMBUS and SEYMOUR — Burl McGuire, P. O. Box 552, Bloomington. Tele.: 523 S. Walnut St., Bloomington. Bus. Agt.: Burl McGuire.

630 PERU — Claude McElheny, 359 Armstrong Ave. Bus. Agt.: Claude McElheny.

660 HUNTINGTON — M. C. Kennedy, P. O. Box 3. Tele.: 1835 Ocean St. Bus. Agt.: M. C. Kennedy.

696 NEW CASTLE — L. E. Thomas, P. O. Box 7. Tele.: 2704 1/2 Grand Ave. Bus. Agt.: John Strong, Spiceland.

701 NEW ALBANY — Charles N. Long, P. O. Box 283. Tele.: 1235 State Run Road. Executive Committee, P. O. Box 283.

IOWA

103 OUBUQUE — Louis W. Huggins, 2205 Rhomburg Ave., Bus. Agt.: Executive Board, 2205 Rhomburg Ave.

191 CEDAR RAPIDS — Herbert W. Johnston, P. O. Box 847. Tele.: 421 24th St., N. W. 52405. Bus. Agt.: Blake St. Clair, 135 38th St. N. E. 52402.

202 WATERLOO — Martin S. Frank, P. O. Box 62. Tele.: 2204 Rainbow Or. Bus. Agt.: Executive Board.

332 CLINTON — A. E. Hubbard, P. O. Box 332. Tele.: 320 Ruth Pl. Bus. Agt. A. E. Hubbard.

385 BURLINGTON — Joe W. Harter, 238 S. 8th St. Bus. Agt.: C. Art Gardner, 807 S. 10th St.

389 FORT DOGUE — Alvin E. Pieper, Jr., P. O. Box 754. Tele.: 1527 Fourth Ave., S. Bus. Agt.: Ralph J. Bolender, R. F. O. 1.

441 OTTUMWA — John J. Johnston, 509 S. Miller St. Bus. Agt.: Herbert Utterback, 260 S. Willard St.

450 MASON CITY — Paul F. Cota, 829 3rd St., S. W. Bus. Agt.: Paul F. Cota.

527 MARSHALLTOWN — Victor H. Sell, 208 W. State St. Bus. Agt.: William Martens, 206 1/2 N. 4th St.

593 CRESTON — P. E. Thomas, 2221 Jones St., Apt. 23, Omaha 2, Neb. Bus. Agt.: Executive Board.

687 SHENANDOAH, Iowa; BEATRICE and NEBRASKA CITY, Neb. — See Nebraska.

690 IOWA CITY — Wm. H. Singleman, P. O. Box 42. Tele.: 8 Triangle Place. Bus. Agt.: Charles Singleman, 832 Dearborn St.

KANSAS

242 PITTSBURG — James C. Evans, 1604 N. Joplin. Bus. Agt.: O. O. Barger, 427 W. Seventh.

261 SALINA — Floyd W. Ringer, P. O. Box 262. Tele.: 230 S. 3rd St. Bus. Agt.: Donald Gray, 437 S. 5th.

368 HUTCHINSON, DOGGE CITY, PRATT, GREAT BEND — Lloyd S. Fuller P. O. Box 125, Hutchinson. Tele.: 715 E. 5th St., Hutchinson. Bus. Agt.: G. E. Fayette, 207 E. 10th St., Hutchinson. Bus. Agt. for Dogge City: Virgil L. Seals, 1505 W. Chestnut, Dogge City.

464 EL OORAO — Lee McNair, P. O. Box 321, Towanda. Bus. Agt.: Donald E. Walker, 712 W. 5th St., Newton.

491 PARSONS — H. R. Reed, Box 86, Tele.: 1516 Appleton. Bus. Agt.: Ira Haskett, 613 N. 13th.

495 COFFEYVILLE — Bernard Williams, 602 Highland. Bus. Agt.: Olin K. Hamlin 10 E. North St.

498 KANSAS CITY and JOHNSON COUNTY — C. C. Bretz, P. O. Box 1146, Zip 66117. Tele.: 3059-B Parkwood Blvd., Zone 4. Bus. Agt.: Bruce Stone, 4008 Oakland.

555 ATCHISON — Frank Antle, 819 Price Blvd. Bus. Agt.: Clarence Bigelow, 920 Santa Fe, Atchison.

632 FORT SCOTT — William H. Betts, 727 N. Cedar St., Nevada. Mo. Bus. Agt.: Eugene O. Rector, 510 Meadow Lane.

641 ARKANSAS CITY — John A. Ray, P. O. Box 405. Tele.: 1120 North C. Bus. Agt.: Melvin G. McCall, 1102 N. D. St.

657 LEAVENWORTH — B. A. Spinner, 316 Lawrence Ave. Bus. Agt.: L. H. Vander Staay, 928 Ottawa St.

KENTUCKY

281 PAOUCAH — Arthur L. Melton, P. O. Box 184. Tele.: R. F. D. Hinkleville Road. Bus. Agt.: Arthur L. Melton.

346 LEXINGTON — J. W. Williams, 813 Oak Hill Dr., Zone 14. Bus. Agt.: R. J. Baxter, 752 E. 7th St.

369 ASHLAND, Ky., HUNTINGTON W. Va., and IRONTON, O. — (See 369, West Virginia)

712 OWENSBORO and HENDERSON — Earl Hardin, 820 E. 20th St., Owensboro. Bus. Agt.: William L. Cart, W. 5th Road, Owensboro.

724 BELL and HARLAN COUNTIES — William H. Ballard, P. O. Box 689, Middlesboro. Tele.: 612 Manchester Ave., Middlesboro. Bus. Agt.: William H. Ballard.

828 HOPKINSVILLE - MADISONVILLE — William L. Svykard, P. O. Box 450, Hopkinsville. Tele.: 520 Brown, Hopkinsville. Bus. Agt.: William L. Svykard.

836 BOWLING GREEN — James E. Thompson, P. O. Box 856, Zip 42101. Tele.: Ridge Road. Bus. Agt.: James E. Thompson.

LOUISIANA

260 LAKE CHARLES — James K. Hollier, P. O. Box 1234. Tele.: 3409 Patrick St. Bus. Agt.: Harry T. Estes, 2609 Cypress St.

400 ALEXANDRIA-PINEVILLE-FORT POLK — Stewart E. Wilson, P. O. Box 841, Alexandria. Tele.: 214 Payne St. Pineville. Bus. Agt.: W. Martin Lipscomb, 1200 Jeanie St., Pineville. Phone: 318-445-4957.

540 BATON ROUGE — L. A. Rice, P. O. Box 125. Tele.: 125 Bellevue Dr. Bus. Agt.: J. O. Cothran, 5153 Bradley St.

668 MONROE — Charles Roddy, P. O. Box 1050. Tele.: 407 Morris Ave. Bus. Agts.: (O) O. H. Moley, 315 McEnery. (S) Vernon Riddick, P. O. Box 1050.

708 VIVIAN — Harry M. Allgood, 2601 Williams Ave., Shreveport. Bus. Agt.: George Ragon, Sr., 1743 Maple St., Shreveport.

888 LAFAYETTE — Steven J. Duhon, 152 S. Richter Drive. Bus. Agt.: Clarence Richard, 121 S. May Drive.

MAINE

198 BANGOR — Francis V. Riva, 72 Oak St., Old Town. Bus. Agt.: Charles F. Rice, 984 Broadway.

MARYLAND

258 CUMBERLAND — Chester Barkman, 200 Wilmont Ave. Bus. Agt.: Russell Hillery, 515 Patterson Ave.

591 HAGERSTOWN and FREDERICK, Md., WAYNESBORO, Pa., WINCHESTER, Va., and MARTINSBURG, W. Va. — Charles O. Warner, 130 North Ave., Hagerstown. Bus. Agt.: George Wagner, 129 Belview Ave., Hagerstown.

MASSACHUSETTS

83 NORTH ADAMS — Peter J. Koch, 326 State Rd., Bus. Agt.: James A. Coidaire, 28 Porter St.

86 FITCHBURG - LEONMINSTER — William H. Moran, 49 Forest St. Bus. Agt.: William H. Moran.

96 WORCESTER — Robert Krock, P. O. Box 326. Tele.: 251 May St. Bus. Agt.: John E. Murphy, 58 Winifred Ave.

232 NORTHAMPTON — Daniel Schwartz, 84 Eames Ave., Amherst. Bus. Agt.: John Tichy, 2 Lang Ave., Easthampton.

454 ATTLEBORO — Thomas DePalma, 16 Shawmut Ave., Mansfield. Bus. Agt.: Edward J. Ringuette, 15 Avery St., N. Attleboro.

505 WALTHAM — Fred Rousseau, 29 Farmington Road, West Newton, Zone 65. Bus. Agt.: Vincent T. Kavanaugh, 8 Fells Circle, Wellesley, Zone 81.

549 TAUNTON — Rolani Robino, 17 Fourth Ave. Bus. Agt.: Mathew Eo Silva, 12 Dean Ave. 02780.

596 GREENFIELD — A. A. Drew, 16 Myrtle St. Bus. Agt.: George F. Patnode, 341 Chapman St.

723 NORWOOD — J. Alphonse Grenache, 206 Main St., Hopedale. Bus. Agt.: Ernest M. Santamaria, 35 Tuttle St., Revere.

792 PLYMOUTH-CAPE COD — William Leming, 128 Sandwich St., Plymouth 02360.

MICHIGAN

35 SAGINAW — C. D. Kelly, 1027 S. Washington Ave. Bus. Agt.: C. O. Kelly.

125 BAY CITY — Fred Morse, 2120 2nd St. Bus. Agt.: Earl F. Orouin, 2103 16th St.

172 JACKSON — Charles Ramsey, 231 W. Mason. Bus. Agt.: Leslie Tingley, 115 Round Lake Drive, Michigan Center.

188 KALAMAZOO — A. J. Thornton, 730 Pleasant Ave. Bus. Agt.: Harry Williams, 2007 Miles Ave.

274 LANSING and EAST LANSING — Craig A. Chapin, P. O. Box 95, Lansing. Tele. 1912 S. Rundle, Lansing. Bus. Agt.: Jay Roberts, 3306 Stoneleigh Drive, Lansing.

291 GRAND RAPIDS — Walter J. Sowa, 1026 Lockridge, N. E. 49505. Bus. Agt.: J. O. Bogardus, 344 Coldbrook, N. E.

395 ANN ARBOR — Howard Fanslow, 302 Middle Or., Ypsilanti. Bus. Agt.: Clarence Paulty, 505 Eberwhite, Ann Arbor.

435 SAULT STE. MARIE — (Secretary, see 435, Canada.) Bus. Agt.: H. C. Annett, 166 Stanley St., Sault Ste. Marie, Ont., Can.

492 BATTLE CREEK — William J. Barber, P. O. Box 637. Tele.: 83 Lakefront Drive. Bus. Agt.: John O. Griggs, 163 Calhoun St.

588 MUSKEGON — William P. Oswald, 2172 Leif Ave. Bus. Agt.: Geo. Oplinger, 1833 Sanford St.

601 BENTON HARBOR — Victor Pitlik, 515 LaSalle St. Joseph. Bus. Agt.: Karl A. Loeffler, 818 Main St., St. Joseph.

620 PONTIAC — Robert W. Oearth, 2737 Silverhill Drive. Bus. Agt.: Jack D. Tobin, 2151 Orby, Birmingham.

622 PORT HURON, Mich., and SARNIA, Ont. — Ernest Cassin, P. O. Box 41. Tele.: 1639 Chestnut St. Bus. Agt.: J. F. Cassin, P. O. Box 41.

735 MT. CLEMENS — James R. Kimmick, 16405 Curtis Ave., Roseville. Bus. Agt.: Roy F. Suckling, Brumar Manor, 22812 Ine Mile Road, Apt. 16, St. Clair Shores.

738 ALLEGAN — Wm. L. Johnson, P. O. Box 69, So. Haven. Tele.: 522 Superior St., So. Haven. Bus. Agt.: Francis J. Falk, Route 2, Box 273.

744 CAULLAC - NORTH CENTRAL MICHIGAN — Lester Van Buskirk, 404 N. Second Ave., Alpena. Bus. Agt.: Lester Van Buskirk.

807 STURGIS — Eric O. Earl, 179 N. Hudson St., Coldwater. Bus. Agt.: C. A. Allen, 431 5th Ave., Three Rivers.

MINNESOTA

416 ROCHESTER - AUSTIN — R. W. Gaskill, P. O. Box 793, Rochester. Tele.: 1533 Third Ave., S. W., Rochester. Bus. Agt.: Wray Eastlick, 516 Tenth Ave., S. E., Rochester.

436 WINONA — George E. Eggers, 1706 Monroe St. Bus. Agt.: Ed Pellowski, 209 W. 5th St.

487 VIRGINIA, HIBBING and EVELETH — Joseph L. Newman, P. O. Box 356, Hibbing 55746. Tele.: 422 Highland Drive Hibbing. Bus. Agt.: Milan Lonchar, 8 Second St., S. E. Chisholm.

510 MOORHEAD, Minn., and FARGO, N. D. — (See North Dakota).

583 ST. CLOUD — C. G. Buchan, P. O. Box 254. Tele.: 346 11th Ave., Waite Park. Bus. Agt.: Lloyd OeVries, 411 2nd Ave., N. E.

684 MANKATO — George J. Homer, 401 Moreland Ave. Bus. Agt.: Tony J. Knoll 936 Marsh St.

714 RED WING — Harold Bennett, 1114 Kellog Ave. Bus. Agt.: Harold Bennett.

743 BEMIDJI — Charter surrendered. Road men contact Glenn C. Kalkhoff, International Representative, 108 W. Wells St., Room 454, Milwaukee, Wis.

MISSISSIPPI

589 JACKSON-VICKSBURG — John R. Frankson, P. O. Box 1753, Jackson, Zone 9. Tele.: 902 Dorgan St., Jackson. Bus. Agt.: C. B. Carroll 414 W. Capitol St., Jackson.

589-A JACKSON-VICKSBURG — A. C. Taylor, 3305 Center St., Jackson. Bus. Agt.: Edward Henry, 920 Oondo St., Jackson.

590 CLARKSOALE-GREENWOOD — Olin L. Spencer, 616 Osota Ave., Clarksdale. Bus. Agt.: Mark L. Cagle, 506 Lynn St., Clarksdale.

615 HATTIESBURG — R. C. Boatman, P. O. Box 1106. Tele.: 307 Eighth Ave. Bus. Agt.: R. C. Boatman.

616 MERIDIAN — Sanly A. Scalco, 3305 27th St. Bus. Agt.: Sandy A. Scalco.

617 GREENVILLE — Joe F. Marshall 431 Eureka St. Bus. Agt.: Charles B. Mullen, 143 N. Edison St.

614 BILOXI and GULFPORT — Paul B. Ussery, 331 Bayly Drive, Biloxi. Bus. Agt.: W. H. Watkins, 1153 Old Pass Road, Long Beach.

MISSOURI

135 SEOLIA — Bernard Hill, 1713 W. 16th.

143-A ST. LOUIS — Cecil R. Keene, 1023 N. Grand Blvd. Tele.: 4315 Pace Blvd. Bus. Agt.: Elmer Sims, 4408 Evans Ave., Zone 13.

421 CAPE GIRARDEAU—(See Illinois.)

443 JEFFERSON CITY — Ralph Oarnell, 321 Case Ave. Zip 65101. Bus. Agt.: Leroy Hackman 1208 Lee St.

497 INDEPENDENCE — Laird B. Jeffers, Sr., 6846 Oak Terrace, Kansas City 10. Bus. Agt.: Walter S. Jennings, 1719 Appleton Ave.

562 HANNIBAL — Abbott V. Shearman, P. O. Box 201. Tele.: 307 N. Sixth. Bus. Agt.: Phil B. Conn, New London

573 MOBERLY — Lawrence Stringer, 1120 Concanon. Bus. Agt.: J. O. Crook, 811 E. McPherson, Kirksville.

595 CARTHAGE — Rex B. Mealey, Sr., 509 E. 4th St. Bus. Agt.: Rex B. Mealey, Sr.

MONTANA

94 BUTTE-ANACONOA — Rene Rouleau, P. O. Box 157. Tele.: 412 W. Park St. Bus. Agt.: Jack McNaughton, 227 E. Front St.

213 GREAT FALLS-HELENA — Paul Morse, P. O. Box 1581, Great Falls. Tele.: 305 Beth Drive, Great Falls. Bus. Agt.: Paul Morse.

240 BILLINGS — Lou S. Smith, P. O. Box 545. Tele.: 2022 Picket Lane. Bus. Agt.: (S) O. J. Farrell, 2714 2nd Ave. S. (O) James C. Nelson, 337 Burlington Ave.

339 MISSOULA - KALISPELL — Merle Olson, 220 E. Kent. Bus. Agt.: Merle Olson.

NEBRASKA

151 LINCOLN — O. O. MacDougall, P. O. Box 487. Tele.: 4631 Holdrege St. Bus. Agt.: Anthony L. Polanka, 1812 Cotner

586 COLUMBUS, HASTINGS, NORFOLK, GRAND ISLAND — Conrad Krieger, P. O. Box 152, Grand Island. Tele.: 436 E. South St., Grand Island. Bus. Agt.: Leo Tews, 1201 S. 6th St., Norfolk.

649 NORTH PLATTE, KEARNEY and OGALLALA — Robert Barton, 415 W. 2nd St., North Platte. Bus. Agt.: Charles Easton, 307 S. James, North Platte.

687 BEATRICE-NEBRASKA CITY, Neb., SHENANDOAH, Iowa — Wilmer C. Wayman, P. O. Box 122, Beatrice. Tele.: 1329 E. Court St. Beatrice. Bus. Agt.: Wilmer C. Wayman.

NEVADA

363 RENO — Herbert H. Hinz, P. O. Box 5278, Washington St. Sta. Tele.: 1950 W. Plumb Lane. Bus. Agt.: Robert H. Wetherill, P. O. Box 538, State-line, Lake Tahoe, Calif.

NEW HAMPSHIRE

195 MANCHESTER — Thomas P. Swift, P. O. Box 483, Zip 03105. Tele.: 306 Lowell St. 03104. Bus. Agt.: Thomas P. Swift.

685 CONCORD — Charter revoked. Road men contact William C. Scanlan, International Trustee, 574 Eastern Ave., Lynn, Mass.

NEW JERSEY

243 ASBURY PARK — James N. Conway, P. O. Box 402. Bus. Agt.: Conway Drezwitz, 1102 1/2 Third Ave.

269 OCEAN COUNTY — James D. Gibson, 711 Bay Ave., Toms River. Bus. Agt.: Edw. Griesenbeck, 405 Lenape Trail, Brielle.

362 PASSAIC COUNTY — Hugh Thompson, Jr., 539 Van Houten St., Paterson, Zone 1. Tele.: 10 Brookside Ave., Hawthorne. Bus. Agt.: Kenneth Chambers, 3 Greene Ave., Totowa, Zone 2.

365 WARREN and HUNTERDON COUNTIES — Frank P. Sheets, Box 343, Annandale. Tele.: West St., Annandale. Bus. Agt.: George F. Miller, 210 W. Stewart St., Washington.

379 PERTH AMBOY — James Quinn, 660 Main St., Fords. Bus. Agt.: John Rogan, 54 Carlton St., Fords.
462 VINELAND — John F. Rhodes, R. D. 2 Lincoln Ave. Bus. Agt.: Eugene V. Mathis, R. D. No. 4, N. Delsea Dr.
485 UNION COUNTY — George F. Cushing, Room 406, Martin Bldg., 1139 E. Jersey St., Elizabeth, Zone 4. Tele.: 639 Salem Ave., Elizabeth. Bus. Agt.: George F. Cushing.

502 MORRIS COUNTY — William Jukes, 83 Hinchman Ave., Denville. Bus. Agt.: Dominick Caravaggio, 25 Pine St., Morristown

529 LONG BRANCH — Charles W. Chappell, Sr., 31 S. Fifth Ave. Bus. Agt.: Charles W. Chappell, Sr.

534 NEW BRUNSWICK — Charles Stillman, P. O. Box 722. Tele.: 2051 Aurlon Ave., South Plainfield. Bus. Agt.: Kenneth McManis, 19 Chapel St., Nixon N. J. 08818.

536 RED BANK-FREHOLD — Alexander Sastokas, R. D. 2, Hwy. 33, Freehold. Bus. Agt.: Anthony Talarico, 84 John St., Red Bank.

642 BERGEN COUNTY — Charles Lamartin, 366 Trench Drive, New Milford. Bus. Agt.: Edward H. Paul, 141 Lozier Terr., River Edge.

813 CAPE MAY COUNTY — Roscoe L. Smith, 915 Washington St., Cape May. Bus. Agt.: Harold F. Sherwood, 3707 Pacific Ave., Wildwood.

885 SUSSEX COUNTY — Stanford Tidaback, P. O. Box 1. Newton. Bus. Agt.: Paul C. Rennett, 16 Orchard St., Newton.

NEW MEXICO

423 ALBUQUERQUE and ROSWELL — David Hamrah, 412 Griegos Road, N. W., Albuquerque. Bus. Agt.: Don Brooks, 520 Richmond, S. E., Albuquerque.

843 LAS CRUCES — Walter A. Bowra, P. O. Box 87. Tele.: 808 S. Melendres. P. A. T.: Archie M. Chambless, 840 Maple St.

NEW YORK

45 NEWBURGH — Anzelo Pizarro, 39 Farrington St. Bus. Agt.: Frank Peacock, 36 Lander St.

108 GFNEVA — Arthur J. O'Neill, 379 Castle St. Bus. Agt.: E. Francis Larham, 568 Liberty St., Penn Yan.

119 AUBURN — James J. Gallery, 86 Hamilton Ave. Bus. Agt.: Albert E. Green, 51 Ross St.

121 NIAGARA FALLS — Leonard Hastee, 2463 Willow Ave. Bus. Agt.: J. Frederick Young, 714 83rd St.

266 JAMESTOWN — George W. Samulson, P. O. Box 153. Tele.: 26 Hazeltine Ave. Bus. Agt.: George W. Samulson.

727 CORTLAND — Jack LeRoy, 97 Tompkins St. Bus. Agt.: Henry Jeffery, 101 Maple Ave.

289 ELMIRA — H. Paul Shay, P. O. Box 371. Zip 14902. Tele.: 1201 Lake St. Bus. Agt.: H. Paul Shay.

290 GLOVERSVILLE — Lynvon B. Harvey, P. O. Box 145, Gloversville. Tele.: 21 Western Blvd. Bus. Agt.: H. S. Laird, 113 E. Clinton, Johnstown.

308 OUNKIRK — John Houghtaling, P. O. Box 203. Tele.: 91 East 7th St. Bus. Agt.: Charles Acker, Jr., 525 Washington Ave.

311 MIDDLETOWN — William F. Robacker, 119 N. Beacon St. Bus. Agt.: D. A. Garcea, 234 Phillip St.

313 AMSTERDAM — Elmer J. Rossi, Jr., R. D. 4, Bus. Agt.: Alfred Noble, 91 Division St.

318 LOCKPORT — Justin J. Burns, P. O. Box 374. Tele.: 42 Genesee St. Bus. Agt.: Justin J. Burns.

338 WATERTOWN — Richard Hartness, 327 Coffeen St. 13601. Bus. Agt.: Henry O'Neill, 1110 Academy St. 13601.

353 PORT JERVIS and SULLIVAN COUNTY — Raymond L. Smith, P. O. Box 82, Forest City, Pa. Bus. Agt.: David Powell, P. O. Box 384, Hurleyville.

377 ITHACA — Robert H. King, P. O. Box 244. Tele.: 49 Cayuga St., Trumansburg. Bus. Agt.: John Detrick, 809 S. Aurora St.

474 ROME-ONEIDA — James A. Street, R. D. 1, Verona. Bus. Agt.: Frank Zugner, 117 MacArthur Drive, Rome.

480 CORNING — John F. Short, 135 Pritchard Ave. Bus. Agt.: Frank Luckner, 3 High St.

484 OLEAN — James R. Norton, 20 Jerome Ave., Bradford, Pa. Bus. Agt.: James R. Norton.

499 PUGHKEEPSIE — Bunnell Eighmie, P. O. Box 482. Tele.: 28 Hammersley Ave. Bus. Agt.: Ed Batey, 25 Hammersley Ave.

524 GLEN FALLS — Phil Brillling, P. O. Box 201. Tele.: 100 Cooper St. Bus. Agt.: William T. Axton, 145 Maple St.

532 OSWEGO — Leonard Scheutow, P. O. Box 252. Tele.: 23 West Mohawk St. Bus. Agt.: Fred Timon, Apt. 109, Hamilton House.

581 BATAVIA — Herman Gabriel, 123 S. Main St. Bus. Agt.: William J. Pickert, 22 Fordham Drive.

592 SARATOGA SPRINGS — Haverly Jeffers, 98 N. Main St., Mechanicville. Bus. Agt.: Frank La Brum, 99 White St., Saratoga Springs.

609 LITTLE FALLS — Stanley Cwalinski, 325 Pleasant Ave., Herkimer. Bus. Agt.: Norbert Steele, East Monroe St.

637 KINGSTON — Geo. P. Seymour, 19 N. 5th St., Hudson 12534. Bus. Agt.: Wilfred Mitchinson, 435 State St., Hudson 12534.

645 ROCKLAND COUNTY — William O'Mahoney, P. O. Box 234, Congers. Tele.: 59 Highmount Ave., Nyack. Bus. Agt.: Claude C. Curtis, 15 Elise Drive, Spring Valley.

676 HORNELL — William K. Jackson, 8 Mays Ave. Bus. Agt.: Elliott Hazen, 10 Mays Ave.

749 MALONE — Arthur Nacashian, 88 Webster St. Phone 483-0475. Bus. Agt.: Charles Brown, 123 S. Williams St.

NORTH CAROLINA

1-78 SALISBURY — L. A. Fox, P. O. Box 81. Tele.: 1660 Park Road. Bus. Agt.: James B. Mahaley, 206 E. Bank St.

278 ASHEVILLE — H. J. Cunningham, 67 E. Chestnut St. Bus. Agt.: S. E. Holland, Woodfin Apts., Woodfin St.

322 CHARLOTTE — W. L. Jenkins, 1831 Thomas Ave. Bus. Agt.: K. M. Clontz, 1724 Independence Blvd., Zone 5.

417 OURHAM — George A. Godley, P. O. Box 947. Tele.: 1623 Avonvale Drive, Bus. Agt.: I. L. Tilley, 2511 Farthing St.

481 GASTONIA — A. R. Walker, 221 S. Oakland St. Bus. Agt.: A. R. Walker

520 WILMINGTON — J. A. Johnston, P. O. Box 238. Tele.: RFD 1, Leland. Bus. Agt.: J. A. Johnston.

574 GREENSBORO — Paul Covington, P. O. Box 666. Tele.: 512 Tate St. Bus. Agt.: S. P. Kersey, 2106 Wright Ave.

603 RALEIGH — O. B. Morris, P. O. Box 1822. Tele.: Rt. 5. Bus. Agt.: G. H. Edwards, 2713 Traxwick Rd.

635 WINSTON-SALEM — C. E. Morgan, P. O. Box 313. Tele.: R. F. D. 2, Walnut Cove. Bus. Agt.: O. L. Zigar, 113 Rosedale Circle.

670 WILSON-ROCKY MOUNT — R. C. Rountree, Anderson Apt. No. 1, 503 Vance St., Wilson. Bus. Agt.: R. C. Rountree.

717 CONCORD — Carl Hinz, P. O. Box 64. Tele.: R. D. 1, Mt. Pleasant. Bus. Agt.: J. R. Parker, 108 Barnhardt Ave.

778 BURLINGTON — C. J. Ross, 231 Lakeside Ave. Bus. Agt.: H. C. Fondow, 516 Flanner St.

797 HIGH POINT — H. C. Simmons, P. O. Box 206. Tele.: 1100 Greensboro Rd. Bus. Agt.: Rush Crawford, 2414 Lexington Ave.

821 LEXINGTON-THOMASVILLE — Billy R. Kanoy, P. O. Box 188, Lexington. Tele.: 602 E. Guilford St., Thomasville. Bus. Agt.: F. Marshall Leonard, 221 Coutland Terr., Burlington.

870 FAYETTEVILLE — Roy Herring, 121 Peace St. Bus. Agt.: William Lucas, 126 Camelia Drive.

NORTH DAKOTA

231 GRAND FORKS — Kenneth C. Lowe, 718 N. Fifth St. Bus. Agt.: Kenneth C. Lowe.

510 FARGO, N. D. and MOORHEAD, Minn — E. J. McCannel, P. O. Box 574, Fargo. Tele.: 915 2nd Ave., S., Apt. 5, Fargo. Bus. Agt.: Henry G. Lehr, 706 N. 10th.

654 MINOT — John S. Ceglowski, P. O. Box 486. Tele.: 713 3rd St., N. W. Bus. Agt.: John S. Ceglowski.

698 BISMARCK — W. Schmaltz, P. O. Box 445. Tele.: 909 16th St. Bus. Agt.: W. Schmaltz.

OHIO

71 NEWARK — G. E. Camp, P. O. Box 424. Tele.: 353 Eddy St. Bus. Agt.: Forrest Bartlett, 142 Riley St.

79 MASSILLON — Dwight E. Dietz, 327 Korman Ave., N. E. Bus. Agt.: Dwight E. Dietz.

100 MARIETTA, Ohio and PARKERSBURG, W. Va. — (See West Virginia).

104 ZANESVILLE — Edgar H. Fuller, 1760 Norwood Blvd. Bus. Agt.: Edward H. Kenity, 41 S. 4th St.

123 EAST LIVERPOOL — Thirl Biggins, P. O. Box 564. Tele.: 306 E. Chestnut St., Lisbon. Bus. Agt.: Frank Marshall, 307 Carolina Ave.

132 NILES-WARREN — Henry J. Blakley, P. O. Box 764, Warren. Tele.: 1541 Gene-see Ave., N. E. Warren. Bus. Agt.: Ralph W. Bailey, 791 Kenmore, N. E. Warren.

136 HAMILTON — Tom C. Smith, 403 Progress Ave. Bus. Agt.: Peter Bisdorf, 1441 Maple Ave.

155 TROY-PIQUA-SIONCY — Glenn F. Bartscher, 1062 Boone St., Piqua. Bus. Agt.: (S) Joel J. Hixson, R. R. 3, Box 293-A, Piqua. (O) Robert Phillips, 403 Wagner Ave., Sidney.

189 ALLIANCE — John H. Greenlees, P. O. Box 434. Tele.: Route 30, East Rochester. Bus. Agt.: Floyd E. Bowman, 10560 State Street, Louisville.

192 FINOLAY — Richard Dunlap, 813 Tiffin Ave., Bus. Agt.: Harrison Van Dorn, 213 East St.

214 SANOUSKY — J. E. Gardner, P. O. Box 1133. Tele.: 1326 Vine St. Bus. Agt.: J. E. Gardner.

267 TIFFIN — Russell G. Kitchin, 262 1/2 N. San'usky St. Bus. Agts.: (O) Burt C. Bricker, P. O. Box 724; (S) Sam Shaw, R. F. D. 3.

282 MIDDLETOWN — Charles Roberts, P. O. Box 284. Tele.: 313 Arcadia Drive. Bus. Agts.: (S) Earl S. Roebuck, 2203 Arlington Ave. (O) F. L. Francis, 14 Harrison St.

315 STEUBENVILLE — T. P. Caniff, P. O. Box 94. Tele.: 3081 Crestline Dr. Bus. Agt.: T. P. Caniff.

349 LIMA — W. J. Courtney, P. O. Box 491. Tele.: 710 Albert St. Bus. Agt.: R. G. Nelf, Waynesfield.

369 IRONTON, Ohio, HUNTINGTON, W. Va., and ASHLAND, Ky. — (See 369, West Virginia.)

422 ASHTABULA — H. L. Rood, P. O. Box 243. Tele.: 521 Prospect Rd. Bus. Agt.: Jack P. Lynch, P. O. Box 243.

571 PORTSMOUTH — Russell Jarris, P. O. Box 33. Tele.: 620 John St. Bus. Agt.: Ofa Osborne, 1722 Charles St.

598 MARION — Richard Baldauf, P. O. Box 101. Tele.: 619 Mary St. Bus. Agt.: Leon Obenour, 396 Commercial St.

633 CAMBRIDGE — Aaron C. Swank, P. O. Box 15, Newcomerstown. Tele.: 452 N. College St., Newcomerstown. Bus. Agt.: 653 LORAIN-ELYRIA — Louis Horkay, Jr., P. O. Box 278. Tele.: 738 Brownell Ave. Bus. Agt.: A. L. MacPhail, 140 N. Ridge, E.

733 ATHENS — Hal K. Osborne, P. O. Box 53. Tele.: Mount St. Bus. Agt.: Charles Farrow, 72 N. Congress St.

OKLAHOMA

227 PONCA CITY — Arthur H. Erwin 302 S. 4th St. Bus. Agt.: R. B. Alston, 525 N. 12th St.

246 MUSKOGEE — U. J. Orrell, P. O. Box 246. Tele.: 1208 Cincinnati St. Bus. Agt.: Milo Miller, 905 S. D. St.

312 ENID — George L. Virgil, 1604 Lake, Lawton. Bus. Agt.: George L. Virgil.

387 LAWTON — O. B. Ranes, P. O. Box 387. Tele.: 1415 Arlington. Bus. Agt.: E. Burrell Jones, 722 N. 31st St.

399 BARTLESVILLE — Floyd Blackman, 123 S. Quappaw. Bus. Agt.: Albert Lee Findley, P. O. Box 1162.

471 OKMULGEE — Charter revoked. Road men contact LeRoy Upton, International Vice-President, 320 N. Grand Blvd., St. Louis 3, Mo.

517 SAPULPA — B. E. Robertson, 2013 S. Cedar St. Bus. Agt.: B. E. Robertson.

679 MIAMI — Orrick Sparlin, Jr., 325 "B" St., N. W. Bus. Agt.: Stanley J. Sullins, 403 "G" St., N. W.

OREGON

234 PENOLETON, LA GRANOE — (See Washington).

446 ASTORIA — Chester R. Lamont, 262 Ninth St. Bus. Agt.: Chester R. Lamont.

613 SALEM — J. M. Kemper, 957 Belmont, N. E. Bus. Agt.: J. W. Simeral, 990 Winter St., N. E.

672 KLAMATH FALLS and MEAFORD — Richard E. Teater, 2345 Applegate Ave., Klamath Falls. Bus. Agt.: for Klamath Falls: Roger Porret. Bus. Agt.: for Meaford: Robert E. Biehn, 369 Oakgrove Road, Meaford.

675 EUGENE, CORVALLIS and BEND — Richard P. Lyons, 1443 E. 20th Ave. Bus. Agt.: Harold DeLarm, 1565 Linda Ave.

785 COOS BAY — A. E. McDuffie, Rt. Box 751. Bus. Agt.: Leonard Ingeman, 1816 Madrona, North Bend.

PENNSYLVANIA

101 SHARON-FARRELL — Michael Yanak, 1109 Spearman Ave., Farrell. Bus. Agts.: (S) Fred Bennett, 1079 E. State St., Sharon. (O) Frank Crivello, 1241 Roemer Blvd., Farrell.

120 PITTSBURG — James A. Casala, 143 Mill St. Bus. Agt.: Stanley Yanick, 202 Philadelphia Ave., West.

130 ALTOONA — Richard Bradley, P. O. Box 263. Tele.: 2626 Pleasant Valley Blvd. Bus. Agt.: Urgie Baker, 3816 Maple Ave.

152 HAZLETON — Joseph Rubinate, 549 W. Green St. Bus. Agt.: Anthony DeCosmo, 549 James St.

177 CONNELLSVILLE — Byron K. Bishop, P. O. Box 304. Tele.: R. D. No. 2, Box 240. Bus. Agt.: Robert Albright, P. O. Box 138, South Connelville.

179 WILLIAMSPORT — Harold B. Lilley, P. O. Box 411, 1218 Vine Ave. Bus. Agt.: Glenn Crossley, Sr., 2381 Riverside Drive, S.

200 NORRISTOWN — John Seal, 266 Prince Frederick St., King of Prussia. Bus. Agt.: Julius Needleman, 1144 Vernon Rd., Philadelphia 50, Pa.

203 EASTON-STROUDSBURG — J. Walter MacCracken, P. O. Box 65, Easton. Tele.: 831 McCartney St., Easton. Bus. Agt.: Kenneth S. Mack., Stone Crossing, Easton.

208 UNIONTOWN — K. S. Haines, P. O. Box 814. Tele.: 56 Elm Ave. Bus. Agt.: Charles W. Vincent, Sr., 151 Connelville St.

218 POTTSVILLE — Carlton Wiest, P. O. Box 194. Tele.: 800 W. Norwegian St. Bus. Agt.: Anthony Discavage, 807 N. 3rd St.

265 GREENSBURG — M. J. Packere, P. O. Box 452. Tele.: 828 Wool St., Latrobe. Bus. Agt.: George W. Mooney, 625 W. Newton Ave.

283 YORK, HANOVER and GETTYSBURG — Harry L. Olp, P. O. Box 181, York 17405. Tele.: 213 Main, Red Lion. Bus. Agt.: Emory Myers, 1702 W. Market St., York.

287 BEAVER FALLS, ALIQUIPPA, AMBRIDGE, BEAVER, MONACA, MIDLAND, NEW BRIGHTON and ROCHESTER — William J. Howe, P. O. Box 328, Rochester. Tele.: 761 Sunflower Rd., Rochester. Bus. Agt.: David E. Dickinson, Fastvale Trailer Park, Eastvale, Beaver Falls.

296 WARREN — E. J. Lesser, P. O. Box 32. Tele.: 122 Conewago Ave. Bus. Agt.: K. K. Sigworth, 308 Hazel St.

329 SCRANTON — Clayton R. Leas, P. O. Box 228. Tele.: 2923 Frink St. Bus. Agt.: Sam Kessler, 512 Wheeler Ave.

335 BRAEFORD — Leo J. Foran, 48 Bedford St. Bus. Agt.: Executive Board, 48 Bedford St.

341 OIL CITY — Howard R. Findlay, R. D. 2. Bus. Agt.: Robert R. Tarr, 305 Wilson Ave.

342 BUTLER — Paul E. Smith, P. O. Box 415. Tele.: Highland Ave. (Meridian), Butler. Bus. Agt.: Paul E. Smith.

398 MEADOWS — August F. Bodisch, R. D. 3, Box 9-A, Linesville. Bus. Agt.: Russell C. Bortles, P. O. Box 364, Linesville.

403 SUNBURY, LEWISBURG, SELINS-GROVE — Russell H. Search, P. O. Box 225, Sunbury. Tele.: College Park, Lewisburg. Bus. Agt.: Robert E. LeVan, 902 Avenue "G," Riverside.

444 NEW KENSINGTON and TARENTUM — Anthony Haraczak, 1910 Constitution Blvd., New Kensington. Bus. Agt.: Joseph Milburn, 1131 Wills Ave., New Kensington.

451 NEW CASTLE — Robert O. Woodring, P. O. Box 583. Tele.: 26 Cecil Ave. Bus. Agt.: Executive Board.

478 BETHLEHEM — Charles Beyea, P. O. Box 1213. Tele.: 430 Main St. Bus. Agt.: Charles Beyea.

515 SHAMKIN — F. Shirman, 119 N. Grant St. Bus. Agt.: Clement Yeager, 233 W. Third St., Mt. Carmel.

516 CHESTER — Jack Mullen, P. O. Box 92. Tele.: 4 W. 24th St. Bus. Agt.: Perry Restucci, 104 Edward Drive, Brookhaven.

554 LEBANON — Albert Spayd, P. O. Box 193. Tele.: 55 N. 12th St. Bus. Agt.: John Shultz, 704 N. 3rd Ave.

561 JOHNSTOWN — Paul Halovich, P. O. Box 665. Tele.: 220 Haynes St. Bus. Agt.: Joseph C. Burgo, 362 Moore St.

566 MCKEESPORT — Herbert W. Schaefer, P. O. Box 157. Tele.: 272 Lafayette Ave. Bus. Agt.: Emmett A. Barnes, 3512 Woodland Ave.

575 POTTSWOWN — Kenneth H. Delo-plain, R. D. 1, Gilbertville. Bus. Agt.: Gerard J. Boyle, R. D. 2, Boyertown.

591 WAYNESBORO — (See Maryland).

607 KITTANNING — James Gallo, 135 Main St., Ford City 16226. Bus. Agt.: James Gallo.

627 WASHINGTON — E. W. Seal, 28 S. Waie Ave. Bus. Agt.: J. P. Lane, 260 Donnan Ave.

628 CHARLEROI and MONESSEN — William C. Giles, P. O. Box 519, Browns-ville. Tele.: 422 Brashear St., Browns-ville. Bus. Agt.: R. J. Crosby, Jr., 513 1st St., Monessen.

636 LEWISTOWN, STATE COLLEGE, HUNTINGTON — Gregory Crawford, R. D. Mt. Union. Bus. Agt.: George Figard, R. D. 2, Box 406 Huntingdon.

664 VANDERGRIFT — James L. Davis, 227 Clymer Ave., Indiana. Bus. Agt.: Albert Sack, 425 Emerson St.

703 OUBOIS — James R. Fleming, P. O. Box 295, St. Mary's. Bus. Agt.: R. R. McGreevey, 509 Grant St. Reynoldsville.
 718 PHILIPSBURG — James Wood, P. O. Box 204, Ramsy. Bus. Agt.: Executive Board, Box 204, Ramey.
 832 LANGHORNE — Howard Scheicher, 6 Summer Lane, Levittown. Bus. Agt.: Frank Fee, 10 Pumpkin Hill Road, Levittown.

RHODE ISLAND

309 NEWPORT — Harold W. McGinn, 10 Summer St. 02842. Bus. Agt.: W. H. White, Jr., 10 Pennacook St.
 538 WESTERLY — H. Irvine Pendlebury, P. O. Box 365. Tele.: Boston Post Rd. Bus. Agt.: Gerald H. Payne, 63 Beach St.
 579 WOODSOKET — William F. Oever, P. O. Box 1164. Tele.: 23 White Parkway. Bus. Agt.: William F. Dever.
 677 KENT COUNTY — Harold F. Benson, 56 Harris Ave., West Warwick 02893. Bus. Agt.: Harold F. Benson.

SOUTH CAROLINA

333 CHARLESTON — A. P. Jones, P. O. Box 671. Tele.: 1670 Garden St. Bus. Agt.: Robert L. Schardt, 619 Welch Ave., Riverland Terrace.
 347 COLUMBIA — Carroll L. Addy, P. O. Box 972. Tele.: 4801 James St. Bus. Agt.: W. H. Herring, 1420 Charleston Highway, West Columbia.
 512 SPARTANBURG — T. H. Childress, 528. Tele.: 103 Cambridge Circle. Bus. Agt.: Paul E. Kelley, 204 Willwood.
 697 GREENVILLE — J. H. Austin, P. O. Box 343. Tele.: 115 Hillrose Ave. Bus. Agt.: T. T. Sizemore, 143 Augusta Court.
 741 ANDERSON — W. Lester Hubbard, P. O. Box 741. Tele.: 3 Jaynes St. Bus. Agt.: John R. Cornwell, 309 Moultrie Square.

SOUTH DAKOTA

503 MITCHELL-HURON — John M. Spry, 622 S. Duff St., Mitchell. Bus. Agts.: (O) William F. Vogt, 1200 E. 4th Ave., Mitchell. (S) James M. Spry, 622 S. Duff St., Mitchell.
 525 ABERDEEN — Walter E. Bleckert, P. O. Box 525. Tele.: 1707 S. Main St. Bus. Agt.: Walter E. Bleckert

TENNESSEE

530 BRISTOL, Va., and Tenn. — Hugh H. Horne, P. O. Box 12, Bristol, Tenn. Tele.: 1725 Holston Drive, Bristol, Tenn. Bus. Agt.: William Vernon, Maple Hurst, Adt. Bluff City, Tenn.
 639 JACKSON — Wm. H. Parham, P. O. Box 126. Tele.: 118 Edenwood Drive. Bus. Agt.: Paul Burke, 612 Lambuth.
 699 JOHNSON CITY — Ralph C. Lusk, P. O. Box 764. Tele.: 301 W. G. St., Elizabethton. Bus. Agt.: H. B. Crowe, Sr., Wautauga Ave., Ext., Rt. 6, Elizabethton.
 713 MURFREESBORO — J. W. Young, 236 E. Tanksley, Nashville 37211. Bus. Agt.: Sam Watson, R. O. 2, Lebanon 37087.
 759 CLEVELAND — Claude A. West, P. O. Box 302. Tele.: Star-Vue Theatre. Bus. Agt.: William A. Smaling, Georgetown Pike.
 763 OYERSBURGH — Charter revoked. Road men contact R. E. Morris, International Trustee, P. O. Box 811, Mobile, Ala. 36601.
 814 OAK RIDGE — Willis E. Baker, Sr., P. O. Box 3113. Tele.: 921 Fowler St., Clinton. Bus. Agt.: William P. Harding, 104-A Elza Drive.
 835 KINGSFORT — Claude K. Pendleton, 1224 Holyoke St. Bus. Agt.: Mark Rich, 1106 Wilcox Drive.
 851 MARYSVILLE and ALCOA — Kenneth E. Sutton, 1003 Young Ave., Marysville. Bus. Agt.: Ed Abbott, Box 402, Marysville.
 852 MORRISTOWN and NEWPORT — L. A. Collins, P. O. Box 1491, Morristown. Bus. Agt.: Aldon Vaughn, 318 Peachtree St., Morristown.

TEXAS

153 EL PASO — Charles W. Moore, P. O. Box 1130. Tele.: 2300 San Jose Ave. Bus. Agts.: (O) A. O. Yonge, 2608 Silver St.; (S) G. R. Jones, 8287 San Jose Rd.

183 BEAUMONT — H. E. Wilson, 4895 Detroit St. Bus. Agt.: Pete Navarro, 1463 Railroad.

205 AUSTIN — B. L. Westlund, P. O. Box 142. Tele.: 4900 Lansing Drive, Zone 4. Bus. Agt.: Charles W. Schubert, 606 W. 8th St.

276 BAYTOWN — Wayne E. Brock, P. O. Box 659. Tele.: 105 E. Fayle. Bus. Agt.: Raymond M. Brock, Box 3383.

280 DENISON — R. T. Jones, P. O. Box 228. Tele.: 516 W. Gandy St. Bus. Agt.: B. E. Perry, 719 W. Hull.

331 TEMPLE — R. L. Moore, P. O. Box 392. Tele.: 911 S. 35th St. Bus. Agt.: G. Molton Allen, 1215 N. 2nd St.

378 WICHITA FALLS — S. F. Weidman, P. O. Box 777. Tele.: 2005 Tilden St. Bus. Agt.: Edgar D. Swartwood, 3007 Pennsylvania Ave.

383 TEXARKANA — Hugh Cavitt, P. O. Box 323. Tele.: 900 Whitaker St. Bus. Agts.: (O) Executive Board, 314 S. Robinson Road. (S) J. R. Henderson, 908 East 33rd St.

391 PORT ARTHUR — R. T. Sipole, P. O. Box 207. Tele.: 115 S. 15th St., Nederland. Bus. Agt.: Travis Emmons, 5145 8th St.

393 MEXIA — CORSICANA — Joe B. Vaughn, 1102 W. 13th Ave., Corsicana. Bus. Agt.: J. O. Walker, Hillside Drive, Corsicana.

456 DENTON — MCKINNEY — Metz Kinde, 1408 N. Waidill St., McKinney. Bus. Agt.: Walter Harris, 225 Joge St., Denton.

469 AMARILLO — LUBBOCK — J. J. Cheshire, Jr., P. O. Box 1885, Amarillo. Tele.: 4605 Bryan, Amarillo. Bus. Agts.: Solon May, P. O. Box 1583, Amarillo, and S. E. Patterson, P. O. Box 5754, Lubbock.

526 ORANGE — Walter Journey, 909 4th St. Bus. Agt.: Davis Gholson, 911 9th St.

548 GREENVILLE — PARIS — Don C. Morgan, 333 Sixth St., N. E., Paris. Bus. Agt.: Rueben C. Vallier, 415 Fourth St., S. W., Paris.

584 BRECKENRIDGE — Cleo Carey, P. O. Box 48. Tele.: 306 S. Miller. Bus. Agt.: J. H. Davis, Jr., 1304 Hopkins St., Dallas.

587 LONGVIEW — MARSHALL — J. Raymond Walker, P. O. Box 845, Longview. Tele.: 703 E. Level Ave., Longview. Bus. Agt.: Emmett Carter, Jr., 207 Smith Drive, White Oak.

604 CORPUS CHRISTI — Leo Beckley, P. O. Box 969. Tele.: 918 Grant Place. Bus. Agt.: O. A. Brandon, 2842 Austin.

612 ABILENE — F. R. Block, P. O. Box 1396. Tele.: 850 Beechwood. Bus. Agt.: F. R. Block.

625 TYLER — J. F. Welch, Sr., 235 S. Fleishel St. Bus. Agt.: S. L. Davidson, 617 Meadow Lane.

652 KILGORE, HENDERSON, GLADEWATER and OVERTON — Jack T. Holbert, P. O. Box 388, Kilgore. Tele.: 1216 Andrews, Kilgore. Bus. Agt.: Jack T. Holbert.

678 LAREDO — Russell G. Ancira, P. O. Box 742. Tele.: 1818 1/2 Farragut St. Bus. Agt.: Russell G. Ancira

688 HARLINGEN, MCALEEN, BROWNSVILLE — G. I. Harp, 517 Patricia Ave., Mercedes. Bus. Agt.: G. E. Ayoub, 451 S. Crockett, San Benito.

692 MARLIN — HEARNE — Charter revoked. Road men contact E. J. Miller, International Representative, 1815 Walker Ave., Houston 3, Texas.

693 BROWNWOOD — Jim Pouns, P. O. Box 23. Bus. Agt.: Jim Pouns.

715 GAINESVILLE — G. L. Luther, P. O. Box 111. Tele.: 2516 Garapan Drive, Dallas. Bus. Agt.: G. L. Luther.

746 FREEPORT — Bernie T. Thomas, P. O. Box 716. Tele.: 204 Lotus, Lake Jackson. Bus. Agt.: Bernie T. Thomas.

765 VERNON — CHILORESS — Argie Walden, P. O. Box 2133, Vernon. Tele.: 4019 Circle Drive, Venon. Bus. Agt.: Argie Walden.

802 BRYAN — Jos. Pletzer, P. O. Box 486. Tele.: 209 S. Hutchins. Bus. Agt.: Harry Anthony, P. O. Box 163.

865 ODESSA — MIOLAND — S. E. Furlow, P. O. Box 691, Odessa. Tele.: 400 E.

38th St., Odessa. Bus. Agt.: S. E. Furlow.

UTAH

358 OGOEN — Walter Wheelwright, P. O. Box 386. Tele.: 4983 S. 2527 W., Roy, Utah. Bus. Agt.: Dave Tompkins, 3305 Quincy Ave.

508 LOGAN — Eugene Bell, 463 W. 2nd South St. Bus. Agt.: Charles McPhee, 234 S. 2nd East St.

648 PROVO — Wayne Cox, 337 E. Center St., Spanish Fork. Bus. Agt.: Edward Bushell, 609 W. First North.

VIRGINIA

55 ROANOKE — Ralph J. McCona'd, P. O. Box 1067. Tele.: 705 Marshall Ave., S. W., Zone 16. Bus. Agt.: C. O. Lawrence, 2318 Rush St., N. W.

264 NEWPORT NEWS — W. L. Strouf, P. O. Box 795. Tele.: 313 Cooper, Hampton. Bus. Agt.: Nelson S. Hawkins, 160 Algonquin Rd., Hampton.

390 LYNCHBURG — L. T. Godsey, P. O. Box 634. Tele.: Leesville Rd. Bus. Agt.: James H. File, 2008 Broadway St.

531 PETERSBURG — W. S. Query, 1770 Oakland St. Bus. Agt.: Carl F. Wood, 1901 Oakland St.

563 DANVILLE — Melville L. Perkins, 2134 Baxter St. Bus. Agt.: William O. Paul, 747 Melrose Ave.

572 STAUTON — Anthony J. Peduto, 1611 Pierce St. Bus. Agt.: Oonald Pattee, Singers Glen.

591 WINCHESTER — (see Maryland.)

619 ALEXANDRIA — Harold H. Phelps, 2005 Columbia Pike, Apt. 829, Arlington. Bus. Agt.: S. A. Dale, 18 E. Bradlock Road.

711 CHARLOTTESVILLE — N. G. Dobson, P. O. Box 611. Tele.: 1324 Long St. Bus. Agt.: N. G. Oobson.

WASHINGTON

93 SPOKANE — Leo T. Vigil, P. O. Box 1266. Tele.: 218 E. Walton Ave., Zone 22. Bus. Agts.: (S) K. R. Oevereaux, East 403 Rich. (O) Robert G. Crawford, East 725 Thurston.

117 BELLINGHAM — Fred A. Graham, P. O. Box 571. Zip 98225. Tele.: 1659 Chuckanut Point. Bus. Agt.: Stan Pehrson, 204 Brown Lane

175 TACOMA — C. J. Ellis, P. O. Box 1155. Tele.: 4301 80th Ave., W. Bus. Agt.: W. H. Jarmon, 4802 N. 14th.

180 EVERETT — John C. Smith, P. O. Box 478. Tele.: 3715 Colby Ave. Bus. Agt.: E. J. McMurray, 1027 Wetmore.

234 WALLA WALLA and TRI CITY — Guy E. Blakely, 1409 Road No. 24, Pasco. Bus. Agt.: Paul Sheley, 914 South 5th, Pasco.

254 YAKIMA — Edwin G. Hauff, P. O. Box 1161. Tele.: 404 S. 18th Ave. Bus. Agt.: L. B. Hinds, 2305 Summitview Ave.

344 OLYMPIA — Owen Linndat, P. O. Box 572. Tele.: 1218 N. Wilson. Bus. Agt.: G. K. Porterfield, P. O. Box 245, Lacey.

351 ANACORTES, MOUNT VERNON, SEORO — WOOLLEY, PORT ANGELES, BURLINGTON, CONCRETE, STANWOOD, MARYSVILLE, SNOHOMISH, MONROE — S. R. Lowrie, 1718 12th St., Anacortes. Bus. Agt.: S. R. Lowrie.

401 CENTRALIA, CHEHALIS, RAYMOND, SOUTH BEND, LONGVIEW, KELSO, VANCOUVER, CAMAS — C. W. Wheeler, P. O. 1842 Van couver. Tele.: 105 E. 31st St., Vancouver. Bus. Agts.: (Centralia-Chehalis) W. A. Kirkpatrick, 413 Magnolia, Centralia. (Vancouver-Camas) N. D. Stark, P. O. Box 12, Vancouver. (Longview-Kelso) H. A. Kirkpatrick, 1732 Ocean Beach Highway, Longview.

429 ABERDEEN — HOKUJIAN — Marvin Frost, 2204 Aberdeen Ave., Aberdeen. Bus. Agt.: Marvin Frost.

445 BREMERTON — CHARLESTON — Arthur H. Miller, P. O. Box 613, Bremerton. Tele.: 1932 Burwell, Bremerton. Bus. Agt.: George Juricich, Route 1, Box 71, Silverdale.

651 WENATCHEE — George H. Henkel, P. O. Box 355. Tele.: 321 15th St., N. E., East Wenatchee. Bus. Agt.: G. H. Schubert, 210 Spokane St.

WEST VIRGINIA

64 WHEELING — George J. Beltz, P. O. Box 292. Tele.: 33 9th St., McMachan.

Bus. Agt.: Nile C. Canady, 3461 Franklin St., Bellaire, Ohio.

100 PARKERSBURG, W. Va., & MARIETTA, Ohio — E. A. Earley, 1809 19th St., Parkersburg. Bus. Agt.: E. A. Earley.

239 FAIRMONT — Bruce E. Vandergrieff, 705 Potomac Ave. Bus. Agt.: William Huett, Nester, 600 Benoni Ave.

270 CLARKSBURG — Dallas O. Cornell, P. O. Box 1453. Tele.: 5 Timberlake Court. Bus. Agt.: Oelmer A. Fesler, 628 Philippi Pike.

369 HUNTINGTON, W. Va., ASHLAND, Ky., and IRONTON, O. — O. M. Rose, P. O. Box 192, Huntington. Tele.: 1431 Grove St., Huntington. Bus. Agts.: (O) Sam Hunter, 1132 Adams Ave., Huntington. (S) Ralph E. Fowlkes, 932 Jefferson Ave., Huntington.

578 MORGANTOWN — H. O. Kelly, P. O. Box 293. Zip 26505. Tele.: 420 West Virginia Ave. Bus. Agt.: Richard Herstine, 1157 Des Moines Ave.

591 MARTINSBURG — (see Maryland.)

691 BLUEFIELD — Charles R. Brewer, P. O. Box 691. Tele.: 924 Frederick St. Bus. Agt.: E. E. Broyles, 144 Giles St.

834 ELKINS — BUCKHANNON — Joseph W. Blackwood, P. O. Box 356, Philippi. Tele.: 222 S. Walnut St., Philippi. Bus. Agt.: Joseph W. Blackwood.

WISCONSIN

141 LACROSSE — Arthur Frey, Rt. 1. Bus. Agt.: Frank Sieger, 139 S. 11th St.

167 OSHKOSH — FONO OU LAC — Harold E. Hurlbutt, 1114 E. New York Ave., Oshkosh. Bus. Agts.: (S. Oshkosh), Elmer Retzliff, 917 Kansas St.; (Fon du Lac), Gor on Tupper, 137 S. Park Ave.

251 MADISON — Thomas C. Tews, 2248 Rowley Ave., Zone 5. Bus. Agts.: (S) Douglas Gauntlett, 213 State St. (O) E. G. Wighall, 4537 Winnequah Rd., Zone 4.

361 KENOSHA — John O. Sublisky, R. F. D. 4, Box 615. Bus. Agt.: Stanley Przlomski, 6211 40th Ave.

394 APPLETON, MENASHA, NENEAH — Floyd Slayton, 1921 W. 5th St., Appleton. Bus. Agt.: Fred Kohl, 207 E. Calumet St., Appleton.

410 MANITOWOC — Harold Lemberger, 834 S. 18th St. Bus. Agt.: Frank Swokoske, 1309 S. 18th St.

457 SUPERIOR — Erving Austin, 1721 Tower Ave., Apt. B. Bus. Agt.: Erving Austin.

475 EAU CLAIRE — Floyd E. Garton, 1630 Main St. Bus. Agts.: Frank Schlaeger, 641 W. Grand Ave., Eau Claire. J. W. Crooks, 8 W. Elm St., Chippewa Falls.

477 GREEN BAY — MARINETTE, Wis. - MENOMINEE, Mich. — Melvin Oswald, Sr., 2312 Woodrow Ave., Green Bay. Bus. Agt. for Green Bay: Bural Tallman, 1930 Farlin Ave. Bus. Agt. for Marinette-Menominee: Herb Newman, 836 1/2 Wells St., Marinette.

493 JANESVILLE - BELLOIT — A. M. Mitchell, 2441 E. Ridge Rd., Beloit. Bus. Agt.: Bernard Marker, 1508 Magnolia Ave., Janesville.

606 WAUSAU and STEVENS POINT — Carmo Bierbrauer, 1231 Steuben St., Wausau. Bus. Agt.: Carmo Bierbrauer.

655 SHEBOYGAN, KOHLER, PLYMOUTH — Henry Udovich, P. O. Box 64, Sheboygan. Tele.: 2127 S. 12th St., Sheboygan. Bus. Agt.: John Kunstman, 610 Broughton Dr., Sheboygan.

694 BEAVER OAM — Ralph Percifield, P. O. Box 34. Tele.: 123 Mary St., Beaver Dam. Bus. Agt.: Ralph Percifield.

721 ELKHORN — Norma Taylor, 414 S. Main St., Oelavan. Bus. Agt.: R. J. Mellien, 513 Haskins St, Lake Geneva

722 WISCONSIN RAPIDS — Ronn R. Desper, Route 1, Box 44. Bus. Agt.: Ronn R. Desper.

WYOMING

426 CASPER — John W. Buchanan, P. O. Box 643. Zip 82602. Tele.: 902 S. Walnut. Bus. Agt.: John W. Buchanan.

489 SHERIDAN — Vergil J. Gilson, P. O. Box 3. Tele.: 742 Jackson. Bus. Agt.: Frank V. Spainhower, 841 E. Heald St.

647 CHEYENNE — George Gauterman, P. O. Box 541. Tele.: 1309 East 20th St., Bus. Agt.: Gordon A. Lewis, 3035 Snyder Ave.

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

BOONTON, N. J.

Kodak's McClelland Boosts Training Based on Need

Industrial training pays when it is based upon the specific needs of the company, needs that are clearly defined and concisely stated.

That thesis came from Robert C. McClelland, director of training for Eastman Kodak Company, at a recent convention of the Department of Audio-Visual Instruction, National Education Association in Rochester, N. Y.

Flexibility in response to company training needs is essential, McClelland said. As an example, he outlined the evolution of a Kodak training program in color photography.

"When the boom in color photography began at the close of World War II, Kodak's training department was deluged with requests for courses in color technology," he said. "Thousands of people in our company needed new knowledge for new jobs.

"Our response was a standardized program with courses taught in the classroom and scheduled throughout the academic year. We even published a catalog of Kodak courses in color technology. With the lessening of the need for new knowledge, we found that specialization, rather than standardization, best met the company's needs," McClelland said.

"Today, we have more courses, more students, and keener interest on the part of company people," he said. "Our courses in photographic technology vary in length from 2 to 800 hours, and instruction takes many forms."

McClelland indicated that Kodak training people have broad latitude in the selection of teaching methods. He discussed a variety of approaches, among them: a self-taught course in computer programming for 200 young men and women in Kodak's data processing group; a course in camera repair taught by means of closed circuit television with each student following instructions on a TV monitor; the use of sound motion pictures made during class to mirror student performance in a course on how to conduct an effective business conference; and the use of programmed teaching devices that individually instruct production personnel on the sites where they take part in assembly and finishing operations.

"Good teachers, in our schools and in industry, have always tried to analyze the needs of their students," McClelland said. "They have always

built teaching techniques around those needs.

"This kind of open-minded approach adds excitement and stimulation to the jobs of those of us in industrial training," he concluded. "And it permits the people of the company to get on with their work, as quickly and as efficiently as possible. **iP**

New York State Projectionists in Autumn Meeting

As this issue of International Projectionist comes off the press, the New York State Assn. of Motion Picture Projectionists will be in session at Ithaca.

Scheduled for October 12, the meetings are being held at the Clinton House. It's a special occasion for the Ithaca Local 377 hosts—they're observing their 50th anniversary of affiliation with IATSE.

President Frank E. Coniglio was scheduled to preside at a board meeting following an opening luncheon. He also serves as business agent of Rochester Local 253. Auxiliary President Jennie Young and IATSE Assistant President Walter F. Diehl were also listed on the program.

George F. Raaflaub and George W. Samuelson were active in the planning.

The sessions were slated to wind up with a gala dinner and entertainment. **iP**

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

ASHCRAFT

CORE-LIGHT
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH REACTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

HEYER-SHULTZ METAL REFLECTORS

*Top Screen Illumination
Will Not Break, Pit or Tarnish
No Replacement or Spare Reflectors Required*

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

Sturgis-Grant Studio Features Oxberry Animation Process

by Vern W. Palen

Sturgis-Grant Productions, Inc., 328 East 44th Street, New York City, is known best for its work with medical and technical films, although the studio also handles its share of industrial films and other tasks. On a recent visit, I spent two hours with William Terry, vice-president of the organization, and was greatly impressed by the staff and by the modern equipment we saw in this establishment. In the latter category, there are two Oxberry animation stands that embody the newest design features.

Our discussion turned immediately to recent projects, the first being a production titled "Modern Obstetrics: Normal Delivery." This is an official film of both the American Medical Association and the American College of Obstetricians and Gynecologists. Sponsored by the Ortho Pharmaceutical Corporation, the 16mm color sound film runs 27 minutes, and is a teaching aid for the practicing physician, intern and student.

Live photography and animation are employed throughout the film, the latter being especially effective in showing internal mechanisms which could not otherwise be visualized. Opening scenes show the arrival of the expectant mother in the obstetrical department, starting with the pre-delivery examination, including determination of the fetal position and status, and the many other procedures covered in the doctor's examination. Animation is used to explain the physiology of the uterine musculature during the first stage of labor, the principal movements of the baby through the birth canal in the second stage, and, after the baby is born, the discharge of the placenta. All of this animation was designed by Dwinell Grant and photographed on the Oxberry stand.

In this film, the animation drawings are somewhat unusual in dealing with curvature or roundness. It wasn't just a simple matter of making the usual background drawings — each picture had to be an air-brushed.

The usual type of cartoon animation allows a great deal of latitude in the stylization, but the opposite is true for medical films such as this. Every movement, every bit of physiological action, must be actually

prescribed within the most exacting medical standards, and at each stage of the film's progress an advisory committee scrutinized every drawing to check its accuracy. Of course, this makes the job of the film producer much tougher, but the final result is most effective because of this care and precision.

In contrast to the childbirth film, which was made for professional use, Sturgis-Grant made a 29-minute, 16mm sound film in color titled "Diabetes — What You Don't Know Can Hurt You" for exhibition to the general public. It was sponsored by the Ames Company of Elkhart, Indiana, manufacturers of testing materials for diabetic patients, and was made through the cooperation of the famed Joslin Clinic of Boston.

The animation is schematic, and is planned with considerable in-



An overhead view of Oxberry Automatic animation camera equipment shows a Sturgis-Grant technician preparing a typical set up.

genuity, since it must convey to a lay audience how body processes work. The stylized, cartoon-type diagrams were shot on the Oxberry animation stand, and include one lengthy sequence depicting the production of insulin by the pancreas, and the action of insulin on the body. The diagrams continue, showing how insulin affects the utilization of glucose, as well as what happens in the kidneys if there is not enough insulin.

Animation also is used in an ingenious manner to explain the relationship between exercise, insulin and food intake. These sequences involve multi-cel, multi-run techniques, since objects must appear, and then undergo constant movement, requiring a great number of cycles. Thus, animation is used throughout the film wherever a concept needs to be elaborated or more fully explained than could be done with mere words.

Another new Sturgis-Grant 16mm color film was sponsored by Procter & Gamble Company, and is titled "Dynamics of Dental Caries." Here, live action and animation are combined effectively to get the message across. Live scenes show patients in the dentist's office and the research carried on in dental laboratories in support of the theory. The animated sequences are very complex, showing the action of acids and various chemical reactions which take place in the dental enamel. Techniques involving cycles and scratch-off, often using up to seven cel layers, were necessary to show movement of molecules. Time-lapse photography is employed for certain sequences — that is, the movie speeds up the action that occurs in real life over periods of days or months. This was accomplished by using good color transparencies that spanned the desired time intervals. By aligning them carefully and by timing brief dissolves between them, it was possible to achieve time-lapse animated movement. Where the scene involves X-ray pictures, life and action were attained with pans, zooms, top-lighting, burn-ins on the second run, pop-on arrows, and other techniques. The Sturgis-Grant people believe this film is about as complex as will be found anywhere with respect to structural animation, and for this complicated work the Oxberry stand was well suited.

Sturgis-Grant recently made a series of 8mm color films for Esso

Please turn to page 17

Futuras Popular in Youngstown



Clean, attractive projection booths seem to be the rule in Youngstown, Ohio theatres. Here is another installation of the new Strong Futura projection arc lamps in that city — at Boardman Plaza Theatre. Operating the Futuras is projectionist Mike J. Kohawski, of IATSE Local 388.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, JULY 2, 1946 AND JUNE 11, 1960 (74 STAT. 208) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

INTERNATIONAL PROJECTIONIST
Published monthly at Main Postoffice, Minneapolis, Minnesota for October, 1964.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Frank W. Cooley, Jr., Minneapolis, Minn.

Editor Frank W. Cooley, Jr., Minneapolis, Minn.

Managing editor, Ray Gallo, New York, N. Y.

Business manager, None.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1% or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Northern Publishing Co., Minneapolis, Minn.
Frank W. Cooley, Jr., Minneapolis, Minn.
Rita Cooley, Minneapolis, Minn.

3. The known bondholders, mortgagees, and other security holders owning or holding 1% or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required by the act of June 11, 1960 to be included in all statements regardless of frequency of issue.) 5,721.

F. W. COOLEY, JR.
Sworn to and subscribed before me this 6th day of October, 1964.

THEODORE GLAROS,
Notary Public, Hennepin County, Minn.
My Commission Expires Sept. 23, 1969.

G. L. Carrington Named VP for Altec Service

Alvis A. Ward, President of Altec Lansing Corporation, Anaheim, Calif., has announced the election of George L. Carrington, Jr. as Vice President of Altec Service Corporation.

In his announcement, Mr. Ward stated: "The election of Mr. Carrington to this important post indicates the vitality of the company's stepped-up program of expanding its service activities, not only in the theatrical field but in all technical and related fields where the Altec national service organization can meet a required need."



Carrington

Altec Service Corporation, a division of Ling-Temco-Vought, Inc., is regarded as one of the largest independent national service organizations in the country. It originally was formed out of Electrical Research Products, Inc., a Western Electric subsidiary, in 1937, at which time it assumed the responsibility for

the installation of a major portion of the motion picture industry's sound reproducing equipment.

Carrington assumed the responsibility as General Manager of Altec Service Corporation on April 2, 1962. He will continue to carry on this responsibility in addition to duties related to his newly acquired position.

Prior to his association with Altec Service, Carrington had been with Altec Lansing Corporation from 1943 working in many capacities throughout the company's facilities. He started as a technician in the Environmental Test Laboratories to the position of General Sales Manager in 1962. He is the son of the late George L. Carrington, Sr. (deceased in 1959), widely known pioneer in the field of electronic sound and one of the original founders of Altec Companies. **IP**

IATSE's Scanlon Is Dead at 88

William C. Scanlan, senior member of the Board of Trustees of the International Alliance of Theatrical Stage Employees, died Sept. 20 in Lynn, Mass., after a short illness. He was 88 years old.

A native of Salem, Mass., Scanlan moved to nearby Lynn as a youth and helped form Lynn Stage Employees Local 73 in 1900. He was elected business agent the next year and continued in that capacity for the rest of his life. For a number of years, he served also as secretary.

He was appointed an International Representative in 1921 and was elected to the Board of Trustees when it was established in 1924. Until taken ill a few weeks ago, he continued as a Field Man in the New England area, establishing many new locals and assisting them in negotiations. In 1949, he helped bring about the absorption of the last vestige of the old Knights of Labor with Boston Moving Picture Machine Operators Local 182.

Scanlan was a former president and secretary of the Lynn Central Labor Union and a former vice president of the Massachusetts State Federation of Labor. In 1948, he was appointed to represent the amusement industry on the Massachusetts Minimum Wage Commission. **IP**

National General Opens New Fox Theatre in Los Alamitos

The new \$350,000 Fox Theatre, which opened July 15 with a gala premiere in the Rossmoor Shopping Center in Los Alamitos, Calif. (Orange County), underscores National General Corporation's continuing program of motion picture theatre expansion in shopping centers, according to Eugene V. Klein, NGC chairman and president.

The 838-seat deluxe showcase is the latest in NGC's announced plans to add theatres, conventional and drive-ins, to its circuit of 217 showhouses in 16 Western and Mid-western states during the next three years.

In the expansion program, Klein said, continuing attention will be given to the erection of theatres in major shopping centers, following the pattern set last year when NGC opened shopping center showhouses in Albuquerque, New Mexico, and Palos Verdes, Northridge and Thousand Oaks in the Los Angeles metropolitan area.

The ultimate in theatre construction, the Fox Rossmoor is equipped with the latest projection equipment and a 25x50 screen, including Ampex stereophonic four-track sound. Climate controlled refrigeration to insure comfort for patrons has been installed. The theatre features modern Bodiform chairs built by American Seating Company.

The Fox Rossmoor, designed by Burke, Kober and Nicolais, Los Angeles architectural and engineering firm, working with J. Walter Bantau, Fox West Coast Theatres' construction chief, features a unique drive-through entryway which curves directly in front of the theatre entrance making it easier for patrons to disembark at the ticket window.

For extra convenience, the architects have added an unique concrete canopy which shades the entire building front, and the drive-in approach. A special metal fascia emphasizes the canopy's distinct design and accents the overhead illuminated letters which spell out the theatre's name.

The exterior of the 11,500-square foot building is distinguished by white concrete columns, separated by brown-toned, oblong block fillers. A decorative center grill of perforated cement blocks above the main entrance also aids the theatre's architectural appeal. Also highlighting the

exterior are three pair of glass entry doors which are flanked to the right by a ticket window and to the left by a display case.

The interior of the theatre features a large, carpeted foyer, with a complete concessions counter, vending machines, an open ticket counter, and restroom facilities. All have been placed around the perimeter of the lobby to provide patrons with unencumbered access to the auditorium.

Carpeted aisles divide the auditorium into three sections. In addition, a third carpeted or cross on aisle was used above the center section to facilitate customer traffic. Located above the rear of the auditorium is a mezzanine, housing projection room, offices, dressing rooms for the ushers, and space for air-conditioning and other mechanical equipment. Ruane Corp., San Gabriel, was the contractor.

In the projection booth, Simplex X-L projectors are used in conjunction with Kollmorgan and Bausch & Lomb lenses, Strong Electric Futura II lamps. Ampex sound equipment is used; Golde rewinds and Kneisley rectifiers complete the major booth equipment picture. Roy Quinn was named to manage the new theatre.

IP



The modern, bright marquee of the Fox Theatre invites patrons to enjoy the comfort of the interior and the enjoyment of excellent features.



The 838-seat auditorium of the new Fox Theatre recently opened by National General Corporation in the Rossmoor Shopping Center at Los Alamitos, California.

Frank H. Riffle New President of Carbons-Xetron

Frank H. Riffle, formerly in charge of engineering sales for Carbons, Inc. and a pioneer in the sound projection field, has just been elected President to succeed the late Edward Lachman, founder and head of the Carbons-Xetron organization.

Under Riffle's supervision and direction on the Board, which also includes the late founder's wife, the company says it will continue to acquire and distribute complete lines of modern motion picture projection power and systems.

One of the last acquisitions is the Cinemeccanica Projector, manufactured in Italy. This multi-purpose V8 35-70mm system is standard convertible type and designed for fast and easy change from either 35 to 70, or vice versa.

The Xetron-Cinemeccanica Projection System will be sold to authorized theater supply dealers all over the country. A special model was on display at the recent TESMA-Allied Exhibitors Trade Show held in Detroit. **IP**

Sturgis-Grant

Continued from page 14

Chemical Company on the subject of fertilizers. Original photography was on 16mm color film, later reduced to 8mm and put into Technicolor cartridges for fool-proof projection in the field. All the films in this series are for release in foreign countries and are made without sound in order to avoid the language problem. Each print of the series is accompanied by a written script with storyboard sketches to show where the narration matches the picture, which allows the representative in any foreign country to use his own words. To "freeze" a particular scene, he merely presses a stop-motion button if he wishes to explain something or more fully answer a question.

The first five-minute film of the series is titled "What Is Fertilizer?" Made entirely in animation, this film explains that plants need food to grow just as man does. Other films in the Esso series involve soil testing, the story of nitrogen, potassium, phosphorus, and the like. Since they are designed to be shown in South America and other lands where many people have never heard of fertilizers, they had to be made so those who have never been to school can get the message — this job was handled most effectively using simple drawings and symbols which were photographed on the Oxberry animation stand.

Animation techniques were also used by Sturgis-Grant on a film that was produced for the Lutheran Church of America. The church is now faced with a world which has expanding and rapidly-changing

Please turn to page 18

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

Metro-Goldwyn-Mayer's Merle Chamberlain Outlines Print Saving Plan

Merle Chamberlain, supervisor of post-production activities at MGM, spoke at the IATSE convention in Louisville, where he outlined MGM's newly-developed process for preventing loss of printed numbers which designate the sequence of film reels.

"The problem which results when film leader is destroyed or cut has resulted in development at MGM," Chamberlain said, "of a new numbering process whereby the reel number as well as a repeat of the title have been moved between sync foot numbers 5 and 6, thus preventing a loss of these numbers through destructive handling of film or snipping. The new procedure is now standard practice at MGM."

In a major speech to the convention, Chamberlain also deplored projection inadequacies in many theatres in the United States as well as abroad. **IP**

THE VERY FINEST



IN PROJECTOR PARTS

The ultimate in precision, long life and dependability— they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.

LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



Sturgis-Grant

Continued from page 17

concepts, some of which may alter or come into conflict with existing church dogma. The population explosion, life on other planets, and similar problems eventually may throw a different light on our former ideas and concepts. The church is meeting this situation head-on by creating a film which will be shown at its annual convention this summer. The 30-minute, black and white, 16mm film has a montage sequence of children, stellar objects and microbiological organisms, which were shot on the Oxberry stand using still photos and artwork.

Sturgis-Grant is especially proud of a one-minute spot, "Butterflies," whose artistry stems from the imagination of Philip Stapp. Shot in 35mm color, this is released also on 16mm, and was photographed in two sections, the first involving normal animation, while the second utilizes a multiple effect. The entire film is made up of butterflies of iridescent hues fluttering in beautiful formations. Approximately 1500 cels were used for this job, some showing one or two insects, others showing large groups in flight. As the butterflies move across the screen, the wings move to show the colors on top and bottom. For example, you may first see yellow on top of the wings, and then other colors on the underwings, as the insects tilt and soar through the air. The larger groups of butterflies are shown in formation, and occasionally, another insect flies in from the side to join the formation. By positioning several photos on the Oxberry stand, pleasing effects were achieved by panning from one to another to give the viewer the feeling that different groups of butterflies are constantly entering and leaving the screen.

"The Gift" is the title of a 35mm, color, 20-minute religious subject that Sturgis-Grant produced for the Protestant Council of Churches. Philip Stapp again wrote and directed the film, most of which is illustrated in his unusual and effective style of animation. The opening scene shows the universe with continuous movement out in space and leads smoothly into the story of the life of Christ. There is no narration for the seven minutes it takes to tell this story, but an original music

score accompanies the pictures. The remainder of the film deals with the history and growth of the Church to the present day, and the responsibilities of a true Christian.

In this film, Mr. Stapp wanted to create the impression that there were more people present than were shown in the original scene. To do this, Sturgis-Grant created triple-effect images under the Oxberry camera, employing the same background several times in separate passes. With the shutter opened only $\frac{1}{3}$ for each exposure, the scene was moved by



In an animated scene from Sturgis-Grant Studios film on diabetes, the clarity which typifies the Oxberry animation stand technique is easy to spot.

means of the peg bars at a selected speed for the first exposure, at a faster speed for the second exposure, and still faster for the third exposure.

After each exposure, the film was rolled back in the camera, and the artwork and peg bars were returned to the starting point for the scene. In this manner, the viewer sees a triple-image effect on the screen and gets the impression there are three times as many people as were shown on the original drawing. Cross-dissolves and fades were done with the automatic devices which are built into the Oxberry camera. **IP**

DIAMOND
TRADEMARK
**PROJECTOR
CARBONS**

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.



As Disastrous As No Spare in the Desert, Is No Spare in the Booth

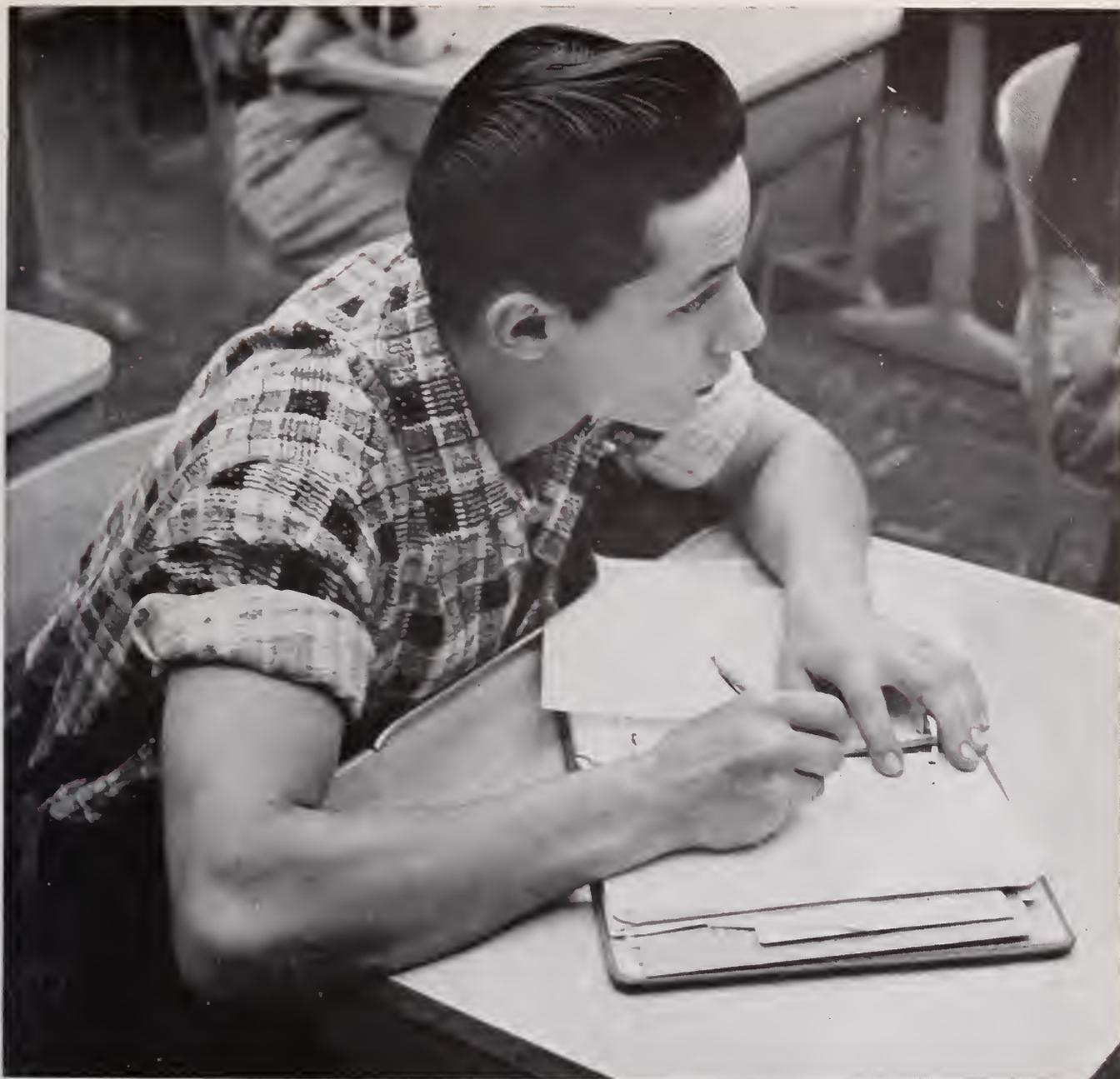
For want of an extra mirror, business can be lost by shut-down.

Always have a spare **TUFCOLD
FIRST SURFACE COLD
DICHROIC REFLECTOR**

Better yet, also replace your old reflectors now with these modern, long-service reflectors with the harder than glass, flake and peel-proof front coating.

THE COATING IS GUARANTEED FOR 2 YEARS!

The Strong Electric Corporation
CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



Library of Congress
Order Division (0368X)
Washington 25, D.C.

X_ETRON[®]

presents

THE MULTI-PURPOSE V-8

35
—
70^{mm}

PROJECTION SYSTEM

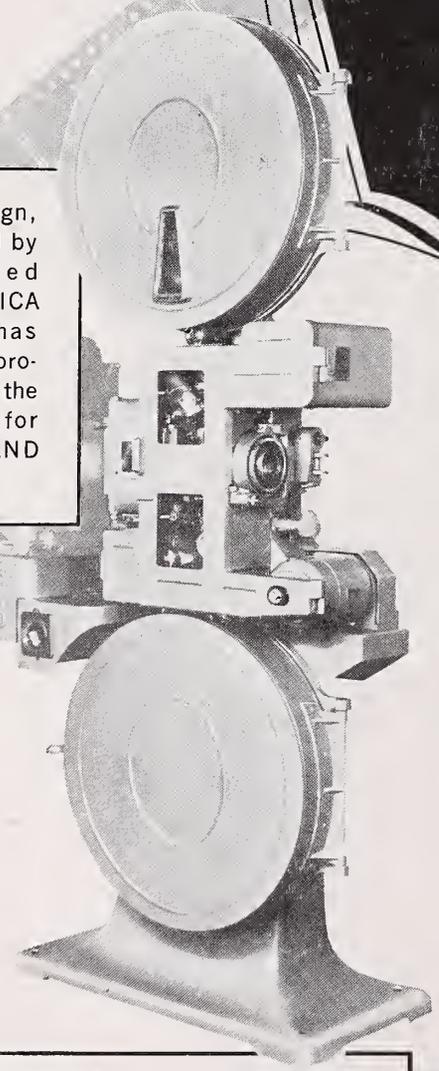
by
CINEMECCANICA

distributed by

X_ETRON

a division of CARBONS, Inc., Boonton, N. J.

Advanced design, as exemplified by the renowned CINEMECCANICA engineering, has produced THE projector to meet the requirements for the present AND the future.



The CINEMECCANICA 35/70 mm projection system represents a time-proven achievement in integrated construction-design, acclaimed as the outstanding development of its type in many years. It includes such features as:

- LARGE DIAMETER SPROCKETS
- AUTOMATIC LUBRICATION
- 6,000 FT. MAGAZINES
- BUCKLE-FREE FILM GATE
- "SWINGING" CINEMASCOPE LENS MOUNT

COOLING SYSTEM

The combined effects of a highly efficient turbo fan and vanes on the conical shutter provides cooling of the film gate area. The dual water cooling system is provided with each projector but is used only with arc currents in excess of 100 amperes.

CONICAL SHUTTER

All V-8 Projectors use a two-blade (1440 R.P.M.) conical shutter in the most effective position for maximum light transmission without flicker.

The system is designed for fast, easy change from 35 to 70 mm or vice versa. Dual purpose sprockets and eccentrically mounted pad rollers make this possible.

THE CINEMECCANICA V-8 STANDARD CONVERTIBLE PROJECTION SYSTEM

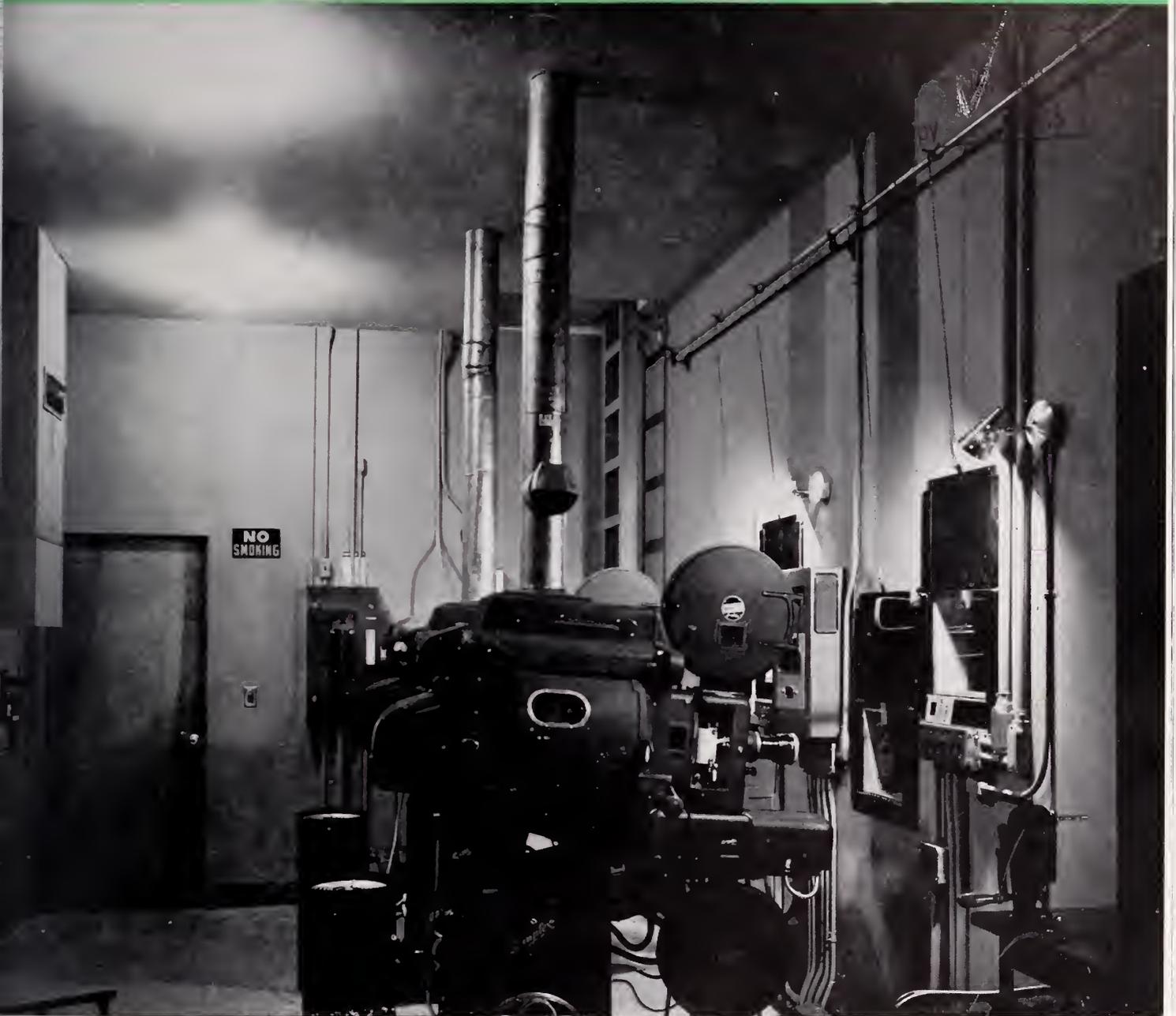
featuring the same heavy duty projector as used in the 35/70 mm system and has been designed to permit conversion to 35/70 mm at a later date. This has been done as a service to the exhibitor who feels he may need the dual purpose equipment at a later date, thus making the purchase of this system a wise investment.

Write for Illustrated Brochure

X_ETRON

a division of CARBONS, Inc., Boonton, N. J.
Sold through Motion Picture Dealers

INTERNATIONAL PROJECTIONIST



This is the projection booth at The Community, the new Walter Reade-Sterling Theatre in Eatontown, N. J. The projection machines utilize Simplex pedestals, Ashcraft Core-Light lamp houses, and the sound is Phillips Norelco transistor.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

NOVEMBER
VOLUME 39
40c A COPY



1964
NUMBER 11
\$3.00 A YEAR



What in the world does popcorn
have in common with
'National' projector carbons?

Plenty! Lobby-stand sales pay a welcome share of theatre overhead. Sales depend on theatre box office ... and to build box office there is no substitute for a top-notch show supported by top-notch screen illumination. Yes, popcorn and "National" projector carbons do have a lot in common. Both give the customer his money's worth in entertainment and pleasure.

"National" projector carbons are an investment — never a house expense. They have been the last word in patron-pleasing lighting for nearly 50 years!



"National" is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N.Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL
PROJECTIONIST



Volume 39 Nov. 1964 No. 11

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Read's Community Theatre	4
Sound Track	6
"Heartening" Industry Picture	8
Charlotte's Capri Theatre	11

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your Copy Every Month...

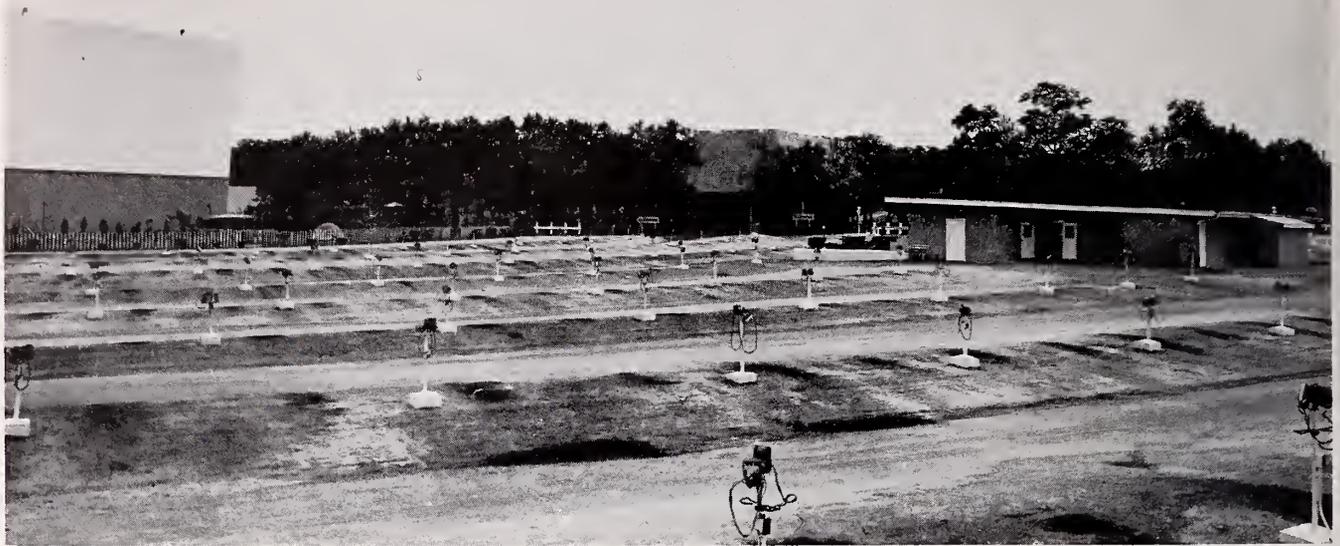
Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

**WE GUARANTEE
YOU CAN'T LOSE**

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



The Eatontown Cinema Centre is evidenced in this theatre. Forming this new entertainment complex of the Walter Reade-Sterling organization in Eatontown, N. J., is the long-established Eatontown Drive-In Theatre, whose screen tower, concessions and projection booth, and ramps, are in the foreground. In the background, between the trees, is the Colonial-styled new Community Theatre. Patrons may enter the Community through the Drive-In Theatre. The Drive-In is a year-round operation, equipped with in-car heaters.

New Theatre "Entertainment Complex" Pays Off In Sight and Sound Techniques

EATONTOWN, N. J.—The Community Theatre, newest unit of the rapidly expanding Walter Reade-Sterling, Inc., organization, uniquely is part of an entertainment complex known as the "Eatontown Cinema Centre" in the popular North Shore area of New Jersey. Built adjacent to the circuit's existing Eatontown Drive-In, with a common entrance to parking facilities for nearly 2000 cars, the Centre offers patrons the choice of outdoor drive-in movie-going, or accommodations in the deluxe new conventional theatre.

Early American in its architecture and decor—with a brown shingled roof, barn-red sidings, and a white colonnade front, the Community accommodates 900 people. Opened in late August (August 26, 1964) it is a virtual duplication of the organization's Community in Cherry Hill, N. J., which opened just a year ago (August 1963) and has received architectural awards for its design and decor.

The new theatre and the drive-in

occupy a large portion of the frontage on what is known as the "Eatontown Traffic Circle" on Route 35 in Eatontown in Monmouth County, N. J., which is one of the fastest growing areas in the nation. A major shopping center is on the other side of the circle.

The new theatre is playing a first-run policy, with the same screen fare often offered simultaneously at the Drive-In. Combined facilities will enable the two theatres to handle more than 3000 people at a time. Patrons may enter the Community directly from a side road, but the main entrance is through the Drive-In Theatre. The complex is unique in the respect that it contains the two separate theatres, which operate as an entity.

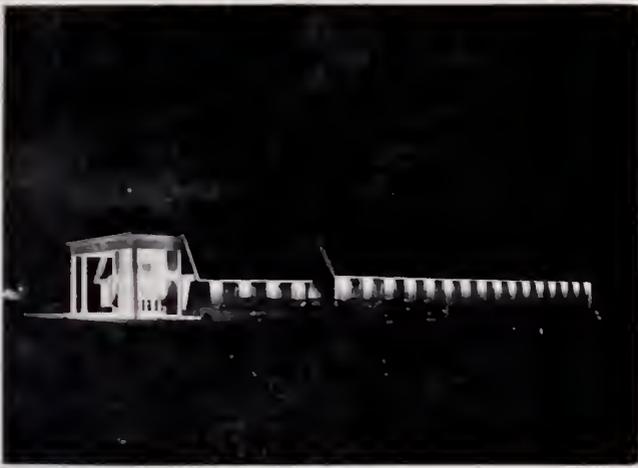
Despite its 18th Century decor, the theatre is modern in all respects, with transistor sound, push-back seating, extra-wide seating rows to assure ample patron leg room, a 20 by 40 foot screen, and the newest projection equipment.

The Walter Reade-Sterling organization pioneered, starting several decades ago, with a Community type theatre which had a Colonial white pillar colonnade, and no marquee. These theatres, which were finished with red brick outer walls are located in Morristown, Trenton, and Toms River in New Jersey, and Kingston and Saratoga in upstate New York. The new Eatontown and Cherry Hill Communities maintain the same no-marquee, white-colonnade front, but have red wood sidings and brown shingled roofs.

At the new complex, an attractive board for the Community is located away from the theatre and fronting on the traffic circle. The drive-in has its own separate attraction board at its entrance.

The Community is situated within 30 feet of the road, separated by an island of shrub planting, and a paved drive. One attraction case is on either side of the glass doors, and represent the only advertising on the complete

(Please turn to page 10)



A night-time view of The Community, the new Walter Reade-Sterling Theatre in the Eatontown Cinema Centre entertainment complex in Eatontown in the populous North Jersey Shore area. With the adjacent Eatontown Drive-In Theatre, the new Cinema Centre gives movie-goers the choice of seeing a film program either in the outdoor theatre, or in the new Community. Jointly the two theatres can accommodate several thousand patrons simultaneously.



An acoustically-treated high ceiling, draped screen and plain painted walls all lend a feeling of spaciousness to the 900 seat Community, newest Walter Reade-Sterling theatre located in the Eatontown Cinema Centre in Eatontown, N. J. This is the view of the stadium-type house, looking towards the 20 by 40 foot Pearl-Light screen. Cove lights and air conditioning vents stud the ceiling. Seats are Griggs push-back.



The cleanness and simplicity of Colonial design is here emphasized in the entrance of The Community, newest of the 50 theatres of the Walter-Reade-Sterling organization. Following a no-marquee styling pioneered by the Reade-Sterling company, the new theatre merely has its name on the white colonnade, and two display cases to show current attractions. A large attraction board along the highway and removed from the theatre, tells passing motorists the current attractions. The roof is brown-shingled; the front and sidings of wood, painted red. The style of the pillars, the exterior coach lamps, and the shrub boxes all carry out the early American decor. Just visible through the glass panels over the doors is a large bronze American eagle.



A settler's bench, antique mirror, massive globed chandelier, beamed ceiling, wall paper, and unique red-brick-designed Karagheusian carpeting, all emphasize the early American decor that is the hallmark of The Community, newest Walter Reade-Sterling Theatre. Patrons entering the theatre through the white colonnade, pass through a small outer lobby (at which the cashier is stationed behind an open-faced, drum-shaped ticket dispensing table), into this inner lobby. Entrance to the stadium-type auditorium is through the doors at the left, and a similar set of doors to the right of the mirror. The concessions stand is recessed into the left wall of the lobby; on the right side are rest rooms and telephones. The manager's office is to the left of the concessions stand.

Sound Track

by J. G. Jackson

While reminiscing about some experiences in years gone by, this Old Timer's thoughts go back to the days of silent pictures and the advent of sound. (I presume 37 years in projection will make me an old timer.)

One unusual experience that comes to mind is the time I ran a show with only three amps on a low intensity arc. I was barnstorming small towns in a remote farming area and I had a show booked for a small place that was virtually a ghost town. I found there was no electricity in the town as the local power plant had been closed down. The plant had consisted of a small D.C. generator driven by an old steam traction engine. I managed to locate the previous steam engineer and prevailed on him to "steam up" and supply power for the show.

My projection equipment consisted of a Holmes portable projector, which had a make shift sound head coupled by means of a flexible shaft. The motor was A.C. and the amplifier was A.C. The arc was a small low intensity rated at 15 amps powered directly from the line through a variable resistance. To supply A.C. to the amplifier and motor I used a small rotary converter.

Shortly before show time the steam engineer managed to get light, so I turned on the sound system and all was fine. But when I tried to draw an arc the line voltage went flat. I sent a rush message to the power plant two blocks away asking for more voltage. the reply came back NO CAN DO.

The old steamer just would not produce any more power. So there I was fit to be tied with not enough power to supply both arc and sound.

Not wishing to give up and quit, I did a little experimenting and I found that if I put all the resistance I had in the arc circuit I could get the carbons to sizzle and still have enough power for sound and motor. I started the show and I found that I could get some light on the screen from the sizzling arc, and the ammeter showed three amps. Luckily

we had a short throw and a small screen so the small amount of light made the picture visible.

I wiggled through the entire show by keeping both hands on the lamp controls, one to keep the carbons in the right contact for sizzling and the other for adjusting the mirror so as to follow the sizzle around the tip of the positive carbon!

What a night! But the customers did not complain; they wanted the show and they understood my problem.

No doubt many readers have had some unusual experiences such as this—so how about dropping me a line and telling me about them. How about some humorous incidents — come on Old Timers, reminisce a little with me! **iP**

Film Projector "Speaks" 13 Languages

NEW YORK — Nine times a day during the World's Fair just closed audiences in the 500-seat auditorium at the Sermons from Science Pavilion (sponsored here by the Moody Institute of Science) watched sound movies showing the interrelationship of science and religion, and hear a perfectly-synchronized commentary in French, Japanese, Norwegian, Swedish, Spanish, Italian, Mandarin, German, Korean, Armenian, Danish, Finnish, Greek and English.

At each seat there is a plastic earphone and a five-position switch. The foreign-language speaking visitor uses the selector switch to tune in one of the five foreign language sound tracks recorded specifically for that film. All films do not carry all 13 languages. The most any can carry is five in addition to English, and these five vary from film to film.

For example, the film shown at 12:00 noon is "Dust or Destiny," and it is in Mandarin, Spanish, French, German, and Japanese. "Hidden Treasures," shown at 4:00 is in Danish, German, Japanese, Norwegian, and Swedish. And the 6:00 film, "The Mystery of Three Clocks," is in German only. All films have an English language commentary which is reproduced by the main speakers at the screen, along with the music and sound effects.

All these languages are spoken



At the Sermons from Science Pavilion sponsored by Moody Institute of Science at the New York World's Fair, the Graflex 16 projector speaks English like a native; its mechanically-linked other voice-box — the Stancil-Hoffman S-7 Reproducer at the right, speaks 13 foreign tongues, five at a time.

in the Sermons from Science Pavilion by a Stancil-Hoffman S-7 Reproducer which plays back the commentaries prerecorded on 16mm magnetic film. It is mechanically linked to the Graflex 16 sound motion picture projector which shows the picture and picks up the optical main English language, music, and sound effects sound track, which is played at the screen. A gear box reduces the projector's 1440 rpm to the 900 rpm required by the reproducer. This mechanical link keeps pictures and languages in perfect synch, so the program does not turn into a modern-day Babel.

The ingenious sound-projection system was worked out at the Moody Institute of Science in California, a ministry of the Moody Bible Institute of Chicago. **iP**

IP DELAYED

This issue and a subsequent issue of International Projectionist was delayed by difficulties in the printing plant which produces IP. Compositors and pressmen, members of several unions including the International Typographical Union, were on strike for over a month. The discussion between the company and the several unions took place while IP was being produced; naturally production had to be stopped until a solution was reached and the picket lines withdrawn. **iP**

Hatch Elected New President of TESMA

DETROIT—Arthur Hatch, president of Strong Electric of Toledo, was elected president and chief executive officer of Theatre Equipment and Supply Manufacturers Association (TESMA).



Hatch

He has been vice-president of the association since 1960. Richard Kneisley, who has been a member of the association's board of directors for several years, was elected vice-president. Kneisley is president of Kneisley Electric Corp., also of Toledo. The Hatch election was forseen.

Larry W. Davee, president of Century Projector Corporation of New York, who has been president of TESMA since 1960, becomes chairman of board.

Four directors of TESMA also were elected to serve three years, namely John Currie, General Precision Equipment, William Gedris, Sr., president of Ideal Seating Company of Grand Rapids; Don Peterson of Bausch & Lomb and Sol Shurpin, president of Technikut Corporation, Brooklyn.

The terms of president and vice-president are for two years. Merlin Lewis continues as Executive Secretary and Treasurer.

Rapidly advancing technical aspects of complex mechanisms of equipment needed to operate theatres, such as projection machines, carbon arc lamps, sound systems, etc., has been a cause for concern on the part of theatre equipment dealers for some time, because of lack of thorough current knowledge of the equipment. Theatre Equipment Dealers Assn. has, therefore, requested Theatre Equipment & Supply Manufacturers Assn. and other unaffiliated manufacturers to meet with TEDA and other dealers in a four day technical session in Phoenix, Arizona, March 13-16. There will be no trade show exhibit.

TESMA has accepted the invitation on behalf of its own organization.

TEDA plans to issue invitations to other manufacturers and dealers not affiliated with either organization also to be present and to be prepared to explain and clarify technical aspects of the equipment they manufacture.

The Phoenix meeting is expected

to be one of several similar meetings expected to take place at least annually, and entirely apart from meetings of TESMA with exhibitor organizations. TESMA is expected to continue its practice of staging yearly trade shows at which manufacturers exhibit their equipment to theatre owners attending annual conventions. **iP**

Shea Named Technical Services Manager For Carbon Products Division Of Union Carbide

J. W. (Jack) Shea has been named to the newly-created position of manager of technical services for the Carbon Products Division of Union Carbide Corp.



Shea

Mr. Shea will be headquartered at the Division's Technical Center now under construction at Parma, Ohio, and will report to M. M. Rand, director of marketing.

In his new position, Mr. Shea will be responsible for coordinating all technical service activities provided to customers for the Division's complete line of carbon, graphite, and high-temperature refractory materials.

Most of the division's technical service operations are now located in New York City, and the transfer of this activity to the new Technical Center, giving technical service personnel intimate contact with development and research functions, is expected to result in even more effective customer service.

Mr. Shea was graduated from New York University with a B. S. degree in mechanical engineering in 1930, and joined Union Carbide as a salesman in 1937 following marketing service in the petroleum industry. After Air Force service during World War II, he was made an industrial carbon products salesman in 1947, and in 1953 became manager of electrode and carbon refractory products technical service. Since January, 1962, he has been manager of graphite electrode technical service in the marketing organization. Mr. Shea is a member of AIME, AISE, NEMA, and the Electrochemical Society, and is the author of numerous papers on the electric arc furnace. **iP**

* look into Stewart Filmscreens ...the choice of experts

FILMSCREENS FOR SHOWMEN—Stewart Projection Screens—the choice of 15 major exhibitors at the New York World's Fair!

ULTRAMATTE—for commercial playhouses, theatre TV, viewing rooms ■ Seamless to 46 by 88 feet ■ Optical efficiency ■ Durable economy.

LUXCHROME 50—seamless rear projection ■ Superior image contrast in lighted rooms.

FILMSCREENS FOR FILM PRODUCERS—used by CBS Studio Center, Columbia, Desilu, Disney, Fox, Goldwyn, MGM, Paramount, Revue, UPA, Universal, Warners.

HI-TRANS—Academy Award background screen—highest calibre production "tool."

ULTRAMATTE gain white, and **LUXMATTE** white matte—front projection screens ■ Demanded by studios and film labs for viewing during production, dubbing, and scoring.

T-MATTE BLUE—rear-illuminated screen for latest traveling-matte process ■ Practical for large and small sets, major productions, or TV commercials.

FILMSCREENS FOR TV PRODUCTION
TV-BLUE—background screen ■ Favorite of networks ■ Versatile ■ Efficient.

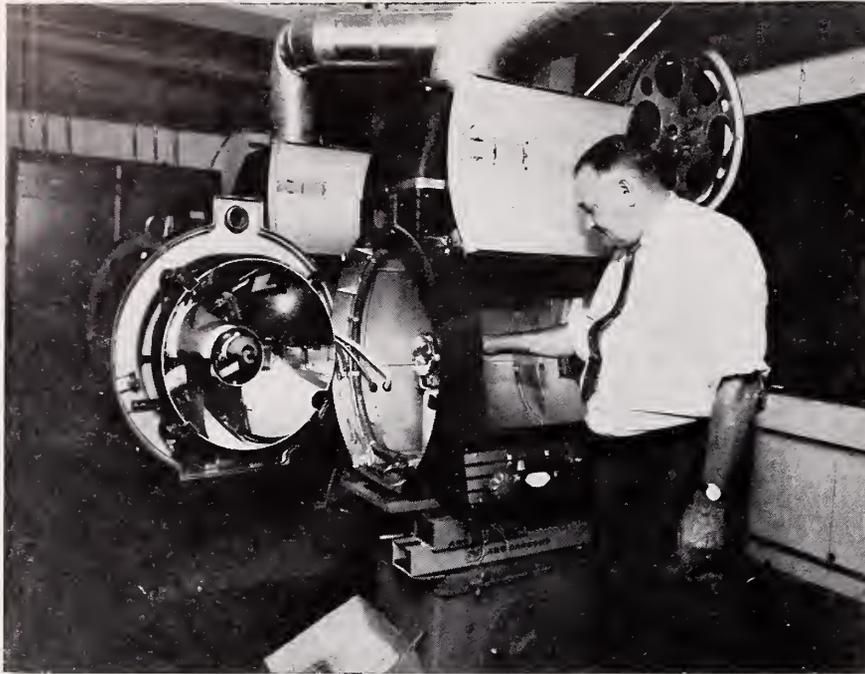
LUXCHROME 60—neutral gray screen for closed-circuit techniques, backgrounds and rear projection viewing.

FILMSCREENS also designed for A-V; fairs, trade shows, exhibits, simulators, plotting and display systems, and special architectural requirements.

STEWART FILMSCREEN CORP.
1161 W. Sepulveda Blvd.
Torrance, Calif. 90503 (213) 326-1422

I want to look further into Stewart Filmscreens. Please send me additional information on: _____

NAME _____
STREET _____
CITY _____ STATE _____



NEW INSTALLATION — National Ventarcs, the powerful blown arc type projection lamps, have been installed in the Indian Hills Cinerama Theatre, Omaha, Nebr., which has embarked on the presentation of the new Cinerama technique. Shown with these big lamps is Alvin G. Kostlan. Literature on this equipment will be sent to those addressing a request to the Strong Electric Corp., 31 City Park Ave., Toledo, Ohio 43601.

Hetzel Tells SMPTE Industry is 'Heartening'

Addressing the opening luncheon of the Society of Motion Picture and Television Engineers Conference, Ralph Hertz, acting president of the Motion Picture Association of America, Inc., commented on the close working relations in the production of motion pictures for both theatres and television.

Commenting on the exceptional film business during the past summer, Hetzel stated: "Already this year an extraordinary record has been rolled up in motion picture theatres. The first eight months of 1964 showed an average increase in the United States domestic film rentals for our member companies of about 20% over 1963. Of course, some companies did better than others. That's the rule of our highly competitive business.

"Last week, when in London, I had reports that boxoffice returns in Great Britain, a market that has had drastic declines in theatre attendance, had increased in 1964 at a percentage not much less than that in the United States, for the first six months.

"I think this resurgence in the

United States, as well as abroad, is far more than a flash in the pan. As an economist, I see ahead a long

secular upward sweep of population and economic developments that promise to lift our business in the same direction."

Hetzel further emphasized the broad scope of the recent upward surge of film business when he stated: "The new vitality and freshness of films, and the production of films aimed at special audiences have attracted more and more people back to the movies. The quality of product today is, in my judgment, superior to any we have enjoyed at any time. Film makers still make mistakes — it is notoriously hard to predict the taste of the American public in advance, but they are obviously doing a better job of matching public taste with appropriate product than ever before.

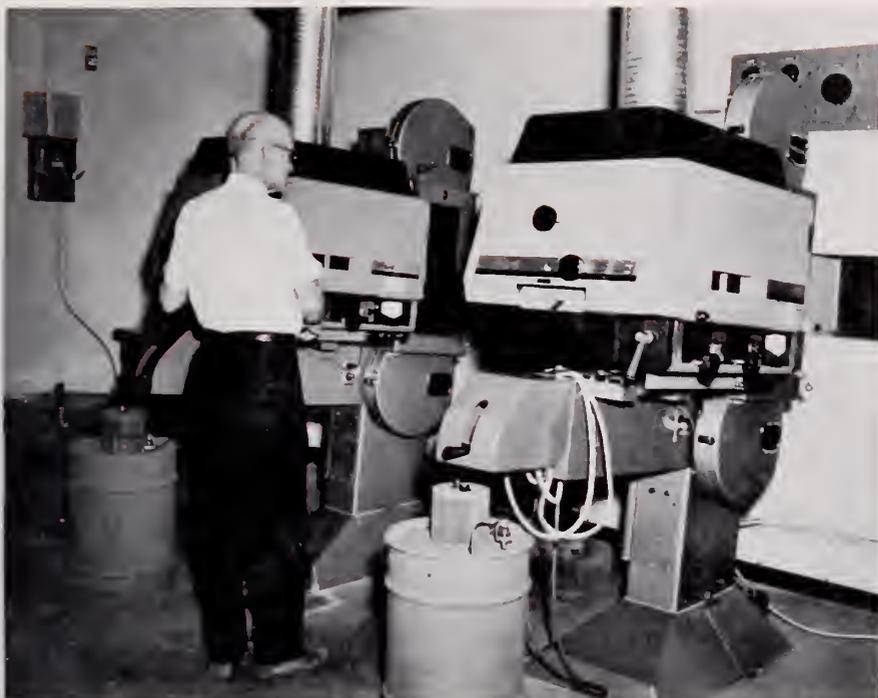
"This is a very subjective area, and hard to evaluate. However, a leading exhibitor publication reported last week that a five-year record has been set this summer in the number of films which have won exceptional public acclaim.

"*Boxoffice* magazine stated that of the 64 feature films in general distribution from June through August, 49, ranked in what the magazine classifies in a 'top hit' classification in terms of dollars paid at the box-office.

"Put another way, exhibitors nationwide claimed that over 76 per-



W. J. Cosby (right) presents a plaque to TESMA's retiring president, Larry Davee, on his completion of four years as TESMA's president. The plaque reads, "Presented to Larry W. Davee, upon his retirement as president of the Theatre Equipment & Supply Manufacturers Association as a token of appreciation for his sincere efforts in its behalf. 1960-1964. Detroit, Michigan, October 1964." Davee becomes chairman of the board of directors of TESMA.



In this orderly projection room is shown William E. Walsh, president of IATSE Local 388. The new Strong Futura projection arc lamps have just been installed in this, The Lincoln Knolls Plaza Theatre, Youngstown, Ohio. Literature on this equipment will be sent to anyone addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio 43601.

cent of the current films were above average in boxoffice take.

"New trends in exhibition," Hetzel continued, "strengthen the fact that the new confidence shown by all members of the industry is heartening." He pointed out that "exhibitors have done their share to spark motion picture resurgence, by making theatre-going more attractive. Last year, 320 new motion picture theatres were opened, or were announced or under construction, at a total cost of almost \$100 million. Most of them were small or medium-sized houses in shopping centers—located, needless to say, where the people are and where it is most convenient for people to go.

"In addition, 670 older motion picture theatres were remodeled, 150 old ones were closed, and 170 which had been closed were reopened."

Referring to the new and growing interest of young people in motion pictures, Hetzel said: "To me, the most exhilarating prospect of all is the growing interest and excitement of young people in motion pictures as a medium of expression. I feel we are confronted with evidences that alert and intelligent young people, especially at colleges and universities, are looking to motion pictures for new ways of expressing their ideas and emotions. If the young people at colleges and universities, while in school and later, have this

growing sense of interest in films, they will build a great new audience that will call forth more creative films and greater films.

"Just last week, the American Council on Education, the top coordinating body for the colleges and universities of this country, held a conference at the Lincoln Center to encourage the development of the study of film at collegiate level. It was an exciting occasion and will, I truly hope, sow the seed of the greater growth of interest in this field."

iP

**Movie Patents
Now Re-Classified**

Patent Commissioner Edward J. Brenner has announced a revised classification for the more than 8,000 patents relating to the field of optics and motion pictures. He stated, "It is an important re-classification project grouping all of the significant advances in optics together in one particular subject matter category."

The re-classification involved the reclassifying of 5,100 original patents, 3,421 cross references and a technical history and encyclopedia of the motion picture art.

Copies of the class schedule and definitions, Class 352 Optics, Motion Pictures can be obtained from the Commissioner of Patents, Washington, D. C. 20231 for a nominal charge.

iP



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.



Ethan M. Stifle Takes Over As SMPTE Head

Ethan M. Stifle, manager of engineering services for the Eastman Kodak Motion-Picture Products Sales Department's East Coast, division New York, has been elected president of the Society of Motion Picture and Television Engineers (SMPTE).

The SMPTE president-elect has served as sections vice-president, financial vice-president and executive vice-president of the Society. Last year he was a member of a four-man delegation that studied technical developments in the Soviet motion-picture industry under the US-USSR exchanges program.

Other officers named in the recent ballot are: G. Carleton Hunt, president of DeLuxe Laboratories, Inc., New York, elected executive vice-president; Herbert E. Farmer, Department of Cinema, University of Southern California, Los Angeles, re-elected editorial vice-president; Kenneth M. Mason, general manager of the Midwest division, Kodak Motion-Picture Products Sales Department, Chicago, elected conference vice-president; and Robert G. Hufford, physicist for Kodak in Hollywood, re-elected secretary. **ip**

Norelco

**projection
equipment**

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

The Cover Story More Work for Projectionists as Reade-Sterling Adds 20 Theatres

from page 4

theatre front. These are "islands" of shrubs planted on both sides of the theatre, with the remaining area paved for parking.

The outer lobby is red-brick

FACT SHEET ON
WALTER READE-STERLING'S
COMMUNITY THEATRE
IN THE
EATONTOWN (N. J.)
CINEMA CENTRE

ARCHITECT: David Marner,
A.I.A., Asbury Park, N. J.
GENERAL CONTRACTOR: Hendrickson Construction Company, Shrewsbury, N. J.

PROJECTION EQUIPMENT:
Simplex pedestals
Ashcraft Core-Light lamps
Phillips Norelco transistor sound
All secured through National Theatre Supply Company, New York City

SCREEN: Pearl-Light 20' x 40'
SEATS: Griggs Push-Back, through Capitol Motion Picture Supply Company, New York City

LENS: Bausch and Lomb
CARPETING: Karagheusian, through W. A. Doolittle & Sons, Trenton, N. J.

CURTAINS AND DRAPES: From Paramount Associates, Philadelphia, Pa.

ATTRACTION SIGN AND LETTERS: Wagner, Plastic, through Capitol

ANTIQUE FIXTURES: Ruby Company of New York City

ELECTRICAL WORK: Red Bank Electric, Inc., Red Bank, N. J.

HEATING, VENTILATION AND AIR CONDITIONING: Noel R. Nilson Company, Little Silver, N. J.

SEATING CAPACITY: 900

floored, with a drum-shaped open counter for ticket dispensing. A large Colonial bronze Eagle hangs over the inner doors.

The inner lobby which is dominated by a massive Early-American chandelier is paved with a unique new Karagheusian carpeting of red brick design, and this same carpeting is utilized for the auditorium aisles. The inner lobby contains a recessed concessions stand on one side, and rest rooms and offices on the other. Furnishings and fixtures are all of Colonial decor.

The auditorium is a stadium type, on one floor. The seats are gold and white, the walls blue, and the curtain white. The extremely high vaulted ceiling, and the simplicity of walls, seating and curtaining give the auditorium an unusual air of spaceousness. The last several rows in the auditorium are on raised concrete steps, and serve as a smoking loge.

The Community is located adjacent to the existing Eatontown Drive-In Theatre, and the two theatres together form the "Eatontown Cinema Centre". The entire complex is located on the "Eatontown Traffic Circle," Route 35, Eatontown, N. J. on the North Jersey Shore.

The theatre raises the circuits total to more than 50. In the theatre operation field for more than 60 years, Walter Reade-Sterling is also engaged in the production and distribution of films for theatres, television, educational, and non-commercial showing: in concessions, real estate, and associated activities. In the past two years it has built or acquired nearly 20 theatres, with more on the planning boards. **ip**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemeccanica by Christie

CARBONS, INC. BOONTON, N. J.

Neighborhood Theatre Draws From 50,000 in Suburb of Charlotte, N. C.

CHARLOTTE, N. C. — Out on Independence Boulevard near the K-Mart, Charles Trexler has put one creek in a pipe and nudged another one over with a great mass of concrete.

On this spot he has filled in gullies and put up a 995-seat motion picture theatre — Charlotte's newest.

This is to be the new Capri Theater of the Stewart & Everett chain of which Charles B. Trexler, a young-looking, slim, intense man of 48, is president.

First show in this big structure of grayish-yellow brick with an 80-foot glassed-in lobby will be "Kisses For My President," starring Fred MacMurray and Polly Bergen, a comedy about the first lady President, the first male "first lady," and their inevitable complications.

With two acres of lighted asphalt for parking, this is a nice spot for a theater. Right up the hill is the turnoff toward Albemarle. The theater is almost on the intersection of Eastway Drive with the boulevard, where the much-disputed belt road is due to cut across.

Besides the prestige of being on the boulevard, the theater has close-in accessibility to 50,000 people who might consider this their neighborhood showhouse, Trexler says.

Discussed over the last eight years, in the planning stage for two years, the Capri had its ground-breaking in May. Ryt Suez, now at the Manor, will be the Capri's managing director.

Trexler likes to stress that right down the line this is an all-Carolinas production. Architect is Charlottean Charles H. Wheatley. Laxton Construction Co. is doing the work.

A native of Anson county, Trexler came to Charlotte in 1937, fresh out of the University of North Carolina with a B.S. degree. In 1942 he married the former Miss Isabel White of Greenwood, S.C. Members of Covenant Presbyterian Church, they have five children and live at 2101 Bucknell Ave.

Sixty-nine Stewart & Everett theaters stretch from Virginia to the Georgia line. In the Carolinas they extend from Mount Airy to Morehead City to Aiken, products of a corporate enterprise first organized in Charlotte in 1937.

There are three entrances from the

boulevard to the new Capri Theater parking areas. Automobiles that circle behind the theater will be driving over one of Trexler's rerouted creeks.

A 100-foot steel canopy roofs the lobby. Supporting pillars thrust steel fingers up in an inverted-umbrella effect that will give a feeling of lightness to the lobby when it is covered with concrete. Lighting will emphasize each angular effect.

Twenty-Foot Marquee

Two marquee signs above the canopy are seven feet high and 20 feet long.

Circling the back of the auditorium is a walled-in "standee," where folks can circulate and congregate without disturbing the audience.

The auditorium is 104 feet wide at the rear. It is 115 feet long and 74 feet wide at the front end supporting the 50-foot (or wider) screen.

Five sound speakers will be on the stage and 10 more are recessed in the walls around the auditorium for stereophonic films.

The Capri is set up for four-track magnetic sound, six-track magnetic sound, and optical sound, 35 and 70mm.

The screen will rise above a conventional stage with a performance area eight feet deep, from which a speaker or a small group of singers could hold forth.

Thrown in for theatrical mood will be an Austrian curtain that moves up and down. There will also be conventional screen curtains that open to each side.

The Capri auditorium will have five aisles, including aisles along each side wall. A smoking area of 98 seats will be in the center rear, with an air duct above drawing cigarette smoke away from the audience.

The new Stewart & Everett theater will be going into competition with the 900-seat Park Terrace theater of the Wilby-Kincey chain, which opened last May at the Park Road shopping center, and with Cinema I and II, which have 1,500 seats between them, open since last November at Charlottetown Mall. **IP**



Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

ASHCRAFT

CORE-LITE
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH REACTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

H. H. Wagershauser, Kodak VP, Named To Director Post

Herman H. Wagershauser, an Eastman Kodak vice-president and general manager of the Apparatus & Optical Division, has been elected a director of the company.

Wagershauser was elected at a meeting of the board of directors held today in Rochester, N. Y. He succeeds James E. McGhee, who is retiring from the board.

The new director came to the company in 1933. For several years he was concerned with production and development work at the Camera Works in Rochester and later at Kodak A. G. in Stuttgart, Germany.

He returned to the Camera Works in 1938 and from 1942-43 served as a process engineer in connection with military optical instruments produced by Kodak at the Hawk-Eye Works.

He was appointed staff engineer at the Camera Works in 1943, assistant to the general superintendent of manufacturing in 1945, and superintendent of production engineering and tooling in 1948. In 1952 he became general superintendent of manufacturing at the Camera Works.

When the Apparatus & Optical Division was formed in 1956, Wagershauser was named production manager. The Division includes three plants in Rochester—the Camera Works, the Hawk-Eye Works, and the Lincoln Plant.

Wagershauser became assistant general manager of the A&O Division in 1958. In 1960 he was elected a vice-president of Eastman Kodak Company and appointed general manager of the A&O Division. He is president of the board of governors of Genesee Hospital, a director of the Rochester Y Athletic Club, a director of Eastman Savings and Loan Association, and a member of the executive committee of the Kodak Employees Association.

He is also a member of the American Ordnance Association, the Photographic Society of America, and the Rochester Chamber of Commerce. Wagershauser received B. S. and M. S. degrees in mechanical engineering from the University of Wisconsin. **iP**

McGhee retired as vice-president in charge of U. S. sales and advertising in January 1, 1963. He had completed 42 years of Kodak service.

He came to the company in 1920 and for the next six years served

with Kodak's medical sales division. He was transferred to the company's Chicago branch in 1927 and returned to the sales department in Rochester four years later.

McGhee was appointed assistant general sales manager in 1935 and general sales manager of the company in 1937. He became an assistant vice-president in 1943 and two years later was elected a vice-president. In 1954 he was placed in charge of U. S. sales and advertising.

He was elected a director of Eastman Kodak Company in 1956 and in 1960 became a member of the company's executive committee. **iP**

Todd-AO Announces New Licensing System

A new licensing system for the use of TODD-AO, making it competitive with other 70mm processes, has been announced by Salah M. Hassanein, President of The Todd-AO Corporation.

The institution of the policy permitting the use of the Todd-AO system on a flat-fee basis marks the beginning of a new era for Todd-AO. Todd-AO's perfection of quality and unlimited possibilities for realism and participation have been clearly established, demonstrated and universally accepted through many great motion pictures, including Rodgers & Hammerstein's *Oklahoma!* and *South Pacific*, Mike Todd's *Around The World in 80 Days*, and 20th Century Fox's *Cleopatra* among others.

In all of these films the process was licensed on a royalty basis. The process will now be available to those producers who have long desired Todd-AO quality at a competitive cost.

Twentieth Century-Fox Film Corporation is the first to take advantage of the new arrangement. Seymour Poe, Twentieth's Executive Vice President, has just signed a 5-picture deal with Todd-AO which will include a multi-million dollar array of motion pictures: *The Sound of Music*, *The Agony & The Ecstasy*, *The Day Custer Fell*, *Magnificent Men & Their Flying Machines* and *Justine*. **iP**

New Mike For Motion Pictures, TV

Shure Brothers, Inc., Evanston, Ill., has announced a new unidirectional boom microphone especially developed to uniquely satisfy the

critical requirements of motion picture and television boom operation.

The new microphone is available as the Model SM5A with an impedance of 50 ohms and the SM5B with an impedance of 150 ohms. It was especially developed by the Shure Professional Products Division to provide a new degree of reproduction quality and flexibility of application in television and motion picture studio and location work.

Desk mounts are available as accessories for both SM5 models. This feature, plus the unit's unusual mechanical construction and performance characteristics, makes possible the SM5's use in many applications, such as coverage of outdoor sports and other difficult remote pickups, where boom operation is not practical.

Demonstration of Dimension-150

Approximately 100 of Hollywood's top motion picture cameramen, members of The American Society of Cinematographers, participated in a full scale demonstration of the Dimension-150 filming and projection process at the D-150 theatre-laboratory in Santa Monica.

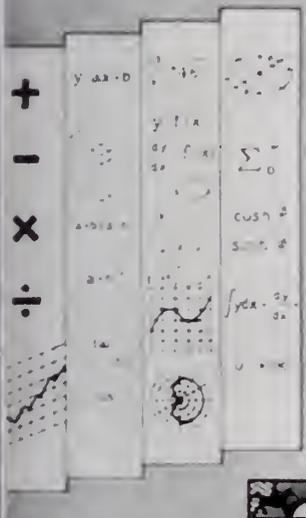
The D-150 presentation at the company's Rosemary theatre-lab was arranged by Marshall Naify, president of D-150 Inc., and Roy Evans, sales manager, exclusively for A.S.C. members through that organization's president, Hal Mohr, and Walter Beyer, chairman of the Society's educational and scientific committee.

Dr. Richard Vetter, executive vice president and co-developer of the Dimension-150 process, welcomed the group and briefly reviewed the background of the development and various technical aspects of the process. Also prior to the showing of the demonstration film Carl Williams, co-developer and vice president of D-150, spoke of his recently completed survey of theatres in more than 27 key cities in the U.S. Mr. Williams reported on his visit to the Dino De Laurentiis production locations shooting "The Bible" currently being filmed in D-150 in Rome under the direction of John Huston.

The cinematographers expressed great interest and spoke enthusiastically about the demonstration. Many of those present participated in an intensive question and answer session following the demonstration screening. **iP**

basic mathematics

by **NORMAN H. CROWHURST**



**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

**America's
headquarters
for all
theatre equipment
and
supplies**



National
THEATRE SUPPLY COMPANY

**OUT OF PRINT
MITCHELL MANUAL
AVAILABLE!**

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
Box 410, Route 5
Wayzata, Minnesota 55391

**World-Wide Business
For Walters Service**

DALLAS — From local projector repair work to a world-wide business has become the story of Lou Walters Sales & Service Co. of Dallas, Texas. Service and good quality did it, backed up by advertising in such publications as IP. As Walters says:

"In 1948 when I started in the projector repair business here in Dallas I was doing the repair work only for the local branch of National Theatre Supply Co. I found that this work was spasmodic, and had lots of time on my hands, so I started advertising that my time and shop were available. My operation became national.

"This was the situation until I started the manufacture of the "Little Miser" carbon saver, and then the orders came not only from our states but from all over the free world. Along with the carbon saver business, orders for hard-to-get parts were sent along and even today many supply dealers check with our shop for parts that have been discontinued. I am pleased to say we have helped many of them find parts that are no longer available from the factories. This business continues even today, although we no longer manufacture the "Little Miser" saver, having sold the rights to Theatre Products of Lancaster, Tex., but we still retail it to the theatres.

"Our business has been typed as The Repair Shop in the U.S. and we are very happy for it. At present we are supplying repair and rebuilding service to many supply dealers who find, because of the uneven flow of repair work, it is no longer economical to operate their own shop.

"Since the high-speed motor freight lines bring shipments to our door in two or three days, these dealers can continue to give good repair service, using our shop. A number of export firms are making use of our complete rebuilding ser-

vice, and our work is being sent all over the world.

"After regrinding, at a nominal cost, thousands of wide-tooth sprockets to narrow tooth to allow the running of narrow-hole Fox prints, we are still getting sprockets for regrinding." **IP**

**Audio-Visual
Expenditures Up**

Expenditures in the non-theatrical motion-picture and audio-visual field increased 3.6 per cent in 1963 over the preceding year, reaching an estimated \$638 million.

This continuation in the steady growth of the field since World War II is noted in a report prepared for the August issue of the SMPTE Journal.

The 1963 figure includes estimated administrative costs not included in previous reports, which have been published by SMPTE since 1959. The revised total for 1962 is \$616 million.

Prepared for SMPTE by Thomas W. Hope of Eastman Kodak Co., this latest interim report notes that for the second consecutive year, A-V expenditures by federal, state and local government showed the biggest percentage gain. The expenditures totaled approximately \$84 million up 5 per cent from the revised 1962 figure.

Other gains were noted among A-V users in business and industry (up 4.5 percent, to \$280 million), and in education (up 3.7 percent, to \$228 million).

Audio-visual expenditures by religious groups and by civic, recreational and social welfare dropped 5 per cent, to an estimated \$19 million each. Relatively unchanged at \$8 million were expenditures in the area of medicine and health.

Several trends were observed in the SMPTE report. The trading-in of used 16mm projectors for new machines was found to have dropped off by over 50 percent. The number of high-budget business films fell off considerably, but the number of special-purpose films shot at lower costs increased. Unit sales of overhead projectors rose, while the dollar volume fell off.

Interestingly, the number of new nontheatrical motion pictures increased 5 per cent to an estimated 9,680 last year, but the cost of production was up less than 1 percent, to \$135 million. Commercial television film production, although not included in the figures for the report, also was reported to be up.



INTERNATIONAL PROJECTIONIST

Post Office Box 6174
Minneapolis 24, Minnesota

Enter my subscription for

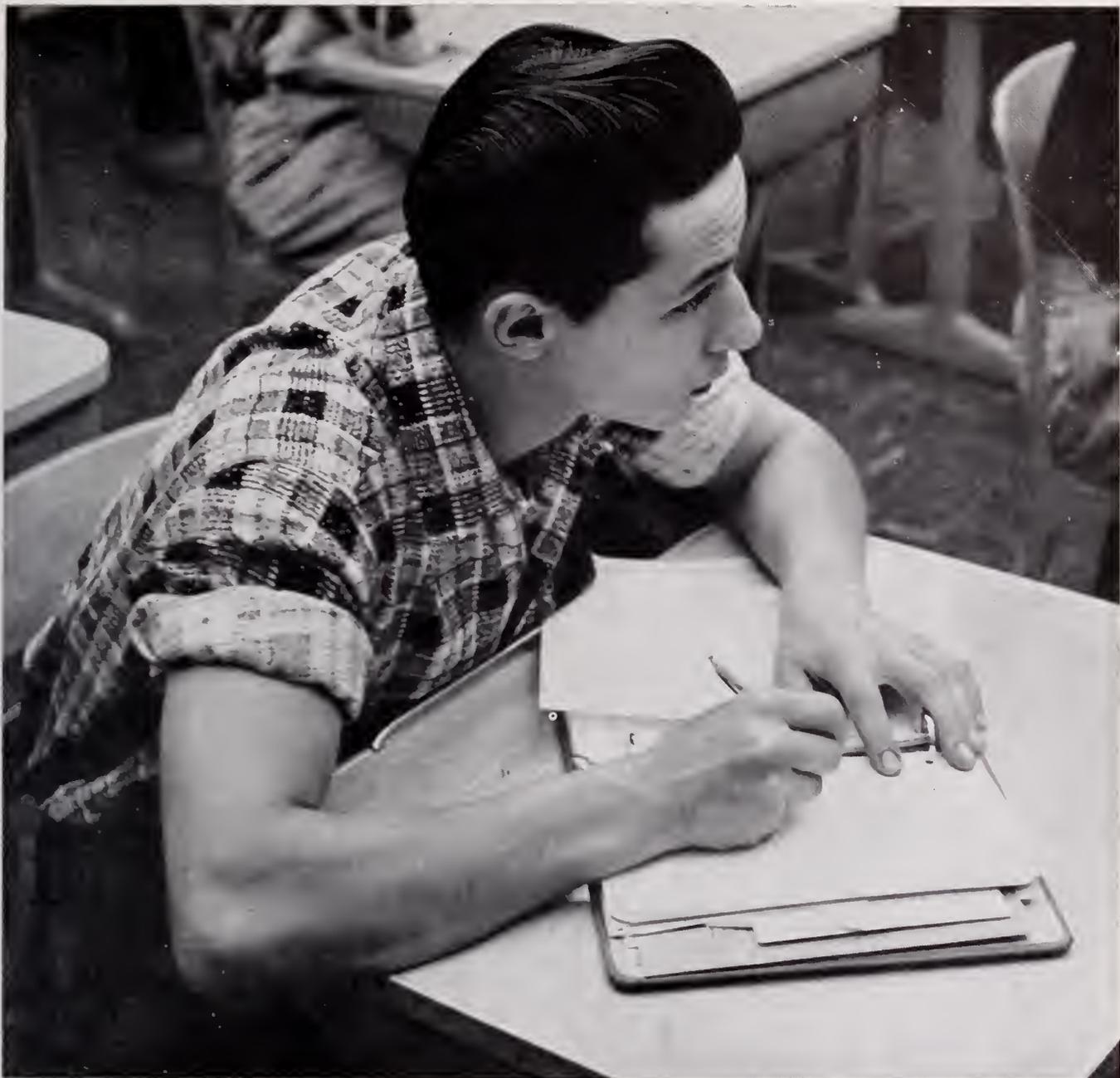
- 1 year (12) issues—\$3.00
- 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—when you encourage your employees to enroll—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



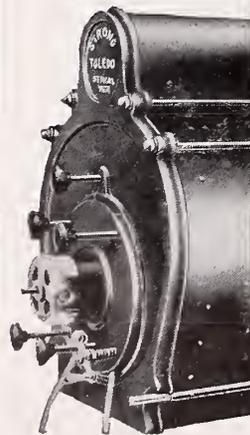
in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



I am a projectionist

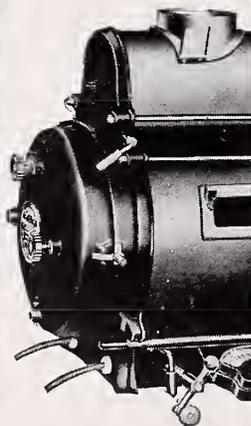


As a young fellow of 19 I remember that Dad operated a 1926 Strong Standard low intensity arc lamp.



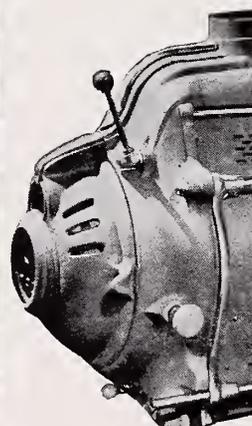
1926

When I started operating in 1928 I had the Strong Hy-Lo.



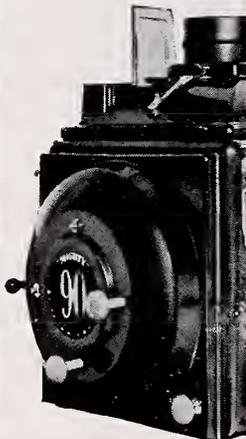
1928

Five years later, in 1933, I ordered Strong Moguls.



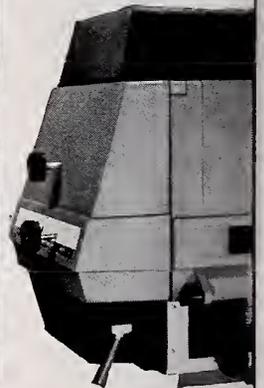
1933

When in 1949 the Strong Mighty 90 was announced I bought a pair of the first ones available.



1949

I believe that if anyone wants to make money in show business he must keep up with the times, so last month I installed new Strong Futuras. I know that it pays, because my box office reports prove it.



TODAY

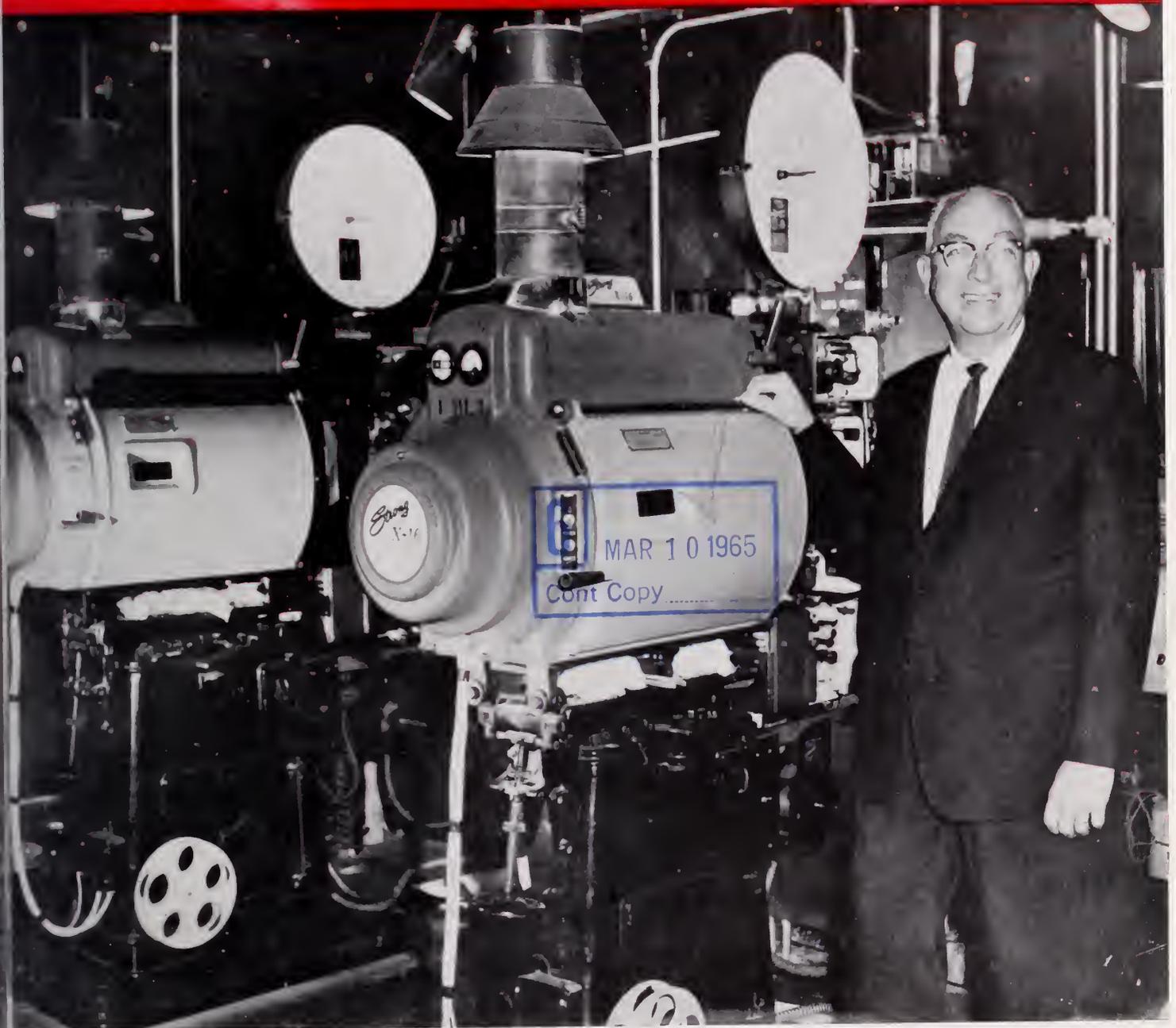
You'd Better Contact—

THE *Strong* ELECTRIC CORPORATION

31

CITY PARK AVE., TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

INTERNATIONAL PROJECTIONIST



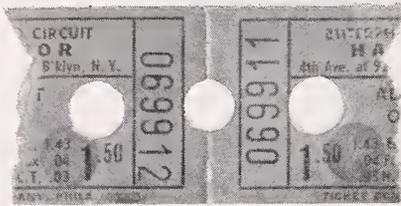
The Columbia Pictures Studios projection room in Los Angeles, Calif., has been equipped with new Xenon projection arc lamps by the Strong Electric Co., Toledo. That's J. W. Scales, projection supervisor, looking happy with his National Theatre Supply installation.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

DECEMBER
VOLMUE 39
40c A COPY

1964
NUMBER 12
\$3.00 A YEAR





It's no box office secret that more ticket purchasers keep coming back when you sell this triple-feature "performance package"...

1. A good movie! 2. The finest screen lighting! 3. A comfortable theatre!

Play it safe—light up with "National" projector carbons. Guarantee your patrons a brighter, clearer picture.

If you want proof of the importance of a well-lighted screen presentation—just try dimming the screen light for a few minutes!

The spontaneous and noisy reaction of your audience will quickly tell you how movie patrons feel when screen lighting isn't up to par.

You'll save money, too, because "National" carbons are *slower-burning!*



"National" is a registered trade-mark of
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017
In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL
PROJECTIONIST



Volume 39 Dec. 1964 No. 12

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Walter Beyer and 70 mm	4
New Camera System	11
70 mm Houses Tested	12
Films for Motion Pictures	13

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixan's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1964 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

**WE GUARANTEE
YOU CAN'T LOSE**

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Part I

Drive-in Operations with 70 mm Equipment

By Walter Beyer
Universal Pictures

IT IS NECESSARY for any engineer or technician, regardless in which professional field he happens to work, to occasionally put his books and tools aside and take a good look at statistical facts about the overall business he is in. In the motion picture industry this type of thing seems to be even more important since, contrary to any other product, we are selling entertainment on celluloid which seems to be a piece of merchandise having very uncertain and unpredictable acceptance and market value.

When therefore, a few months ago, I was approached with the question of stating the total number of 70MM theatrical projection installations world wide, I found as many different answers as there are figures published in different magazines throughout the industry. I therefore started from scratch and undertook, with the kind cooperation of 70MM projector manufacturers throughout the world, a reliable survey of all presently existing theaters having 70MM projection facilities.

For obvious reasons of course, I shall refrain from listing these installations by manufacturer names

but merely list the total number of installations. It would exceed the scope of this presentation to publish every theater by name, city, state and country but merely summarize all installations supplied with projectors from American, European and other manufacturers.

There are now 1,100 theaters throughout the world equipped to show 70MM films. According to data compiled chiefly from projector manufacturers throughout the world, the United States and Canada lead the list of 70MM theaters with a combined total of about 350 installations. Italy is next with 175, France comes third with 119, Japan fourth with 78, England has 54, Germany 44, Africa 30 and remainder of installations are distributed among 46 other countries.

Table 1 lists the 70MM facilities in detail. Even though they add up to only 993 it should be understood that I have listings of 150 more theaters having installations with modified 35/70MM projectors such as XL, Friesecke + Heopfner Zeiss Ikon and others. My statistics do not include as yet installations for single film 70MM Cinerama showings.

A preliminary follow up of my sur-

vey shows a speeding up of 70MM installations so that the total number at present will be considerably higher than the above figures.

Hardly any new theater installation is being completed now without serious consideration given to 35/70MM projectors. I may furthermore remark right here that having established reliable information sources, I shall repeat and extend my survey at the end of this year and bring all my figures correspondingly up to date.

So much for the statistics on the 70MM situation. Let me now present my views on "Drive-In operations with 70MM projectors and prints".

During the last eight years at least, a substantial amount of new wide-screen processes of all kinds have been introduced to the industry and found practical application. Although all of these innovations have been widely ballyhooed, it seems strange that one of the most important technical presentations has not yet found the attention it deserves, namely, the use of 35/70MM projectors and 70MM prints in Drive-In theaters.

Two basic viewpoints have to be taken to recognize the importance

IP DELAYED

This issue and a previous issue of International Projectionist was delayed by difficulties in the printing plant which produces IP. Compositors and pressmen, members of several unions including the International Typographical Union, were on strike for over a month. The discussion between the company and the several unions took place while IP was being produced; naturally production had to be stopped until a solution was reached and the picket lines withdrawn. **IP**

for the release of 70MM prints in Drive-In theaters:

They are, first—the drastic change in the overall statistics of show-places in the United States; and second—the technical and engineering considerations that determine the limitations of overall picture presentation in Drive-In theaters.

As far as statistics are concerned, it should be noted that eight years ago the total number of Drive-In theaters was approximately 1,726 with roughly 18,200 Hard-Top houses. The 1961 statistics, however, show a total of 1,768 Drive-Ins and 11,335 Hard-Top theaters. These figures speak for themselves and even to an impartial observer, indicate a drastic change in the total revenue situation . . . undoubtedly in favor of the Drive-In.

Looking at the technical and engineering considerations of the Drive-In theater, it should be noted that many engineering conventions, research projects, and theater liaison programs have, without success, been devoted to the fact that the picture in the Drive-In theater is substantially hampered in screen brightness due to physical limitations inherent in the film itself and due to the entire concept of equipment, performance, and capability.

In regard to screen brightness in Drive-Ins, for instance, it is known

from the Motion Picture Research Council's theater liaison program, that the nationwide average is only 3 foot-lamberts for a wide-screen and not more than 5 foot-lamberts for a Cinemascope picture.

While the above figures are based on a nationwide average, relating to all Drive-Ins, it should, naturally be noted that successful efforts have been made to achieve higher screen brightnesses. However, the overall level still remains substantially below the point of what one would call a brilliant picture with good storytelling impact in many cases.

Without going into technical details, it should be recognized that there are presently limitations in boosting these screen brightnesses that are mainly determined by the film itself that can stand no more heat without suffering permanent damage.

I consider it therefore, a most natural step to think of the utilization of 70MM projection in Drive-Ins whenever possible, because this release system provides us with an aperture size that will permit all the light and illuminating power of the arc to pass through it and achieve a picture of startling brightness—so urgently needed for outdoor shows.

The above statements are not merely wishful thinking, but are the result of extensive tests that I made in actual Drive-In theaters having different types of equipment. It may be worthwhile to disclose the results of two experiments with 70MM film and equipment as example we made at the Midway Drive-In theater, in San Diego, and the other at the North Star Drive-In theater, in Denver.

The Midway Drive-In theater in San Diego is owned and operated by Kenneth Gallion, who had throughout the years always maintained a close contact with the staff of the Motion Picture Research Council (now disbanded since March 1960). He therefore has the first all-aluminum outdoor screen developed



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.



Africa (inc. Mar., Kenya, Sa. Africa, etc.)	30	France	117	Luxembourg	1
Australia	10	Germany	43	Malaya	7
Austria	11	Greece	1	Malta	2
Argentine Rep.	10	Holland	24	Mexico	5
Belgium	8	Hong Kong	5	New Zealand	5
Brazil	4	Iceland	2	Norway	7
Burma	1	India	1	Pakistan	2
Chile	3	Iran	1	Philippines	4
Columbia	2	Iraq	1	Portugal	5
Cuba	1	Ireland	5	Rumania	2
Cyprus	3	Israel	5	Spain	13
Czechoslovakia	1	Italy	173	Sweden	19
Denmark	14	Jamaica	2	Switzerland	22
England	53	Japan	76	Svria	3
Finland	2	Jordan	1	Thailand	5
Farmasa	2	Korea	5	Venezuela	2
		Lebanon	3	Vietnam	1
				Uruguay	1
United States and Canada					
U.S.S.R. (from Western manufacturers only)					
					202
					5

Strong
**BI-POWR RECTIFIER
 SAVES EVEN MORE
 THAN PROMISED**

"Your local dealer . . . pointed out that we would save about \$35 per month on our electric bill. Actually we save close to \$42 per month since we have changed over from our generator. It is good to know that we can depend upon you and your dealer organization."

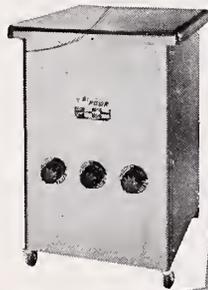
—D. M. Pearce
 Ascarate Drive-In Theatre,
 El Paso, Texas

**DESIGNED
 FOR THE OPERATION
 OF 2 ARC LAMPS**

This new type silicon diode stack transformer-rectifier, is the most economical means of power conversion ever manufactured. No flicker or other change in projected light when striking the second arc.

DEPENDABLE

"Lo-Strike*" feature associated with each output protects the silicon stacks from overload, and prevents destruction of carbon crater upon striking the arc.



**SAVES
 ON INITIAL COST!**

Sells for 15% less than two of the lowest priced 90-135 ampere rectifiers, and costs less to install. Requires only one line service.

SAVES ON SPACE

Requires one-third to one-half less floor space than two separate rectifiers spaced for proper ventilation.

DUAL OUTPUT RATING OF

60-85/ 60-85 AMPS/	35-45 V
75-105/ 75-105 AMPS/	48-61 V
90-135/ 90-135 AMPS/	56-70 V
120-160/ 120-160 AMPS/	58-75 V

SEND FOR LITERATURE

The *Strong* Electric Corp.

31 City Park Ave., Toledo 1, Ohio

*Not supplied as regular equipment on 60-85 ampere and 75-105 ampere models.

Fig. 1: The Manco-Vision all-aluminum screen as shown in use at the Midway Drive-In in San Diego, Calif.



Fig. 4: The lamp house is pulled back to show the mounting of the shallow heat filter, a liquid heat-absorbing installation.

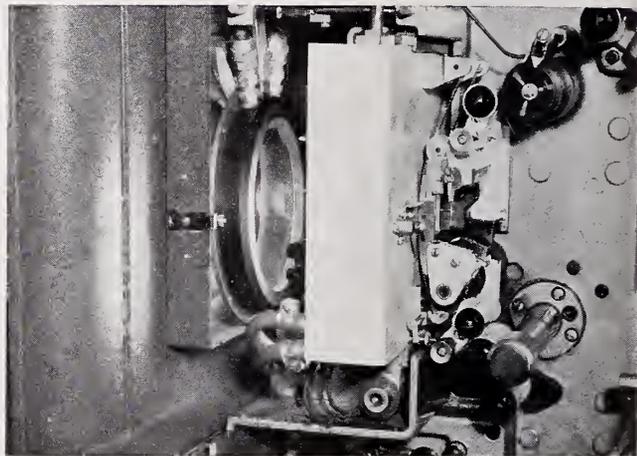
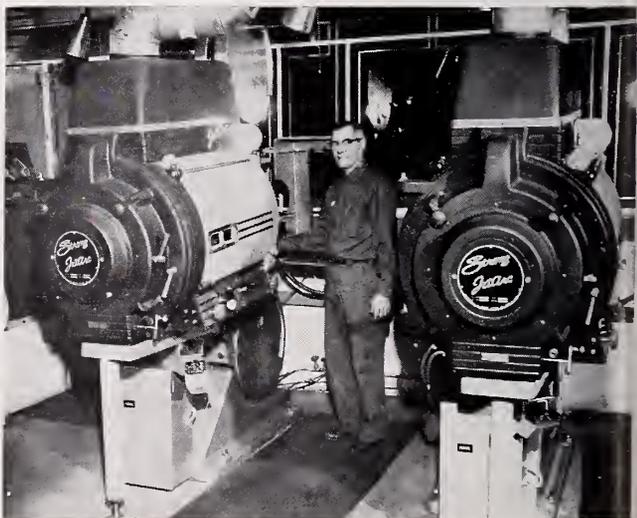


Fig. 6: The inside of the booth at the North Star Drive-In, Denver, Colo., showing a pair of Norelco and Jet-arcs ready for 70 mm operation.



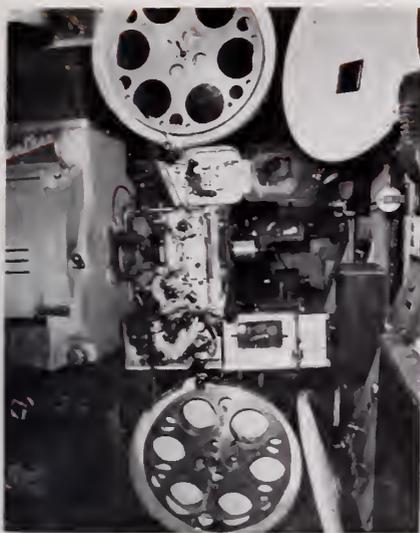


Fig. 3: The modified 35/70 mm XL projector and Ventarc lamps with the liquid heat filter, all threaded and ready for a 70 mm. Projection at the Midway Drive-In in San Diego.

by the Research Council, built and installed by Manco-Vision.

Figure 1 shows a daytime picture of the Midway Drive-In and Manco-Vision screen for a picture of 102 ft. by 44 ft. Even though this was one of the first screen installations of this kind, it is in excellent condition and has retained a gain of 2.5 plus. The 70MM picture of 102 by 44 ft. had a center brightness of 18 foot-Lamberts.

As shown on Figure 2, he operates with modified XL-projectors and Strong Ventarc lamps. These lamps are equipped with 21 in. silver mirrors and for the projection of both his 35MM and 70MM prints he uses the D + F liquid heat reducing filters with dichroic coatings, also a Research Council development, and shown directly mounted on the lamp-house on the side-view of Figure 3.



Fig. 5: A close-up of the liquid heat filter. The filter is only $\frac{7}{8}$ " thick and does not interfere with light beam and distribution over aperture.

Needless to say that this liquid filter is recommended for all high power installations, since its heat absorption is the most effective known so far and will not only protect the 35 and 70MM prints but eliminate focus drift as well. Another view of such filter installation is shown on Figure 4, and the liquid heat filter itself is seen on Figure 5.

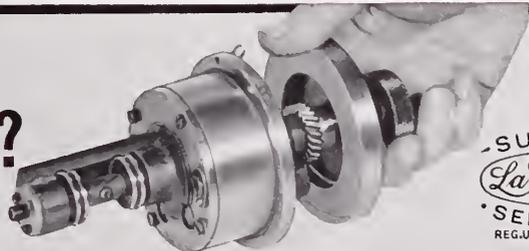
(For the more interested reader I would like to refer to my article "Research Council Development for

Better Theater Projection," by Walter Beyer, in the Journal of SMPTE, November 1960 pages 792 through 794.)

In the North Star Drive-In theater in Denver, Colo., which belongs to the Wolfberg Theaters, Inc. we projected with 70MM a picture of 135 ft. by 60 ft., having a center brightness of 12-foot-Lamberts.

This Drive-In operates with Philips Norelco projectors using again the

Need repairs?



SUPER
LaVeZZi
SERVICE
REG. U.S. PAT. OFF.

The next time your projection equipment needs repairs ask your dealer to install genuine LaVeZZi Super Service replacement parts. Their unexcelled performance and long life make them your best buys . . . Only the finest—since 1908.

LaVeZZi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—378-1636



As Disastrous As No Spare in the Desert, Is No Spare in the Booth

For want of an extra mirror, business can be lost by shut-down.

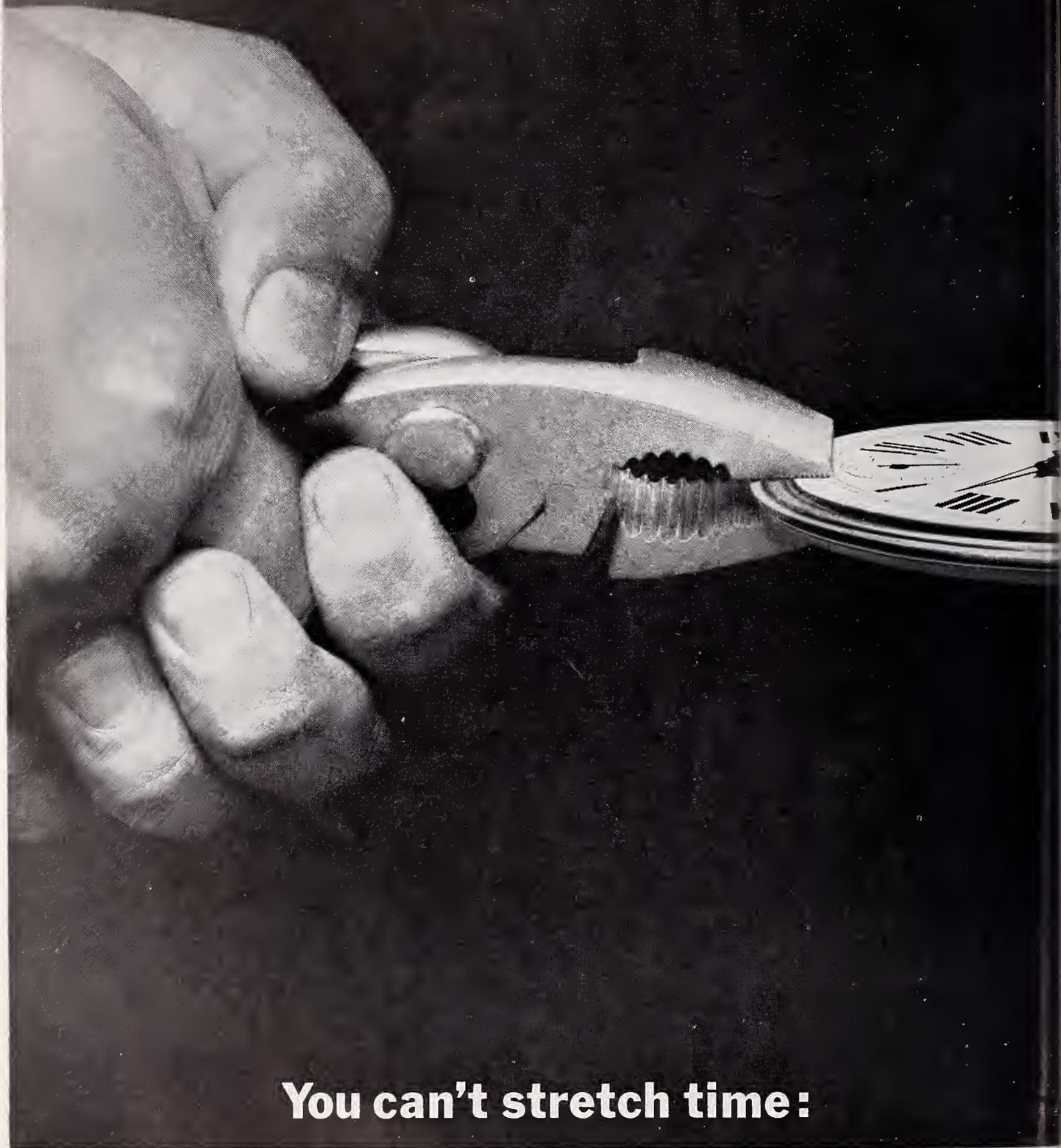
Always have a spare **TUFCOLD FIRST SURFACE COLD DICHROIC REFLECTOR**

Better yet, also replace your old reflectors now with these modern, long-service reflectors with the harder than glass, flake and peel-proof front coating.

THE COATING IS GUARANTEED FOR 2 YEARS!

The Strong Electric Corporation

31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741



You can't stretch time:

If you want crisp, top-quality prints—and you most certainly do—don't waste good negative quality by pushing your laboratory into making short cuts. Give them time to do the job right with the right materials. In other words, GO EASTMAN all the way—negative and print-stock. For the purchase of film, technical queries,



and service, write or phone: Motion Picture Products Sales Department,
EASTMAN KODAK COMPANY, Rochester, N.Y. 14650, or the regional
sales divisions, 200 Park Avenue, New York, N.Y.; 130 East Randolph
Drive, Chicago, Ill.; 6706 Santa Monica Boulevard, Hollywood, Calif.



time to do the job right with the right materials. In other words, GO EASTMAN all the way—negative and print-stock. For the purchase of film, technical queries,



You can't stretch time:

If you want crisp, top quality prints—and you most certainly do—don't waste good negative quality by pushing your laboratory into making short cuts. Give them time to do the job right with the right materials. In other words, GO EASTMAN all the way—negative and print-stock. For the purchase of film, technical queries.

and service, write or phone: Motion Picture Products Sales Department, EASTMAN KODAK COMPANY, Rochester, N.Y. 14650, or the regional sales divisions, 200 Park Avenue, New York, N.Y.; 130 East Randolph Drive, Chicago, Ill.; 6706 Santa Monica Boulevard, Hollywood, Calif.





Fig 2: Another illustration of the Midway Drive-In in San Diego, Calif., showing 35/70 XL installation using Ventarc lamps.

Strong Ventarc lamp—in this case with a 21-in. Balcold mirror.

Figure 6 shows the booth of the Northstar Drive-In. Their screen is a very unique new design consisting of corrugated steel sheets that have been galvanized—after which several coats of a special white paint are applied.

In both cases, the Manco-Vision, as well as the corrugated sheet metal screen, have excellent horizontal light distribution over the entire parking areas of the Drive-Ins.

These tests have proven, beyond any doubt, that 70MM prints, as used in Hard-Top theaters, require absolutely no change for running in Drive-Ins, which is of special interest in regard to six-channel sound, as it can be picked up magnetically just as in the indoor houses. The six-channel reproduction also enhances the sound outstandingly even through the single speaker.

With the equipment, as described above, the center screen brightness in 70MM, both 18 and 12 foot-Lamberts, represents an unbelievable achievement for a Drive-In picture. One should not forget that the brightness recommendation for a 70MM print indoors is not more than 15-16 foot-Lamberts.

In both cases the impact of having a picture with such brightness outdoors is beyond description. It
(Continued on page 14)

70/35MM TESTS AT MIDWAY DRIVE-IN THEATER IN SAN DIEGO

Technical Data

Screen:	Motion Picture Research Council aluminum screen—gain approximately 2.5 (1/3 of panels on right side of screen slightly darker.)
Screen Size:	102 x 44 feet — 4,488 square feet.
Throw:	473 feet.
Projectors:	Modified XL projector heads with indoor shutter blades, 50% efficiency.
Light Source:	Strong ventarc lamp with 21 inch silver mirror burned at 130 amps, 73 volts.
In the Projection Beam:	1 Porthole glass; absorption approximately 11%.
In the Light Beam:	1 Liquid heat filter with dichroic coating; absorption approximately 14%.
Lens for Wide Screen:	Focal length 5 inches, speed f:2, Bausch & Lomb.
Lens for Cinemascope:	Focal length 4 inches, speed f:1.5, Super Kiptar (Isco) plus anamorphic attachment.
Lens for 70MM:	Focal length 8 inches, speed f:2.2, Kollmorgen.

SCREEN BRIGHTNESS READINGS IN FOOT-LAMBERTS

1) 35MM Cinemascope Readings:

Left Center	Center	Right Center
8.0	8.0	6.0
7.5	7.5	5.0
8.0	7.5	
	6.5	
7.5 Average	7.37 Average	5.5 Average

2) 70MM Readings:

Left Center	Center	Right Center
10	19	8.5
8	17.5	8.5
	17.0	
	16.5	
9 Average	17.5 Average	8.5 Average

Distribution approximately — 51%

We are mainly concerned with the 70MM situation, and assuming that the 102 by 44 ft. screen image is as close in information as we can get it, I have calculated backwards using the 8 in. focal length of the lens to determine the 70MM aperture size.

This aperture was approximately 1.740 by .744. In order to determine the luminous flux in the center of the image, the basic lens from his CinemaScope setting having 4 in. focal length but being of a speed of f:1.5, contrary to the 8 in. f:2.2 lens as used during the measurements and showings, several center readings on the screen were made; and an average of 7.75 foot-Lamberts was read (average of two readings—7.5 and 8.0).

The 4 in. lens would have equalled a picture size of 204 by 88 ft., or 17,952 sq. ft. If we consider a screen gain of 2.5, the 7.75 foot-Lamberts correspond very roughly with 3 foot candles as identical to 53,856 lumens.

Since we had in 70MM a 50% distribution, which with the 4 in. lens may even have been worse due to lens fall-off, it looks as if the total luminous flux over the entire aperture area was very nearly 27,500 with the shutter running which checks closely with 55,000 lumens of factory output rating.

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemecanica by Christie

CARBONS, INC. BOONTON, N. J.

Mitchell Shows New System 35 Camera

HOLLYWOOD — The Mitchell Camera Corp. used one of New York's club shows to demonstrate its newest camera system to 400 film-industry executives yesterday.

Mitchell called upon the cast and crew of Julius Monk's "Plaza" show at the Plaza Hotel as subjects for simultaneous filming and video-viewing on the company's new "System 35" equipment. The system adds a closed circuit and videotape capability to the Mitchell Mark II 35mm reflex camera.

Mitchell's system filmed the action and telecasted what the camera saw on monitors placed around the supper club and in an adjoining cocktail bar.

Edmund Di Giulio, Mitchell's chief engineer, explained that the system utilizes electronics to provide an instantaneous "preview" of what is actually going on film to the director, actors, and others on the set. In addition, the system provides an immediate videotape record of what has been shot, for use in rehearsal or to correct set arrangement or lighting.

Di Giulio also pointed out that System 35 will open up the possibility of multi-camera film-making, in which several cameras can be used simultaneously or in sequence, and turned "off or on" by remote control, while the director monitors all of them on a closed circuit TV console.

Production of System 35 is underway, according to B. G. Tubbs, president, who said first deliveries will be made to customers in Europe and the U.S. in April. Total cost of the system is about \$40,000.

Las Vegas Showcase In Shopping Center

Continuing its program of motion picture theatre expansion in shopping center locations, National General Corp., is completing its \$400,000 Fox Theatre in the Charlestown Plaza Shopping Center in Las Vegas, Nev.

Eugene V. Klein, chairman and president of the Los Angeles-based theatre circuit operator and entertainment company, has announced that the 900-seat Las Vegas showcase is the latest in National General's announced plans to add to its circuit of 217 theatres in 16 Western and Mid-Western states during the next three years.

In the expansion program, Klein

said, continuing attention will be given to erection of theatres in major shopping centers, following the pattern set last year when NGC opened shopping center showhouses in Albuquerque, New Mexico, and in Palos Verdes, Northridge and Thousand Oaks in the Los Angeles metropolitan area, and more recently at Los Alamitos in Orange County.

On hand for the gala groundbreaking, which was conducted with traditional Hollywood fanfare, were Las Vegas Mayor pro-tem Phillip Mirabelli; Albert Horman, a director of the Charleston Shopping Center; William H. Thedford, Pacific Coast division manager of Fox West Coast Theatres, subsidiary of National General; Bob Smith, Los Angeles-Las Vegas district manager; and French Actress Chris Carrole.

The ultimate in theatre construction, the Fox Theatre will be equipped with the latest projection equipment, stereophonic sound equipment, climate-controlled refrigeration and modern Bodiform seats built by American Seating Company, said J. Walter Bantau, Fox West Coast Theatres' construction chief.

The building and construction firm of Horman Construction Company, Salt Lake City, developers of the Charlestown Plaza Shopping Center, will build the theatre, which was designed by Fox West Coast Theatres.

NGC is also a leader in the development of closed circuit TV in theatres, packages and produces live concerts and stage shows with name talent, and another subsidiary, Carthay Center Productions, was formed after NGC received court permission last year to engage in motion picture production.

Opening of the new Fox Theatre, scheduled for early Spring, 1965, will be staged in traditional Hollywood fanfare of stars, searchlights, music and entertainment. **IP**

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

ASHCRAFT
CORE-LITE
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH REACTANCE
MULTI-PHASE
RECTIFIERS

World's Standard of
Projection Excellence

HEYER-SHULTZ METAL REFLECTORS

*Top Screen Illumination
Will Not Break, Pit or Tarnish
No Replacement or Spare Reflectors Required*

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.



Investment Opportunity

Her dreams will be the realities of tomorrow—sleek, shiny birds will aim at the moon and cars will whisk her from city to city on cushions of air.

But dreams and children alike must have the proper atmosphere to thrive. Freedom and stability provide this. It is our task to foster this atmosphere in the present and protect it for the future. We have an investment in it for our children.

You can protect this investment by joining with other leading American businessmen to promote the Treasury Department's Payroll Savings Plan for U. S. Savings Bonds. The Treasury's plan works for stability in our economy and strength in the defense of our liberties.

By fostering the love of individual freedom and the economic well-being of the nation, it provides a strong, steady foundation that will not waver under the challenges of tomorrow.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the dreamers of our today. In the engineers, scientists and teachers of our tomorrow. In America's future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today directly to the Treasury Department, United States Savings Bonds Division, Washington, D. C., 20226.



in your plant...promote the PAYROLL SAVINGS PLAN for U.S. SAVINGS BONDS



• The U.S. Government does not pay for this advertisement. It is presented as a public service in cooperation with the Treasury Department and the Advertising Council. •

Four New Film Types Introduced by Kodak At SMPTE Convention

Four new types of motion picture films, offering cinematographers greater range and ease under various operating conditions, were announced by Eastman Kodak Company at the convention of the Society of Motion Picture and Television Engineers.

The films include a new reversal print film, an extremely fine-grain, low-speed type for recording bright daylight scenes and a high-speed, medium grain film for photographers working with available light. They are:

1. Eastman Reversal Color Print Film, Type 7387, 16mm.
2. Eastman 4X Panchromatic Negative Film, Types 5224 7224, 35mm and 16mm.
3. Eastman Fine Grain Duplicating Positive Film, Types 5366/7366, 35mm and 16mm.
4. Eastman XT Panchromatic Negative Film, Types 5220 7220, 35mm and 16mm.

Advances in emulsion making and processing methods have enabled Kodak to introduce Eastman Reversal Color Print Film, Type 7387. Superior color reproduction—especially in greens and reds, improved sharpness, somewhat finer grain and higher speed are features of this new film.

In addition, this film type will be of value when reversal film prints are used for work prints or answer prints. Its reproduced quality closely matches that of an Eastman Color Print on Type 7385 through a Type 7270 internegative. It's almost a full stop faster than Eastman Type 5269, and has a high quality negative-positive silver sound track much like that of Type 5269, but superior in certain respects.

The new Eastman 4X Panchromatic Negative Film will permit cameramen to film in extremely adverse lighting situations. It even can be used in places where the lighting is so low that a reading cannot be obtained with an exposure meter. For this reason 4X Panchromatic is expected to be used extensively by news and industrial photographers and for night shooting. Despite the speed of this new film — which is about twice the speed of the Eastman Tri-X Panchromatic Film it succeeds — there is little or no increase in granularity.

The third new film, Eastman Fine Grain Duplicating Positive Film, Types 5366/7366, is faster than present fine grain duplicating positive

films and makes possible a fourfold increase in printing speed — without a resulting increase in granularity. Scene information can be placed more easily than with earlier film types. The film can be processed at high temperatures, as in an Eastman Viscomat Processor using Kodak Viscomat Developer, Type III.

Cinematographers will find the new black-and-white Eastman XT Panchromatic Negative Film, Types 5220 7220 of special value for exterior motion picture work. This film provides extremely fine grain and sharpness for outside photography or for other situations where the inherent light level is high. It has approximately one-third the speed of Eastman Plus-X Panchromatic Negative Film, Types 4231 and 7231.

While the new Eastman 4X Pan will extend available speed range on the high side, Eastman XT Pan will extend the speed range on the low side. Color sensitivity and filter factors for XT Pan are about the same as those for other Eastman negative films. **IP**

SMPTE Asks for Color TV Control

NEW YORK — Careful control in staging and photography of color films for television has been recommended by a special engineering subcommittee of the Society of Motion Picture and Television Engineers.

The joint subcommittee of the Society's Television and Color Committees has been working to establish SMPTE Recommended Practices for density and contrast range of films for color television. During this work, the group reported, "it became evident that optimum control of release print density range could be achieved only if the original photography were carefully controlled."

Subcommittee Chairman John M. Waner, taking note of the special problems of color television film transmission and reception, summarizes the findings as follows:

- It is desirable to limit the density range of the color print, and to include a "reference white" and "reference black" in the scene for the benefit of the video operator or automatic video control.

- The recommended maximum and minimum reflectances of fully illuminated materials that are to be reproduced with good detail are 60% for whites and 3% for blacks, with existing film products and techniques.

- For a fully lighted day interior scene, a lighting ratio of 2 to 1 is recommended. Higher ratios may be

used for special effects and night scenes.

- It is emphasized that the most important, practical and effective way to control the density range of the color print is in the staging and photography, rather than in the final printing.

"There is no sharp dividing line," the subcommittee reported, "between color prints that would be generally regarded as acceptable for television transmission and those that would be considered unacceptable."

"The particular recommendations for color television films that are described herein represent observations taken from films with scenes that did reproduce well on a typical color television system."

"Deviation from these recommendations should be accompanied with caution and should be undertaken only if a particular effect is desired or if tests show that good color television reproduction can be obtained from such films and that they can be printed and intercut properly with films that are known to transmit successfully."

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

Norelco
projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

70 mm

from page 10

could only be emphasized by saying that in this manner it is possible to show Drive-In audiences a picture they have never seen before—and such presentation will also solve the entire problem of low-key and night scenes for Drive-Ins.

The accompanying chart is a compilation of technical data prevailing at both Drive-Ins mentioned above, as well as a true report on the screen readings made during my tests.

IATSE Local Riled About Film Prints

Charging that "for years now the condition of too many prints exhibited in New York City theatres has been very bad," Moving Picture Machine Operators' Union, Local 306, IATSE, has issued a warning to the film companies that, if something is not done about it, action will be taken by the union.

In a letter to the heads of all the distribution companies Steve D'Inzillo, Local 306's New York business agent, put them on notice that "unless a marked improvement in print condition takes place within the next few months" the union "will have no alternative" but to take the following steps:

1. "Reject the very bad prints."
2. "Refuse to do extensive print repair during showtime."
3. "Charge overtime for any print repairs other than normal inspection for cuts, occasional bad splices and cue marks."

"There are exceptions, to be sure, which include the initial new prints at the start of a release," D'Inzillo told the company heads. "It is obvious, however, that most often prints are still kept in service long after they should have been junked."

The "situation" was held to be "so bad that it is causing an increasing number of disputes between this union and theatre managements."

"Many prints" were said to be in such bad condition "that the projectionist should refuse to run them according to the city code and thereby protect his license."

"Some companies are more responsible than others in servicing theatres with useable prints," added the letter. "No effort is here being made to blame all equally. Nevertheless there needs to be a general coordinated industry effort, as well as a

company-by-company one, if there is to be demonstrable improvement."

"For the good of all concerned" the company heads were exhorted to give the problem their "immediate and urgent attention."

Stambaugh Named by UC's Carbon Products

Robert P. Stambaugh has been named director of development for the Carbon Products Division of Union Carbide Corp. In his new position, he will be located at the division's Technical Center at Parma, Ohio.

Mr. Stambaugh was graduated from Purdue University in 1942 with a B. S. degree in chemical engineering, and joined Union Carbide's Plastics Division. He transferred to National Carbon Co., now known as the Carbon Products Division, in 1946, and went to Cleveland in 1950 as a development engineer. Transferred to Niagara Falls, N. Y., he became head of the works laboratory there in 1955, was named assistant plant manager in 1956, assistant development manager in 1957, and since 1959 has been manager of the Niagara Development Laboratory.

Mr. Stambaugh is a member of the Electrochemical Society and the American Chemical Society.

SMPTE Conference Set for March 28

NEW YORK — Planning of the most diverse and comprehensive conference in the history of the Society of Motion Picture and Television Engineers (SMPTE) is well underway.

The 97th semiannual conference and exhibit is set for March 28 to April 2, at the Ambassador Hotel in Los Angeles. Program Chairman is Dr. Richard J. Goldberg, Technicolor Corp., Research and Development Division.

There is an exhibit area for 81 booths of equipment to be located adjacent to the technical sessions in the hotel.

Topics and topic chairmen have been chosen and numerous papers have already been selected. Although the formal topical structure is broad, reflecting the growing interests of SMPTE's members, any papers which do not fit under one specific topic heading will nevertheless be welcomed for the program; they will be assigned a place in the proceedings by the program chairman.

Authors forms are available from

SMPTE Elevates 15 Members To Society Fellowships

Fifteen members of the Society of Motion Picture and Television Engineers (SMPTE) are being elevated to the grade of Fellow of the Society in recognition of their outstanding contributions.

The 15 new Fellows, announced by out-going president Reid H. Ray are: Alex E. Alden, Wallace F. Bischof, James P. Corcoran, C. Russell Dupree, George R. Groves, William G. Hyzer, Saul Jeffee, Harry W. Knop, Jr., Orlando S. Knudsen, Anthony H. Lind, Albert S. Pratt, Alex S. Quiroga, Roderick T. Ryan, William M. Sheahan and Edward A. Winkler.

Fellows Recognized

The new Fellows, nominated by a committee headed by SMPTE past-president John W. Servies, were recognized during the Society's 96th Technical Conference in New York.

Alden has been staff engineer of SMPTE for the past three years. Previously, he was employed for 15 years in the research and development division of 20th Century-Fox Film Corp., and in 1962 was a co-recipient of the Academy Technical Award given to 20th Century-Fox for a decompression printer for TV release of CinemaScope pictures.

Bischof is project manager for RCA Redstone Pictorial Services, Huntsville, Ala. A founder of SMPTE's Huntsville Section, he is a graduate of The Colorado College and did graduate work in Chemistry at the University of New Mexico

20th Century Fox official

Corcoran is sound director for 20th Century-Fox Film Corp. in Los Angeles. He is a graduate of the University of Washington and has been with Fox since 1938. Mr. Corcoran has served on the Society's Sound Committee and has contributed papers to the SMPTE Journal.

Dupree is development engineer for J. A. Maurer, Inc., in Long Island City, N. Y. Previously, he was an engineer at the Army Pictorial Center in Long Island City, N.Y. Mr. Dupree is current chairman of the SMPTE. **IP**

Chairman Goldberg, or from any topic chairman, or from SMPTE headquarters in New York.

The complete list of topics and topic chairman will appear in the next issue of IP. **IP**

Cosby Sets Up New Carbon Products Regions

The establishment of two regional divisions in the arc carbon marketing group of Union Carbide Corporation's Carbon Products Division was announced recently by J. W. Cosby, arc carbon marketing manager. Mr. Cosby added that the change was necessitated in order to continue to provide the best possible customer service in the face of increasing business activity.

The eastern division, to be headquartered in New York City, will be headed by P. H. Freeman as manager. Western division manager will be W. T. Brenner, who will be located in Chicago.

Freeman joined Union Carbide in 1950 following graduation from Niagara University. After military service from 1951 to 1953, he returned to the arc carbon sales department and served in both Charlotte, N. C., and New York. Since January, 1962, he has been arc carbon sales manager.

Brenner was graduated from Seton Hall University in 1950 with a bachelor of science degree. Following service in the Army Air Corps, he worked with two motion picture companies and joined Union Carbide in 1959 as an arc carbon sales engineer with assignments in Charlotte, N. C., and most recently in Dallas, Texas.

Kalart Firm Gets Freedom Award

The Kalart Co., Inc. is one of 7 Connecticut Industrial firms of a total of 104 U. S. firms who received awards from the "Tools for Freedom" Foundation. U. S. industrial firms donated a total of \$600,000 worth of new equipment to be used in the International Center for Advanced Technical and Vocational training, a United Nations sponsored facility for the developing nations in Turin, Italy. "Tools for Freedom" is a non-profit organization formed by the U. S. business community to advance technical training in under-developed countries.

The Kalart Company, Inc., through its audio-visual division, The Victor Animatograph Corp., donated a Kalart Victor Model 70-25MP 16mm sound projector with a 12-inch separately cased speaker. This unit included a special built-in pre-amplifier and interchangeable sound heads



Kalart officials show their award from the Tools for Freedom Foundation.

which permit projection of either optical or magnetic sound tracks.

The Victor Animatograph Corp. manufactures and distributes an extensive line of 16mm sound projectors and related audio-visual equipment on a world wide basis.

Increased emphasis by the Export Department of the Victor Animatograph Corporation has resulted in a far reaching program for the development and use of audio-visual techniques in foreign countries. From Iceland to Laos, regardless of climate or conditions, Kalart Victor made projectors are used to teach and train. Complete engineering and technical services are offered by the Victor Animatograph Corp. to all foreign countries who request aid in the development of their audio-visual departments. Thru the extensive use of 16mm sound movies many of the underdeveloped countries are able to train and teach their personnel in modern methods and procedures. **iP**

OUT OF PRINT MITCHELL MANUAL AVAILABLE!

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
P.O. Box 6174
Minneapolis, Minn. 55424

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY



INTERNATIONAL PROJECTIONIST

1645 Hennepin Ave.
Minneapolis 34, Minnesota

Enter my subscription for

- 1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

*Our greetings and best wishes for a Merry Christmas
and a New Year of fruitful discussions pointing the
way to fulfillment of the world's hope for lasting
peace.*



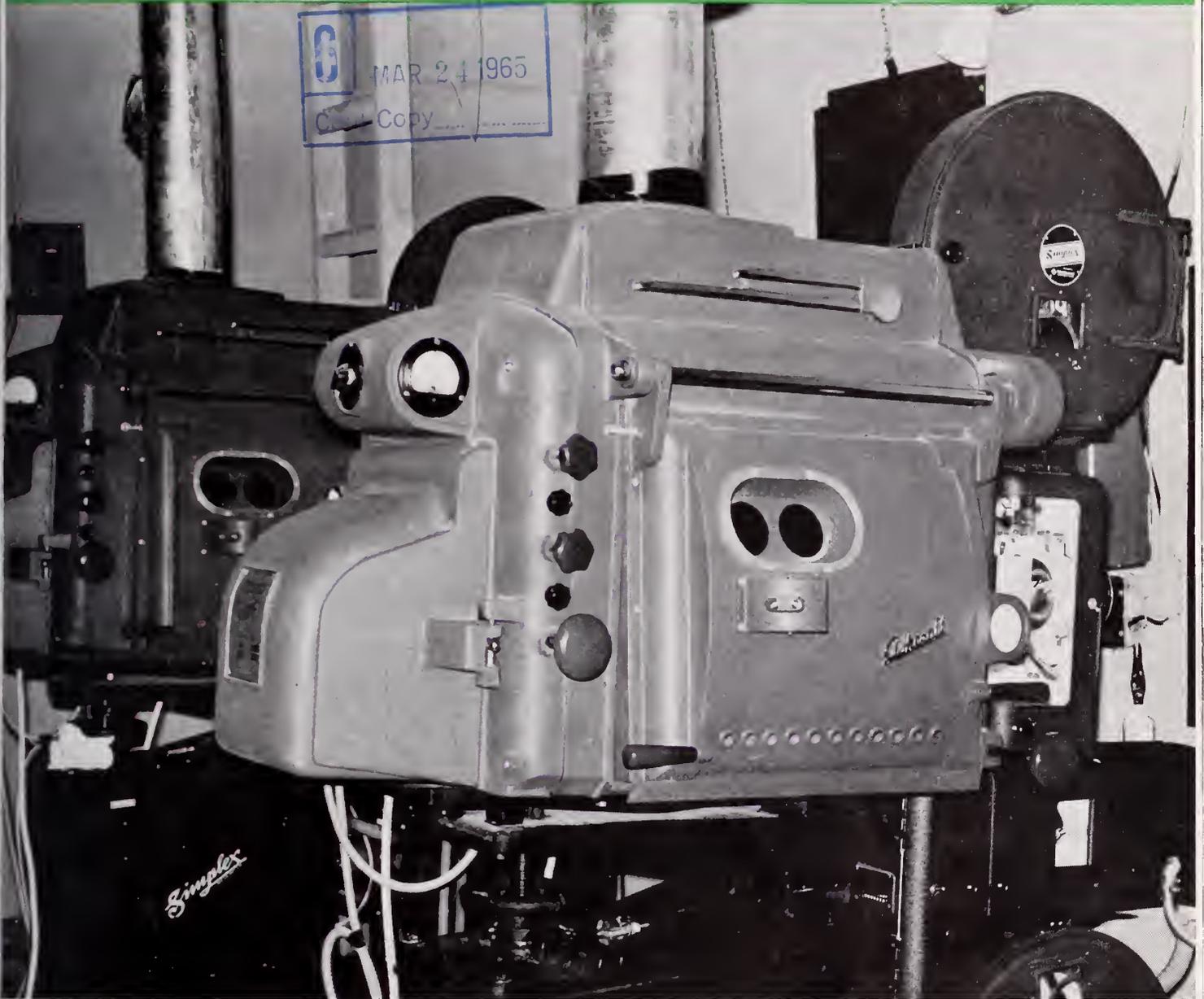
**INTERNATIONAL ALLIANCE OF THEATRICAL STAGE
EMPLOYEES AND MOVING PICTURE MACHINE
OPERATORS OF THE UNITED STATES AND CANADA**

Affiliated with the A.F.L.-C.I.O.

RICHARD F. WALSH
International
President

HARLAND HOLMDEN
General
Secretary-Treasurer

INTERNATIONAL PROJECTIONIST



W. R. Sterling

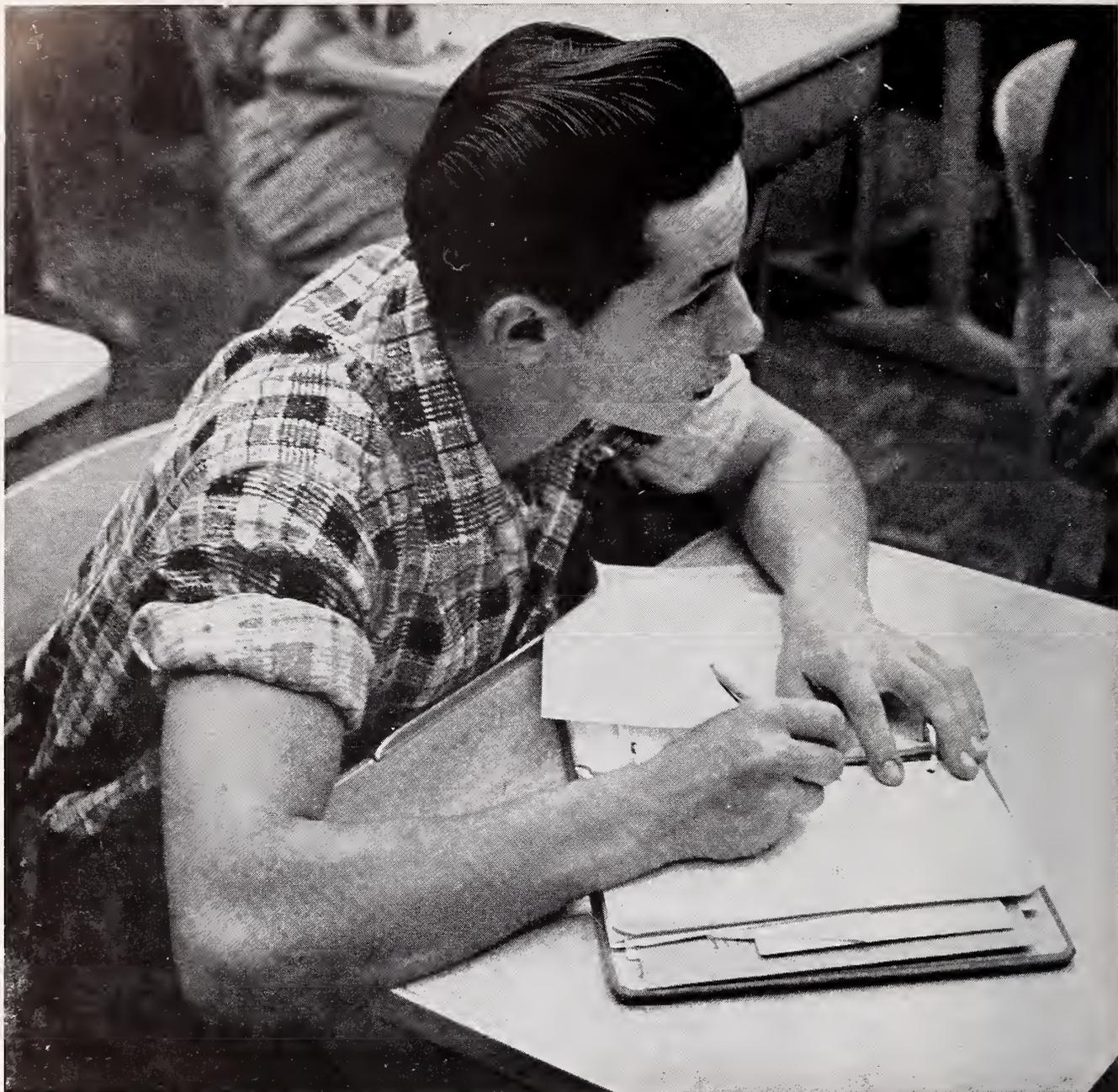
Projection booth of the Walter Reade-Sterling Community Theatre, Eatontown, N. J. showing Ashcraft's Care-Lite arc lamps. The projected Cinemascope picture is 40 feet wide at a projection distance of 95 ft. The projectors are Simplex XL with Simplex XL-Narelco sound system. Photo courtesy C. S. Ashcraft Mfg. Co.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

JANUARY
VOLUME 40
40c A COPY

1965
NUMBER 1
\$3.00 A YEAR





Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—when you encourage your employees to enroll—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



INTERNATIONAL
PROJECTIONIST



Volume 40 Jan. 1965 No. 1

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

- Part II
70 mm In Drive-In's 4
By Walter Beyer
- Another Walter Reade Theatre, and
New Ashcraft Installations 6
- Getting Ready for Spring 11

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

**WE GUARANTEE
YOU CAN'T LOSE**

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Part II

Drive-in Operations with 70 mm Equipment

By Walter Beyer
Universal Pictures

If one thinks of a shortage of 70MM prints it may be worthwhile to list all the pictures that are now and in the near future available, such as: Technicolor 70mm prints (general release) — "Oklahoma" "Sleeping Beauty" "Around the World in 80 Days" "South Pacific" "Solomon and Sheba" "Spartacus" "Porgy and Bess" "The Big Fisherman" "Ben Hur" "Exodus" "West Side Story" "Black Tights" "King of Kings" "El Cid" "Can-Can" "The Alamo" "Mutiny on the Bounty" "Cleopatra" "Lawrence of Arabia" "It's a Mad, Mad, Mad, Mad World" "The Cardinal" "Becket" "My Fair Lady" (to be released) "The Greatest Story Ever Told" (to be released) "Cheyenne Autumn" (to be released) "The Golden Head" (to be released) "Fall of the Roman Empire" (to be released) "The Long Ships" (to be released) "Lord Jim" (to be released) "Circus World" (to be released) "The Agony and the Ecstasy" "Sound of Music" "Magnificent Men in their Flying Machines" "The Day Custer Fell" "Taras Bulba" "Barrabas" "Carpentbaggers".

I like to say that my trial runnings of "Spartacus" material, for instance, which is technically one of the best Super-Technirama 70MM pictures released, created in every sequence an audience participation effect. This is possible since, in spite of the huge Drive-In screen, the viewing distance for the average patron is always at least more than two screen widths away and, therefore, remains overall a small size picture. Whereas, with such brilliance one loses the awareness of screen location and really views the entire picture content with an increased depth effect.

Concluding, it should be stated that the 70MM print alone, however, is not the solution for the Drive-In theaters, and even though many are already equipped with 70MM projectors, I would like to emphasize very strongly that in order to warrant the showing of 70MM prints these Drive-Ins should live up completely to specifications as close as possible to the data as attained and published from these tests.

As to special applications of the 70MM release print, one could of course write an entire article on that subject by itself. Within the scope of this paper however, I like to restrict myself to some of the latest developments that have a direct bearing to increasing the availability of 70MM



Figure 7B



Figure 7A

TECHNICAL DATA DURING TESTS AT THE NORTH STAR DRIVE-IN THEATER, DENVER

1) Wide Screen Readings

Screen brightness readings:
 3.5 4.5 3
 3 5.5 3.5
 3.5 5 3
 4
 4.5

Average foot-Lamberts: 3.2
 4.7 3.2

Light distribution: 70%

Lens used: 4 inch f:2

Aspect ratio: 2 to 1

Jet arc burned at 150 amps., 100 volts

Screen image size: Approx. 114 x 57 feet.

Throw: Approximately 552 feet.

Screen size: 135 x 60 feet.

2) 70MM Readings

Screen brightness readings:
 5.5 10 6
 5 11 6.5
 5.5 10 5.5
 13
 11.5
 12
 11.5

Average foot-Lamberts: 5.2
 11.3 6.0

Light distribution: 50%

Lens used: Kolmogoren 7.5 inch f:2

Jet arc burned at 150 amps., 100 volts

Screen image size: 135 x 60 ft.



Figure 7C

prints. By that I mean the possibility to provide 70MM prints from pictures that are originally photographed in CinemaScope or Panavision on 35MM film.

This process is illustrated with the aid of film clippings from the picture "Carpetbaggers". Figure 7 shows at "A" the squeezed camera original negative. "B" is the 2:1 squeezed print for 35MM release and "C" represents a 70MM release print clipping made from the 35MM original negative. In the Technicolor Laboratories the original negative is unsqueezed and minutely magnified to fit perfectly on 70MM film for a compatible 70MM release print.

With this process the producer has an excellent opportunity to provide first run and/or roadshow houses and of course properly equipped Drive-Ins with 70MM prints of outstanding quality. These prints are not to be classified as "blow-ups" but rather "print-up" pictures. The unsqueezing in the printer is not a blow-up or magnification and does not reduce picture quality.

Another special type of prints from Technicolor are the single film 70MM prints for Cinerama, a clipping of which is shown on Figure 8. This print has inherent a minute squeeze horizontally to compensate for the "tangend" projection situation as it prevails at the sides when showing it into a deeply curved screen. It thus avoids "elongation" of faces, etc., on the sides but does not require anamorphic projection lenses.

Last but not least I would like to disclose a very special 70MM film clipping related to using 70MM print stock to carry the left and right eye images of a 35MM picture produced in 3D.

This print, again made by Technicolor shows that the 70MM print can easily accommodate the two 3D - images in perfect registration for a single-film single-projector 3D presentation.

In cooperation with the technical director of technicolor, Mr. W. Pohl, I have made successful tests on a big screen proving this method to be desirable for 3D showings either new productions or re-releases in this medium.

It would exceed the scope of this article to go into further details on beam-splitting etc. at this point but I considered it worthwhile to disclose this special application of 70MM film at this time, as a possible prospect for the future.

There are of course many more uses for the 70MM print as image carrier for special types of shows, such as for instance used at the World's Fair with 10 perforation pulldown projectors etc., too numerous to describe in detail.

IP



Figure 8



Figure 9



RURAL MOTIF—Walter Reade-Sterling's new Community Theatre, Eatontown, N. J. The design and construction follows the rural motif established last year with the opening of the Reade-Sterling Community Theatre in the Barclay Farms section of Cherry Hill, N. J. Photo courtesy C. S. Ashcraft Mfg. Co.

The Cover Story

Walter Reade-Sterling Theatres Make Fourth Ashcraft Core-Lite Installation

Walter-Read-Sterling, Inc., operating more than 50 hard tops and drive-ins in New Jersey, New York and Long Island, recently opened its latest new theatre in Eatontown, N. J.

The new Community Theatre seats slightly less than 900 people, and is a near duplicate in design and construction of their new Community Theatre which opened in the Barclay Farms section of Cherry Hill, N. J. last fall. The new Eatontown Theatre is almost identically equipped as the Cherry Hill Theatre (see Nov., 1964 IP) which incidentally marks the fourth Walter Reade-Sterling theatre to be equipped with Ashcraft Core-Lite arc lamps and twelve phase selenium rectifiers within the past year. Other Reade theatres making Core-Lite installations are the Strand in Plainfield, N. J. and the Coronet, New York City.

Sam Colisimo, chief of projection and maintenance for all Walter Reade-Sterling Theatres, said following the Eatontown opening, "The projected picture on the screen should be reproduced with the same lighting characteristics as when it

was photographed. Modern photography demands modern projection arc lamps if perfect screen lighting is to be realized." **iP**

Sound Service Men Receive IATSE Boost

IATSE sound service engineers will receive a wage increase of \$7.50 per week in two annual steps under terms of an agreement announced by Richard F. Walsh, president of the union.

The new contracts with Altec and RCA provide a \$5 raise effective Jan. 2, to be followed by another \$2.50 on Jan. 2, 1966. They expire at the end of that year.

The companies also agreed to grant a third week of paid vacation after 12 years of service. Heretofore it was 15 years. In addition, the sound men will be offered a major medical insurance plan. As in the past, the Altec and RCA pacts are expected to set a pattern for later agreements with a number of other sound service companies. **iP**

SMPTE Conference Names Topics Chairmen

NEW YORK—Topics and topic chairmen have been set for the 97th semiannual SMPTE conference and exhibit, set for March 28 to April 2, at the Ambassador Hotel in Los Angeles. Program Chairman is Dr. Richard J. Goldberg, Technicolor Corp., Research and Development Division.

Applications in Science and Technology: Dr. Philip N. James, Technicolor Corp., 2800 West Olive Ave., Burbank, Calif. 91505.

Aerospace Cinematography: Lloyd E. Watson, Aerospace Corp., P. O. Box 95085, Los Angeles, Calif. 90045.

Instrumentation & High-Speed Photography: John Waddell Douglas Aircraft Co., 3000 Ocean Park Blvd., Santa Monica, Calif.

Laboratory Practices: W. Daniel Carter, Consolidated Film Industries, 959 Seward St., Hollywood, Calif. 90038.

Motion Picture & Television Abroad: Rodger J. Ross, Canadian Broadcasting Corp., 354 Jarvis St., Toronto, Ont., Canada.

Motion Pictures & Television in Education: Dr. Bernard R. Kantor, University of Southern California, Dept. of Cinema, Los Angeles, Calif. 90007.

Motion Pictures & Television in Medicine: Lowell Wentworth, Bay State Film Production, Inc., 80 Boylston St., Boston, Mass.

New Materials and Processes: George W. Boemler, Kalvar Corp. 12345 Ventura Blvd., Suite J, Studio City, Calif. 91604.

Photographic Science & Engineering: Alan Gundelfinger, Technicolor Corp., 6311 Romaine, Hollywood 38, Calif.

Rapid-Access Photography: Dr. LeRoy M. Dearing, L. M. Dearing Associates, Inc., 12345 Ventura Blvd., Suite Rm Studio City, Calif. 91604, and

Television Developments: Eliot Pliss, Columbia Broadcasting System, Inc. TV, 7800 Beverly Blvd., Los Angeles, Calif. **iP**

16mm-35mm Xenon System Added by Xetron

The Xetron Division of Carbons, Inc., Boonton, N. J., announces the addition of the Cinemeccanica CX-900 lamphouse to their line of Xenon light sources. This is a compact, highly efficient unit, designed to

operate with 16mm and 35mm projection systems.

When operating at 45 to 50 amperes, this lamphouse will deliver 4000-5000 lumens of high intensity light. It is a complete unit including the high voltage starter, ventilating fan, seven inch reflector and elapsed time meter.

It is especially suitable for small screening rooms using 35mm projection and with 16mm applications to replace the carbon arc lamp. **iP**

Identification of 16mm Film Simplified In New Method

A new method of "branding" 16mm film for positive owner identification will be given a "sneak preview" at the Film Council meeting in New York City on April 21-22 by the Film Identification Bureau.

The Film Identification Bureau, a Division of the Jack C. Coffey Co., Inc., North Chicago, Ill., will be described in detail. The "branding" system will receive an industry-wide introduction at the Department of Audio-Visual Instruction convention in Milwaukee immediately following on April 26-30.

The service uses a patented, precision machined code press and matching plates to emboss small indentations on the frame lines of film. The never-duplicated code is unable to be copied and will provide positive identifying marks for film libraries, producers, schools and others to prevent loss, "straying", theft and print-switching.

Each subscriber leases the code-press and plates to mark the films in his library, and the "branding" is good for the life of the print. Each subscriber to the Film Identification Bureau services will have his "brand" registered for quick, positive establishment of ownership.

Every year tens of thousands of feet of valuable film are lost, mishandled, shipping labels removed, improperly mailed, even "accidentally" switched. This FIB service will quickly get the right print back into its owner's possession, so it can quickly become available for rental or showing.

Films can be "branded" every 75-100 ft., in addition to the leader, so that it will be impossible to remove the marking without ruining the contents of the film. Special leader material with imprinting is available from the Film Identification Bureau, or subscribers may use their own leaders and tails. **iP**

TAKE YOUR PICK

of the 2 means of power conversion for projection lighting.

Strong BI-POWR
Silicon Stack Rectifier
for Operation of 2 Lamps

HEAVY ROTATING EQUIPMENT

Costs considerably less than 2 separate low priced single rectifiers.

Costly to purchase and maintain in good working order.

Saves average theatre about \$42 per month on power bill.

Power bills average about \$42 higher than with the Bi-Powr.

Double protection against failure. You keep operating.

Failure means your show is down.

Require no current-wasting ballast rheostats.

Require current-wasting ballast rheostats.

Silent.

Noisy.

Easy installation. Requires only one line service.

Expensive installation.

Requires one-third to one-half less floor space than two properly installed conventional rectifiers.

Requires about twice the space of other means of conversion.

Send for literature on the Bi-Powr today. There are models for every requirement.

THE Strong ELECTRIC CORPORATION
31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

*True high-fidelity, distortion free.

*Increased reliability, less maintenance.

*Low installation cost, minimum space needs.

*No vacuum tubes, no photoelectric cells.

***and the only American-made 70 mm 35 theatre projection systems**

SEE
YOUR CENTURY
DEALER

... for bigger, brighter projection.

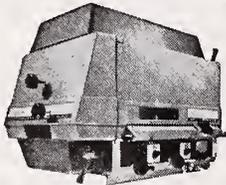
CENTURY PROJECTOR CORP.

New York 19, N. Y.

LOTS OF LIGHT FOR SALE at a Bargain

with this marvel of
projection lamp.

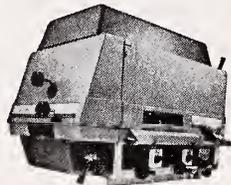
The **NEW**
Strong **FUTURA**



**MOST
LIGHT
PER CARBON DOLLAR**

for 35mm and 70mm pro-
jection. Instant change from
one film width to the other.

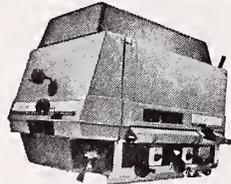
The **NEW**
Strong **FUTURA**



TOP LIGHT OUTPUT

for indoor and drive-in
theatres.

The **NEW**
Strong **FUTURA**



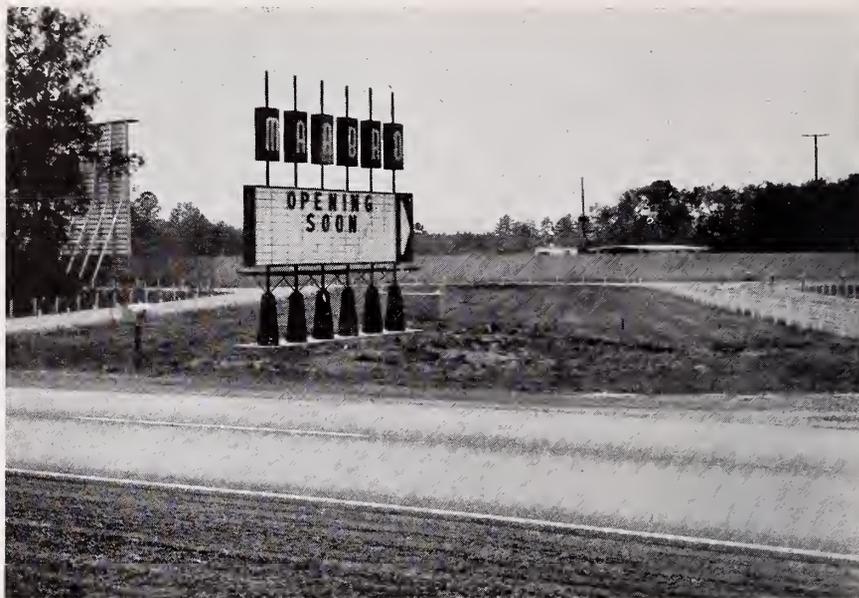
THE MOST ADVANTAGES

Low original cost. Greater op-
erator convenience. Efficient
use of standard 20-inch car-
bons.

See your Strong dealer or
write for literature.

The *Strong* Electric Corp.

31 City Park Ave., Toledo, Ohio 43601
TELEPHONE: 248-3741
AREA CODE: 419



This is the entrance to the new Marbro Drive-In in Chattanooga, owned by the Martin Theatre circuit. The illustration shows the changeable letter sign, screen, concession building and projection building used in this new installation. Ashcraft products are used in the projection booth. A 6-foot high cedar fence surrounds the entire drive-in.

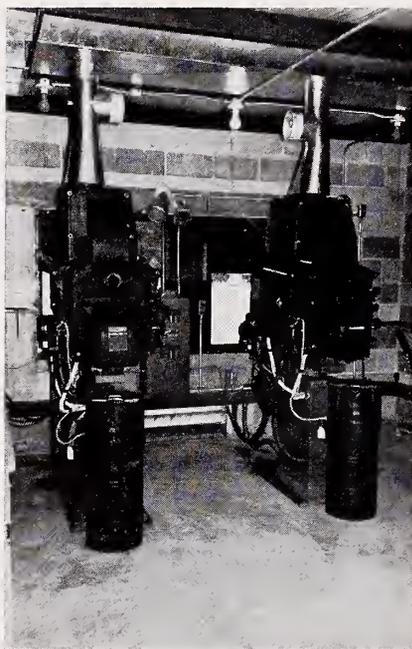
Hollywood Cameraman Relates Movie Making Experiences

(*SPLINTERS FROM HOLLYWOOD TRIPODS* by Virgil E. Miller, A. S. C., 139 pages, \$4.00, An Exposition-Banner Book, Exposition Press, Inc., N. Y.)

Many books have been written celebrating—or denigrating—Hollywood stars. Virgil E. Miller, probably more than any other person, was the man behind the camera which brought them immortality. In his book, "Splinters From Hollywood Tripods," he focuses on his fellow cameramen and others behind-the-scenes colleagues and professionals.

Many of Miller's experiences—and those of his coworkers—were filled with danger, excitement and sometimes hilarity. How does one go about photographing a runaway locomotive, for instance, so that it smashes directly into the camera? Miller solved that problem with a mirror trick—and without injury.

He was less fortunate when another assignment called for him to get some close-ups of a group of "tame" lions. One of the beasts suddenly swerved from the path he was expected to run in and charged between Miller's legs, sending him and his tripod flying into the air. The cameraman next found himself riding, for about ten seconds, on the



Here is the installation of Super Core-Lite arc lamps and twelve phase selenium rectifiers in the projection room of Martin Theatre's new Marbro Drive-In, which opened early last October at Chattanooga. Water recirculators are used to cool the solid silver positive carbon contacts with the lamps burning 13.6 mm x 18 high intensity carbons at 150 amps. Screen width is 110 ft. Illustration courtesy C. S. Ashcraft Mfg. Co.

Beyer's 35/70 MM Analysis

The following Drive-In theatres are presently equipped with 35/70MM projectors.

DRIVE-IN
Midway
Pacific
Rancha
Twin
Miracle Mile
Twin
Fairgrounds
Park Vu
Fairyland
North Star
100 Twin
Maple Leaf
Thunderbird
Cranston
Edgemere
Whitehorse Pike
Cascade

CITY and STATE
San Diego, Calif.
San Diego, Calif.
San Diego, Calif.
Indianapolis, Ind.
Pantiac, Mich.
Cincinnati, Ohio
Pittsburgh, Pa.
Salt Lake City, Utah
Kansas City, Mo.
Denver, Colo.
Minneapolis, Minn.
St. Paul, Minn.
Atlanta, Ga.
Cranston, R. I.
Shrewsbury, Mass.
Lawnside, N. J.
Vancouver, B. C.

lion's back, and only because the big cat was probably as surprised as Miller did Miller escape with nothing more than a few bangs and bruises.

Fast-paced and loaded with entertaining anecdotes, this chronicle of the cinema greats and of the "little people" who helped make them so is fascinating reading for everyone who is or ever has been a movie fan.

The author was born in 1886 in Illinois. In 1913 he went to Hollywood where he established the first Electrical Department for Universal. Subsequently he worked as a cameraman for every major studio and became head of both Paramount's Camera Department and Selznick's. Besides filming more than 400 feature productions, he has traveled around the world photographing 62 FitzPatrick Traveltalks. **iP**

William B. Spooner Named to Manager Post by Carbons, Inc.

In line with their program of expanding services, facilities and staff, Carbons, Inc., Boonton, N. J., has announced the appointment of William B. Spooner as general manager of Carbons, Inc., Western Division.

"This is a progressive move," stated Frank Riffle, Carbons president, "and particularly a well deserved promotion for Bill, whose long, rich background along with some 12 years with us in both sales and engineering capacities has given him a coast-to-coast reputation. His highly specialized talents brings to the field of theatre lighting and projection exceptional skill and experience."

Mr. Spooner is located in the Los Angeles area and will serve in both the carbons and XeTRON divisions of Carbons, Inc. **iP**

Film Exchange Workers Win Wage Increase

Employees at film exchanges through the U.S. received a wage increase of \$5.50 per week effective Dec. 1. Also provided in a new contract announced by the I.A.T.S.E. are increased employer pension contributions of 75c per week, bringing the weekly total to \$4.50.

Other benefits include:

A third week of vacation after 11 years of service. In the past it was 12 years. Maximum severance pay of 15 weeks' salary for employees who have worked 28 years or more. The previous top was 14 week's pay after 26 years. Columbus Day off, raising the number of annual holidays to nine.

Also obtained was a clause giving the local business agent and/or an International representative the right to visit a branch during working hours after notification to the branch or office manager.

The agreement is for two years. Companies coming under it are M-G-M, Columbia, Buena Vista, Allied Artists, National Film Service, Bonded Film Service and National Screen Service. **iP**

Closed Circuit TV for RCA Stockholders Meet

The Radio Corporation of America has announced that its 46th annual meeting of shareholders will be held in Chicago on May 4, 1965, and linked to New York via a closed-circuit two-way color television hookup.

The meeting will be held at the Chicago Opera House, 20 North Wacker Drive, and joined to the National Broadcasting Company's famous Peacock Studio in Rockefeller Center, New York, via closed circuit color TV. **iP**

* look into Stewart Film screens ...the choice of experts

FILMSCREENS FOR SHOWMEN—Stewart Projection Screens—the choice of 15 major exhibitors at the New York World's Fair!

ULTRAMATTE—for commercial playhouses, theatre TV, viewing rooms ■ Seamless to 46 by 88 feet ■ Optical efficiency ■ Durable economy.

LUXCHROME 50—seamless rear projection ■ Superior image contrast in lighted rooms.

FILMSCREENS FOR FILM PRODUCERS—used by CBS Studio Center, Columbia, Desilu, Disney, Fox, Goldwyn, MGM, Paramount, Revue, UPA, Universal, Warners.

HI-TRANS—Academy Award background screen—highest calibre production "tool."

ULTRAMATTE gain white, and **LUXMATTE** white matte—front projection screens ■ Demanded by studios and film labs for viewing during production, dubbing, and scoring.

T-MATTE BLUE—rear-illuminated screen for latest traveling-matte process ■ Practical for large and small sets, major productions, or TV commercials.

FILMSCREENS FOR TV PRODUCTION
TV-BLUE—background screen ■ Favorite of networks ■ Versatile ■ Efficient.

LUXCHROME 60—neutral gray screen for closed-circuit techniques, backgrounds and rear projection viewing.

FILMSCREENS also designed for A-V, fairs, trade shows, exhibits, simulators, plotting and display systems, and special architectural requirements.

STEWART FILMSCREEN CORP.

1161 W. Sepulveda Blvd.
Torrance, Calif. 90503 (213) 326-1422

I want to look further into Stewart Film-screens. Please send me additional information on: _____

NAME _____

STREET _____

CITY _____ STATE _____

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

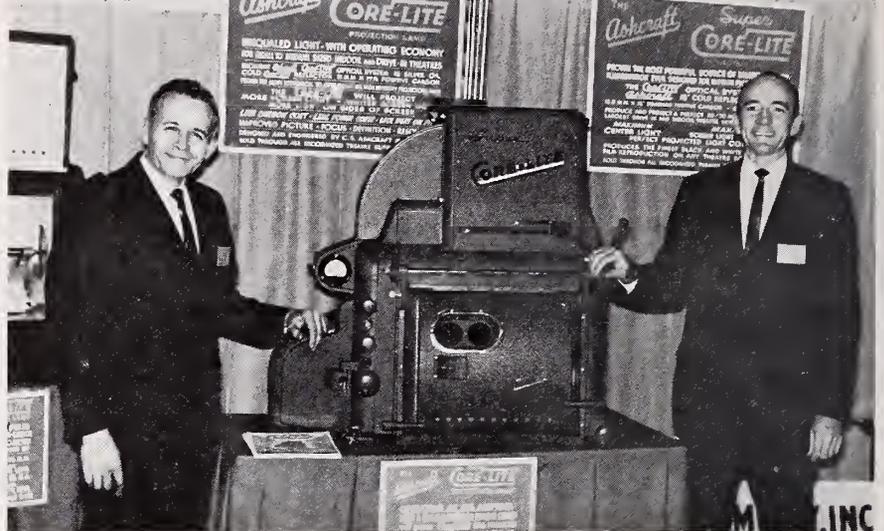
Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

CRAFT MFG. CO. INC.
46 ISLAND CITY, N.Y.



C. S. Ashcraft, Jr., president of the C. S. Ashcraft Mfg. Co., recently announced two important promotions. Mr. Ashcraft said - "the promotions of these two brilliant young engineers to administrative positions is a progressive step in the top management of our company to make secure the high quality of workmanship of our products, and a continuation of the arc lamp and rectifier market our company has enjoyed for more than 40 years under the same ownership-management."

Pictured above in the Allied booth at Detroit showing the Ashcraft Super Core-Lite arc lamp are Larry Orthner, left, who has been promoted to manufacturing superintendent, and Albert John, who smiles at his new responsibilities as plant manager. Mr. Orthner will be in charge of all manufacturing and assembly operations as well as quality control. Mr. John will be in charge of factory personnel, material procurement and assistant to the president on matters pertaining to engineering and development. Each has nearly 20 years experience.

Walter Beyer's iP Article Forecasts Growth in 70 mm

Top equipment manufacturing estimates now place the number of theatres in the U.S. and Canada equipped for 70mm showing at between 300 and 350. It is estimated that by the end of 1965 there will be as many as 500. The number is accelerating rapidly.

Of the present total, some 25 or 30 of the theatres are drive-ins. Of the new theatres being built, the ratio

is running about 75-25% in favor of hardtops.

A good part of the increase is due to the overall boom in theatre construction, rather than renovation of old theatres, although this too is occurring to some degree.

Installation of a pair of 35mm projectors costs somewhere between \$3,000 and \$5,000. For a pair of 35mm-70mm projectors the cost rises to \$12,000-\$16,000, a sizeable difference, but not so when the expenditure for the theatre is in terms of six or seven figures.

Another reason for installation of the 70mm equipment lies in the fact that the major companies are increasingly using some form of 70mm process. **iP**

CARBON ARCS . . . for finest Projection . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .

XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

by Cinemecanica

by Christie

CARBONS, INC.

BOONTON, N. J.

Getting the Drive-In Projection Ready for Spring

These hints may serve as a guide in getting your projection and sound equipment ready for spring:

Place one or two drops projector oil in each idler oil hole, and look the soundheads over carefully so as not to miss any oil hole or oil cup. The valve rollers of the upper and lower magazines do not require lubrication.

5. MAGAZINE REEL SPINDLES

Place several drops of projector oil in the oil hole of each magazine spindle shaft. Avoid spilling oil into the friction-disc clutch of Simplex-type lower magazine takeups. (The cork discs of Motiograph takeups may be soaked in oil when disassembled, but this is the single exception to the rule of "no oil in takeup friction clutches.")

C. ADJUSTMENTS

1. UPPER MAGAZINES

Make sure that the upper magazine is in correct alignment with the valve rollers and mechanism sprockets so as to avoid twisting, scraping, or shearing the film. Spindle tension should exert sufficient "drag" to prevent a fully loaded 2000-ft. reel from spinning too freely.

2. LOWER MAGAZINES

Replace takeup belt if loose, worn, or oil-saturated. (Loose or oily belts slip and cause the film to take up in an irregular manner.) It is often advisable to disassemble the takeups completely and wash the parts in lighter fluid or cleaning naphtha to remove oil and dirt from the friction disc and clutch slipping surfaces, but this chore takes time and may be deferred if the takeups appear to be in good working condition.

Adjust tension so that a fully loaded 2000-ft. reel in the lower magazine will start turning of its own accord when the projector is switched on, but not so much tension that the reel cannot easily be held back from turning with light pressure of the finger.

3. FIRE VALVE ROLLERS

Check the rollers for free turning and absence of "flats" which scratch the picture and soundtrack areas of the film. Worn rollers should be replaced without delay!

4. AUTOMATIC FIRE SHUTTER

Turn the projector motor on, and after the machine has attained normal running speed, turn it off, meanwhile observing the lifting and dropping action of the fire shutter behind the film aperture. The shutter should drop before the machine has come to a stop. Remove obstructions which interfere with its action, and make sure that the centrifugal governor which controls its action is free from dirt and in good condition.

5. TRANSMISSION, MECHANISM, AND SOUND HEAD GEARS

Check all gears and replace those having chipped or otherwise damaged teeth. Check all gear trains for excessive backlash, especially the shutter-driving gears. A small amount of backlash is normally present in a projector, but excessive backlash in the shutter gears is troublesome and requires extra blade width to avoid travel ghosts. This wastes light. Replace gears having worn teeth.

Backlash in the main gear train can be reduced by replacing the gear shafts with oversize shafts made especially for old machines with worn bearings.

6. FILM SPROCKETS AND IDLERS

Examine all sprockets in mechanisms and soundheads for worn and undercut teeth. Undercutting is detected by noticing whether a knife-blade "clicks" when passed lightly over the film-contacting face of a tooth from base to tip. Reverse or replace worn sprockets, deferring the changing of sprockets on old-style intermittents until the movements are overhauled.

Line up idlers laterally, if necessary, and adjust each for a space of 2 thicknesses of film between idler and sprocket faces. (Continued)



RINGSDORFF CARBON CORP. East McKeesport, Pa.

Projectionists
who like quality
always use the best

ACE

Blue★Star
Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
Division of the
Ace, Electric Mfg. Co.
1923 Bay Road
Miami Beach, Florida

ASHCRAFT

CORE-LITE
SUPER CINEX
CINEX SPECIAL
PROJECTION LAMPS
And
HIGH REACTANCE
MULTI-PHASE
RECTIFIERS
World's Standard of
Projection Excellence



ALLIED DISPLAY — The Bristol Beacons display at the Allied convention and conclave in Detroit shows. (L-R) H. J. Ringold, president, Ringold Theatre Equipment Co.; F. M. Meyers, president, Bristol Electronics, Inc., and Jack Armstrong, president of Allied. The Bristol Beacons manufactured by Bristol Electronics, are self contained, portable, flashing Neon signs designed for highway approaches and drive-in theatres. Battery life is approximately 700 hours and with batteries weighs only 12 lbs. The signs are available in 12x24 and 18x24 in. The legends available for the drive-in operation are depicted in the photograph and other legends subjects to the requirements of the drive-in operator. The BRISTOL BEACONS are waterproof and weatherproof and are available for "horse mount" and "stanchion mount" and will rest on all flat surfaces. The patented circuitry and neon tubing are guaranteed for five years, except for breakage of tubing.

7. GATE TENSION

Replace worn tension bands of curved-gate mechanisms. Remove the gate doors of straight-gate mechanisms and check the film rails for flatness with a steel straightedge and a flashlight. Replace uneven rails and tension pads. Adjust tension of the pads for average film—less tension if the film pulls hard through the gate, more if the picture jumps on the screen by "overshooting." Pads on each side should exert equal pressure.

8. LATERAL GUIDE ROLLERS

Check guide-roller flanges at top of each film gate for ease of turning and condition of the flanges. They should have flat, unscored film-contacting surfaces. Replace scratched or damaged flanges. See that the ten-

sion is just sufficient to press the laterally movable flange against the edge of the film rather lightly. Excessive tension of the coil spring may "pinch" the film as it enters the gate and cause sidesway.

9. INTERMITTENT UNIT

An intermittent movement should run quietly when the gate door or tension shoe is open. Make absolutely certain that there is no backlash in the sprocket when in the "locked" position. Neither should the movement, when turned by hand, feel tight.

If an intermittent runs tight, it will wear out the starwheel and may "freeze" during a show. If it is too loose or runs noisily, the picture may jump. If the starwheel or sprocket are worn or the shaft bent, the picture will "dance" or jiggle

rapidly. If the movement leaks oil it will soil the machine, interfere with sound reproduction if the oil leaks into the soundhead, and also soil the film. In the event of any of these things, the movement must be overhauled according to the manufacturer's instructions.

Worn starwheels and damaged cams must be replaced; but since this job is critical and time-consuming, and requires that the refurbished movement be "run in" for at least 24 hours, the projectionist should obtain spare movements from the supply house and send the defective ones to the repair shop. Be sure that the intermittent cover screws are tight. *Never loosen the cover screws unless the movement is out of the projector for adjustment!* Correct end-play of the sprocket-and-star shaft. See that the intermittent-sprocket shoes have enough tension to hold the film firmly on the face of the sprockets, and that they are aligned laterally so as not to scrape the sides of the teeth.

10. SHUTTER TIMING

Turn the projector over by hand very slowly; and when 2 teeth of the intermittent sprocket have passed a fixed reference point from the "at-rest" position, set the shutter so that the blade is midway in its covering of the aperture. Fine shutter adjustment may be made during a projection test with the shutter knob to remove "flare" or slight traces of travel ghost on the tops or bottoms of bright objects in the pictures.

Travel ghosts on *both* the tops and bottoms of bright objects simultaneously indicate shutter blades that are too narrow or excessive backlash in the shutter gear train. Widen the shutter blades enough to get rid of the ghosts.

11. SOUNDHEADS

Check the tension pads of old-style sound gates for wear and pressure. The pressure rollers of rotary-stabilizer soundheads should exert just enough pressure to bring the scanning drum up to speed within 3 or 4 seconds from the time the projector is switched on. Not enough pressure will result in fluttery sound for several seconds after each changeover: too much pressure will cause continual flutter and "wows."

Since the pressure roller also guides the film laterally, the lateral adjustment should not be disturbed if neither perforation noise ("motor-boating") or clattering frameline noise is heard in the sound. Otherwise a chopper and buzz-track test



INTERNATIONAL PROJECTIONIST

1645 Hennepin Ave.
Minneapolis 34, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name _____

Address _____

City _____ Zone _____ State _____



Dealers for the Strong Electric Corp., Toledo, Ohio in attendance of the Allied-Tesma-Teda convention and trade show heard a discussion of the market potential for blown type arc projection lamps by Arthur J. Hatch, Strong's president.

Cliff Callender, Strong's sales manager of the theatre equipment division, detailed the favorable experience with Xenon projector lamps as encountered at the World's Fair. A newly developed Xenon slide projector was also described.

Dealers attending the meeting were: left to right, seated, Vm Geissler, Wil-Kin Inc., Atlanta; Bob Tankersley, Western Service & Supply, Inc., Denver, Colo.; Bob Wolfe, San Francisco; J. W. McBurnie, Charleston Theatre Supply Co., Charleston, W. Va.; H. J. Ringold, Ringold Theatre Equip-

ment Co., Grand Rapids, Mich.; Carl White, Quality Theatre Supply Co., Omaha, Neb.; and Dick Sutton, Des Moines Theatre Equipment Co., Des Moines, Iowa.

Left to right, standing, are Cliff Callender, Strong Electric Corp., Toledo, Ohio; Arthur J. Hatch, Strong Electric Corp., Toledo, Ohio; W. L. Waterhouse, General Sound & Theatre Equipment, Ltd., Toronto, Ont.; Howie Forbes, Theatre Equipment Co., Detroit, Mich.; John J. Kenny, Theatre Equipment Co., Detroit, Mich.; Floyd C. Pearson, General Sound & Theatre Equipment, Ltd., Toronto, Ont.; Phil Wicker, Standard Theatre Supply Co., Greensboro, N. C.; Armand Besse, Besse Theatre Supply Reg'e., Montreal, Canada; L. M. Wutke, Pembrex Theatre Supply Corp., Los Angeles; and Bill White, Strong Electric Corp., Toledo, Ohio.

film will have to be used to obtain correct lateral adjustment. Replace exciters if the glass envelopes have blackened or if the filaments are seen to sag. Adjust exciters up and down and sideways for maximum light on the photocell cathodes. Be sure exciters are tight in their sockets—they draw a heavy current at low voltage.

Adjustment of optical-tube focus and azimuth (rotational adjustment) is a very critical matter, and is properly left to the service engineer who will use his frequency test films and output meters. In an emergency, however, thread up a film having a lot of high-frequency sound—many fine lines across the track. Draw this down through the scanning beam *very, very slowly* by means of the handwheel, and observe the flickering shadow patterns on the photocell cathode. If the shadow bands *move up* on the photocell: the optical tube is *too close* to the film; if they *move down*, the tube is *too far away*. Adjust the position of the tube (without disturbing the azimuth) so that the shadows of the sound-track striations *flicker uniformly* on the photocell cathode, *moving neither up nor down* as the film is drawn

through the scanning point very slowly.

Check film tension in magnetic soundheads and demagnetize all film-contacting parts of the entire projector with a "degaussing" electromagnet energized by 60-cycle AC. Case-hardened aluminum alloy sprockets offer no magnetization problems.

The outputs of the soundheads on both projectors should be equalized in the preamplifiers. We must emphasize once again that sound adjustments should be made by a trained sound-service engineer, not by the operating projectionist in the normal course of events.

D. OPTICAL LINEUP AND AND SPEAKER CHECK

1. OPTICAL LINEUP

Test the projector optical train for alignment. This must be perfect, especially in light-hungry drive-ins. Stop up the automatic fire shutters and remove the lenses from the mechanisms. Sight through each machine (using a pocket mirror if necessary) or stretch a string tightly from the center-hole of the lamp mirror to the middle of the lens holder.

This is the "optical axis." The centers of lamp mirror, positive carbon holder, film aperture, and lens holder must all be in a straight line.

The lamp mirrors should be positioned at the recommended "working distances" from the film apertures, and the lens holders must support the projection lenses square to the apertures, and without looseness or vibration.

Regulate arc current for normal burning of the carbon trim used, and correct any abnormal conditions in the rectifiers or in the generators and their ballast rheostats.

After it gets dark enough to project light on the screen, adjust the arc-lamp mirrors and carbon burners for maximum light properly centered. (Run the projectors, but without film for these adjustments.)

2. MOTORS AND PROJECTOR SHUTTERS

Check the pickup times of both projector motors. They should be the same, and bring the machines up to normal running speed in 2 or 3 seconds. Pickup time can be adjusted in split-phase induction motors by means of the starting-winding rheo-



National Theatre Supply branch managers in attendance at the Allied-Tesma-Teda convention and trade show were given an insight into the sales potential for blown arc type projection lamps by Arthur J. Hatch, president of the Strong Electric Corp., Toledo, Ohio. Hatch also described a new Xenon type slide projector and features of new model spotlights.

Cliff Callender, sales manager of the Theatre Equipment Division of Strong Electric, related the favorable experience with 30 Strong Xenon projectors as employed at the World's Fair.

Attending the meeting were: left to right, standing: Cliff

Callender, Strong Electric Corp., Toledo, Ohio; J. Currie, vice president National Theatre Supply, Tarrytown; Harold Plumodore, Strong Electric; Pete Peterson, Indianapolis, Indiana; Vernon Barrett, Minneapolis, Minn.; Harry Russell, Pittsburgh, Pa.; W. C. Hutchins, Philadelphia, Pa.; Arthur J. Hatch, and Bill White, factory representatives, Strong Electric. Seated are: Ed Novak, Chicago, Illinois; F. F. McCleary, Pittsburgh, Pa.; Clarence Williamson, Detroit, Mich.; J. Servies, vice president, Tarrytown; J. M. Fisher, Cincinnati, Ohio; and Don Atkinson, Baltimore. Not shown in the photo were Bud Mutchler, Cleveland, Ohio; and Jerry George, Buffalo, N. Y.

stats. These are usually mounted on the motors.

Thread up the projectors with prints known to be of good quality and run them. Observe the passage of the film through the machines, paying particular attention to the film loops and the action of the take-ups. If the film runs smoothly, strike the arc and project it upon the screen. Determine lens focus, centering of the apertures on the screen.

OUT OF PRINT MITCHELL MANUAL AVAILABLE!

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
P.O. Box 6174
Minneapolis, Minn. 55424

and put finishing touches on shutter timing by means of the shutter adjusting knobs if travel ghosts are detected.

3. SOUND QUALITY

Run the films again and switch on the sound amplifiers whether or not the in-car speakers have been installed at this point. Listen to the sound very carefully in the monitor speaker and note its quality. Test functioning of volume controls, changeover faders, etc. Advise the sound engineer of any abnormalities which may be detected—hums, static noises, "mushy" sound, weak sound, etc.

4. IN-CAR SPEAKERS

See that the speaker-post junction boxes are in good condition and that all post lamps are operative. Install the in-car speakers, attaching each securely to its junction box. Check the performance of each by playing phonograph records from the projection building. Short circuits and noisy or erratic ramp circuits must be corrected, and all defective speakers laid aside for repair. Further checks and routine daily inspection of all speakers are unnecessary and terribly time-consuming. **IP**



The "Tools for Freedom" award is proudly displayed by Leonard J. Quartin, vice president export sales and Mrs. Dora Narzynski, coordinator of export sales, of The Kalart Co., Inc., Plainville, Conn. The award was presented to The Kalart Co., Inc. by the Tools for Freedom Foundation for contributing a Kalart/Victor 16mm sound projector, which will be used in the International Center for Advanced Technical and Vocational training, Turin, Italy.

basic mathematics

by NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4. \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name
Address
City Zone State



If you aren't using 'National' projector carbons you're missing two bonuses:

- 1. Bonus brilliance**
- 2. Bonus burning time**

The longer your throw and the wider your screen, the more you need the two big bonuses that go with "National" projector carbons!

So why short-change yourself? Why settle for less when you can fill your screen with today's brightest light and get longer screening time per inch of carbon burned?

Specify "National"—and you specify the projector carbons that have been the standard for quality screen illumination since 1917.



"National" is a registered trade-mark of

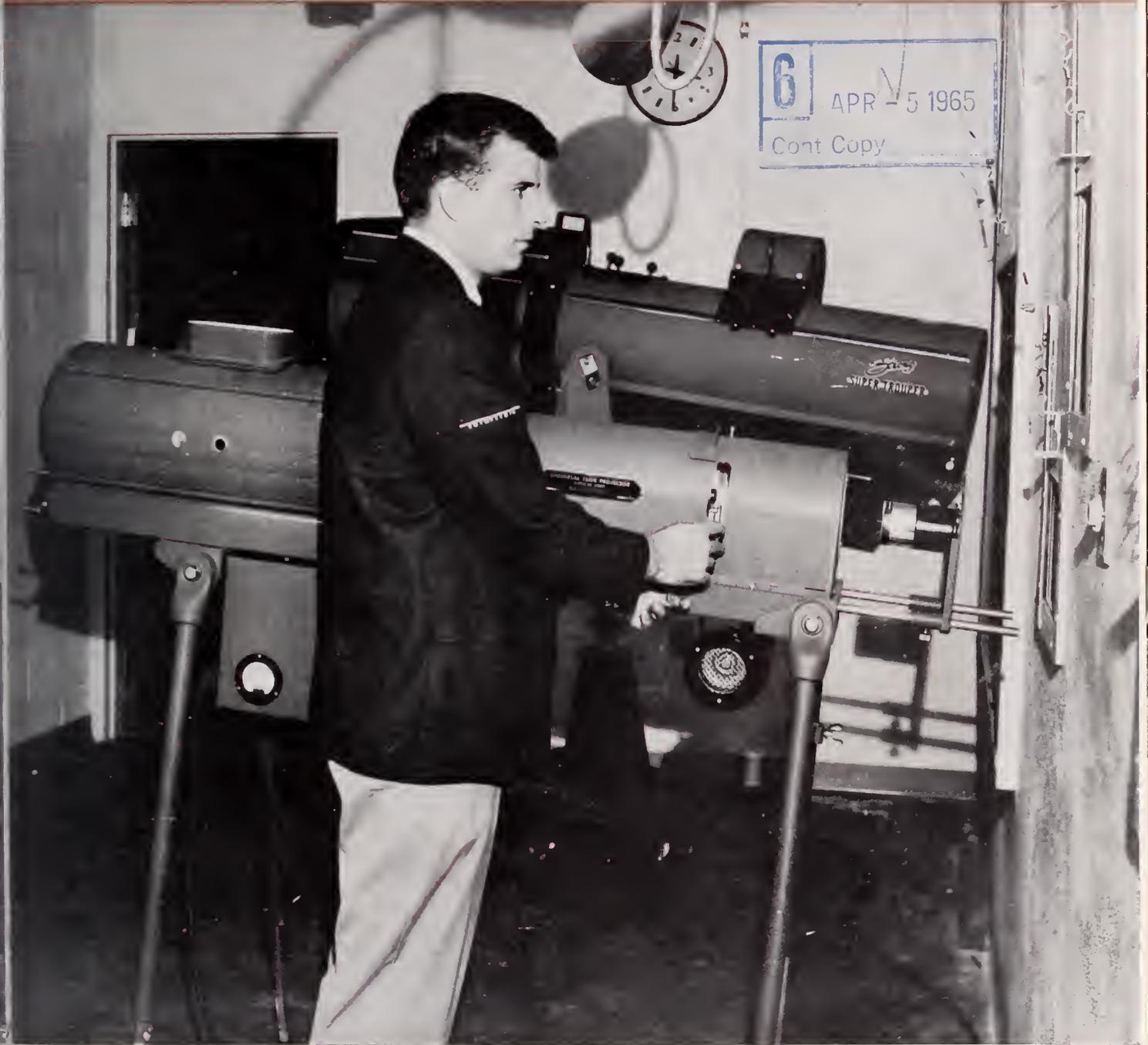
UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

INTERNATIONAL PROJECTIONIST

M. P. C. - Thea Per

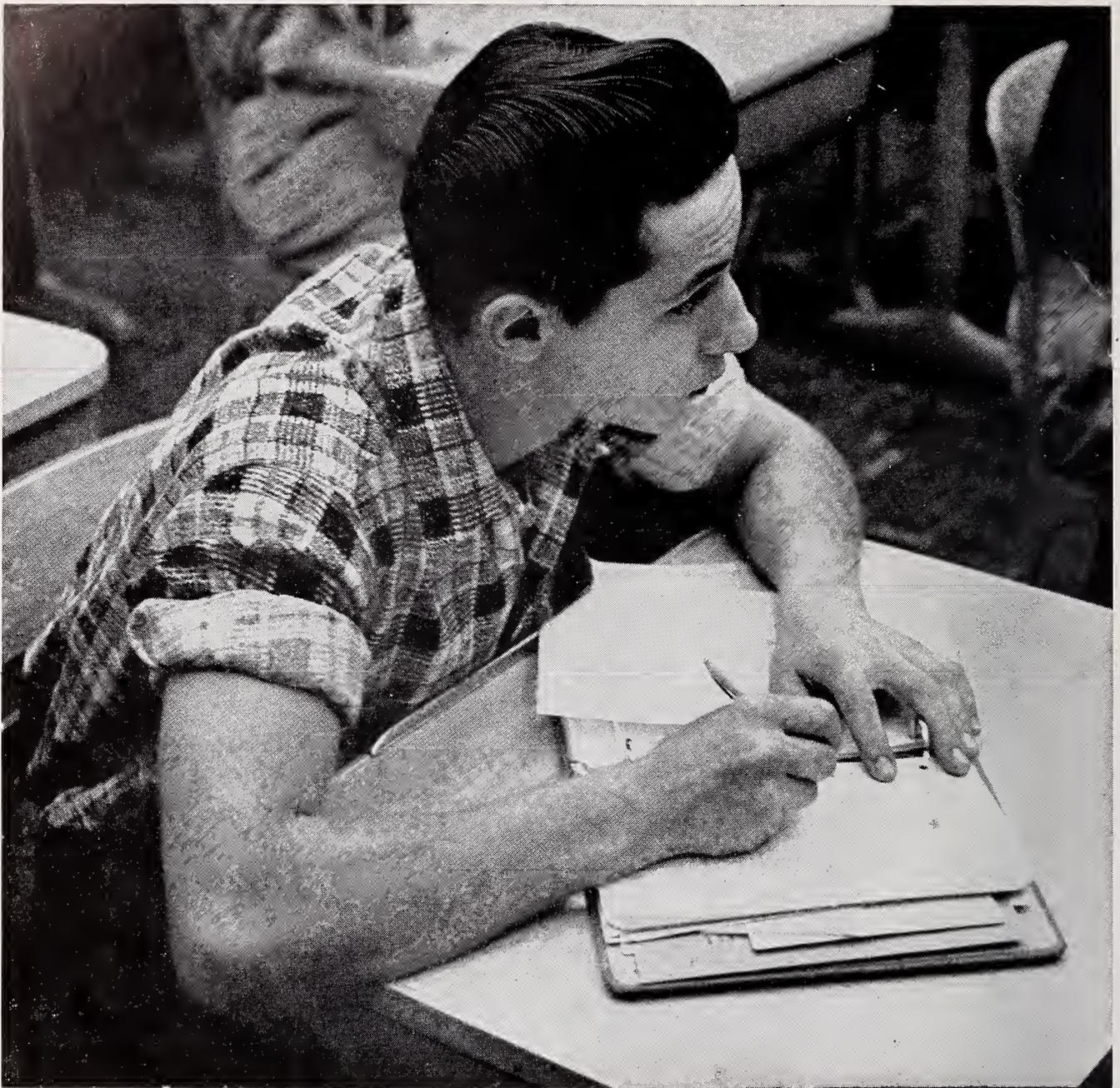


To assure a professional touch to stage and screen presentations, Louisiana State University, at Baton Rouge, La., has recently installed the most modern projection room equipment. Shown is James E. Mire, projectionist, operating the carbon arc slide projector for showing big, brilliant pictures on the screen. In the rear is also seen a powerful Strong Electric Super Trouper carbon arc follow spotlight for abundant illumination of various types of live presentations on the auditorium stage.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

FEBRUARY 1965
VOLUME 40 NUMBER 2
40c A COPY \$3.00 A YEAR





Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—when you encourage your employees to enroll—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



INTERNATIONAL
PROJECTIONIST



Volume 40 Feb. 1965 No. 2

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

- | | |
|---|----|
| Part III — 70mm Projection
By Walter Beyer | 4 |
| New Mitchell System | 10 |
| New Leader Style | 11 |
| Morris J. Rotker | 14 |

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis, Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your Copy Every Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Part III

Technical Report on the 70 mm Sound System

By Walter Beyer

*Head of Engineering Research Department
Universal City Studios*

IN ORDER TO ASSIST YOU in the installation of 70mm projectors, as well as screens, screen masking, and sound considerations, the engineering department of Universal-International has compiled technical information data.

A feature is the screen chart which will facilitate the selection of proper focal length lenses for your

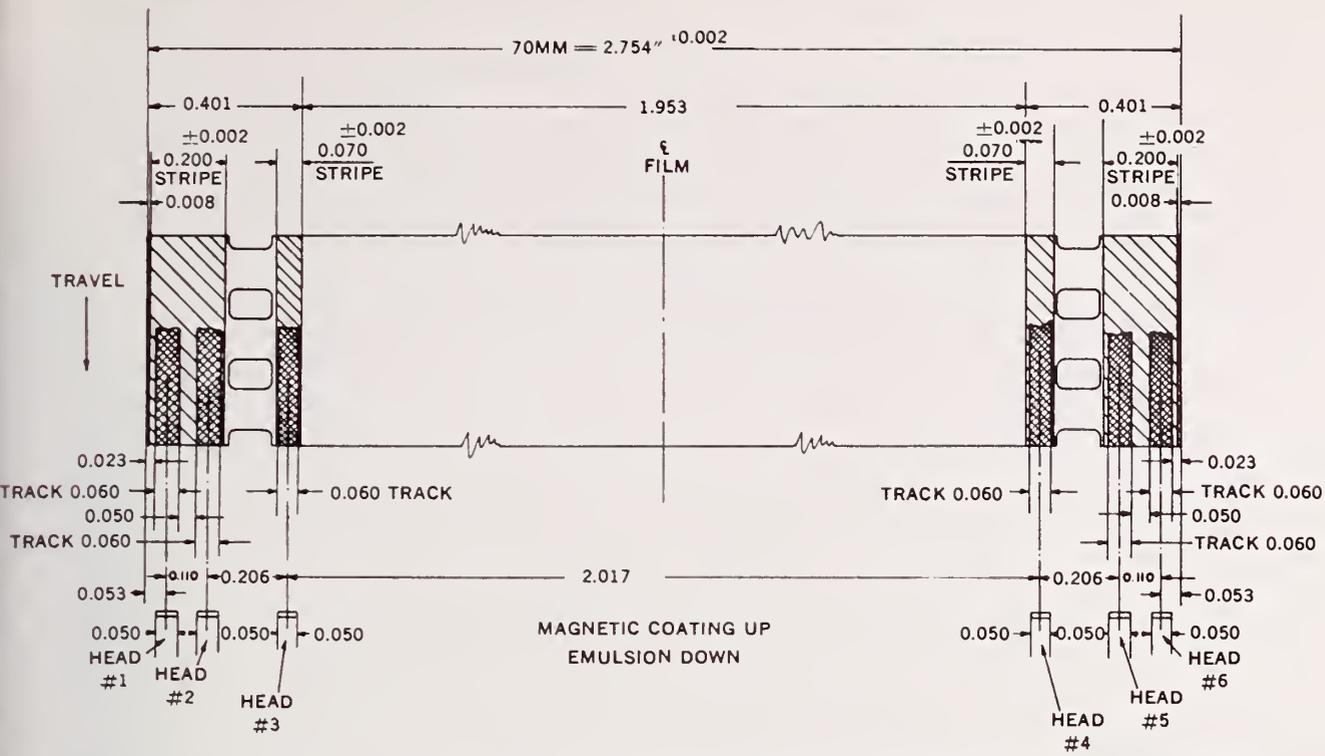
screen size, all computed for the new 70mm projector aperture. This is the first chart of its kind ever computed for 70mm projection. A selection of easy-to-use formulas has also been provided in case your theatre requires deviation from the screen chart. (Figure 1)

A drawing showing the recommended aperture for

SCREEN CHART FOR 70 MM PROJECTION																		
LENS FOCAL LENGTH IN MM AND INCHES																		
PICTURE WIDTH IN FEET	66 MM	70 MM	75 MM	80 MM	85 MM	90 MM	95 MM	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	5"		
	25	34.0	36.0	38.6	41.2	43.7	46.3	48.9	52.3	55.5	58.8	62.1	65.3	68.6	71.9	75.1	78.4	
	30	40.7	43.2	46.3	49.4	52.5	55.6	58.7	62.7	66.6	70.6	74.5	78.4	82.3	86.3	90.2	94.1	
	35	47.6	50.4	54.0	57.6	61.2	64.8	68.4	73.2	77.7	82.3	87.0	91.5	96.1	100.6	105.2	109.8	
	40	54.4	57.6	61.7	65.9	70.0	74.1	78.2	83.6	88.7	94.1	99.3	104.5	109.8	115.0	120.2	125.5	
	45	61.2	64.8	69.4	74.1	78.7	83.3	88.0	94.1	99.9	105.9	111.7	117.6	123.5	129.4	135.3	141.1	
	50	68.0	72.0	77.2	82.3	87.5	92.6	97.8	104.5	111.1	117.6	124.2	130.7	137.2	143.8	150.3	156.8	
	55	74.7	79.2	84.9	90.6	96.2	101.9	107.5	115.0	122.2	129.4	136.6	143.8	150.9	158.1	165.3	172.5	
	60	81.5	86.4	92.6	98.8	104.9	111.1	117.3	125.5	133.3	141.1	149.0	156.8	164.7	172.5	180.3	188.2	
	65	88.3	93.6	100.3	107.0	113.7	120.4	127.0	135.9	144.4	152.9	161.4	169.9	178.4	186.9	195.4	203.9	
	70	95.1	100.8	108.0	115.3	122.4	129.6	136.9	146.4	155.5	164.7	173.8	183.0	192.1	201.3	210.4	219.6	
	75	102.0	108.0	115.7	123.5	131.2	138.9	146.6	156.8	166.6	176.4	186.2	196.0	205.8	215.6	225.4	235.2	
	80	108.7	115.2	123.4	131.7	140.0	148.2	156.4	176.3	177.7	188.2	198.6	209.1	219.6	230.0	240.5	250.9	
	85	115.5	122.5	131.2	140.0	148.7	157.4	166.2	177.7	188.8	200.0	211.1	222.2	233.3	244.4	255.5	266.6	
	90	122.3	129.7	138.9	148.2	157.4	166.7	176.0	188.2	199.9	211.7	223.5	235.2	247.0	258.8	270.5	282.3	
	95	129.1	136.9	146.6	156.4	166.2	175.9	185.7	198.6	211.1	223.5	235.9	248.3	260.7	273.1	285.5	298.0	
	100	135.9	144.0	154.3	164.7	174.9	185.2	195.5	209.1	222.2	235.2	248.3	261.4	274.4	287.5	300.6	313.6	
	105	142.7	151.3	162.0	172.9	183.6	194.5	205.3	219.6	233.3	247.0	260.7	274.4	288.2	301.9	315.6	329.3	
110	149.5	158.5	169.7	181.1	192.4	203.7	215.0	230.0	244.4	258.8	273.1	287.5	301.9	316.3	330.6	345.0		
120	163.0	172.9	185.2	197.6	209.9	222.2	234.6	254.9	266.6	283.3	298.0	313.6	329.3	345.0	360.7	376.4		

FIGURES IN THE ABOVE TABLE SHOW PROJECTION OISTANCE IN FEET FROM PROJECTOR APERTURE TO CENTER OF SCREEN.																			
Width:	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120
Height:	11.3	13.6	15.8	18.1	20.4	22.6	24.9	27.1	29.4	31.7	33.9	36.2	38.5	40.7	43.0	45.2	47.5	49.8	54.3

Figure 1



MAGNETIC COATING AND TRACK PLACEMENT DIMENSIONS FOR 70 MM RELEASE FILM

Figure 2

70mm projection has been included, as well as a drawing showing the sound track placement for the six magnetic tracks (Figure 2). Sound track, speaker arrangements, and theatre specifications are also covered.

The Picture

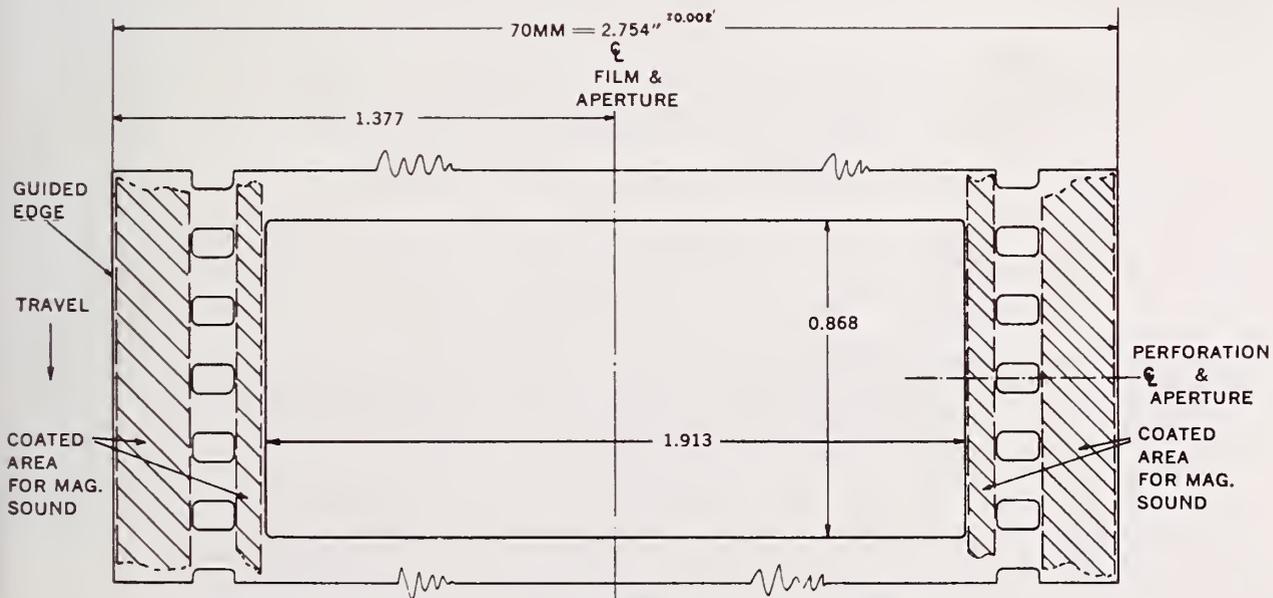
The screen chart on the opposite page is especially calculated for the 70mm projector aperture of 1.913 (0.868 inches). The aspect ratio is 2.21 to 1. This ap-

ture was established by Todd AO and is now a recommended SMPTE standard.

This table shows picture widths in the left and focal length of lenses in the top column. The figures in the table are distances from projector aperture to center screen in feet.

Figure 3 below lists picture height to corresponding

(Continued)



BASIC DIMENSIONS RELATED TO SIZE AND PLACEMENT OF THE RECOMMENDED 70MM PROJECTOR APERTURE

Figure 3

$$\text{Focal length} = \frac{1.913 \times \text{throw}}{\text{picture width}}$$

$$\text{Throw} = \frac{\text{focal length} \times \text{picture width}}{1.913}$$

$$\text{Picture width} = \frac{1.913 \times \text{throw}}{\text{focal length}}$$

$$\text{Aspect ratio} = \frac{\text{Width}}{\text{Height}} \quad \text{Height of Picture} = \frac{\text{Width}}{\text{Aspect ratio}}$$

picture width based on a 2.21 to 1 aspect ratio. The above formulas and comparisons is in an additional small table to relate corresponding focal length in millimeters to dimensions in inches—just for general orientation. Even though the tables are self-explanatory, for the calculation of specific installations, with given lenses, screen sizes, and throw, the usual formulas can be applied using the dimensions of the 70mm aperture.

The focal length lenses listed in the top column are all lenses especially designed to cover the 70mm aperture, and only such lenses should be used. Do not project 70mm prints with lenses only suited for 35mm apertures—even if they have a 4" O.D., and do not project 70mm prints by using supplementary lenses, lens attachments, or focal length converting devices.

A 70mm projector alignment film with a test chart as shown in Figure 4 should be used to check lens performance for cleanest and sharpest picture projection. This test film is available through supply houses and shipped with instruction sheet for its use. It can also be ordered from SMPTE, 55 West 42nd Street, New York 36, N. Y.

The Sound System

The sound system for six-channel sound reproduction, as established for 70mm release prints, is generally handled by service organizations. We think, however, that it will be appreciated to publish the engineering facts on the six magnetic sound tracks on 70mm release film.

As can be seen in Figure 2, the tracks are numbered from 1 to 6—going from left to right if the film is placed with the magnetic coating up and the emulsion down.

The tracks are used as follows: (with the listener facing the screen).

Track 1 for the left speaker—Track 2 for the left

center speaker—Track 3 for the center stage speaker—Track 4 for the right center speaker—Track 5 for the right speaker—Track 6 for the surround or auditorium speakers.

The recording and reproducing speed is 24 frames (5 perforations) per second—representing exactly 120 perforations per second or 112.2 feet per minute.

The center of the picture precedes the corresponding sound by a distance of 24 five-perforation frames.

It should again be noted that the above specifications have been established by TODD-AO and are in accordance with their presently used process. In line with the specifications for 70mm composite film sound as outlined by the TODD-AO Corp., the theatre sound equipment should fulfill the following specifications:

1. The frequency response as measured on theatre equipment should be

- 50-8,000 cycles flat within plus or minus 1/2 db.
- 40-12,000 cycles flat within plus or minus 1.5 db.

2. Cross talk between channel . . . minus 40 db. at 1,000 cycles.

3. Signal to noise . . . 55 db.

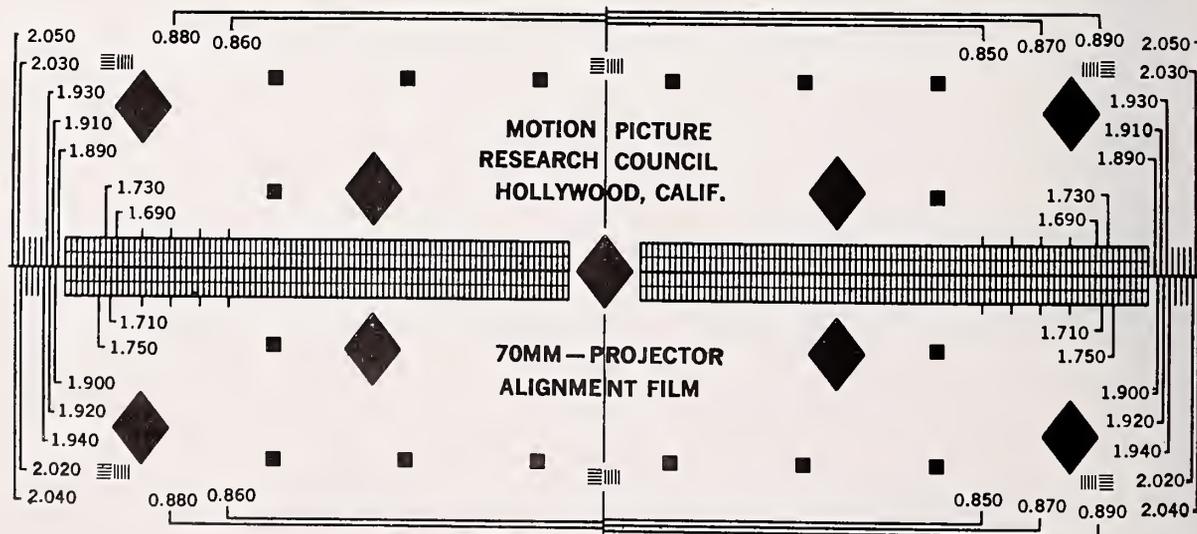
4. Wow and/or flutter not to exceed 0.2 of 1% in a band width between 2-200 cycles.

5. Preamplifier distortion not to exceed 1% when operated at a level of 12 db. above the level from magnetic film recorded at 3% distortion.

6. Power amplifier distortion not to exceed 2% at rated output of the amplifier between 50 and 12,000 cycles.

7. Speakers and power amplifiers should be of such power rating that any single track can properly fill the auditorium's acoustical needs.

All necessary test films for checking 6-channel magnetic sound installations, as specified above, are available through the TODD-AO Corp., West Coast Division, 1021 N. Seward St., Hollywood, Calif. **IP**



70MM TEST FILM CHART

TEDA Sets Extensive Meeting Program

The Theatre Equipment Dealers Assn. (TEDA) has arranged an intensive program for its meetings March 21-24 at Del Webb's Towne House, Phoenix, Ariz. The meetings originally had been scheduled for March 14-17 in the same city.

These meetings will amount to a national convention for TEDA and during the four day sessions they have scheduled two board of directors meetings and their annual election of officers. TESMA also will conduct its annual membership meeting and a board of directors meeting during the sessions.

TEDA has invited theatre equipment dealers who are not members of TEDA to be present and has extended a special invitation to members of Theatre Equipment and Supply Manufacturers Assn. (TESMA) to participate.

Phil Wicker, president of TEDA, has said that the first three days of the meetings are to be a working forum, during which manufacturers have been invited to present in detail to the dealers whatever new or modified equipment they now have ready for sale to theatres and auditoriums.

Two manufacturers, Century Projector Corp., and Strong Electric Corp. have arranged special meetings with their own dealers, and two other manufacturers, Edw. H. Wolk, Inc. and C. S. Ashcraft Manufacturing Corp., have sponsored luncheons during the meetings.

The Carbon Products Division of Union Carbide Corp. (National Carbons) will entertain at a cocktail party on opening evening which will be followed immediately by a dinner and entertainment sponsored by TESMA. **iP**

Circuit Plans 60-75 New Houses by 1970

HOLLYWOOD — National General Corp. plans a major new suburban theatre building program, it was stated by NGC president Eugene V. Klein at the company's annual meeting of stockholders here.

Speaking in the Fox Wilshire Theatre, Klein said National General plans over the next five years to build 60 to 75 new theatres, following the "population trend" and locating them in large new shopping centers when possible. **iP**

TAKE YOUR PICK

of the 2 means of power conversion for projection lighting.



Costs considerably less than 2 separate low priced single rectifiers.	Costly to purchase and maintain in good working order.
Saves average theatre about \$42 per month on power bill.	Power bills average about \$42 higher than with the Bi-Powr.
Double protection against failure. You keep operating.	Failure means your show is down.
Require no current-wasting ballast rheostats.	Require current-wasting ballast rheostats.
Silent.	Noisy.
Easy installation. Requires only one line service.	Expensive installation.
Requires one-third to one-half less floor space than two properly installed conventional rectifiers.	Requires about twice the space of other means of conversion.

Send for literature on the Bi-Powr today. There are models for every requirement.

THE Strong ELECTRIC CORPORATION
31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

There's Plenty for You At
CENTURY!

... and from CENTURY only

dramatic, New ALL TRANSISTOR sound systems

- *True high-fidelity, distortion free.
- *Increased reliability, less maintenance.
- *Low installation cost, minimum space needs.
- *No vacuum tubes, no photoelectric cells.

*and the only American-made 70 mm 35

theatre projection systems

SEE
YOUR CENTURY DEALER ... for bigger, brighter projection.

CENTURY PROJECTOR CORP.

New York 19, N. Y.



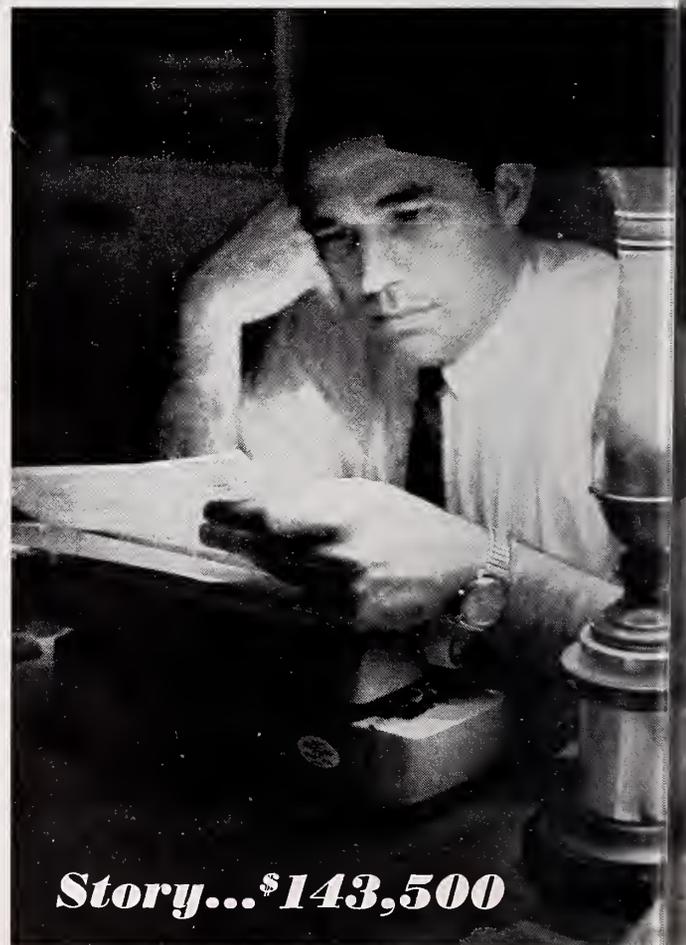
Talent...\$390,000



Location...\$86,500



Lighting...\$33,500



Story...\$143,500



Sets...\$242,600



Wardrobe...\$54,000

Now. Are you willing to risk it all on less than Eastman films?

More than anything else except creative skill, film is crucial to quality in movie-making. Isn't it a false economy, then, to attempt to save a fraction of a cent per foot on film stock which has less than Eastman quality? And doesn't poor film quality jeopardize your entire investment, even make talent look bad?

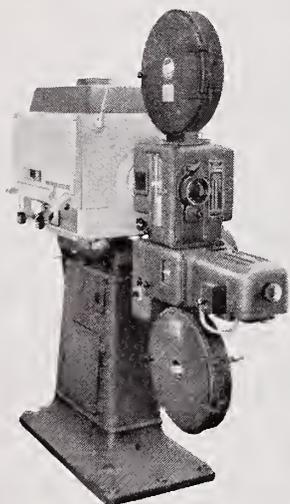
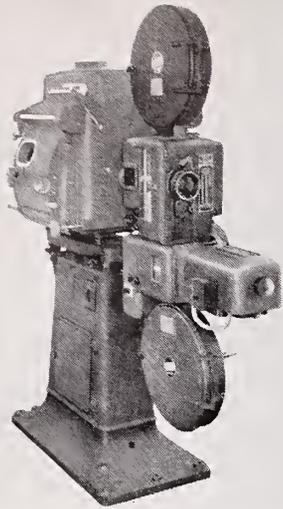
But total picture quality doesn't demand that you merely shoot on the best negative. There's also the print stock to consider... and some don't. It's a great mistake—both from your point of view and that of your audience—to print on anything less than EASTMAN Film.

Look at it this way. Film—both negative and print stock—must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. In the theater it must possess a long wear-tear capability for precision in projection and in order to hold down costly print reorders. EASTMAN Films have all these qualities because Eastman's engineering and technical facilities are unique. Furthermore, Eastman's film specialists are always at hand to help you maximize production efficiency.

Everything considered, doesn't it make good sense to use EASTMAN all the way?

**Motion Picture Products Sales Department
EASTMAN KODAK COMPANY**
Rochester, N. Y. New York, N. Y.
Chicago, Ill. Hollywood, Calif.





Introducing the 1965

Simplex
X-L

Is there really a new Simplex X-L for 1965?

Yes and No. Yes, because the X-L mechanism never stops being refined and improved to meet every new advance in motion picture projection. No, in the sense that the basic components that have performed so perfectly for so many years are still the heart of the X-L.

Fact is, there's a long list of advanced engineering features on the X-L that are just not available on any other projector. But it's sufficient to say that the X-L is the pride of the world's most experienced manufacturer of professional motion picture projectors. And it's the overwhelming choice of projectionists everywhere.

Get all the facts about the '65 X-L. There's nothing newer, or better on the market.



National
THEATRE SUPPLY COMPANY

Subsidiary of General Precision Equipment Corporation 

HOME OFFICE, 50 PROSPECT AVENUE, TARRYTOWN, NEW YORK
BRANCHES FROM COAST TO COAST • PHONE MEDFORD 1-6200



KALART RECEIVES AWARD — President Johnson's "E" Award for excellence in exporting was awarded to The Kalart Co., Inc. by John H. Royer, deputy to the under secretary of commerce, U. S. Department of Commerce. Receiving the award was Morris Schwartz, president and Leonard J. Quartin, executive vice president. Over 50 national, state and local business and civic leaders attended the Award luncheon. Left to right are Hy Schwartz, president, the Victor Animatograph Corp., Morris Schwartz, Mr. Royer, Deputy to the Under Secretary of Commerce, Mr. Quartin, and James E. Kelley, director Hartford field office, USDC. Following the luncheon a tour of the manufacturing departments of the company was held. Highlights of the tour was the inspection of the Kalart Victor Series 70 16mm sound projector assembly department and 35mm filmstrip and slide assembly.

Mitchell Camera Corp. Premieres 'System 35'

The Beverly Hilton Hotel in Beverly Hills, Calif. became a Hollywood sound-stage for one day, when Mitchell Camera Corp. premiered its new "System 35" to more than 1000 members of the motion picture and television industry.

"System 35," a building-block system that includes the Mark II reflex 35mm camera, an "electronic door" to the camera's sound "blimp" that provides a high-resolution closed-circuit TV picture of exactly what the camera lens sees, and a small, semi-portable videotape recorder for making an instantaneous transcript of the film shooting, was shown for the first time to studio and network executives, producers, directors, cinematographers, and camera operators.

The ballroom was transformed into the famous mansion and terrace of "Philadelphia Story" in a fully lighted and dressed set. Two young Hollywood professionals, Jonathan Bolt and Sybil Collier, per-



VIDEO VIEW-FINDER—Camera director and operator both view dramatic action on TV monitor in Mitchell Camera's "System 35" development, which films in 35mm and videotape simultaneously and "broadcasts" a live closed circuit TV picture to monitors on the camera and around the set.

DIAMOND

TRADEMARK

**PROJECTOR
CARBONS**

Better Light! Lower Costs!

RINGSORFF, CARBON CORP. East McKeesport, Pa

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

ASHCRAFT

**SUPER CORE-LITE
CORE-LITE
CINEX SPECIAL
35/70**

PROJECTION LAMPS
AND HIGH-REACTANCE
MULTI-PHASE RECTIFIERS
★
**World's Standard
of
Projection Excellence**

formed scenes from the play for System 35 to film and tape simultaneously. The audience, spread from set-side to the far corners of the ballroom, followed the action both directly as they watched it "live," and remotely on a series of television monitors placed around the room. They could hear directions to the actors, and see immediate videotape re-runs of rehearsal sequences.

B. G. Tubbs, president of Mitchell, told the audience that "this system is one of the highlight developments of Mitchell's 45-year history as the world's major producer of cinematographic systems." He also noted that "System 35 brings the cinematographic art 'up-to-date' by incorporating advanced solid-state electronic techniques to provide a completely new creative tool to the film-maker."

Tubbs reported that best estimates indicate the system can reduce usual sound-stage costs by as much as 25% by "insuring" that the director knows exactly what the film has recorded, in rehearsal time-saving, and in providing a preview look at picture composition and content. **IP**

New Leader Set by SMPTE Standards

NEW YORK — A new leader for all motion-picture film release prints has been announced by the Society of Motion Picture and Television Engineers. Called the SMPTE Universal Leader, it replaces the old Academy and Society leaders which are no longer suitable for modern film practices.

Though the SMPTE Universal Leader includes many new features, the major aspects of the old leaders were retained to permit established film laboratory and theatre practices to be followed while meeting the new requirements of television transmission.

Changes incorporated into the Universal Leader include:

(1) Timing or count-down in seconds at 24-frame/second running instead of the present 16-frame, "footage" count down;

(2) A continuously moving clock-type wedge to denote passage of time;

(3) Reduction of flashing to prevent instability in automatic telecine projection;

(4) Use of slightly redesigned 35mm and 16mm sound cues in the anticipation of international acceptance;

(5) Provision of space in the synchronizing section to be replaced by

(Continued)

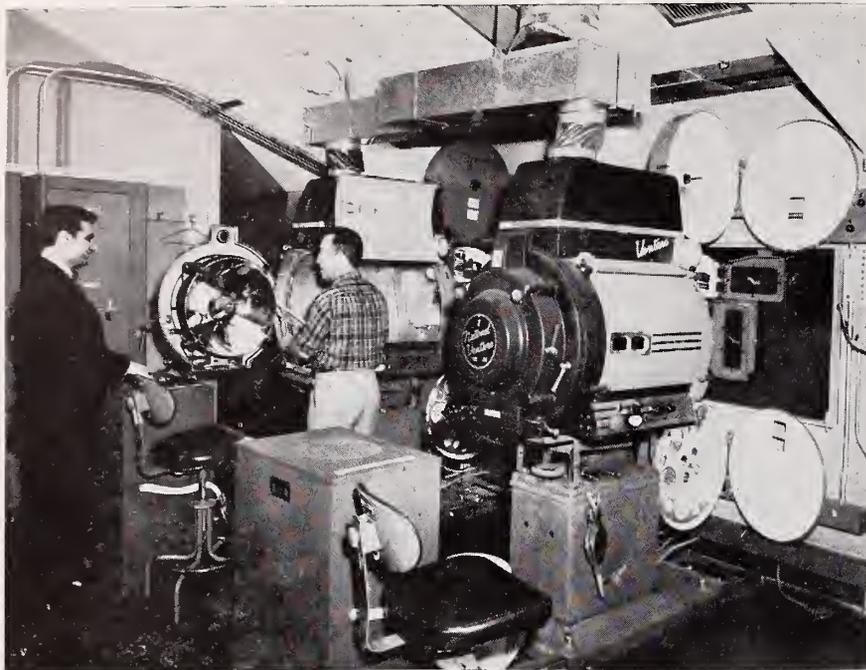
KOLLMORGEN



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.





COMFORTABLE — It is a spacious, "comfortably equipped" projection room in which the modern projection lighting equipment and rectifiers have been installed at the new Martin Cinerama Theatre, St. Louis, Mo. Shown is Paul Danesh, manager, left, and Terry Savage, chief projectionist, with the new National Ventarc blown arc projection lamps and Strong rectifiers, such as are being installed everywhere for the new Cinerama projection technique. The equipment was furnished by National Theatre Supply. Literature on this equipment will be sent on request to the Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio 43601.

a similar number of Control Frames to provide technical checking frames or duplicated tests of the black-and-white or color picture frames.

(6) Inclusion of 35mm and 70mm magnetic cue positions;

(7) Provision of three successive frames, marked Head, O, and Picture, to guide the operator printer when threading in the dark room;

(8) Retention of the former cue for television switching which can also indicate to film examiners, cutters and projectionists, when a leader has been spliced too often, shortening its effective length;

(9) Addition of a series of X's and O's on separate frame and on opposite sides of the film to provide print-through cues for sound on tape sync.

The length of the new leader has been kept the same as the original Academy Leader to avoid errors in

printing and sound cuing and to permit operators to continue using well-established practices.

The new Universal Leader is described in an article in the January 1965 *SMPTE Journal*, written by chairman of the leader committee, N. R. Olding of the Canadian Broadcasting Corp., Montreal. Copies are available from Smpte Headquarters, 9 East 41st St., New York, New York 10017.

The society will make available copies of the leader on master positive material on both 35mm and 16mm film, to enable laboratories to produce negatives for their own customers. The society points out that anyone wishing to replace old positive leaders can obtain the new leader on release positive stock from any commercial motion picture laboratory. **iP**

Foot Warmer Mat Aids Projectionists

A new portable electric foot warmer which cannot be punctured or damaged by ladies' stiletto heels has been announced by American Mat Corp., Toledo. By simply plugging into a convenient outlet, the mat radiates comforting warmth to the feet and legs and protects against cold floors and drafts. It also may help projectionists, acting as a protective mat.

Made of durable, 7/16" thick nyracord compound, the mat measures 14" long by 20½" wide and has a ribbed surface and beveled edges. It is available in mosaic on black, or solid black. Easy to keep clean, it may be washed in soap and water. **iP**

Names Marketing Manager

NEW YORK — In a move to expand its technical operations and services, Reevesound Co., Inc., a subsidiary of Reeves Industries, Inc., has added to its staff, it was announced here by Boyce Nemeck, president of the firm. Charles Beck, Jr. has been named manager of marketing and sales. He has had wide experience in the marketing and sales of engineering systems and electronic components. **iP**

Holds 2nd Election

MILWAUKEE — In a re-run of the Dec. 4 election of the International Alliance of Theatrical Stage Employees, Local 18, another election was held in February.

The election was supervised by Glenn C. Kalkhoff, IATSE representative, assigned by Richard F. Walsh, president. All members were allowed to vote by mail.

Kalkhoff said that 22 members of the local had presented a petition alleging irregularities in the Dec. 4 election. It was agreed that a new election would be held.

Elected in the latest balloting were Curt Crain, president; H. Stahnke, vice president; G. Baehler, secretary-treasurer; W. Domach, business manager; G. Kemmer, sergeant-at-arms, and A. Crain, ninth district delegate. **iP**

CARBON ARCS . . . FOR FINEST PROJECTION . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

CARBONS, INC.

BOONTON, N. J.

New Sound System Makes In-Flight Motion Pictures More Enjoyable

A revolutionary new sound system for Inflight Motion Pictures aboard jet aircraft is now in operation on both Trans World Airlines and United Air Lines. It is announced by David Flexer, president of Inflight.

The wholly new sound concept was installed in all UAL jets, flying from California to Honolulu, and in United's long-range domestic aircraft, which started showing wide-screen, full color movies on Sunday, January 17.

The entire transcontinental and trans-Atlantic fleet of TWA has also been changed over to the new system. TWA has been featuring Inflight movies since 1961. "The new sound development can provide true stereophony," Mr. Flexer said. "It is based on a fundamental shift-over from a magnetic to a dynamic principle of sound reproducing."

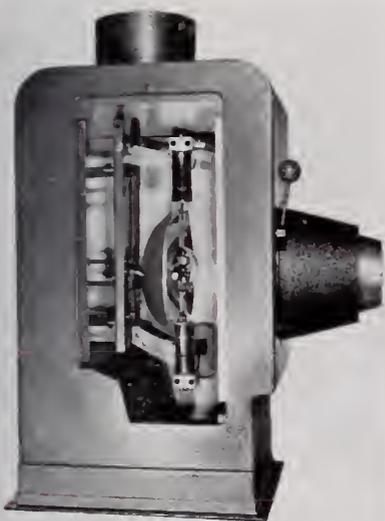
All future Inflight installations will feature the new sound system.

which carries not only the dialogue, music and sound effects track of the movie, but also a wide range of stereo and monaural audio programming. The new Inflight sound system is the result of months of experimentation. Development costs exceed \$500,000.

Originally the earsets, through which the sound is delivered to each airborne passenger, were equipped with a tiny sound head, which were about the size of a five-cent piece. They were magnetic transducers, which hung from the left earpiece. They weighed about an ounce. The new earsets do away with the magnetic transducers. Instead two dynamic sound heads, each four times larger than the original piece of equipment, has been permanently fixed in junction boxes attached to the airplane seat. The earset is now even lighter in weight. It consists of two acoustical plastic tubes, forming true stereophonic sound conduits. The earpieces have been redesigned to fit the contour of the head and inner ear. Disposable plastic ear tips fit snugly against the ear drum, shielding out cabin noises and making a rich and firm sound contact.

The dramatic improvement in the Inflight sound system was made possible by the development of solid state transistorized amplifiers, small enough for aircraft application which for the first time, could deliver sufficient output to handle the doubled number of four-times enlarged dynamic transducers.

The junction boxes also have been fitted with new sensitive volume controls, so that the passenger can find the level best suited to his own enjoyment without disturbing any other passenger. **iP**



The Cinemeccanica CX-900

NEW LAMPHOUSE — The Xetron Division of Carbons, Inc., Boonton, N. J., announces the Cinemeccanica CX-900 lamphouse to its line of Xenon light sources. This is a compact, highly efficient unit, designed to operate with 16mm and 35mm projection systems. When operating at 45 to 50 amperes, this lamphouse will deliver 4000-5000 lumens of high intensity light. It is a complete unit including the high voltage starter, ventilating fan, seven inch reflector and elapsed time meter. It is said to be especially suitable for small screening rooms using 35mm projection and with 16mm applications to replace the carbon arc lamp.

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

The
finest
carbons
ever
made...



**PROJECTOR
CARBONS**

THE VERY FINEST



IN
PROJECTOR PARTS

The ultimate in precision, long life and dependability— they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.

LaVeZZi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



Morris J. Rotker, Boothman 51 Years, Originated Will Rogers Copper Drive

MORRIS J. ROTKER, Boothman.
NEW YORK — Morris J. Rotker, motion picture projectionist for 51 years until his retirement in 1957, originated the "Save Copper Drive" throughout the motion picture industry in the U.S., on behalf of the Will Rogers Hospital at Saranac Lake, N. Y.

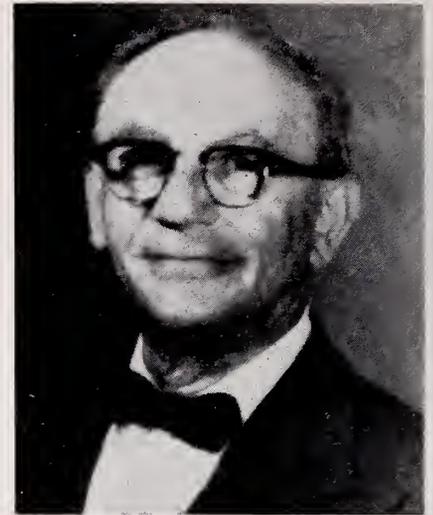
Rotker, a resident of the Bronx, began his career as a projectionist in April 1907 at No. 8 Bowery in the heart of Chinatown, and through the years has put forth outstanding effort in behalf of the industry, civic and service organizations and the nation. For the last 20 years, previous to his retirement, Rotker worked at the RKO Marble Hill in the Bronx, and he currently is secretary to Hon. Sidney H. Asch, Judge of the civil court.

Rotker, a native of Warsaw,

Poland, is the father of two sons and two daughters. Both sons served with distinction in World War II after enlisting as privates. Harold, the eldest, was discharged with the rank of first lieutenant, and Elias with the rank of captain.

During World War II, the father, too, gained special note, receiving a citation from the U. S. Treasury for selling almost \$1,000,000 in bonds and citations from the War Production Board for the greatest single collection of furs, nylons and books. He was co-chairman of the Fleetwood civil defense group and a member of the War Production Board and was the only male recruiting officer for the WACS for New York, Pennsylvania and Connecticut.

He has been a leader in many business, labor, social, political and community organizations. He was former organizer and president of the Bronx Electrical Contractors Ass'n. and former chairman of the administrative board of Polish Jews in America; former president of the Independent Warschaver Sick Support Society; member of the board of Hyam Salomon Home for the Aged; past chancellor of national Lodge 407 of Knights of Pythias; treasurer of Masonic Lodge 1035; organizer and patron of Eastern Star Lodge 798; member of the Kaplan Projection Society; organizer and past president and life member of the 25-30 Club of Motion Picture Machine Operators of the U.S.; former chairman of the Bronx district 18 school board; former secretary of Bronx school board district 19; honorary buff of the New York fire department; honorary member of the Detectives Endowment Assn of the New York police department;



Morris J. Rotker

a former vice president of the Tackamuck Democratic Club of the Bronx, and held various offices in MPMO Local 306 of New York.

iP

Artoe Co. Perfects Coldlite Reflector

The Lee Artoe Co. of Chicago has announced a new development in reflectors — the Artoe Coldlite PX — which is a further perfection of its Artoe Coldlite reflector.

The Coldlite PX is an improved, front surfaced, dichroic reflector made of unbreakable boro-silicate glass, able to withstand extremely high temperatures and very rapid cooling. Boro-silicate glass is the same compound used so successfully in the latest ovenware as well as in space technology and aerodynamic research.

The Coldlite PX dichroic reflector is optically ground by master craftsmen who painstakingly hand rub the reflector until its polished surface is free from blemish, and a maximum of light is transmitted through the aperture opening. The front surface of the reflector is evenly coated on a special vacuum coating machine in order to insure top quality reflection.

The Coldlite PX is sold with a two year guarantee against breakage through temperature change or against surface blistering and deterioration. It is made in two sizes, Ashcraft 16" and Strong 16½". There is no advance in price.

iP

**OUT OF PRINT
MITCHELL MANUAL
AVAILABLE!**

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
P.O. Box 6174
Minneapolis, Minn. 55424



INTERNATIONAL PROJECTIONIST
1645 Hennepin Ave.
Minneapolis 34, Minnesota

Enter my subscription for

1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

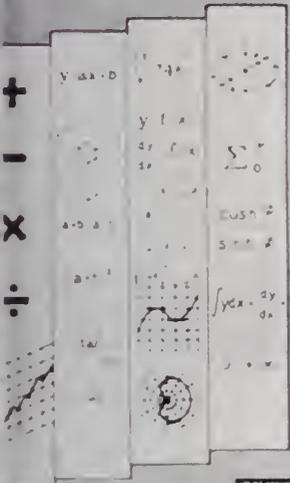
City Zone State

basic mathematics

by **NORMAN H. CROWHURST**

**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



RIDER

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

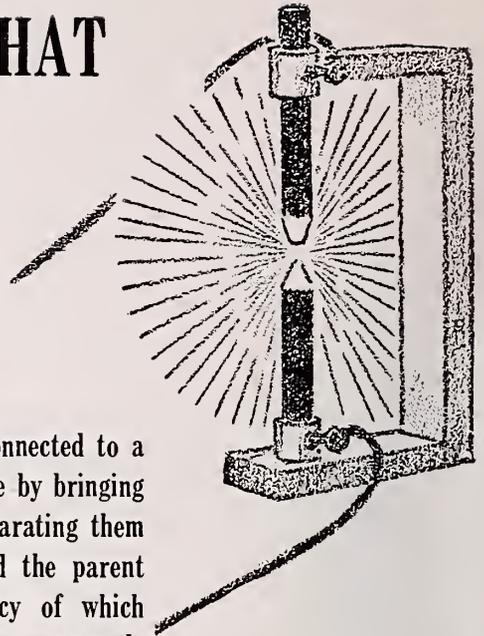
City Zone State



WE WONDER WHAT

Sir Humphrey Davy

would have thought of
the new **FUTURA**



In 1800, using charcoal electrodes, connected to a battery, he produced a brilliant flame by bringing the electrodes together and then separating them by a short gap. He had discovered the parent of today's carbon arc, the brilliancy of which has never been surpassed by another man-made light source.

But just as the Wright brothers' first plane has been replaced by today's jets, so too have most previous projection arcs been outdated by Strong's Futura. It provides that extra measure of light for today's big drive-in and indoor screens—the greatest amount of light ever delivered per carbon dollar.

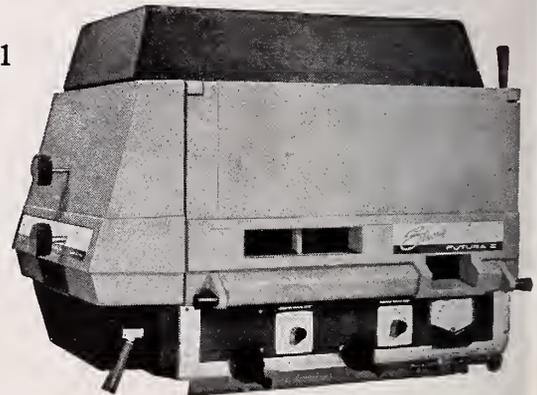
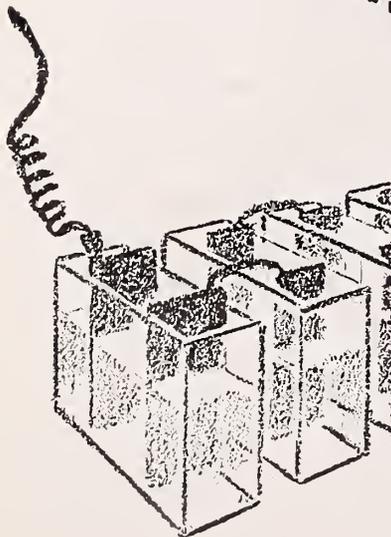
The Futura costs less to buy and less to use with all 35mm and 70mm projectors, and any Strong dealer can prove it.

SEND FOR BROCHURE

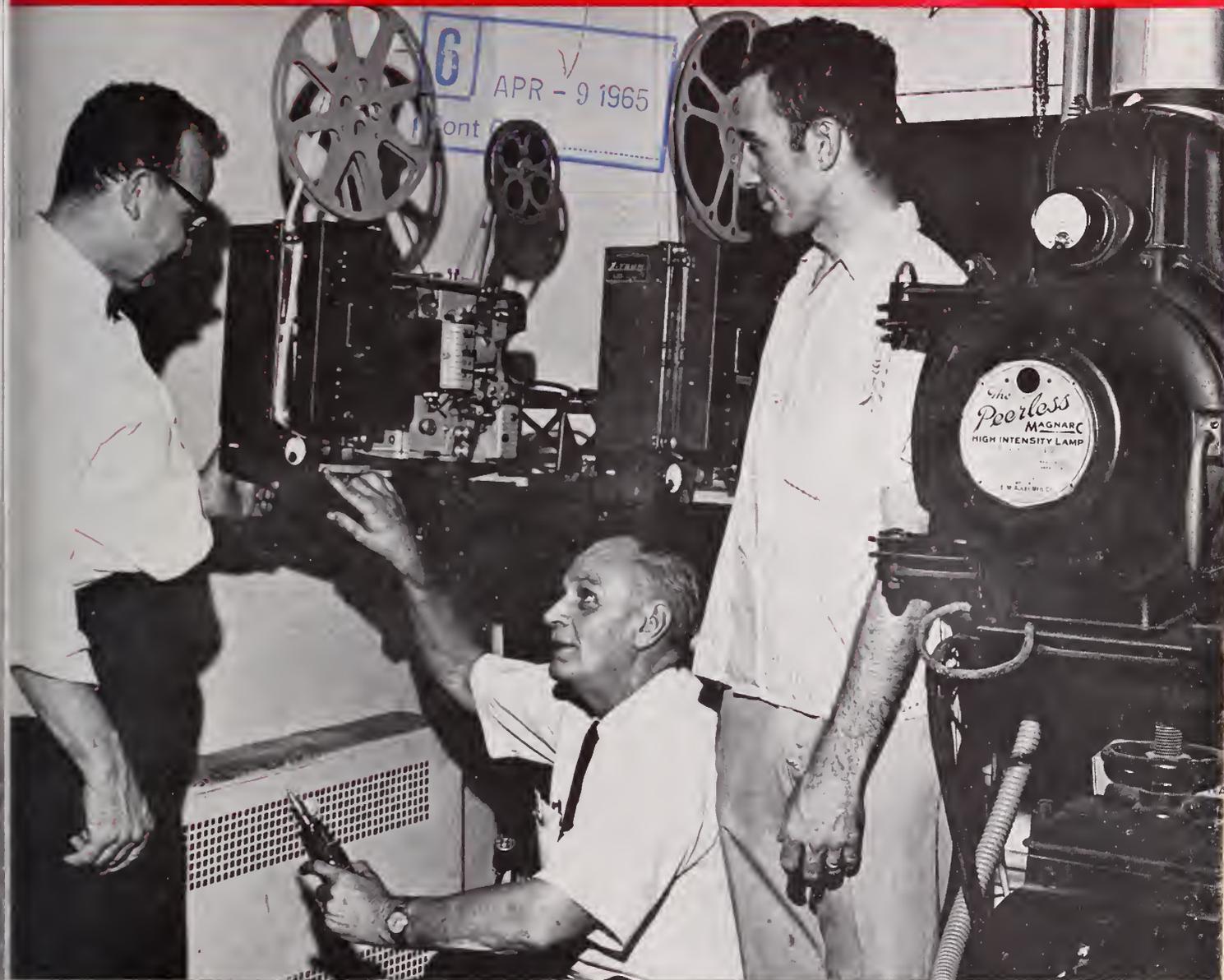
The *Strong* Electric
Corporation

31 City Park Ave. • Toledo, Ohio 43601

Phone: (419) 248-3741



INTERNATIONAL PROJECTIONIST



letter and brighter motion pictures at Texas A & M University, College Station, Texas, are certain as William Spooner, middle, factory representative from Carbons, Inc., Boonton, New Jersey, explains the operation of the equipment to Alfred Thielemann, left, and Gayle Burrage.

MARCH

1965

VOLUME 40

NUMBER 3

40c A COPY



\$3.00 A YEAR

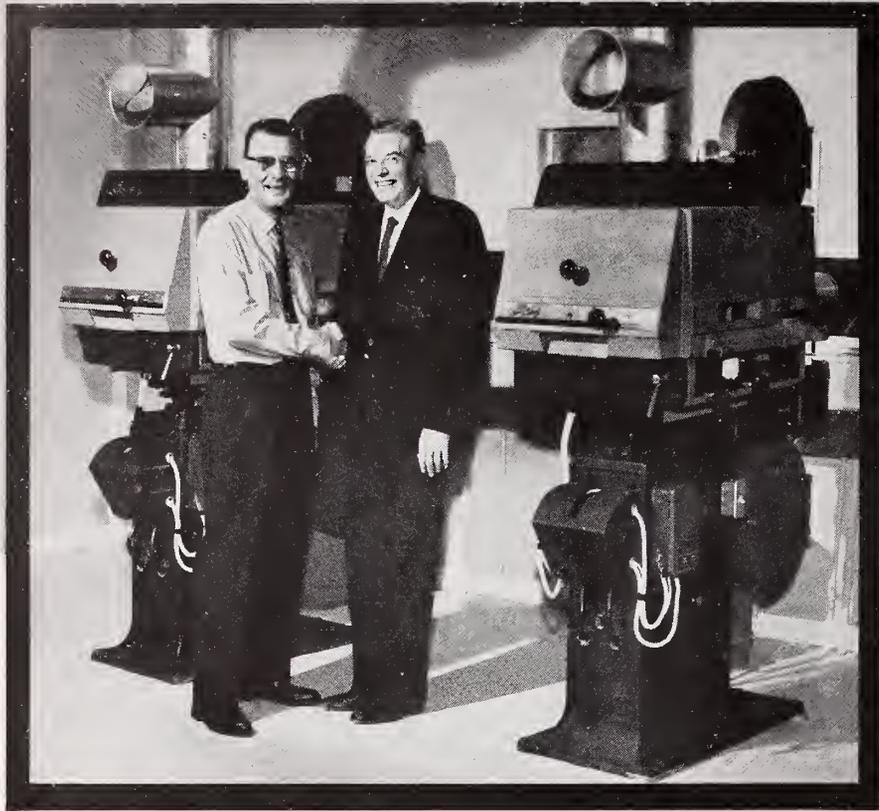


**Society of Motion Picture
and Television Engineers**

Library of Congress
Order Division (0368X)
Washington 25, D.C.

SMPT Technical Exhibit Directory on Page 10

Theatre men Like the Futura



They like its looks.

They like the brilliant light it projects on the biggest screens.

They like the low initial cost, low operating cost, low carbon bills.

They like the ease of changing from 35mm to 70mm . . . instantly.

They like its convenience in cleaning and inspection.

They like the many new exclusive features.

They like the . . . but what else is there to like?

Get brochures on the 75-105 ampere Futura I and 100-125/120-160 ampere Futura II or see your Strong dealer. You'll like him, too.

THE *Strong* ELECTRIC CORPORATION
31 City Park Avenue . . . Toledo, Ohio 43601
Phone: (419) 248-3741

INTERNATIONAL
PROJECTIONIST



Volume 40 March 1965 No. 3

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone MURROYHILL 7-7746
(Area Code 212)

IN THIS ISSUE

Industry News	4
The Cover Story Texas A & M Uses 16 MM	6
SMPTE Meeting	9
New Rectifiers Developed	12
Sound Track — A New Projection Standard	15
News Notes — Technical Hints — Miscellaneous Notes	

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Mocklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.



IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE
YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Four Year Contract Set With Hollywood Studios

HOLLYWOOD — A 4-year contract has been set between the IA and local studios, with two wage increases of 23c hr. attained as well as an increase in the pension to \$200.

The contract covers 29 studio unions, 22 of them IATSE locals, and seven basic crafts. IATSE president Richard F. Walsh represented the former, and Ralph Clare, Teamsters representative, spoke for the latter. Executive vice president Charles S. Boren of the Association of Motion Picture and Television Producers represented management, with Eugene Arnstein, executive vice president of the Independent Producers Association.

Under the new contract the unions get a 23c hourly wage increase at once and another in the same amount two years from now. The unions had asked a 65-cent an hour increase. A boost in the pay rate for holiday work is provided.

Considered by the unions to be more important than the wage increase are the changes made in the pension plan, under which retirees have been receiving \$120 per month. This figure is increased to \$200. Additionally, a retiree's spouse is now covered by the health and welfare provision, and dependents are given additional hospital room allowances.

The new agreement creates a fund to provide retraining for employees whose occupation is affected by technological developments, and for training of new employees. The special aspects of this new type of undertaking are left to each individual local.

Severance pay provisions are liberalized, increased incentive for employees to retire at 65 is inherent in several phases of the new contract, and a standing committee of labor and management to meet every four months to discuss developments affecting the contract or its application is created.

Technological changes, an issue of increasing importance, will be cov-

ered in a clause yet to be finalized.

The unions dropped demands for a flat ban on runaway production and did not negotiate residual payments on television films for craft workers.

The increase in pension payments will be made up by an increase in employer contributions of 8.8c an hour, and an increase in employee contributions of 5.8c an hour.

iP

Film Salesmen Get Wage Increase

Film salesmen throughout the U.S. have ratified an agreement giving them a wage increase of \$5.50 per week, retroactive to last Dec. 1, it is announced by the IATSE.

The agreement, negotiated by the I.A. - affiliated Colosseum of Motion Picture Salesmen, raises the minimum pay of those having a year of selling experience in the industry from \$100 to \$105.

Payments by the employers into the IATSE Film Exchange Employees Pension Fund in behalf of each salesman have been increased 75c, bringing the total contribution to \$4.50.

Other benefits include: A third

week of vacation after 11 years of service. In the past, it was 12 years. Columbus Day off, raising the number of annual holidays to nine. An increase in the expense allowance of country salesmen from \$12.25 to \$13. per day.

The agreement is for two years. Companies coming under it are M-G-M, Paramount, 20th Century-Fox, United Artists, Warner Bros., Universal, Columbia, Buena Vista and Allied Artists.

Representing the Colosseum in the negotiations were President Bruce Marshall of Denver; Stanley Kositsky, Philadelphia; William M. Garner, Cincinnati; Fred W. Bunkelman, Chicago, and Allen Boodman, Hollywood, assisted by attorney David B. Bartell and the IATSE general office.

iP

CLARENCE G. LAWING, PROJECTIONIST, DIES

Clarence G. Lawing of Charlotte, North Carolina, died recently at age 59. Mr. Lawing was spot lamp operator at the Colosseum and projectionist at the Visulite Theater. He was a member of the IATSE, Local 322.

Mr. Lawing converted Trans-Lux rear projection equipment for Cinemascope projection by moving the machines and twisting the film between the sound head and projector head.

iP

Census Bureau Says 12,652 Theatres in U. S. in 1963, Grossing \$1.062 Billion

WASHINGTON — There were 12,652 motion picture theatres in the U. S. in 1963, according to figures from the Census Bureau, of which 12,040 had payrolls. Total receipts for all theatres was \$1,062,732,000, of which the theatres with payrolls received \$1,057,224,000.

Of the theatres, 9,150 were conventional houses and 3,502 were drive-ins. The hard-top theatres had receipts of \$807,596,000 while the drive-ins' receipts totaled \$255,136,000. Conventional theatres with payroll had receipts of \$803,458,000, while drive-ins with payrolls took \$253,756,000.

Payrolls for hard-top theatres in 1963 totaled \$201,132,000 for their 89,999 employees, while drive-ins' payrolls came to \$48,867,000 for their 22,522 employees.

There were 7,440 active proprietors of unincorporated businesses in the motion picture theatre business in 1963, of whom 5,331 had conventional theatres and 2,109 had drive-ins.

There were 3,729 establishments engaged in motion picture production, distribution and services in 1963, of which 2,829 had payrolls. Their total receipts were \$1,662,233,000.

iP



**What'll the boys in the
back row have? They'll
have the same bright picture as
the boys in the front row if you
use 'National' projector carbons!
(The No. 1 choice since 1917)**

Movie patrons in the rear rows, generally speaking, pay the same box office prices as the downfronters. But they get smaller images and less enjoyment if your screen lighting isn't sufficiently brilliant.

Give them the break they deserve. Trim your lamps with "National" projector carbons—the brightest light in the movie industry for almost 50 years.

Remember, late comers in the back rows are the extra-profit patrons. Keep them happy—keep them coming back with the top-quality lighting of "National" long-lasting projector carbons!



"National" is a registered trade mark of

UNION CARBIDE CORPORATION
CARBON PRODUCTS DIVISION

270 Park Avenue • New York, N. Y. 10017

In Canada: Union Carbide Canada Limited, Toronto

XeTron Projection System

A highly-profitable summer at the Grove Theatre, Texas A & M University, College Station, Texas, has been translated into better business in Guion Hall at the college. This installation shows motion pictures before college students and gives some employment to local projectionists.

Texas A & M University is the largest military school in the United States, with 8,320 students. Guion Hall seats 2,150 and has shown three motion pictures a week. 90% of the films have been 35mm and 10% 16mm in the past but with this new equipment they now plan to produce 16mm exclusively because of the great improvement in the equipment. The projectors feature the XeTron light source installed by Carbons, Inc. Boonton, New Jersey.

"With this new type of lamp, the picture will be more than three times brighter than our old 1200 watt bulbs," said Wallace Johnston, student program advisor.

Here is the lamp house of the JAN projector, together with the various parts used in the modification, an unusual application for 16mm motion pictures, according to Frank H. Riffle, president of Carbons, Inc.

This illustration shows the modified JAN projector using the XeTron Kit by William Spooner. The letters and arrows illustrate the areas in which Mr. Spooner made mechanical modifications to the JAN projector.

The Texas A & M installation is a very interesting application of 16mm projection as it is a large auditorium with a seating capacity of 2,150.

Previously 90% of the films were 35mm because the 16mm equipment was unable to provide the necessary screen brightness. The screen size for the 16mm presentation is 24x17 ft., which is a real test for any 16mm projector.

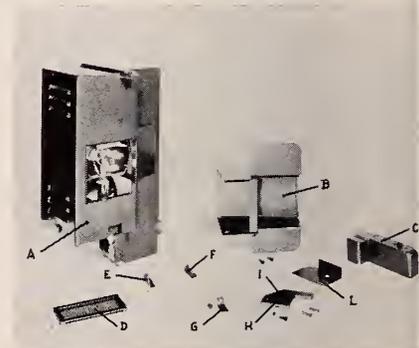
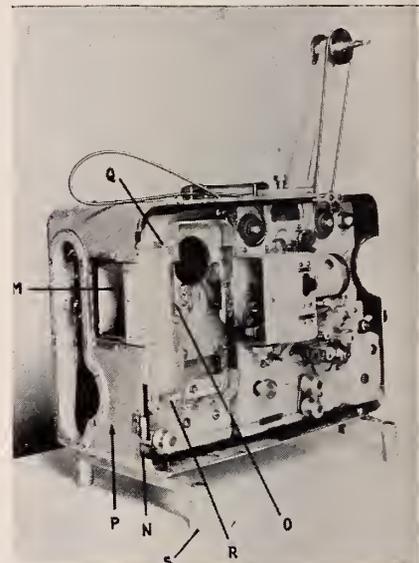
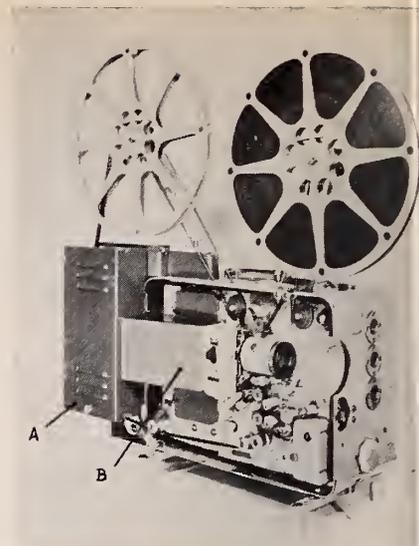
The Bell & Howell JAN projectors were modified by William Spooner, representing the XeTRON Division of Carbons, Inc. The results have been so outstanding that the decision has been made to use 16mm prints on as many showings as possible. It is estimated that in the future,

90% of all feature pictures will be with 16mm prints.

The actual modification of the standard JAN projector can be made in about one hour. This permits the attachment of the XeTRON lamp-house and its easy removal for transporting. This lamphouse contains the necessary high voltage starter unit plus a front coated reflector and associated adjustment controls.

If the projector does not have the standard two blade shutter, it should be used, otherwise maximum screen brightness will not be obtained.

The Osram 450 watt Xenon bulb operates in the range of 23 to 28 amperes, and by careful design of the reflector very good overall



efficiency is obtained. The arc voltage for this bulb is approximately 20 volts after ignition. As the quartz envelope is filled with Xenon gas, under pressure, a 30,000 volt pulse is supplied at the instant the start button is depressed. This ionizes the gas and allows the initial current flow.

The projected light is of the high intensity type and compares favorably with that of the small carbon arc operating in the 23 to 30 ampere

range. The color temperature is approximately 5600° Kelvin, and this offers an extra plus factor for auditoriums which are used part time for educational purposes — as the house lights can be used without too degrading the picture on the screen.

The power supply requirements are of a special nature and calls for a very low current ripple in order to obtain maximum life expectancy from the bulb. The power supply must also supply a no-load voltage of approximately 80 volts, to aid in the initial start, and drop immediately to the 20 volt value.

This is one of the many installations where it has been possible to upgrade the quality of 16mm projection to achieve professional type results by the use of a properly designed Xenon lamphouse. Mr. Spooner and president Frank Riffle report.

ip

Oklahoma City Projectionists Note 50th Anniversary

OKLAHOMA CITY — The two-day 50th anniversary celebration of the Motion Picture Machine Operators, Local 380, IATSE, was held here at the Oklahoma-Sheraton Hotel.

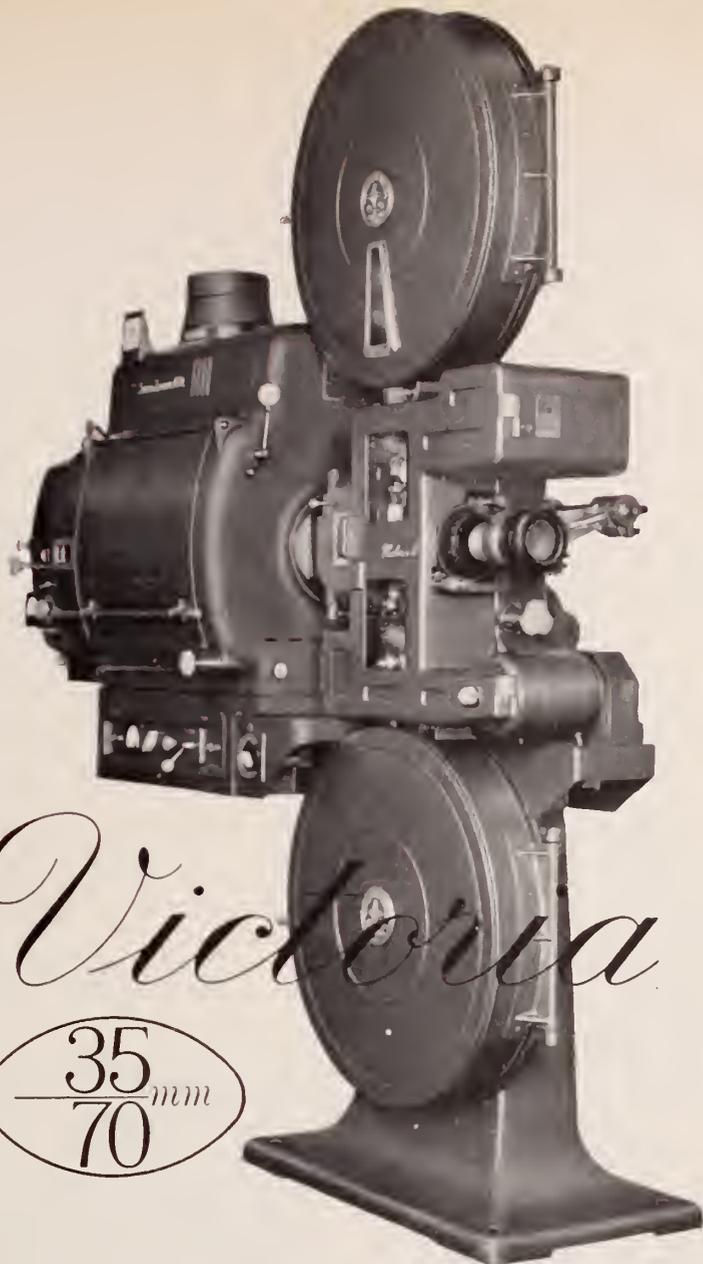
Gold membership cards were presented to three charter members of Local 380, Howard Wortham, Bert Bell and Frank Holic. Speaker of the Oklahoma House of Representatives, J. D. McCarthy, acted as master of ceremonies.

For many years the union has furnished equipment for the Crippled Children's Hospital here, having constructed a booth and furnished the latest in projection equipment and have been showing motion pictures on each Saturday for the past many years to shut-ins.

Two years ago, during the celebration and world premiere of MGM's "Cimarron," the projectionists played a part in the festivities. Several members of the Shrine's local group drove their own matching white Cadillac convertibles, complete with (detachable) red revolving warning lights, as parade vehicles for film stars like Anne Baxter and Glenn Ford.

For several years the union has been collecting carbon drippings from theatres in Oklahoma City and other parts of Oklahoma and selling them. This year it got enough with a donation from members to present a check for \$100 to the Will Rogers Hospital.

ip



Victoria S

35
—
70 mm

All-Purpose Sound Projection System by

CINEMECCANICA

Complete change from 70 to 35 mm in
LESS THAN ONE MINUTE

*The perfect, simplified system
for all processes*

XeNON CINEMECCANICA Lamphouses for
450-900-1600-2500 and 6500 watt bulbs

Exclusive Distributor for U.S.

XETRON®

A Division of **CARBONS Inc.**, Boonton, N. J.



**America's
number 1 source
of optimum
image quality!**

Get all the facts! Ask your equipment dealer for the new 1964 Kollmorgen Projection Lens Catalog or write us direct.



Ballantyne Equips California Drive-In

Ballantyne Instruments & Electronics will completely equip the beautiful 1750-car Sunnyside Drive-In Theatre, Fresno, Calif., and the fabulous new 1,750 car Kalua Drive-In in Hawaii, for Pacific Drive-Ins Theatres Corp., Los Angeles.

The complete job features Ballantyne "All-in-One Package" equipment including all-sound projection booth, box office and concession equipment.

Ballantyne executive vice president J. R. Hoff said that Pacific Theatres has "gone all the way on top quality" and included Ballantyne transistorized sound, pre-amplifier system, and Ballantyne MX power amplifiers, Norelco AAI 70mm projectors, Jet Arce lamps and Ballantyne 360° electric heaters.

The Fresno Drive-In will also install 525 Ballantyne 360° electric heaters. Complete concession equipment will include ovens, freezers, Tappan Micro-Wave ovens, pizza ovens, etc.

The Sunnyside Drive-In in Fresno is scheduled for opening April 1 and the Kalua follows in 30 days.

The screen tower at the Sunnyside in Fresno is 50x140 ft., while the Kalua in Hawaii has a 50x114 ft. screen.

iP

Ed Hill Retires From Toronto's 173

TORONTO, CANADA — One of the oldest pioneer projectionists, Ed Hill, Local 173, has retired after 58 years of service in the motion picture projection craft in show business. A charter Gold Card member for 50 years of Local 173 IATSE, and now holder of an honorable withdrawal card, Mr. Hill started his career with the Griffin Amusement Company as operator in the silent days. Most film projectors were hand-cranked varieties in those days, and there was no sneaking out of the booth to see what the picture was all about, Mr. Hill points out.

There were illustrated songs and slides with two single reels to a show—Mr. Hill was able to crank the projector with one hand and rewind with the other, working from 9:00 A.M. to 11 P.M. and "lucky if there even was a relief man."

Show business drew Mr. Hill about 1909 when he traveled road shows with Johnston and Burns as well as handling stage gear and spot lamps at the old Star and Gaiety Theaters in Toronto.

iP

1965 International Convention Set for Audio Engineering Society

LOS ANGELES — This city will host the 1965 international convention of the Audio Engineering Society April 27-30. The world famous Los Angeles Music Center and the Hollywood Roosevelt Hotel have been chosen as conference and special event sites.

More than 1000 representatives and special invited guests are expected to attend the convention. Because of the increased interest from exhibitors and added technical papers, the convention's original date of March 23-26 has been advanced.

"Audio Advancement" is the "key" to this year's convention theme. "Audio For The Performing Arts." Technical papers, conference seminars and exhibit booths are scheduled.

This convention will host the largest exhibit of professional audio equipment on the West Coast. Presentation awards for outstanding professional contributions to the audio industry will be made to AES members. A special honorary award and membership will be presented to Walt Disney for his signal achievement and major tribute to the performing arts, in recognition of his early use of multi channel stereophonic motion picture sound systems and for developments in audio animatronics.

iP

New York State Projectionists Plan May 17 Meeting

The spring meeting of the New York State Association of Motion Picture Projectionists will be held May 17 at the Hotel New Yorker in New York City.

Steve D'Inzillo, Business Agent of Local 306 in New York, has offered the complete services of himself and staff to make the spring meeting an outstanding affair.

A highlight of the meeting will be a tour of the World's Fair on May 18 for delegates and guests, sponsored by Local 306.

George F. Raaflaub is Secretary-Treasurer of the New York State Association of Motion Picture Projectionists and Edward G. Hurd of Mixed Local 377, Ithaca, New York is handling publicity on the meeting.

iP

Kodak Sales, Earnings At New Highs in 1964

Eastman Kodak Co. sales and earnings for 1964 advanced to new highs. Albert K. Chapman, chairman, and William S. Vaughn, president, report. Consolidated sales of Kodak's U. S. units in 1964 reached \$1,237,176,239, about 12% over the \$1,106,670,760 of 1963. Net earnings were \$187,248,263, nearly \$43 million—or about 30% over the 1963 total of \$144,428,503. Net earnings equalled \$4.64 a share of common stock as compared with \$3.57 a share in 1963. They were 15.1% of sales for 1964 as against 13.1% for 1963.

Cash dividends on the common stock advanced 21% to nearly \$121 million in 1964. Dividends declared were \$3 per share, compared with \$2.60 on the shares outstanding in 1963. A two-for-one stock split was voted by the directors, subject to approval by the share owners at the annual meeting in April. This action would double the number of shares authorized and issued and would reduce the par value from \$10 to \$5 per share. Total cash dividends on

the common stock have been increased in each of the past 16 years. Kodak has paid cash dividends on the common shares for 63 consecutive years.

On a world-wide consolidated basis (eliminating intercompany transactions), 1964 sales totaled \$1,541.7 million, up about 12% from the previous year. **iP**

NEW TECHNIQUE

A special optical photographic technique, incorporating still-picture color negatives into a motion picture, will be used for the first time in Warner Bros.' "The Third Day," starring George Peppard and Elizabeth Ashley under Jack Smight's direction.

The technique was developed by David Sutton, who was retained by Warner Bros. for special magazine photography on the drama, which is being filmed in Technicolor and Panavision. Technically, it involves a progression of images within a single exposure at the moment of shooting with a zoom lens, creating an illusion of movement within a still photograph. **iP**

Westland Theatres Starts Construction of \$500,000 Hardtop

COLORADO SPRINGS — A new \$500,000 dollar 850-seat hardtop, in construction by Westland Theatres, Inc., is planned for mid-summer opening.

The new house will be called Cinema 70, it was designed by Lusk and Wallace, architects, and incorporates two dozen new features lacking in the present modern theatre, according to L.A. Staresmore, president of Westland.

Features include is the away-from-the-auditorium lobby, lounge, concessions bar and boxoffice, which is housed in a separate circular building connected with a glass enclosed corridor.

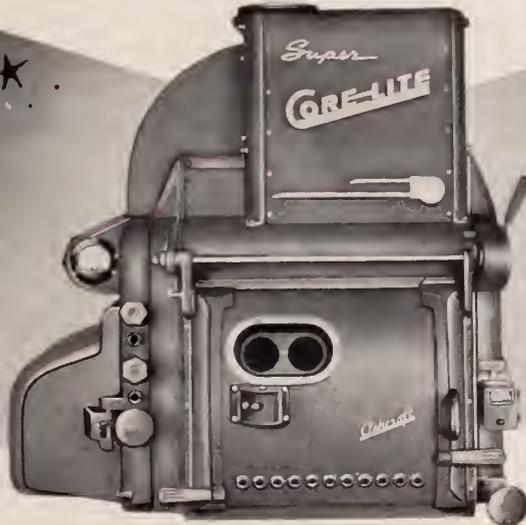
The large parking area will be reached by a covered walk past landscaped grounds. A 25x56 ft. curved screen and projection booth large enough and so equipped as to accommodate any current and experimental system of projection is promised. **iP**

Ashcraft SUPER CORE-LITE®

35/70 PROJECTION LAMP

UNEQUALLED

LARGEST
DOOR
THEATRES



UNEQUALLED
for
LARGEST
DRIVE-IN
THEATRES

OPTICALLY AND MECHANICALLY PERFECTED TO PROJECT THE MOST BRILLIANT PICTURE POSSIBLE!

Now available with... the New Core-lite Front Surface Coated Cold Reflector with a 2 Year Warranty

Trade Mark © **SOLD EVERYWHERE IN THE UNITED STATES BY LEADING AUTHORIZED THEATRE SUPPLY DEALERS**

S. S. ASHCRAFT MANUFACTURING CO., INC.

36-32 THIRTY-EIGHTH STREET, LONG ISLAND CITY, NEW YORK

Projection Treated ...

Record Number of Papers and 80 Booths at SMPTE Meet

Motion picture and television equipment manufacturers have reserved exhibit space for the 97th Society of Motion Picture and Television Engineers Technical Conference Equipment Exhibit March 29 through April 1, states Warren

Strang, Hollywood Film Co., exhibit chairman. The Conference is set for March 28 to April 2 at the Ambassador Hotel, Los Angeles. An all-time high number of technical and scientific papers will be presented in 20 sessions.

Another FIRST for KNEISLEY Miniaturized High Current Silicon Rectifiers

THE MOST COMPACT RECTIFIERS EVER DESIGNED

Occupy only 1/7 square foot of usable
floor space in your projection room

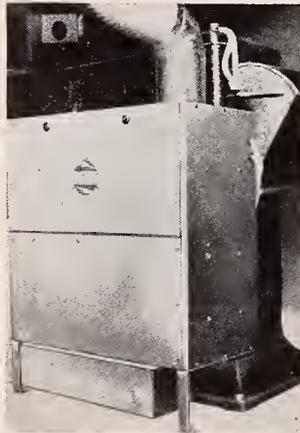


R. F. Kneisley
President, The Kneisley
Electric Company

These miniaturized rectifiers are designed to mount over pedestal base beneath projector motor. Required floor space is reduced from 3 square feet to 1/7 square foot.

Installation provides "on the spot" current adjustment.

In quest of projection room modernization and elimination of costly booth wiring, Mel Glatz, of Fox Inter-Mountain Theatres Inc., insisted upon compact rectifiers to mount adjacent lamphouses. Kneisley engineers complied by designing 115, 140, and 180 ampere 3 phase rectifiers in housings measuring 20" x 20" x 10" utilizing only a small fraction of floor space.



Mel Glatz
Designer, Fox Inter-Mountain
Theatres, Denver, Colorado

Current adjustment is provided by 4 rough and 8 fine taps, conveniently located beneath hinged doors.

Requires only 3 phase line into rectifier. Practically all expensive D.C. wiring as well as direct current line losses are abolished.

Employs new method of ventilation (see chart below).

All three models are equipped with 480 ampere heavy duty silicon stacks.

Automatic Arc Striking Current Minimizers supplied with each rectifier for reflector protection.

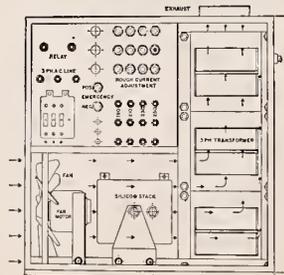
Blower draws cool air into rear housing, through silicon stack, upward and over transformers into lamphouse exhaust system, eliminating heat in projection room.

Write us for detailed information. Address Dept. P.

THE KNEISLEY ELECTRIC COMPANY

P. O. BOX 1506

TOLEDO, OHIO 43603



Over 80 booths will show services and new equipment for the industry. Exhibitors include:

Amega Corp., Sun Valley, Calif.; Amco-Engineering Corp., Madras, India; Ana-Tec/Air Cargo Div. of Monogram, Culver City, Calif.; Arriflex Corp. of America, New York; Bach Auricon, Inc., Hollywood; Bell & Howell Co., Chicago; Birns & Sawyer Cine Equipment Co., Los Angeles; Cinema Beaulieu, Hollywood; ColorTran Industries, Inc., Burbank, Calif.; Andre Debrie of New York, College Point, N. Y.; Eclair Corp. of America, Los Angeles; John P. Filbert Co., Inc., Los Angeles; Frigid-heat Industries, Nashville; General Electric Co., Lamp Div., Los Angeles; Gordon Enterprises, North Hollywood; Gryphon Corp., Burbank, Calif.; Karl Heitz, Inc., New York; Frank Herrfeld Engineering Corp., Culver City, Calif.; Hollywood Film Co., Hollywood; Hughes Electronics Co., Los Angeles; J & R Film Co., Hollywood; L-W Photo, Inc., Van Nuys, Calif.

Macbeth Sales Corp., Newburgh, N. Y.; Magnasync Corp., North Hollywood; Magnetic Sales Corp. and Ryder Sound Services, Inc., Hollywood; Metro/Kalvar, Inc., New York; D. B. Milliken Co., Arcadia, Calif.; The 3M Co., St. Paul; Mole-Richardson Co., Hollywood; Moviola Mfg. Co., North Hollywood; North American Philips Co., Inc., New York; O'Connor Engineering Labs., Pasadena, Calif.; Oxberry Corp., Mamaroneck, N. Y.; Plastic Reel Corp. of America, Weehawken, N. J.; Quick-Set, Inc., Skokie, Ill.; Sarkel Corp., Los Angeles; Sol-Lux Cinema Electronic, Los Angeles; S.O.S. Photo-Cine-Optics, Inc., Hollywood and New York; Stencil-Hoffman Corp., Los Angeles; Traid Corp., Encino, Calif., and Treise Engineering, Inc., San Fernando, Calif.

Exhibits will be open Monday, March 29, 5 to 8 p.m.; Tuesday, March 30, 11 a.m. to 8 p.m. Wednesday, March 31, 9:30 a.m. to 4 p.m.; and Thursday, April 1, 11 a.m. to 6 p.m. There will be an Exhibitors' Open House on Monday, March 29 at 5 p.m., where all registrants and holders of exhibit passes are invited for the opening. Refreshments will be served.

For the first time in Los Angeles, the SMPTE will show its highly successful Test Film Booth, which had its initial showing at the Society's 96th Conference in New York last fall.

Demonstration of the various Society test films will highlight the booth's activity, along with the showing of the new SMPTE Universal Leader (see separate story) and enlarged pictures of many SMPTE test films. Complimentary literature will be available, including SMPTE Recommended Practices relating to test films, TV transmission and image specifications.

The booth will remain open during all hours of SMPTE Conference activity and will be manned by SMPTE assistant staff engineer Joseph R. Stibfel.

IP

Norelco Exhibits Special New Projectors at SMPTE Conference

New developments in Norelco projection equipment will be on display in Norelco's booths 227-228 at the Society of Motion Picture and Television Engineers' Exhibit, in the Ambassador Hotel, Los Angeles, March 29 through April 1, states Niels Tuxen, head of the Motion Picture Equipment Division of the North American Philips Co.

A brand new stop-motion 35mm Norelco projector designed especially for technical conferences and x-ray and medical analysis will be shown for the first time. This projector operates at speeds ranging from the normal 24 frames per second to single frame stop motion. Also to be shown is the Norelco portable 35mm projector that weighs only 67 lbs. and yet has the features of regular 35mm professional projectors.

Another new projector to be shown is the special purpose Norelco FP-20 35mm projector, modified, for use in sound mixing studios and screening rooms. This unit operates forward and reverse in sync or interlock from local or remote control. The projector includes looping rollers and high speed rewind. It is available with an incandescent, Xenon, Arc or Pulse-Lite light source. Another special model of this projector is also available for TV scanning with simultaneous screen projection.

These special purpose projectors are available from Magna-Tech Electronics Co., Inc., manufacturers of sound recording and screening room equipment. Magna-Tech is also offering an all electronic interlocked frame and footage read-out counter featuring automatic preset stops for use with this special purpose projector.

A complete line of Isco lenses, which are distributed by Norelco in the United States, will be displayed. These lenses range from the T-Kip-tagon, reported the most widely used 70mm projection lens in the world, to the Super Kiptar, super-fast 35mm lenses.

Norelco also manufactures a line of 16mm Tele-Cine projectors and related equipment. Although these products will not be displayed at the SMPTE exhibit, complete information, literature and technical data

will be available at the Norelco booths.

Niels Tuxen and Fred Pfeiff, of the Norelco Motion Picture Equipment Division, and Norman T. Prisament of Magna-Tech, are scheduled to be on hand at the exhibit to provide information and assistance to SMPTE members and other visitors.

iP

C. P. O'Grady Elected by National Theatre

NEW YORK — C. P. O'Grady has been elected to the office of administrative vice president of National Theatre Supply Co., it was announced by W. J. Turnbull, president. O'Grady has been associated with National for 35 years in many capacities. He will continue to serve as president of Cinesound Service Corp., a wholly owned NTS subsidiary.

iP

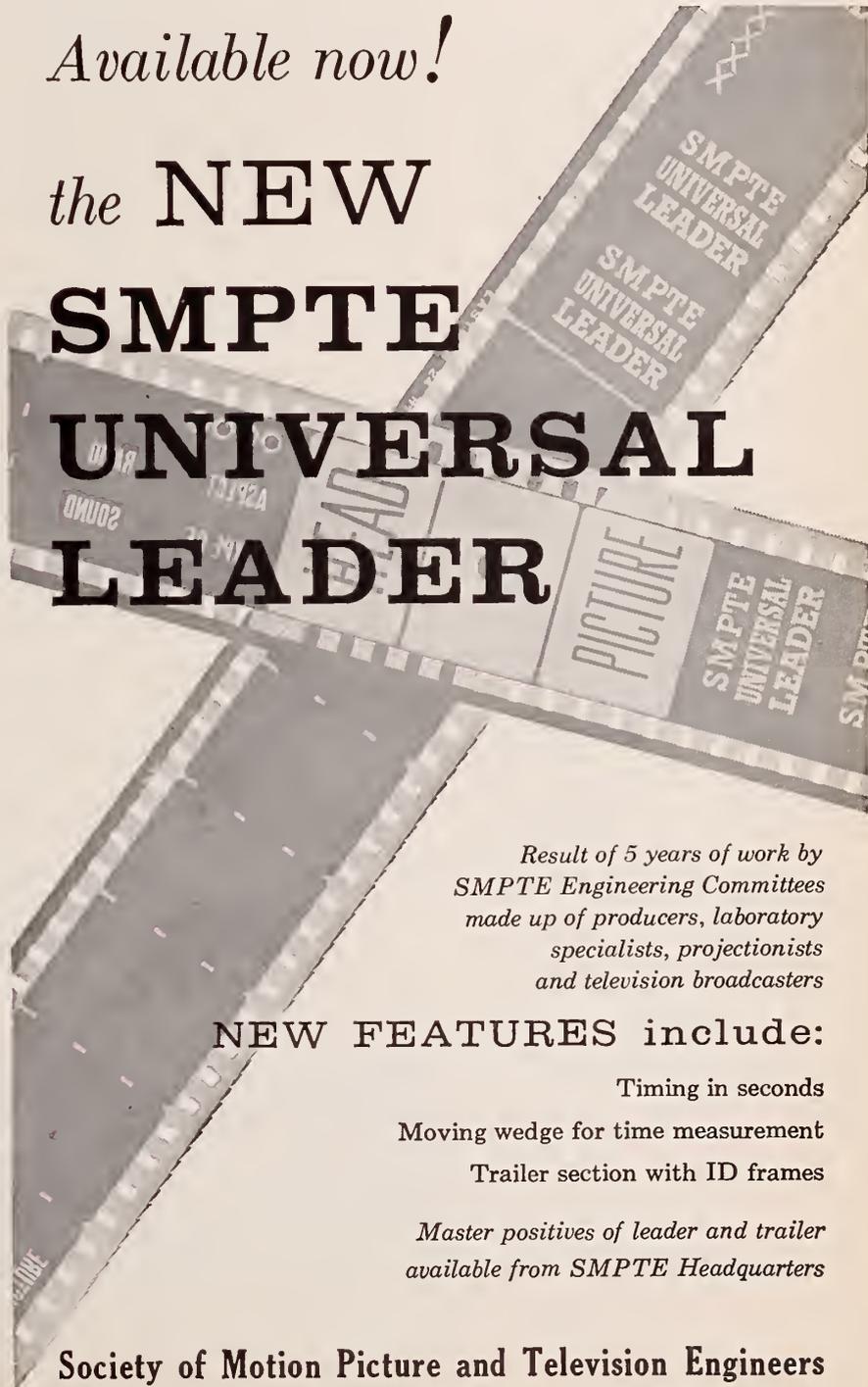
Available now!

the **NEW**

SMPTE

UNIVERSAL

LEADER



*Result of 5 years of work by
SMPTE Engineering Committees
made up of producers, laboratory
specialists, projectionists
and television broadcasters*

NEW FEATURES include:

- Timing in seconds
- Moving wedge for time measurement
- Trailer section with ID frames

*Master positives of leader and trailer
available from SMPTE Headquarters*

Society of Motion Picture and Television Engineers

9 East 41 Street, New York, N.Y. 10017

Tel: (212) TN 7-5410

Kneisley Electric Develops Miniaturized Silicon Rectifiers for Projection Room

At the request of Mel Glatz, designer and purchasing agent for Fox Intermountain, Denver, Colo., in his quest for the elimination of costly booth wiring. The Kneisley Co., utilizing a new version of ventilation, has reduced the size of their 115, 140, and 180 ampere, 3 phase, silicon rectifiers from 42½"x24"x18" to 20"x20"x12". Simultaneously, transformer operating temperatures were reduced appreciably.

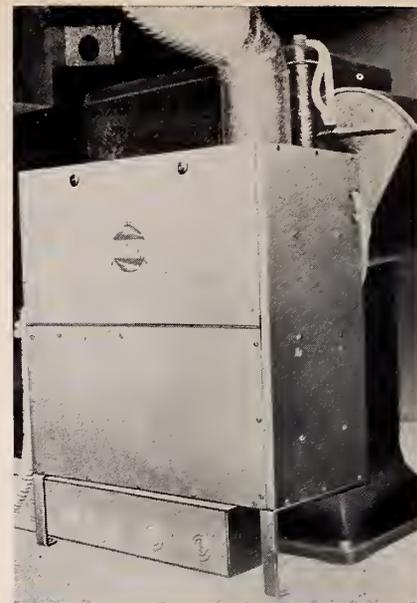
These designs, utilizing waste space in the booth, mount over the pedestal base, beneath the projector motor, reducing usable floor space requirements from 3 sq. ft. to 1/7th sq. ft. Costly wiring is eliminated. Only one 3-phase line need be brought into the rectifier through a 4" surface gutter positioned beneath the rectifier.

Flue apertures in the tops make possible stacking out the heat loss of the rectifiers into the lamphouse exhaust system, so that you do not

pay for air conditioning loss; nor do you heat up the projection room in the summer, if not air conditioned.

Three models, M115RTK2, M140-RTK2, and M180RTK2, utilize the R-1325 480 ampere heavy duty silicon stacks. All 230 volt rectifiers have voltage ranges of 190 to 250 volts. Odd voltage designs are available. Four rough and eight fine current adjustment taps, conveniently located, replace switches. Emergency studs are provided, on the terminal board, so that either rectifier can operate either lamp. Automatic arc striking current minimizers are supplied with each rectifier. Nothing has been sacrificed, quality-wise, to attain compactness, the company states.

Being only 20" high (without the detachable legs used for installations adjacent the pedestal) they can be positioned directly beneath the lamphouse in 70mm installations. The base of the rectifier is solid sheet-



metal, as the ventilating system is located in the lower front of the rectifier.

The M115RTK2 miniaturized Knitron silicon rectifier is housed in a rectangular steel case, designed to set adjacent the lamphouse pedestal, providing "on the spot" current adjustment, eliminates wiring and direct current line losses.

The rectifier consists primarily of three transformers, an R-1325 (480 amp.) Silicon Stack, a filter capacitor, blower type ventilating system, one control panel for wide range current adjustment and voltage control, one fine current control panel, and a three pole relay.

On a panel behind a hinged door, in the left side of the rectifier, are the wide adjustment and voltage control taps. A heavy duty three-pole

**From Coast to Coast
From the
Music Hall
to
Graumann's Chinese
For Good Projection
It's Hurley All the Way**

**HURLEY SCREEN COMPANY, INC.
96-17 Northern Blvd., Corona, N.Y.C.
(See your theatre supply dealer)**

CREATE THE RIGHT MOOD EVERY TIME WITH THE

Major Mood Music Library

MAJOR offers you a full forty-five hours of mood music for titles, bridges, backgrounds.

Write for Free Catalogue

THOMAS J. VALENTINO, INC.

Established 1932

150 West 46th Street CI 6-4675 New York 36, N. Y.

Want
More Profits?

SELL LOCAL ADVERTISERS

**SLIDES
SLIDES
SLIDES**

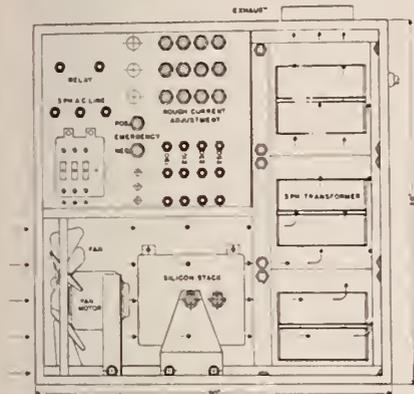
Send
for complete
information

NATIONAL STUDIOS
42 West 48 Street, NYC

relay is also affixed to the panel. Removal of the side panel exposes entire internal construction. Fine current adjustment taps are conveniently located on a panel directly under a hinged door in the rectifier top.

An automatic arc striking current minimizer is furnished with each rectifier, but not incorporated in the same housing. It limits striking current to no more than full load current of the arc; also greatly minimizes reflector and positive carbon crater damage. The silicon stack is easily accessible should removal be necessary. Diodes employed in the stack are far in excess of the required rating and failures are rare, it is claimed.

Miniaturization has reduced ship-



The new method of ventilation in the Kneisley unit (see above and on facing page) saves on heat loss and consequent higher operating costs.

ping weights considerably, which will be reflected in shipping costs. Write the Kneisley Electric Co., P. O. Box 1506, Toledo, Ohio, 43603, for full details. **iP**

James Brennan Dies

NEW YORK—A Solemn Requiem Mass was held for James J. Brennan, 80, first vice president of the International Alliance of Theatrical Stage Employees, at St. Paul's Church, Ramsey, N. J. He died after an illness of several weeks.

A native of Brooklyn, N. Y., Mr.

Brennan entered show business as a horseback rider at New York's old Hippodrome Theatre when it opened in 1905. Three years later, he helped form the Theatrical Clearers Protective Union, and in 1914 he became a members of New York Stage Employees Local No. 1. He served seven terms as president of that union and helped negotiate many of its contracts.

Mr. Brennan was elected an IATSE international vice president for the first time in 1934, and since 1935 he had been on the staff at the organization's general office in New York, handling the placement of stage crews with road shows and other legitimate theatre assignments. He was chairman of the grievance committee at many of the union's conventions. He is survived by his widow, two daughters and three sons. **iP**

Tri-State Association Of IA Plans Erie Convention

MORGANTOWN, WEST VIRGINIA — The Tri-State Association of IATSE and Motion Picture Operators, covering projectionists in Western Pennsylvania, Eastern Ohio and West Virginia, will hold the 41st Convention of the Association in Erie, Pennsylvania, Sunday, June 6, 1965.

Chairman of arrangements is George F. Thompson, Business Agent and Secretary of Erie Theatre Employees Local B-187.

Also hosting the Annual Meeting will be members of Stage Employees Local 113 and Moving Picture Machine Operators Local 621. Additional details can be obtained from Richard J. Herstine, Secretary-Treasurer of the Tri-State Association, 1157 Des Moines Avenue, Morgantown, West Virginia 26503. **iP**

HEYER-SHULTZ METAL REFLECTORS

Top Screen Illumination

Will Not Break, Pit or Tarnish

No Replacement or Spare Reflectors Required

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

* look into Stewart Filmscreens ... the choice of experts

FILMSCREENS FOR SHOWMEN—Stewart Projection Screens—the choice of 15 major exhibitors at the New York World's Fair!

ULTRAMATTE—for commercial playhouses, theatre TV, viewing rooms ■ Seamless to 46 by 88 feet ■ Optical efficiency ■ Durable economy.

LUXCHROME 50—seamless rear projection ■ Superior image contrast in lighted rooms.

FILMSCREENS FOR FILM PRODUCERS—used by CBS Studio Center, Columbia, Desilu, Disney, Fox, Goldwyn, MGM, Paramount, Revue, UPA, Universal, Warners.

HI-TRANS—Academy Award, background screen—highest calibre production "tool."

ULTRAMATTE gain white, and **LUXMATTE** white matte—front projection screens ■ Demanded by studios and film labs for viewing during production, dubbing, and scoring.

T-MATTE BLUE—rear-illuminated screen for latest traveling-matte process ■ Practical for large and small sets, major productions, or TV commercials.

FILMSCREENS FOR TV PRODUCTION
TV-BLUE—background screen ■ Favorite of networks ■ Versatile ■ Efficient.

LUXCHROME 60—neutral gray screen for closed-circuit techniques, backgrounds and rear projection viewing.

FILMSCREENS also designed for A-V, fairs, trade shows, exhibits, simulators, plotting and display systems, and special architectural requirements.

STEWART FILMSCREEN CORP.
1161 W. Sepulveda Blvd.
Torrance, Calif. 90503 (213) 326-1422

I want to look further into Stewart Filmscreens. Please send me additional information on: _____

NAME _____
STREET _____
CITY _____ STATE _____

THE NEW TECHNIKOTE XR-171 SCREEN

... The anti-static pearlescent screen that excels for both 35mm and 70mm.

USED FOR

"MY FAIR LADY"

CRITERION Theatre—N.Y. City

and

"The SOUND of MUSIC"

RIVOLI Theatre—N.Y. City

Years of research, testing and development have brought Technikote Screens to a state of perfection which will meet the most exacting projection requirements.

Technikote Screens are seamless in construction, have perfect uniformity of surface and will give the finest results for all systems of projection . . . and are unconditionally guaranteed.

TECHNIKOTE CORP.

63 Seabring St., Brooklyn, N. Y. 11231

EXPORT-AMITY INTERNATIONAL
DISTRIBUTORS—AMITYVILLE, N. Y.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

George J. Flaherty Of IA Elected to Hollywood Canteen

HOLLYWOOD—Miss Bette Davis, president of the Hollywood Canteen Foundation, announced that gifts, pledges and allocations exceeding \$70,000 were made by the trustees at its annual meeting held on March 9, 1965.

The principal beneficiaries of this year's commitment are pledges of \$25,000 to the building fund of the Cedars - Mount Sinai Hospitals, \$10,000 to the American Legion Rehabilitation Department, and \$5,000 to the Variety Club of Southern California. The Foundation also authorized payments of previous commitments, \$25,000 to the Regents of the University of California, \$2,500 to the Portals House and \$1,000 each to the Nursery School for visually handicapped children, the John Track Clinic and the 52 associates of Southern California.

The Hollywood Canteen Foundation is an outgrowth of the Hollywood Canteen which was originally formed by 42 unions and guilds within the amusement industry to entertain the members of the armed forces during World War II. Its original source of income, besides gifts, resulted principally from the production of two motion pictures. "Stage Door Canteen" produced by Sol Lesser, and "The Hollywood Canteen" produced and released by Warner Brothers.

The original fund transferred to the trustees upon the closing of the Canteen at the termination of the war approximated \$500,000. By investment and reinvestment of its funds, the trustees have been able to make gifts or pledges exceeding three-quarter millions of dollars since that time and Jules Stein, chairman of the finance Committee, stated that the market value of its funds presently exceeds \$1,300,000, all of which is invested in marketable securities including common stocks, bonds and savings accounts.

George J. Flaherty, international vice president of the IATSE was elected to succeed the late B. C. "Cappy" Duval. In addition to Miss Davis and Jules Stein, the other trustees are Ralph Clare, Baron Morehead, John Tegroen and Lew Wasserman.

Wolk Acquires RCA's Replacement Inventory

Acquisition of the Radio Corporation of America's inventory of replacement parts for RCA theater sound equipment has been announced by Edward H. Wolk, Inc., of Chicago, supplier of replacement parts for the motion picture industry.

The agreement was concluded by A. J. Platt, manager of distributor sales for RCA, and Charles Wolk, president of the Chicago firm. It also gives Wolk rights related to the manufacture of the replacement parts.

Wolk said his company had arranged to acquire RCA tooling and would manufacture and inventory parts for the sound systems. The Wolk company also is the source of replacement parts for RCA 35mm projectors.

iP

Growing Competition From 16mm Showings Noted by Theatres

CEDAR RAPIDS—Roy Metcalfe, president of Iowa Allied Independent Theatre Owners, has cautioned the industry against the mounting problem of competition from 16mm films being shown in schools, colleges and churches.

Cornell College, Mount Vernon, Iowa, played "Flower Drum Song" for an admission. This was in direct competition with the theatre at Mount Vernon, which was playing "The Outrage."

He stressed that 16mm "is a big business in the number of playdates by which anybody can get into show business by the back door . . . Just why schools and colleges wish to get into our business is anybody's guess. My understanding is that film companies send a questionnaire to an organization that there is not any theatre in the town or city these films are to be shown."

Metcalfe noted that the First Unitarian Church in Des Moines showed "Pepe" at an admission of \$1 for adults and 50 cents for children. "Just how long can this situation last?" he asked. "For many small theatres the worry is over. They're closed. Some small towns finding out their loss are attempting to reopen theatres with the aid of the Chamber of Commerce or other groups," he said.

iP

iP

Sound Track

by J. G. Jackson

A Proposed Standard for Studios and Theatres

By B. A. Nixon

1. A Standard (Squeeze) 2 to 1 Image for 35mm Print (.968"x.895").
2. A Standard Image Height of 5 Sprocket Holes Per Frame (35mm and 70mm).
3. A Standard Magnetic Sound Reproduction and Speed 22-1/2" Per Second (35mm and 70mm).
4. A Standard Screen Ratio—2.12 to 1 (35mm and 70mm).

The attentive proposal would result in practical advantages for the industry. Also mindful of a minimum expenditure in time and financial outlay to any one phase of the industry: initiatory or otherwise.

The dimensions of the drawing is of close proximity and feasible as to the intention for the described standards numbered 1 to 4. The necessary exact measurements would naturally be at the discretion of the Society of Motion Picture and Television Engineers.

The implication of a 20% increase in 35mm film stock required for final prints may appear startling; but the advantages and elimination of many costly and time-consuming existing processes, would more than offset this increase: such as eliminating of various ratios, which in a majority of existing prints is a stock wasting and time-consuming process.

Elimination of the antiquated optical track and its many time-consuming processes.

Having a unified speed in all magnetic prints (35mm and 70mm) eliminates varied processes also.

The image aperture (.968" to .895") being identical height of 70mm .895", it eliminates many problems such as sound transferring to print: printing down from 70 to 35mm. or vice versa; sets a uniform height for the theatre screen and elimin-

(Please turn to page 18)

DIAMOND
TRADEMARK
PROJECTOR CARBONS

Better Light! Lower Costs!

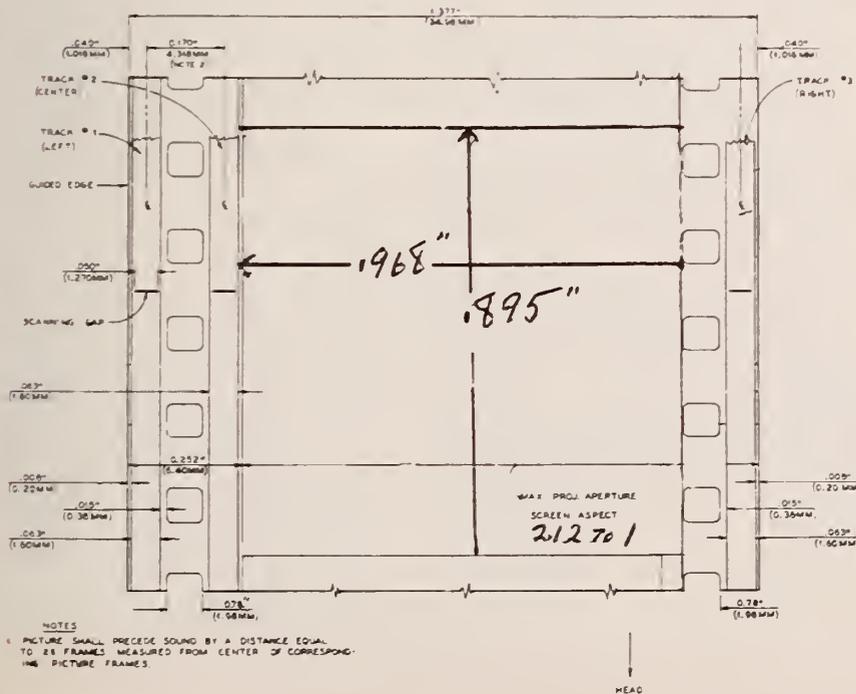
RINGSDDRRF CARBON CORP. East McKeesport, Pa.

MOVING?

Be sure to send IP the label from the cover of your International Projectionist as soon as you have your new address. Please allow five weeks for change.

INTERNATIONAL PROJECTIONIST

1645 Hennepin Ave.
Minneapolis, Minnesota 55403



2 to 1 Squeeze Image .968" x .895" — Screen Ratio 2.12 to 1

Projectionists who like quality always use the best

ACE

Blue Star
Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
(Division of the Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

Four Marketing Appointments Announced by Eastman Kodak

Four Eastman Kodak appointments related to the company's rearrangement of its photographic marketing organization were announced by Gerald B. Zornow, vice-president, marketing.

Charles L. Resler was appointed sales manager of the consumer markets division. He was formerly director of sales of the Apparatus and Optical Division.

William A. Sawyer, former general manager of the Northeastern Sales Division, was appointed sales manager of the professional, commercial, and industrial markets division.

Resler and Sawyer will serve on the company's Marketing Council, along with the general managers of the marketing divisions and the directors in the marketing organization that were announced at the end of November.

Dr. Norwood L. Simmons, former general manager, West Coast Division, Motion Picture Products Sales, was appointed general manager of the Northeastern Sales Division, succeeding Sawyer.

C. Ray Troutner, former sales manager, amateur products, Midwestern Sales Division, was appointed general manager of the Middle Atlantic Sales Division, succeeding William S. Allen, who was recently named general credit manager of Kodak.

Resler, a graduate of the University of Rochester, has been associated with Kodak since 1930 when he joined the company's training program. After varied assignments at Kodak Office, he transferred to stores in Boston, then in Pittsburgh.

Sawyer, a 1937 graduate of Pomona College, attended the Harvard Graduate School of Business and joined Kodak in 1938 as a trainee. After various assignments he transferred to the sales service department in 1939. He was commissioned in the U. S. Navy in 1941 and served for the duration of the war.

Dr. Simmons joined Kodak in 1937 and for the next four years was associated with the Company's film

manufacturing operations at the Kodak Park Works in Rochester, N. Y. In 1941 he moved to the West Coast Division of the motion picture products sales department. He held successive engineering and managerial posts and was appointed general manager of the division in January, 1964.

Born in Washington, N. C., Dr. Simmons received a B. S. degree from the University of North Carolina in 1933, an M. S. degree from the California Institute of Technology in 1935, and a Ph.D. degree at North Carolina in 1937.

Troutner is a graduate of Dartmouth College. He joined Kodak in 1938 and filled various assignments in training and at Kodak stores. In 1939-40 he worked for two seasons at the Kodak Exhibit at the New York World's Fair and then became a sales representative in Pennsylvania.

He served with the U. S. Air Force during World War II. On his return to Kodak in 1946 he joined the sales force in Pennsylvania and later in Ohio. **IP**

New Tool Solves Maintenance Clutter

Because of the neatness of peg-board racks in the projection booth, the drive-in maintenance storage area and the like, projectionists and theater operators generally will be interested in the "Wire Former" by M & W Manufacturing Co., 1950 Sheridan Road, North Chicago, Ill. 60064.

This is a hand tool of case-hardened metal for making peg-board hooks, self hangers and holders for use in the projection booth, workshop or for personal use.

The equipment shapes with precision any wire or cold rolled rod up to 5/32" in diameter, makes eyes



This is the Wire Former, a handy tool for projectionists in making peg-board tool storage panels to end possible clutter in the projection booth.

with 3/16" inside diameter, to make convenient anchoring to a wall with screws or nails, if peg-board types are not suitable.

With its own built-in cutter, it bends wire right and left, forming any angle, arc or circle or straightening mistakes made. The equipment may be ordered from the manufacturer for \$3.98. Galvanized steel wire of 9 gauge .148 diameter, or hardened aluminum wire 5/32" .156 diameter is also available from M & W. **IP**

CORRECTION

In the September issue of International Projectionist, it was inadvertently stated that the copper drippings program was started by president Morris I. Klapholz of the 25-30 Club Inc., a New York organization of motion picture projectionists. The statement was in error; the originator and founder of the copper drippings program, which is now being used all over the U. S. for the Will Rogers Memorial Hospital, was Morris J. Rotker. Mr. Rotker has been presented with many commendations for his efforts in this drive as well as a statuette of Will Rogers for his creativeness. Mr. Rotker is now Recording and Corresponding Secretary of the 25-30 Club, Inc., and was the General Chairman of the Silver Anniversary Banquet of the organization held at New York's Hotel Empire in January. **IP**

CARBON ARCS . . . FOR FINEST PROJECTION

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



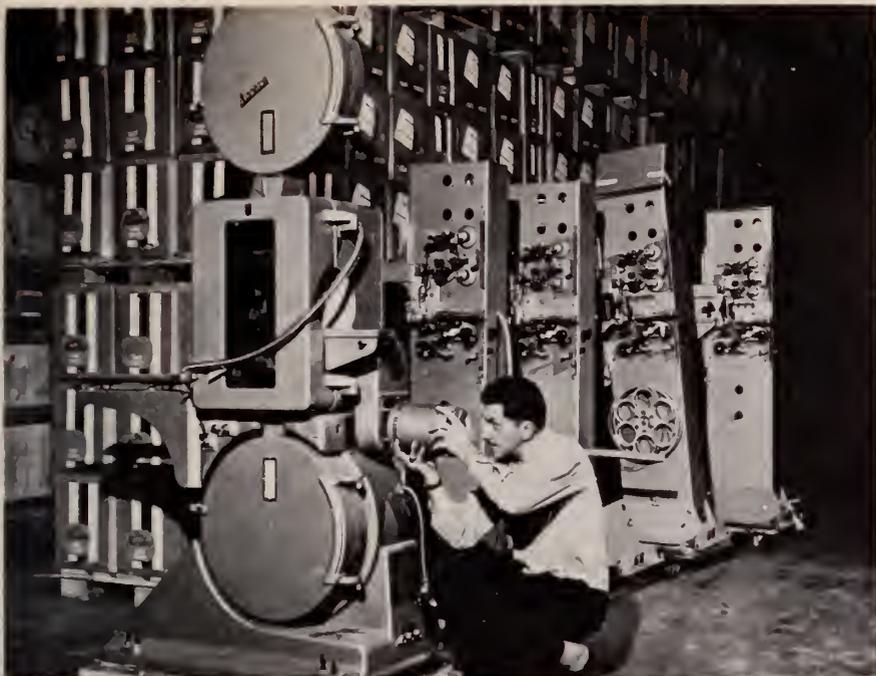
XETRON products

division

XETRON LAMPHOUSES • *XETRON* POWER SUPPLIES

CARBONS, INC.

BOONTON, N. J.



Motion picture projectors in storage and ready for shipment from the new Norelco installation. That's an Academy Award model in the foreground, receiving final checks before crating for shipment.

New Norelco Operations Center in New York Speeds Parts Shipments

In order to provide Norelco projector users and dealers with fast delivery and service on motion picture projectors and sound equipment, North American Philips Co., Inc. recently transferred warehousing and shipping operations to a large new building at 30-10 Review Ave., Long Island City. On the roof of the structure, one of the largest signs in the metropolitan area flashes time, temperature, and product announcements in the direction of Manhattan throughout the day and night.

The new operations center provides 100,000 sq. ft. of space at ground level plus 10,000 sq. ft. on the mezzanine for offices. Now, under one

roof, the company maintains a large stock of spare parts and complete units which are ready for shipment at short notice. Around-the-clock shipments of stock items are generally made on the same day and always within 24 hours after the order is received. This applies to the Academy Award Model AAI 70 35mm projector, as well as to all other Norelco theatre types, audio-visual and tele-cine units.

Norelco projectors are used in all major Hollywood studios and by theatres in 35 states. The inventory, consisting of more than a thousand parts and sub-assemblies, is constantly reviewed and amended as usage of Norelco projectors expands. **IP**

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY



The sign atop the Norelco warehouse can be seen for miles, reporting time, temperature and Norelco product messages.

THE VERY FINEST



IN
PROJECTOR PARTS

The ultimate in precision, long life and dependability—they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.

LaVezzi
SINCE 1908

MACHINE WORKS
4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



New proposed film standard

Continued from page 15

ates the changing of lens in a projector for either 70 or 35mm, only requirement is the addition of the presently used C/S attachment lens for 35mm print.

The width of the 35mm print would be .968" for the picture image; this can be accomplished by elimination of the antiquated optical sound track, also the elimination of the magnetic effects sound track, which is of marginal value in any case. This brings the image width to 1/2 the width of a 70mm image and using a squeeze image 2 to 1 ratio. It will expand with C/S attachment to the same width as 70mm. By conforming to same screen ratio it eliminates various ratio screen maskings; a 25% increase in definition; full use of spot from light source and superior sound from all prints.

With the elimination of all the outdated, time-consuming, costly processes the path is cleared to simplify and unify all printing; both picture image and sound. Every phase of the

industry will benefit, including the most important persons — the patrons.

The requirement of parts in the theatre for this change of image ratio and sound, would be (2) magnetic sound heads; (6) sprockets; (2) modified gate assemblies; (2) modified intermittent brackets to accommodate the large sprocket should any exhibitor initially choose to eliminate stereo sound equipment, only a matching transformer with three primary windings to one output, and a pre-amplifier would suffice, and could carry on with the existing monoral amplifier and speakers.

Theatres now possessing stereo equipment, their requirements for parts would be less. The changeover to this proposed standard would be gradual, from the first run down the line to a final run in theatres, covering a period of 18 months to two years; thus it would alleviate a large demand for parts required in theatres at any one time, keeping prices stable.

Should any exhibitor find it necessary to change back to the existing ratio the time limit and effort would be of no consequence.

Since the advent of CinemaScope in 1953, many theatres should require a change of sprockets and etc. at this date, in any event. The total expenditure to accommodate the new image would be very modest in return for benefits received and updating equipment for future use.

It has been stated throughout the industry that 70mm prints outlast the present 35mm print by many dozens of runs. The proposed 35mm print being basically identical, it would be expected to last for increased runs also.

Submitted for the benefit of the motion picture industry and to the Society of Motion Picture and Television Engineers for consideration,

corrections and adaptation for standardization.

Sincerely,
B. A. NIXON,
Fox Cinema,
Victoria, B. C., Canada

J. G. Comments:

The proposed standards suggested by brother Nixon is something that should be given careful consideration by the industry as a whole.

This plan would once and for all eliminate the hodge podge that exists in the projection room at this time, such as the changing of lenses, apertures and screen masking.

With this the audience would see a full screen picture at all times, with no change of aspect ratio. Also the picture definition or focus would be improved due to the larger film image and the sound would be better due to the extra quality obtained from magnetic recording.

As brother Nixon points out, the changes to the projector would be of a minor nature. The writer at this time sees two more slight changes required for the larger film aperture. One is that a larger spot would be needed to cover the larger aperture, which has an increase of 25% in depth.

In many cases this may be obtained by moving the lamphouse back a few inches and repositioning the carbons to a new focal point to obtain a greater magnification of the arc crater. I am not at this time prepared to say just how flexible the present arc mirrors are in this respect. I do however doubt if it could be done with the Jet Arc mirrors as they are of special design and do not use the common elliptical curve as do the conventional lamps. Perhaps the manufacturers will comment on this.

Also a new prime lens will be required with the present anamorphic since the aperture is 25% oversize in depth and not many theatres could increase the screen dimension to this extent, hence a longer focus prime lens will be a must in most cases.

All these of course are only minor details, and would not stand in the way of conversion to the new proposed standard.

I heartily endorse brother Nixon's proposals and I hope the industry will give it a good hard look, and not just shrug its shoulders as it so often does when suggestions are made for improvements.

I would be glad to hear from readers with comments pro and con on this subject, and I know Mr. Nixon has also solicited comments from individuals or organizations.

J.G.J.

**OUT OF PRINT
MITCHELL MANUAL
AVAILABLE!**

The renowned "Manual for Practical Projection" by Robert A. Mitchell is now out of print, according to an announcement by the bookseller, International Projectionist.

Returns from our retail outlets have been consolidated and we now have approximately 40 volumes of the Mitchell Manual available on a first-come-first served basis.

These books are in brand new condition, complete with dust jackets; have never been used. This rare publication can be yours for \$10 cash or money order. Sorry, no C.O.D. or foreign orders can be accepted at this price.

Sheehan Booksellers
P.O. Box 6174
Minneapolis, Minn. 55424



INTERNATIONAL PROJECTIONIST
1645 Hennepin Ave.
Minneapolis 34, Minnesota

Enter my subscription for

Name

Address

City

1 year (12) issues—\$3.00

2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Zone

State

basic mathematics

by NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you toward your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4. \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

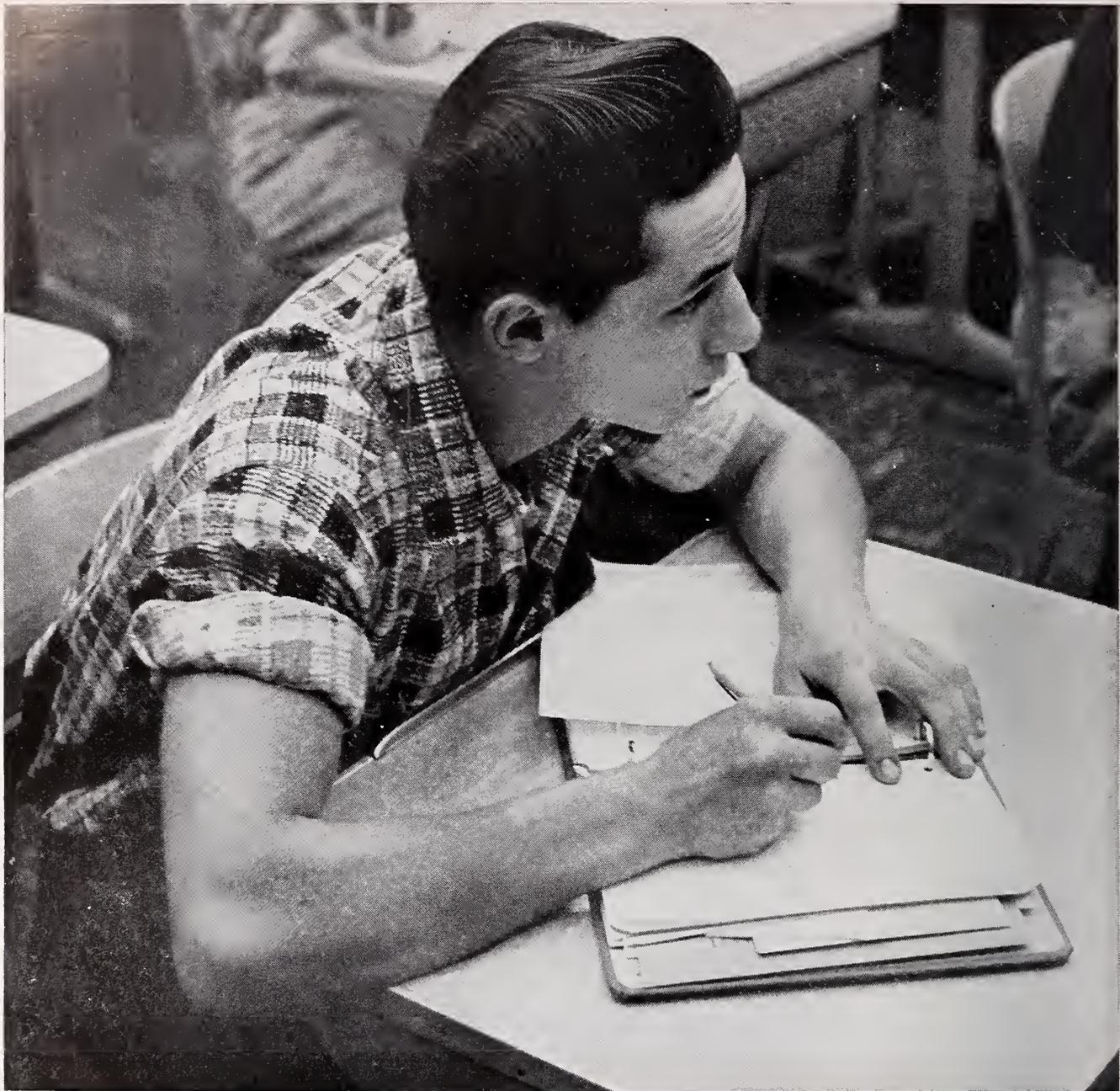
Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the PAYROLL SAVINGS PLAN for U.S. SAVINGS BONDS



INTERNATIONAL
PROJECTIONIST



Volume 40 April, 1965 No. 4

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

The 8mm Situation	4
Projection Room Dust Control	6
Southland's New Drive-In	10
Kodak's 8mm System	13

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.

INTERNATIONAL PROJECTIONIST April, 1965

IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE
YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



A report on the future . . .

Several varieties of 8mm spell opportunity, but also problems, for the professional projectionist

The International Motion Picture and Television Committee, motion picture equipment manufacturers, film producers and representatives of the Ministry of National Education recently attended a Continental symposium on a new 8mm film size.

Audio-visual education is constantly being extended to new fields, in particular that of educational motion picture which is, by far, its most important aspect. In the latter field, 16mm sound film has been used for a long time and before World War II the Institute Pédagogique National had already conceived and enforced rules for testing projectors for teaching.

8mm Sound Film

However, while 16mm sound film was standing out in audio-visual education, many professors (in applied sciences, in particular) were becoming keen promoters of 8mm film, which enabled them to show their own work to their pupils.

Then, three years ago, 8mm film prints obtained by a reduction process with magnetic track between sprocket holes and film edge were introduced. The outstanding results achieved immediately induced manufacturers to start designing conventional type 8mm sound projectors.

The most recent achievements were shown at the Photokina in Koln and the Salon Photo-Cinéma in Paris where many types manufactured in particular in the United States, Ger-

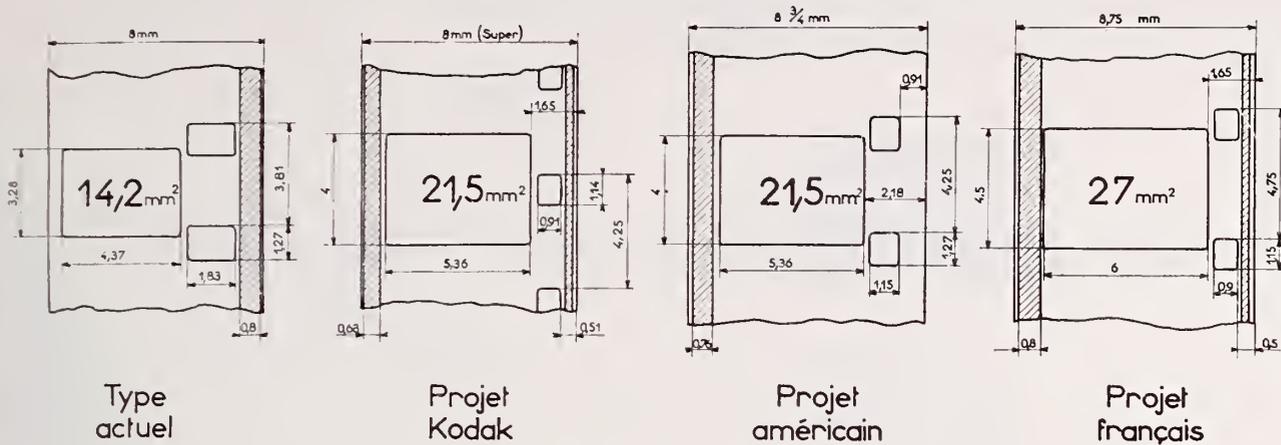
many, Japan, Italy and France were exhibited.

Magazine Type Projector

As a matter of fact, this promotion of 8mm film as an audio-visual aid led teachers to ask for a high quality automatic projector doing away with the inconvenience and loss of time caused by the setting up of a projector unit of conventional design.

A magazine projector was designed and introduced two years ago by Technicolor Ltd. (London) for short silent filmstrips. The members of the meeting had the opportunity of seeing a demonstration with an American Fairchild projector having

PROJETS de NORMES FILMS 8 mm ^(Son. magnétique)



a magazine accommodating up to 150 ft. of film, with provision for sound recording on magnetic track. An automatically loaded projector designed by the American specialist J. Maurer was also demonstrated.

The New 8mm Film

However, the attention given to this extensive use of 8mm film was bound to revive the objections raised more than 10 years ago against a film derived from the 16mm and which, therefore, had sprocket holes of superabundant section.

As early as April 1941, in an article published in the review "Ciné-Amateur" and entitled "La Bataille des Formats n'est pas terminée" (the size quarrel is not over), the defects of the 8mm size were stressed, showing the advantages which could be derived from the 10mm size with sprocket holes of smaller section.

This basic project was discussed at a meeting organized by the American SMPTE with a view to study-

ing the respective merits of each method proposed as a substitute for the 8mm size. All these methods were characterized by the use of smaller sprocket holes than in the 16mm film:

—An 8mm film with magnetic track between holes and film edge and a pitch of 4.25mm.

—Two 8 3/4 mm films (35/4), one with a 4.25mm pitch and magnetic track on picture edge, the other with a 4.75mm pitch and magnetic track between holes and film edge.

—An 8mm film with photographic track between holes and film edge and with 3.81mm pitch.

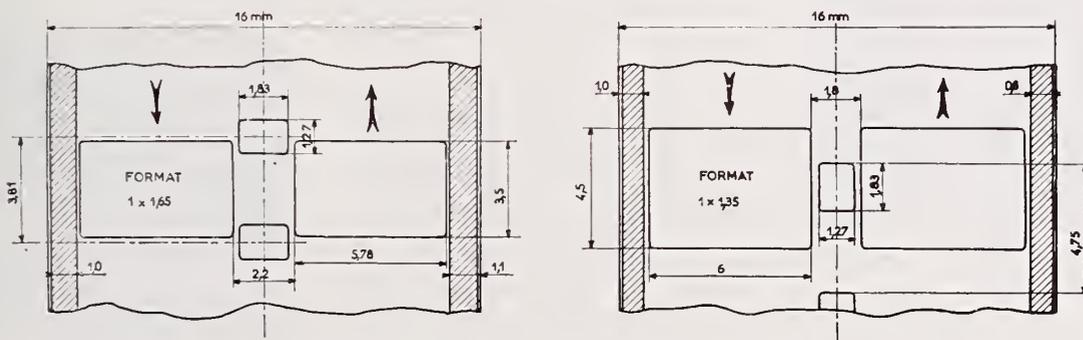
To face all the methods proposed, the former project of a 10mm film to adapt it to new requirements was proposed, and that—in addition to an 8mm film intended for amateur use only—a sound film size (with optical or magnetic sound track at option) be created for audio-visual education purposes.

At the 4th UNIATEC Congress held in Moscow an interesting proposal made by Martin and Saint-Hilaire again brought out the "tête-bêche" (head-to-tail) system in which two series of opposed frames are arranged on a 16mm film, driven by a single row of central sprocket holes with magnetic tracks laid on the external edges.

This system does away with film rewinding, since the projection of the two series of frames successively, brings back the film to the start position; it also eliminates the need for a balance-track.

Finally, it was announced that Eastman Kodak, Inc., had decided to adopt an 8mm film with narrow sprocket holes and a pitch of 4.25mm, providing a frame area of 21 sq. mm as against 14mm, i.e. an increase of 50% in area (x 1.2 linear).

PROJETS de NORMES FILMS 2 x 8 mm



images "tête-bêche" avec entraînement central

Dust Is An Unmitigated Nuisance. Here, From An Expert, Are Some New Facts About Its Efficient & Economical Removal.

The Projection Room And Dust Control

By Edward H. Steinberg

Executive Director, Kex National Ass'n.

NO ONE IS BETTER QUALIFIED than the man in the projection room when it comes to testifying that dust is a menace that attacks man and machine alike.

Dust has proven an especially grave problem to the projectionist — a problem that can threaten his health and his theater's business.

Personal experience shows that conventional clean-up methods can't quite get the dust job done. One reason the dust menace is more worrisome in the projection room than in most other places is that the projector creates its own carbon dust.

But, of course, carbon dust isn't all the dust you encounter. Dust is, unfortunately, one of the few universal substances which scientists have discovered *everywhere*. They've found



AN END to projection room dust? Dry, chemically-treated cloths and mops, originating mainly for use in hospitals where dust-borne "staph" was a serious problem, may have application in the projection room. New system really removes carbon dust where conventional broom sweeping and wet mopping does not.

tons of it in the atmosphere above the North and South Poles, for instance. Dust is spread by auto exhausts, as a by-product of heating, when a cigarette ash is flicked on a floor. Whenever you or anyone else enter the projection room, dust comes in too — "hitchhiking" on shoes and clothes.

The nuisance value of dust is so obvious to the professional projectionist that the point doesn't have to be labored. It can "gum up" projectors and other equipment, impair the quality of exhibition of the film; can be a real health hazard. As the National Safety Council has pointed out, dust and dirt can infect cuts and minor scratches. Dust can cause or aggravate respiratory ailments. In short, dust is a menace as well as a nuisance.

At the invitation of the editors of *INTERNATIONAL PROJECTIONIST*, the writer is glad to pass along some tips about a new approach to dust control, the use of chemically-treated mops and tools that do a far better job of dust removal than conventional methods of broom sweeping and "wet mopping."

For a long time, dust was a lot like the common cold. Everybody admitted it was a hazard and a nuisance but nobody had figured out an easy and economical way to do any thing about it. Then the Bell Telephone Co., concerned with the vexing problem of dust in switchgears and other electronic equipment, got together with Callaway Mills to experiment with chemically treated dry mops. The result was a new approach to dust control. The dry mops really remove the tiny particles of "invisible" dust, almost too small to be seen by the

naked eye, but which unfortunately is always very much present.

Interestingly enough, the initial impetus for the new method of "dry mop" dust control (available on a rental basis) came from hospitals. Dust is notorious as a carrier of bacteria-borne diseases. For hospitals, absolute cleanliness is a "must." The new method of dust control, combined with germicidal agents, has played an important role in quelling the rise of "staph" and other infections which, you may recall, was the occasion of nationwide concern three or four years back. You don't hear much about "staph" any more.

Instead of "wet-mopping," the new approach to dust removal relies mainly on "dry-mopping."

It's easy to observe a really dramatic comparison of treated dry-mop sweeping versus broom sweeping and wet-mopping. Wet-mopping often sashes the finer particles around. When the floor or other surfaces dries, the dust is right back where it started.

For a convincing demonstration,



Mops, Chemically-Treated, make dust control faster, easier, really remove fine dust particles missed by other means. Study by American University shows effectiveness of germicidals used, too.

sweep and mop a section of floor. Then, as soon as it dries, without a single foot ever having been set upon it, whisk over it with a treated dry mop. Invariably, the mop will be literally black with resettled dust, fine particles, and "invisible" dirt from the so-called sparkling clean floor!

Three impressive advantages are offered by the new system: 1) increased cleanliness and better appearance; 2) time and labor saving; 3) keeping dust from resettling where it may become a health or sanitation hazard.

A headache

In the projection room, this "resettling" of dust when conventional cleaning methods are used can be a real headache. When dust is "removed" from the floor by conventional methods, and resettles on projection or other equipment, you're really worse off than when you started!

Broom sweeping and wet-mopping involve two separate, time-consuming operations. The dry-mop operation is a single step.

The new dust control method carries a special "bonus": effective germicidal control. Results of hundreds of laboratory tests conducted by Prof. Martha Sager at the biology department of The American University have indicated that treated mops provide substantial anti-microbial activity and reduce the hazards of transmission usually encountered when untreated mops and dust cloths are used by maintenance people.

Prof. Sager reports: "Each of the germicides commonly added to treated dry mops (phenols, mercuric compounds, and quarternary ammonium compounds) affects the bacterial cell in a different manner, so each is effective in destroying the organism or its ability to reproduce."

What is adaptable to the hospital and other businesses may well be adaptable to the projection room. Chemically-treated cloths are quite capable of removing carbon dust and other dust more easily and efficiently than anything yet devised.

Incidentally, if any reader of INTERNATIONAL PROJECTIONIST would like to have a copy of Professor Sager's report, it is available free upon request by writing: The Dust Control Information Bureau, Executive Building, 7100 Baltimore Ave., College Park, Md. **IP**

INTERNATIONAL PROJECTIONIST April, 1965

Let your screen show everything that's on the film



USE
BAUSCH & LOMB
SUPER CINEPHOR®
PROJECTION LENSES

You can't show *today's* motion pictures with *yesterday's* projection lenses . . . and expect to get top box office. You need modern Super Cinephor lenses . . . designed to project with high fidelity all the fine detail, subtle tones and true colors on today's advanced film. Engineered and built by Bausch & Lomb, Super Cinephors offer proven performance, backed by years of unmatched experience and technical know-how in optics, from the camera to the screen.

WRITE for Catalog 41-123 to get complete information. Bausch & Lomb, 61616 Bausch St., Rochester, N. Y. 14602.

BAUSCH & LOMB

Pioneers and leaders in optical design and manufacture for the motion picture industry, including reflectors, optical sound units, Super Baltar® camera lenses and Super Cinephor and CinemaScope projection lenses.



Talent...\$390,000

... and Studio costs ... \$403,000;
Production staff ... \$275,000;
Sets ... \$242,600; Story ... \$143,500;
Location ... \$86,500 ...



Now. **Are you** **willing to risk** **it all on less** **than Eastman** **films?**

More than anything else except creative skill, film is crucial to quality in movie-making. Isn't it a false economy, then, to attempt to save a fraction of a cent per foot on film stock which has less than Eastman quality? And doesn't poor film quality jeopardize your entire investment, even make talent look bad?

But total-picture quality doesn't demand that you merely shoot on the best negative. There's also the print stock to consider ... and some don't. It's a great mistake—both from your point of view and that of your audience—to print on anything less than EASTMAN Film.

Look at it this way. Film—both negative and print stock—must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. In the theater it must possess a long wear-tear capability for precision in projection, and in order to hold down costly print reorders. EASTMAN Films have all these qualities because Eastman's engineering and technical facilities are unique. Furthermore, Eastman's film specialists are always at hand to help you maximize production efficiency.

Everything considered, doesn't it make good sense to use EASTMAN all the way?

Motion Picture and

Education Markets Division

EASTMAN KODAK COMPANY

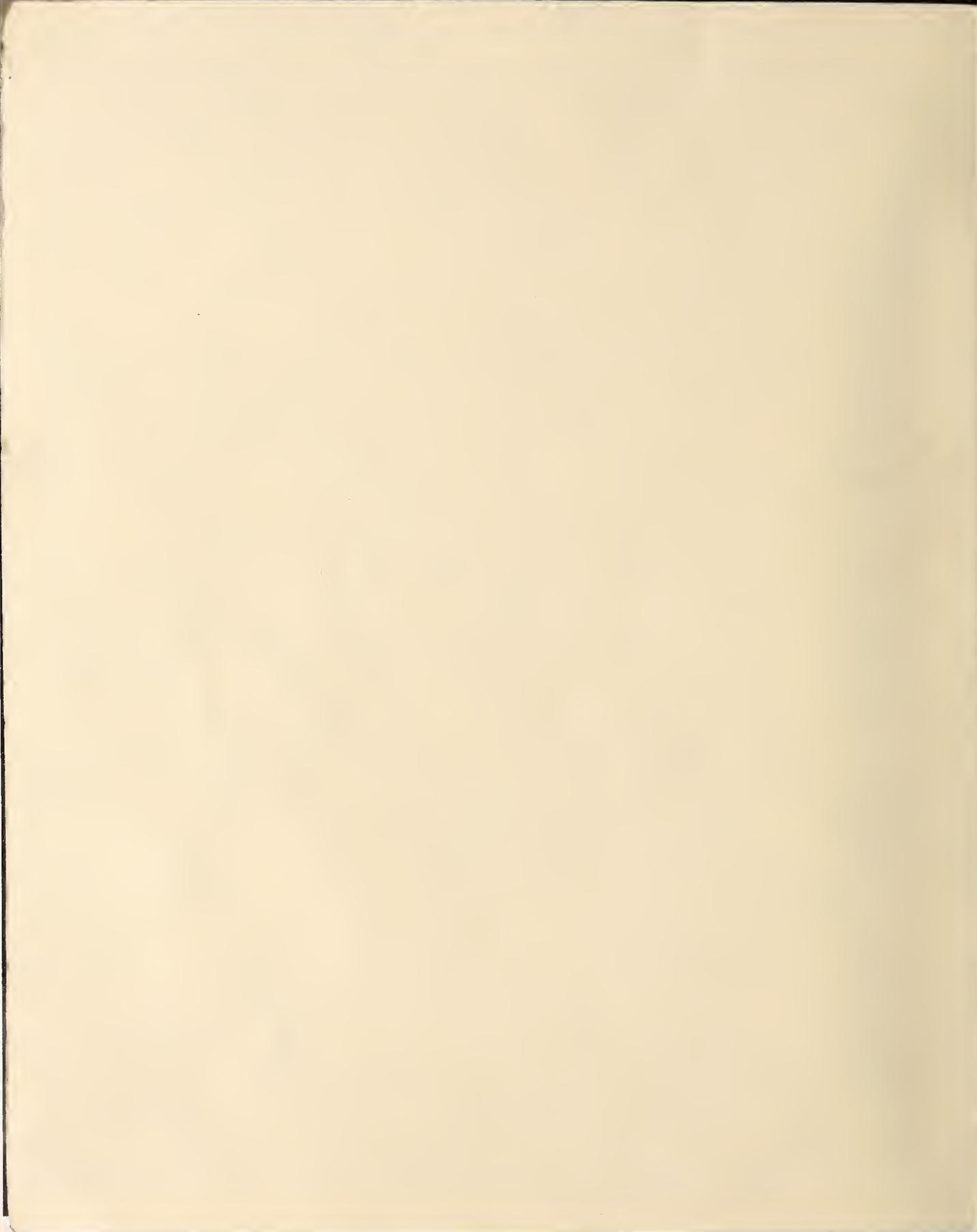
Rochester, N.Y.

New York, N.Y.

Chicago, Ill.

Hollywood, Calif.

EASTMAN FILM





Talent...\$390,000

... and Studio costs ... \$403,000;
Production staff ... \$275,000;
Sets ... \$242,600; Story ... \$143,500;
Location ... \$86,500 ...

Now. Are you willing to risk it all on less than Eastman films?

More than anything else except creative skill, film is crucial to quality in movie-making. Isn't it a false economy, then, to attempt to save a fraction of a cent per foot on film stock which has less than Eastman quality? And doesn't poor film quality jeopardize your entire investment, even make talent look bad?

But total-picture quality doesn't demand that you merely shoot on the best negative. There's also the print stock to consider ... and some don't. It's a great mistake—both from your point of view and that of your audience—to print on anything less than EASTMAN Film.

Look at it this way. Film—both negative and print stock—must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. In the theater it must possess a long wear-tear capability for precision in projection, and in order to hold down costly print reorders, EASTMAN Films have all these qualities because Eastman's engineering and technical facilities are unique. Furthermore, Eastman's film specialists are always at hand to help you maximize production efficiency.

Everything considered, doesn't it make good sense to use EASTMAN all the way?

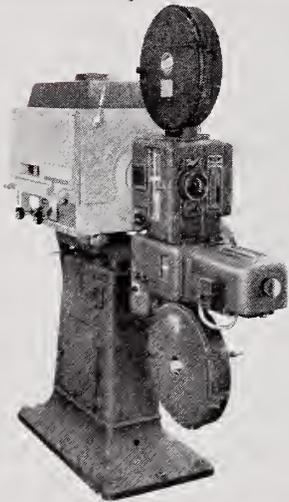
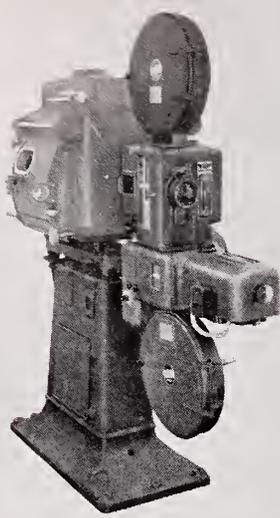
Motion Picture and
Education Markets Division

EASTMAN KODAK COMPANY

Rochester, N.Y. New York, N.Y.
Chicago, Ill. Hollywood, Calif.



Southland's Finest New Drive-In Boasts Better Projection and Sound



Introducing the 1965

Simplex
X-L

Is there really a new Simplex X-L for 1965? Yes and No. Yes, because the X-L mechanism never stops being refined and improved to meet every new advance in motion picture projection. No, in the sense that the basic components that have performed so perfectly for so many years are still the heart of the X-L.

Fact is, there's a long list of advanced engineering features on the X-L that are just not available on any other projector. But it's sufficient to say that the X-L is the pride of the world's most experienced manufacturer of professional motion picture projectors. And it's the overwhelming choice of projectionists everywhere.

Get all the facts about the '65 X-L. There's nothing newer, or better on the market.



National
THEATRE SUPPLY COMPANY

Subsidiary of General Precision Equipment Corporation 

HOME OFFICE, 50 PROSPECT AVENUE, TARRYTOWN, NEW YORK
BRANCHES FROM COAST TO COAST • PHONE MEDFORD 1-6200

Albert Weiss, second generation general manager of the Weiss chain of theatres in Macon and Savannah, Georgia, wanted a new drive-in theatre for Macon, but not for the prestige of building the biggest and gaudiest in Georgia.

He set high standards in this order.

No. 1) Brightest possible picture consistent with screen size and car capacity.

No. 2) Best sound reproduction possible within capabilities of equipment available.

No. 3) Plan the drive-in for convenience of entrance and exit to highways yet far enough from highways to avoid annoying interferences from car headlights, flashing signs and highway noises.

No. 4) Locate the screen for least interference from sunset or twilight shadows.

No. 5) Construct a beautiful and functional main building to house the projection room, rest rooms, three lanes of concession operations, ample patio space between main building and screen for seating walk-in patrons and to make the entire complex as beautiful as possible through the lavish use of landscaping and shrubbery.

He did all of this and the new Weiss Drive-In Theatre opened last fall to turn-away business.

But it took quite some doing to build a drive-in to the Weiss standards. First he commissioned William Pulgram of the Fabrap Group of Architects of Atlanta, Ga. as designer and architect. Next he selected a contractor of wide reputation and ample equipment to carve the drive-in out of the rolling hills of the site.

To get the best picture possible, Mr. Weiss actually located the screen and the projection booth and then built the drive-in theatre around them. He selected Ashcraft Super Core-Lite arc lamps and 170 ampere 12 phase selenium rectifiers, Simplex XL projectors with 5/1 fast pull down intermittent movements, Kollmorgen 4" diameter f:1.9 Cine-

mascope backup lenses with 4" diameter Bausch & Lomb anamorphic attachments, Kollmorgen f:1.7 flat picture lenses.

For sound, he selected a special Simplex-Altec sound system with three 175 watt power amplifiers (two in use, one for standby) fed by transistorized pre-amplifiers. Ditmco 5" diameter speakers and Eprad down-lighted junction boxes with special baskets to receive the larger type speakers were used.

The screen is 120 ft. wide, 52 ft. high and is faced with Barrett white butt jointed asbestos shingles.

Mr. Weiss installed Carrier year
(Continued on page 12)

New "Packaged" Projection Booth

A new series of easy to erect packaged buildings has been announced by FlexiBuilt-by-Master. Models are available for gate houses, projection booths, and refreshment stands, and combinations of these are easily arranged.

FlexiBuilt buildings are pre-manufactured, modern-style structures easily and quickly erected. FlexiBuilt components include sandwich type walls made of Alcoa "Alply" with permanently colored aluminum faces; many styles of windows, doors, roof styles and floor treatments. Standard packages are available for buildings as small as 4' x 4' guard houses up to large warehouses, retail stores, motels, school rooms, etc. Buildings can be constructed from standard components for almost any use in any multiple of four feet.

The one-story structures can be built on slabs or footings, with or without basements. Most can be erected quickly by local crews of two to four men. The buildings are shipped from the factory complete, ready for instant erection and include all kitchen, rest room or bath facilities where desired.

For a free folder containing more information about these packaged buildings, write FlexiBuilt, 333 West First Street, Dayton, Ohio, 45402.

IP



Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

ASHCRAFT

SUPER CORE-LITE
CORE-LITE
CINEX SPECIAL
35/70
PROJECTION LAMPS
AND HIGH-REACTANCE
MULTI-PHASE RECTIFIERS

★
**World's Standard
of
Projection Excellence**

Ballantyne Equips Two Pacific Drive-Ins

Ballantyne Instruments & Electronics will completely equip the 1,750 car Sunnyside Drive-In Theatre, Fresno, Calif., and the new 1,750 car Kalua Drive-In in Hawaii, for Pacific Drive-Ins Theatres Corporation, Los Angeles.

The complete job features Ballantyne All-in-One Package equipment, including all-sound protection booth, box office and concession equipment.

Ballantyne executive vice president J. R. Hoff said that Pacific Theatres has "gone all the way on top quality" and included Ballantyne Transistorized Sound, Pre-amplifier system, and Ballantyne MX Power Amplifiers, Norelco AAI 70mm projectors, jet arc lamps and unique Ballantyne double-cone speakers.

The Fresno Drive-In also will install 525 Ballantyne 360° electric heaters. Complete concession equipment will include ovens, freezers, Tappan Micro-Wave ovens, pizza ovens, etc.

The screen tower at the Sunnyside in Fresno is 50 x 140 feet, while the Kalua in Hawaii has a 50 x 114 foot screen.

iP

Ballantyne Introduces New Power Amplifier

Now, for indoor theatres, a new all-transistorized, power amplifier, the PAT-50, is being produced by Ballantyne Instruments and Electronics, Inc., in Omaha. This amplifier unit is designed for 50 watts undistorted power output with a 10-ohm speaker load. Two PAT-50's are housed together in a wall cabinet measuring 12¼" wide x 17⅞" deep and 32½" high.

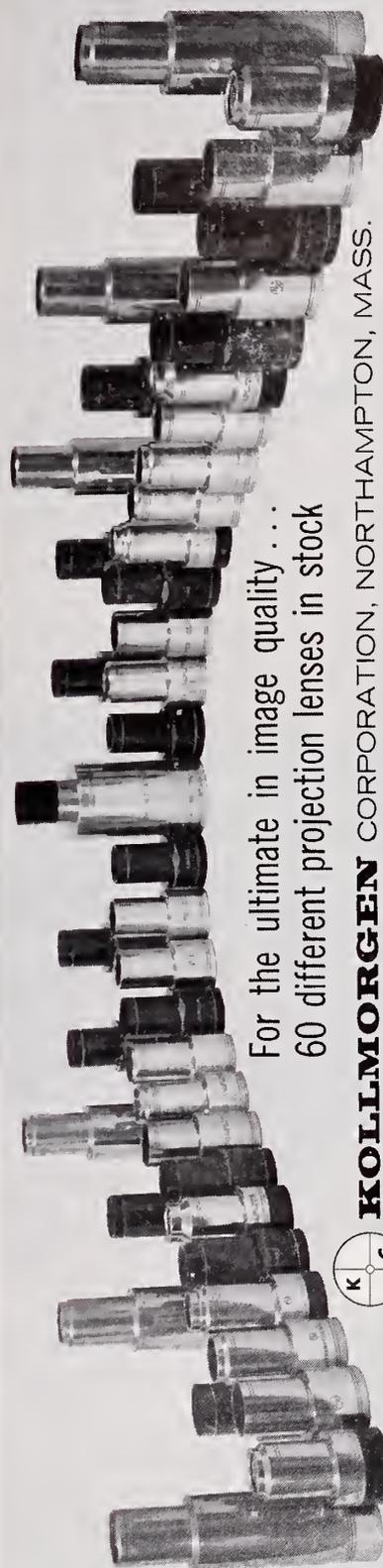
The amplifiers are plug-in type, and each PAT-50 is complete in itself. For convection cooling and with a flat response, power is calculated RMS and will operate under continuous full power duty.

The cabinet has filtered forced air cooling for added amplifier protection. Units are designed to be fully compatible with the Ballantyne transistorized pre-amps.

Full information, prices and technical data can be secured from Ballantyne Instruments and Electronics, Inc., 1712 Jackson St., Omaha, Nebraska. Ballantyne is a division of A.B.C. Consolidated Corporation.

iP

KOLLMORGEN



For the ultimate in image quality...
60 different projection lenses in stock

KOLLMORGEN CORPORATION, NORTHAMPTON, MASS.



New 8mm Problems

from page 10

A Critical Study

All the factors involved having been defined, it was possible to proceed to a critical study of the problem both as regards film size and projector design.

As regards the film size, the first question to be solved was that of the sound track to be adopted. In spite of its higher cost and the drawbacks encountered in operation, the

magnetic track seemed to prevail because it provided better quality of sound reproduction, similar to that obtained with a magnetic tape running at a speed of 9.5 mm/sec.

Therefore, there remained the super 8mm film proposed by Kodak, the 8 $\frac{3}{4}$ mm film proposed by Bell & Howell in the United States and the French 8.75mm film providing a frame area of 25 sq. mm, i.e. twice the present area . . . notwithstanding the "tete-beche" 2 x 8mm formula which can also embody the above improvements by adapting it to the 4.75mm pitch with sprocket holes of reduced section.

A substantial increase in frame area constitutes an essential factor in the design of projectors, as it has been stressed by the manufacturers of such apparatus, both in the U. S. and in France.

The problem of projectors should therefore be approached from the viewpoint of performance requirements. Allowing for average classroom dimensions, it is essential that the picture—which has to be viewed from a distance equal to six times the frame width at the most—be projected on a 0.70 to 1 screen. Moreover, this picture must be sufficiently bright to be viewed in a room normally illuminated for schoolwork.

These requirements should be met under rear-screen projection conditions so that the projector can be placed near the professor's chair;

moreover, film handling in projector operation should be limited to putting the magazine in place. Finally, reverse motion and still projection are desirable features.

It was claimed that the American formulae (Technicolor and Fairchild) did not meet the above requirements on account of the small size of screens, the fact that reverse motion is not possible with closed loop magazines, and, finally, of the high cost of a magazine adapted to sound film.

Conversely, the automatic film loading projector seems to be more rational, provided it be combined with a simple magazine with automatic film rewinding, in the view of the Continental experts.

In this connection, attention was drawn to the "Scopitone" system designed by the Société CAMECA, while pointing out that constant film speed running with optical compensation projection was, at any rate, preferable to the claw system, to protect the film from damage due to faulty operation of driving mechanism or deterioration of sprocket holes. On the other hand, mention should be made of the advantages which could be derived from the use of embossed surfaces in the design of transmission type screens with a high photometric coefficient.

The optimum characteristics of a projector intended for audio-visual education was defined as follows:

- Automatic engagement of the film enclosed in a magazine;
- Simple and inexpensive magazine;
- Constant speed motion;
- Possibility of moving the film in reverse direction and still projection;
- Transmission type screen with multicellular embossing;
- Image brightness 500 to 1000 blondels.

Comparison tests between Continental and U. S. solutions to the problem are being made at the present time. For this discussion of the European approach, IP is indebted to the Commission Superieure Technique du Cinema, Paris. **IP**

Norelco

p r o j e c t i o n
e q u i p m e n t

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.

THE VERY FINEST





IN
PROJECTOR PARTS

The ultimate in precision, long life and dependability—they keep projectors in top operating condition essential to good pictures, patron satisfaction and good business. Available through your Theatre Equipment Dealer.



MACHINE WORKS

4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636



CARBON ARCS . . .

FOR FINEST PROJECTION

. . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON

division

products

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

CARBONS, INC.

BOONTON, N. J.

New 8mm Kodak Movie System Ready to Go

Eastman Kodak Co. announced that it plans to introduce a new movie system comprising a new Super 8 format, an improved Kodachrome II film and new equipment for 8mm amateur and commercial motion pictures prior to opening of the International Photographic Exposition on May 1.

The Kodak system of an enlarged picture area, improved film quality and new equipment and optics gives brighter, sharper pictures on the screen, it is said. Complete details will be reported at the IPEX meeting.

New system

Eastman Kodak Co. has announced that it plans to introduce a new movie system comprising a new Super 8 format, an improved Kodachrome II film, and new equipment for 8mm amateur and commercial motion pictures.

The Kodak system of an enlarged picture area, improved film quality, and new equipment and optics, gives brighter, sharper pictures on the screen.

The complete system includes an improved 8mm film that gives approximately 50% more projection image area than present 8mm.

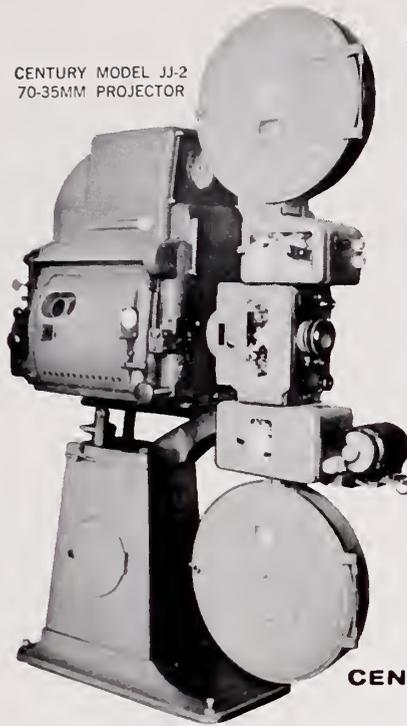
The reports in IP have detailed how the company's technical men had been able to provide the appreciable increase in the picture area which can be utilized for brighter and larger pictures with increased definition and sharpness. This was achieved by reducing the size of the perforations and placing the perforations nearer the edge of the film. The sound track was also moved to the opposite edge of the film from the perforations.

Because the new format lends itself to the use of either magnetic or optical sound, and for other technical reasons, it is well-suited for educational, industrial, and commercial motion picture use.

New equipment

The price of the Super 8 Kodachrome II film, which will be supplied in an easy-load cartridge in 50-foot lengths 8mm in width, is expected to be only moderately higher than conventional 8mm Kodachrome II film in rolls. Cameras and projectors for present film will not accept the "super" film.

CENTURY MODEL JJ-2
70-35MM PROJECTOR



This is the NEW



Projector:

It has everything you want and more!

You can show better pictures, and at the lowest cost—see for yourself at any CENTURY dealer! CENTURY'S all-new Projectors—35mm, 70/35mm and All-Transistor Sound Systems—4 channel, 6/4/1 channel, single channel

CENTURY PROJECTOR CORPORATION
NEW YORK, N.Y. 10019



REDUCE SCREEN LIGHT LOSS

with modern, first surface

TUFCOLD DICHROIC REFLECTORS

The light reaching your screen must be reflected by the lamphouse mirrors, therefore brilliancy of your pictures is dependent directly upon the condition of your reflectors.

Using TUFCOLD reflectors, projected light is reflected from the front surface without passing through the glass twice, as with second surface mirrors.

*See your dealer now for the size you need or write
for data on sizes for all lamps.*

The *Strong* Electric Corporation
31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741



Projectionist Andy Noble looks very pleased with the neat installation of his projection room at the Weis Drive-In Theatre in Macon, Georgia. Featured in this illustration are the two Ashcraft Super Core-Lite Arc Lamp installations.

Also shown are the water recirculators. The lamps burn 13.6x18 high intensity carbons at 165 amps. The screen width is 137 feet. The Simplex XL projectors have high-speed movements, Simplex XL-Altex 525 watt sound system and Simplex pedestals.



A general scene from the parking area of the Weis Drive-In Theatre in Macon, Georgia, showing the 125-ft. wide screen and the main building, sunken seven feet below the grade level of the parking area. At the far right of the illustration is the projection booth, located above the three-lane, cafeteria-style, air conditioned concession area. The Drive-In playground is located at the rear of the building.

New Drive-In

from page 10

'round heating and air conditioning units for 80 cars, and said he would equip the entire theatre with such units provided the year' round popularity of such units would justify the expense.

Traffic and admissions accounting at the box office are handled through four lanes of Eprad Car-Check and Watchdog car counting systems.

An area approximately 150 ft.

wide and 300 feet long was sunken near the center of the drive-in and the entire main building was located in this depression, which is approximately 7 ft. below the level of the drive-in surface. The purpose of this design is to lower the main building to improve sight lines of all the car ramps at the rear of the drive-in area and to make possible one of the most unique and beautifully landscaped drive-in anywhere. More than 6,700 different pieces of shrubbery were used in landscaping the project.

Currently the capacity of the Weiss Drive-In is 850 cars, but rough ramps have been provided and wiring installed for an additional 300 cars when the need for more capacity justifies the expansion.

All of the projection and sound equipment, speakers, junction boxes, concession and box office equipment, changeable letter signs and playground equipment, were supplied and installed under the supervision of Bill Toney, manager of the Atlanta Branch of National Theatre Supply Co. **IP**



Look over Drive-In — here the owner and general manager of the Weis circuit of theatres, Albert Weis, is shown with architect William Pulgram on the sunken patio of the Weis Drive-In Theatre in Macon, Georgia. The illustration shows part of the patio seating area and two goldfish ponds which help make the entire recreation and playground area a valuable adjunct to the Drive-In.



Another view of the Weis Drive-In Theatre showing a view from the screen area — showing in greater detail the sunken main building and projection booth. Unexcelled viewing is permitted from the parking area in the back of the projection booth and concession area; the pit also contains a playground area, patio and even fish ponds.

A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

basic mathematics

by **NORMAN H. CROWHURST**

**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES

RIDER

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics—regardless of your previous education! It employs an exciting new technique presenting basic mathematics as an continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS—No matter what your plans are in electronics—mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT—You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS—Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS—This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS—Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4 Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

Only the Arc Lamp Manufacturer



who is the largest in the world, has built the greatest number of carbon arc lamps, the most different models, and who builds lamps that deliver maximum light requirements for indoor and drive-in screens, could have developed the beautiful new

Library of Congress
Order Division (0368X)
Washington 25, D.C.

FUTURA

That's why Strong lamps are used in 70% of all U. S. theatres. Your Strong dealer will be happy to show you the Futura or you can obtain literature by writing . . .

THE *Strong* ELECTRIC CORPORATION

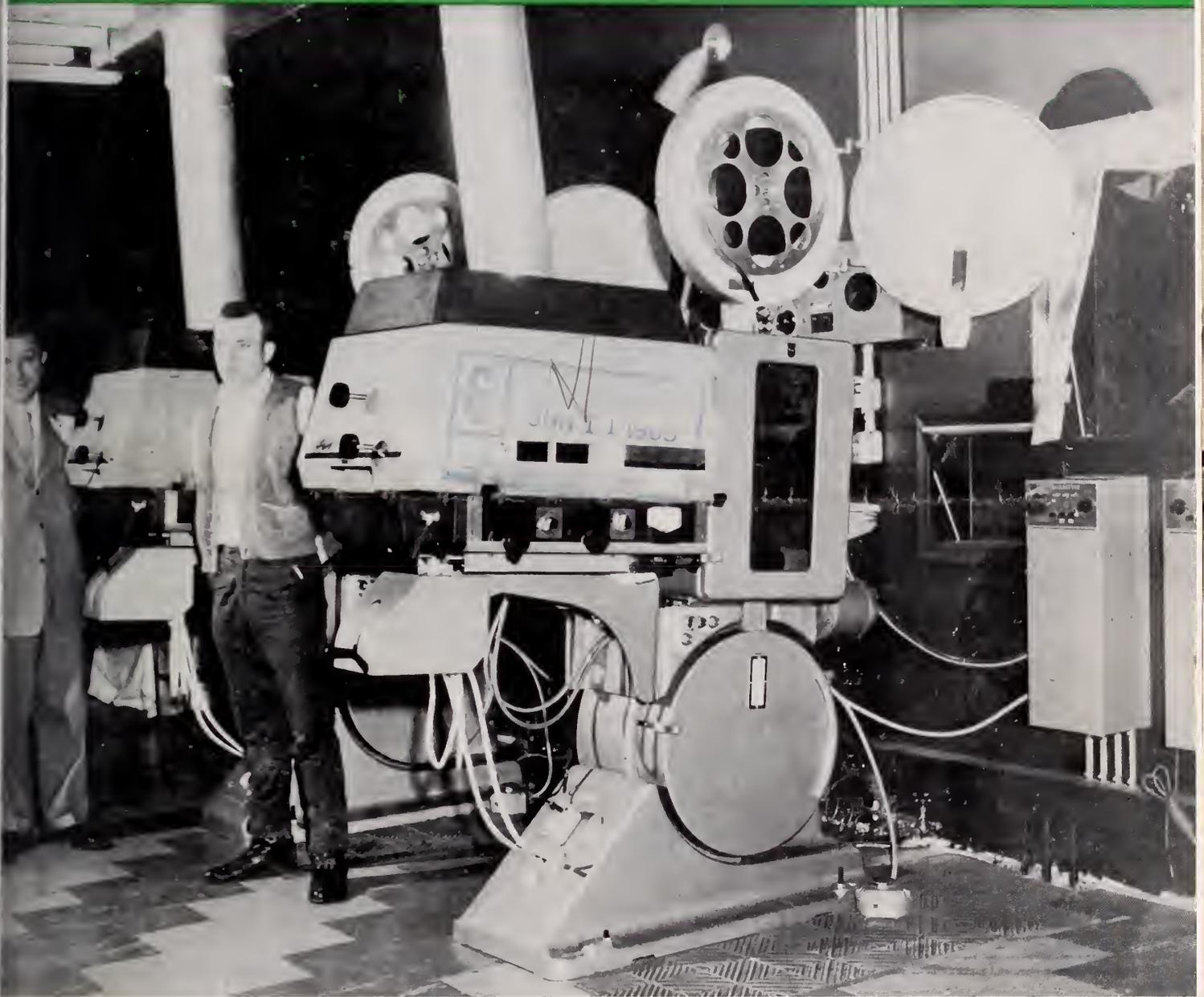
31 City Park Avenue

Toledo, Ohio 43601

Phone (419) 248-3741

Note: Strong also is the only American Xenon lamphouse manufacturer.

INTERNATIONAL PROJECTIONIST



A look at the projection room of the Basil Theatre, Sharon, Pa., suggests that a projectionist, after working his shift, would be reluctant to leave such surroundings even for the comfort of his home. Surely it is a splendid example of fine equipment, well installed, and perfect housekeeping from floor to ceiling. Note the comfortable safety matting at each projector and the provision for good booth lighting. Shown is Arnold F. Campana, manager, left, and William Taylor, projectionist, after the installation of Strong Futura lamps was made by Ballantyne Instruments and Electronics, Inc. Omaha, Nebr.

M. P. ...
Library of Congress
Order Division (0368X)
Washington 25, D.C.

MAY

1965

VOLUME 40

NUMBER 5

40c A COPY

\$3.00 A YEAR

When we read this letter
was our face red!



"Just recently we completed installation of two STRONG FUTURA II Lamps with the STRONG Bi-Power Silicon Rectifier and two water pumps for the water cooled positive jaws. Both lamps work like a charm. They're easy to clean and stay clean longer than any lamps I've run. We are getting 25% more light on the screen. Carbon consumption has been reduced by a big percentage. The lamps are beautiful. There are many more things that I like about these lamps and all of it is good."

W. C. Mathews, Projectionist

Shades Mt. Drive-In Theatre,
Birmingham, Ala., Member
of IATSE & MPMO Local 236

(Shown at left in picture with
Carl Wesler, Jr., Manager)

Such compliments make one blush

The Strong Electric Corp., • 31 City Park Avenue • Toledo, Ohio 43601

INTERNATIONAL
PROJECTIONIST



Volume 40 May, 1965 No. 5

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

Research Pays Off	4
New Trade Show Plans	11
Sound System Improvements	12
Rectifier Developments	13

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtney Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.

IP

Get Your Copy Every Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



Motion Picture Theatre Research will Pay Dividends for Projectionist

By M. C. (Mel) Glatz*

No doubt everyone in the industry is looking with great anticipation at the *growing activity* in the construction of new theatres — remodeling — refurbishing — and re-equipping of existing theatres. By past standards, we might say that there actually is a *boom* developing, particularly in conventional theatres in key locations and shopping centers.

BACKED UP WITH HARD CASH

Experimental theatres, properly located, improved product, and population trends have re-established faith in the industry. This renewed faith was backed up with hard cash to the

**Head of purchasing, construction and real estate, Fox Intermountain Theatres, Inc. Mr. Glatz is also a theatre design engineer. Printed here is an address given at the recent Theatre Equipment Dealers Ass'n meeting in Chicago.*

tune of \$97,000,000 in new construction in 1963, plus another \$15,000,000 on refurbishing and re-equipping older theatres.

It is predicted that in 1964 there will be considerably more new theatre construction and many more remodeling projects—possibly at a combined amount near \$130,000,000.

While the industry has lost an audience to other forms of entertainment and sports media except for rare occasions, it is starting to feel the effects of the population explosion. You are aware of this great population growth, but to bring it into full and proper focus, may I remind you of a few significant statistics and predictions?

GREAT POPULATION GROWTH

In 1950 the U. S. population was 152.3 million. In 1960 the figure was

180.7 million. We are approaching 1965, and the prediction is 195.1 million. The prediction continues by estimating that the population figure in 1970 will be 211.4 million; and by 1980, only 15 short years away, the figure will reach 252.1 million. No doubt much of the new faith in the industry is based correctly on these figures.

To refresh your memory on what is happening to the youth population, which, at present, makes up the majority of theatre attendance.

In 1950 there were 51.4 million under 20 years of age. By 1960, there were 69 million — a gain of 35 per cent in only ten years. This will expand as follow:

By 1970—to 85 million.

By 1980—to 103 million or double the 1950 youth population.

While on statistics, the migration

of population should be of some significance to you in planned marketing. During the 50s, the rate of growth in the the western states was twice that of the national average. It is predicted that during the 60s this migration west will increase, with the migration south being a close second. It is estimated that by 1975, the majority of the population will live in only 20 *super cities!*

BRIGHT FUTURE APPARENT

Considering these facts and predictions; plus your realization that there are eight to ten thousand theatres in the nation badly needing remodeling, new equipment new furnishings, *Your Future Appears Bright!*

However, even though your part of this industry has been on "starvation rations" for many years; even though your service to the industry has been of great value; even though you have won deserving respect of the industry, and no doubt are entitled to a break, your fight for survival *may be only beginning!*

It appears that for those who can adapt and qualify, they are on the threshold of the biggest, most rewarding opportunity they will experience in a lifetime.

The question becomes: *What Does It Take to Qualify?*

You must become a hard-headed realist, and realize that many of the items and services you are offering your customers are as obsolete as most of our ancient theatres. In fact, some product and methods are the same as were being offered and sold in the 30s!

Maybe there is a good excuse because your past energies and ingenuity have been centered on survival, and rightly so. But *now* is the time for a change. Otherwise, the opportunity may be a mirage.

I am not belittling, in any way, the brave souls who have improved their products and services during the past "dry spell." In fact, they have the industry's highest regard. These are the ones who are pioneering the new era. These are the ones whose place, I believe, is secure.

STARTING A NEW ERA

We are in fact starting a new era. And, speaking of new eras—most U.S. businesses have been in a new era for 15 years. The technological advancements in all other businesses have been tremendous. Their

methods of marketing have kept pace. Their entire concept of doing business, their dreams, their ideas, their physical plants are tuned to 1964, and beyond. They, in many instances, are 15 years or more, ahead of our industry, particularly in physical properties. *Competition* has forced these *radical changes.*

I believe, too, that the production end of our business is also way in advance of our physical properties and equipment, and that there are relatively few theatres which can present their product to the customer as it should be presented, and give the customer the full impact of what has been put on the film.

The attitude of "you make it, we'll sell it" was discarded 15 years ago by most every other business. In modern business, those disliking change have gone. Those preferring to remain status quo, have not been able to maintain their status quo. Those who welcomed change, who adopted and initiated new concepts in product and marketing, are the *successes* of today in modern business. This must be your *philosophy*, as of now.

INDIVIDUAL OBSOLESCENCE

Have you ever heard of individual obsolescence? Well, there was a time back in 1900 to 1920 when a person might learn a trade and go through his life without finding himself, his ways, his thinking, his trade, obsolete.

World War I and technological advancements changed this somewhat. By 1945 a person might get midway in life before he became obsolete, unless he kept pace with change.

Whether we know it, or want to realize it, change on today's market in some businesses, and particularly in the engineering field, is so rapid that a person's knowledge, approach and training is obsolete before he can begin the career for which he has been trained.

How obsolete are we?

With others so far ahead, I believe you can see a real danger which can jeopardize your position, in that, as the market grows, engineers, technicians and outsiders with this advanced knowledge and know-how, will be enticed and intrigued by your opportunity, and will, in fact, steal your opportunity! Your stake is large. The industry needs you as a guiding force.

The industry needs an organized research program of your customers' needs, and those of the demanding public. The whole picture must *begin*



PHOTO: HALF SIZE

SHORT FOCAL LENGTHS!

See Kollmorgen for 1¾" and below

LONG

FOCAL LENGTHS!

See Kollmorgen for 11" and beyond

Now, Kollmorgen offers you the widest range of theater lenses, in speeds and focal length extremes. For extra short, e.f. range, the telescopic BX294 series has no equal. This series has 7 items in focal lengths of 1¾", 1⅞", 2", 2¼", 2½", 2¾", 3". These superior lenses, with built-in telescope adapters, bring you the benefits of longer back focus, larger rear aperture, sharper focus and more complete overall corrections. Get all the facts. Ask your equipment dealer for latest information on Kollmorgen Projection lenses for 1965 or write us.



America's Number 1 Source
of Optimum Image Quality

and end with the public's likes and dislikes. I am not speaking of equipment and furnishings only, but of the composite theatre, the *completed end results*.

DON'T KNOW HOW TO BEGIN

There are literally hundreds of exhibitors wanting and needing new facilities, remodeling, equipment. Most of them haven't the slightest idea of how to begin, or where to start, or what they will need, or with whom to counsel who can really guide them and who really knows.

It is a crime to see how money, energy and time are wasted on new projects, or old ones, which are patterned after theatres and concepts of the 20s or 30s.

Architects, engineers, designers "in the know" in our business are few and far between. Most of these deserted the industry in the 40s and early 50s, because of necessity.

With no new, up-to-date guide lines and requirements to go by for today's streamlined functional theatre, an inexperienced person is bound to

make costly errors and come up with obsolete facilities.

Here, again, research by a group such as yours can be invaluable to the industry. Guess work — personal opinion — tradition must go. Everything must start with the customer and end with the customer — his needs, his likes, his way of life; and with vision to the future. It cannot start with a designer, an engineer, a manufacturer, your wife or mine, a vice-president, neither with the sales manager, nor you, nor me — *but with the customer*.

ACTIVE IN EXPANSION PROGRAM

As you have read, my company has been very active in this new expansion program, and has completed several new projects, both conventional and drive-in theatres. And there are many more in the planning of obsolete facilities, not only in stage. We need many replacements metropolitan areas, but in towns of 25,000 to 100,000 population, as well.

The tremendous cost of these completed projects has made our officials



Ed Nelson, center, assistant general manager and vice president of Ballantyne Instruments and Electronics, Inc., Omaha, Neb., and his wife, Dorothy, are seen greeting Oregon theatre owners, Mr. and Mrs. Tom Moyer and their son, Tommy, on their arrival in Honolulu. The Moyers are owners of the Moyer Theatres in the Portland, Oregon area. During their stay in Hawaii, the Moyers had an opportunity to see Ballantyne's 70mm equipment being installed in the new, 1700 car Kailua Drive-In Theatre in Kailua, Oahu. Mr. Nelson is supervising the installation of the sound, projection and concession equipment furnished by Ballantyne. After viewing this impressive installation, Mr. Moyer immediately commissioned Ballantyne Instruments and Electronics to also equip his new drive-in theatre in Eugene, Oregon. The new Moyer drive-in is expected to open in 60 days. Ballantyne Instruments and Electronics, 1712 Jackson St., Omaha, Neb., is a division of ABC Consolidated Corp.



REDUCE SCREEN LIGHT LOSS

with modern, first surface

TUFCOLD DICHOIC REFLECTORS

The light reaching your screen must be reflected by the lamphouse mirrors, therefore brilliancy of your pictures is dependent directly upon the condition of your reflectors.

Using TUFOLD reflectors, projected light is reflected from the front surface without passing through the glass twice, as with second surface mirrors.

See your dealer now for the size you need or write for data on sizes for all lamps.

The Strong Electric Corporation
31 CITY PARK AVENUE • TOLEDO, OHIO 43601 • PHONE: (419) 248-3741

consider each project more carefully. It would be my guess that others interested in expansion and improvement are finding the same condition.

It would also be my guess that for every new project under way or completed, there are at least 20 to 30 more which are desired and needed, but which have been shelved or halted.

So what is really happening in this new building spurt so far, must be considered an extremely limited market, as compared with the need, and what might be built if costs could be amortized and some profit foreseen.

In my company, those of us in the design and construction field have been challenged by our top management to do something about this cost

problem; to produce a new, de luxe conventional theatre for \$300 per seat, complete in every respect, fully equipped, exclusive of land cost. The past completed theatres have been costing between \$400 to \$600 per seat. This means cutting the cost of an average 800-seat, equipped theatre by \$50,000 to \$100,000.

This, you may say, is impossible. Yet, every indication is that it *can* and *will* be done.

A CHALLENGE EXISTS

It *cannot* be done by some of our ancient standards. Let me tell you a little about the challenge. Much of the sound system will be from outside concerns. Why? Because we cannot afford the luxury of 12,000 cubic feet of building space required to house the conventional speakers you have to offer. We will use transistor amplifiers, not now offered by supply houses such as yours, primarily because of first cost; secondly because of installation cost. With ours, we will be able to plug it in, and have it operating in a few minutes.

Let me give you an example first-hand of what happened in Albuquerque, N. M., regarding our new theatre in the Winrock Shopping Center.

We installed 70mm equipment, with five-track transistor sound equipment. Our cost of engineers and installation supervision was \$1,799. We had two projectionists in the booth for over four weeks; \$1,100; plus two electricians at \$2,240; plus material costs. *Labor alone* for this installation was over \$5,000.

This is not the end, we just spent an additional \$4,800 to install Cinerama sound equipment a few weeks ago.

I'm sure you get the idea. And this is typical. Multiply the problem several times, in all categories, and you can see the tremendous waste that must be eliminated; and, of course, it can be.

If you force the exhibitor, such as us, to take the initiative, he will cut you out as middle man, as in the foregoing example.

Complacency and lack of realistic understanding and action on your part, or on the part of the manufacturer, will cut your potential market by 80 to 90 per cent, if not destroy you.

HOUSING INDUSTRY SHOWS WAY

As an example of what can be done — the housing industry, which, as

you know, is one of the largest dollar-volume businesses in this country, through ingenuity, resourcefulness, research and the use of new methods and marketing, has stopped the upward-spiraling costs. They now are building a better house *cheaper* than five years ago with prefab components, with less on-the-site labor, new materials. The end-result is an ever-increasing market rather than a diminishing one, primarily due to stabilizing and reducing costs. We must adopt a similar approach.

Getting back to the challenge of creating a greatly reduced cost on our new theatre:

We cut our over-building height by 30 inches by using the former attic space to mount draperies and tracks. This eliminates a valance, and also cuts out another 14,000 cubic feet from the auditorium, helping on heating and air-conditioning requirements and future costs. This also improves the picture presentation.

Fifty per cent of the sidewalls are a continuation of the stage drapery, helping with the acoustical problem and eliminating expensive finishing materials on a substantial portion of the walls.

PACKAGE UNITS CUT COSTS

Package heating and air-conditioning are available (and incidentally, you should be selling them), which help to eliminate expensive duct work and cut down the job installation cost and on-the-job assembly by approximately 80 per cent. This field is wide open, with great potentials in improvement and adaptation for strictly theatre use.

Inside boxoffices also save, create a more friendly atmosphere, and speed traffic.

Restrooms are simplified. While nothing replaces ceramic tile for floors, there are plastic materials in abundance for walls. We have eliminated doors by creating light and sound locks. This speeds traffic: there is a lower first cost and later maintenance.

Electrical systems can and are being simplified, primarily in the projection booth, and simplification of the main distribution system. While some of this may create a few extra steps for theatre personnel, it saves thousands of dollars in first cost and later maintenance.

Catwalks through the attic have

(Continued)

*
**look
into
Stewart
Filmscreens
...the
choice
of
experts**

FILMSCREENS FOR SHOWMEN—Stewart Projection Screens—the choice of 15 major exhibitors at the New York World's Fair!

ULTRAMATTE—for commercial playhouses, theatre TV, viewing rooms ■ Seamless to 46 by 88 feet ■ Optical efficiency ■ Durable economy.

LUXCHROME 50—seamless rear projection ■ Superior image contrast in lighted rooms.

FILMSCREENS FOR FILM PRODUCERS—used by CBS Studio Center, Columbia, Desilu, Disney, Fox, Goldwyn, MGM, Paramount, Revue, UPA, Universal, Warners.

HI-TRANS—Academy Award background screen—highest calibre production "tool."

ULTRAMATTE gain white, and **LUXMATTE** white matte—front projection screens ■ Demanded by studios and film labs for viewing during production, dubbing, and scoring.

T-MATTE BLUE—rear-illuminated screen for latest traveling-matte process ■ Practical for large and small sets, major productions, or TV commercials.

FILMSCREENS FOR TV PRODUCTION
TV-BLUE—background screen ■ Favorite of networks ■ Versatile ■ Efficient.

LUXCHROME 60—neutral gray screen for closed-circuit techniques, backgrounds and rear projection viewing.

FILMSCREENS also designed for A-V, fairs, trade shows, exhibits, simulators, plotting and display systems, and special architectural requirements.

STEWART FILMSCREEN CORP.

1161 W. Sepulveda Blvd.
Torrance, Calif. 90503 (213) 326-1422

I want to look further into Stewart Filmscreens. Please send me additional information on:

NAME _____
STREET _____
CITY _____ STATE _____



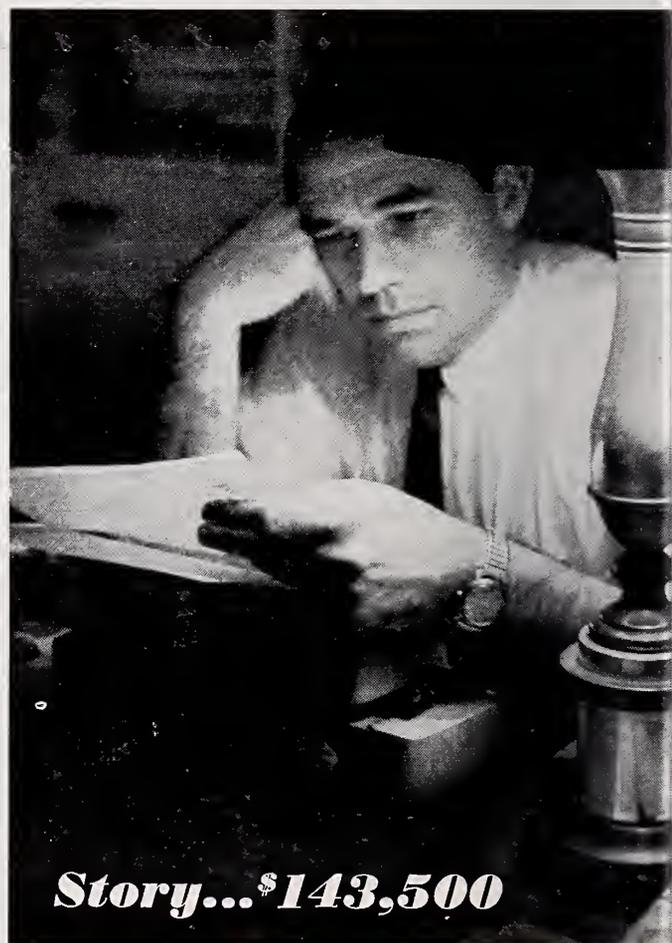
Talent...\$390,000



Location...\$86,500



Lighting...\$33,500



Story...\$143,500



Sets...\$242,600



Wardrobe...\$54,000

Now. Are you willing to risk it all on less than Eastman films?

More than anything else except creative skill, film is crucial to quality in movie-making. Isn't it a false economy, then, to attempt to save a fraction of a cent per foot on film stock which has less than Eastman quality? And doesn't poor film quality jeopardize your entire investment, even make talent look bad?

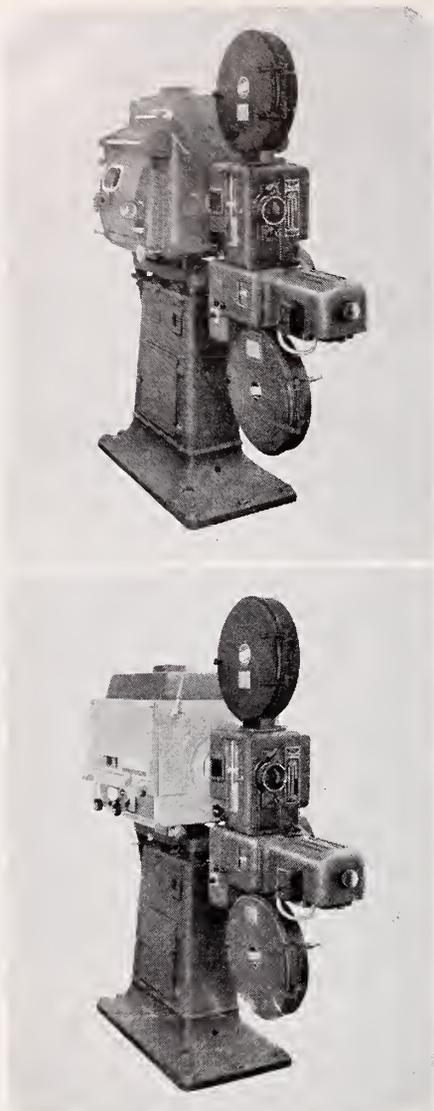
But total picture quality doesn't demand that you merely shoot on the best negative. There's also the print stock to consider... and some don't. It's a great mistake—both from your point of view and that of your audience—to print on anything less than EASTMAN Film.

Look at it this way. Film—both negative and print stock—must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. In the theater it must possess a long wear-tear capability for precision in projection and in order to hold down costly print reorders. EASTMAN Films have all these qualities because Eastman's engineering and technical facilities are unique. Furthermore, Eastman's film specialists are always at hand to help you maximize production efficiency.

Everything considered, doesn't it make good sense to use EASTMAN all the way?

**Motion Picture Products Sales Department
EASTMAN KODAK COMPANY**
Rochester, N. Y. New York, N. Y.
Chicago, Ill. Hollywood, Calif.





Introducing the 1965

Simplex
X-L

Is there really a new Simplex X-L for 1965? Yes and No. Yes, because the X-L mechanism never stops being refined and improved to meet every new advance in motion picture projection. No, in the sense that the basic components that have performed so perfectly for so many years are still the heart of the X-L.

Fact is, there's a long list of advanced engineering features on the X-L that are just not available on any other projector. But it's sufficient to say that the X-L is the pride of the world's most experienced manufacturer of professional motion picture projectors. And it's the overwhelming choice of projectionists everywhere.

Get all the facts about the '65 X-L. There's nothing newer, or better on the market.



National
THEATRE SUPPLY COMPANY

Subsidiary of General Precision Equipment Corporation 

HOME OFFICE, 50 PROSPECT AVENUE, TARRYTOWN, NEW YORK
BRANCHES FROM COAST TO COAST • PHONE MEDFORD 1-6200

been eliminated by discarding old standards; new engineering and adapting new-type fixtures. This item, alone, saves approximately \$3,000.

USE NORMALLY WASTED SPACE

New approaches to traffic patterns of patrons entering and exiting also conserve precious square feet, by putting normally waste space to work.

A unique use of common materials has eliminated plaster or acoustical materials for auditorium sidewalls not covered by draperies.

Special products have been developed in conjunction with standard, inexpensive T-grid acoustical ceiling products, which eliminate the appearance of the grids, making possible a one-hour rated ceiling at 25 per cent less cost from normal methods.

As you can see, I am merely covering the high points, since this discussion could go on and on for days.

"Necessity is the mother of invention."

What I have outlined for economies in construction, must be followed in equipment and furnishings. It can be done, and will be done.

We must get manufacturers to consider the problems and the cost he creates in the use of his product. The market is large enough to warrant consideration.

If you will recall my previous remarks, *nowhere* have I mentioned eliminating, changing or cheapening any item or phase of the composite theatre which would diminish in any way the esthetic atmosphere, the comfort, the functional qualities, the maintenance, the ability to present motion pictures as they should be presented—because all of these are primary, and are of extreme importance.

I have not covered drive-in theatres. Here again, most are still in the cow pasture stage. Prestige is seriously lacking. Yet, they are a way of life for many in both the low and high-income groups. Actually, they offer some groups their only outside the home form of entertainment. They are a tremendous thing for family groups, invalids and handicapped.

CAN PRODUCE DESIRED RESULTS

The human mind is capable of creating, developing and producing anything it can conceive. It can produce the answers and the end-results we desire—if we will only dream and put it to work.

The ideas presented are only the

beginning! We need a consolidated force—the thinking of engineers, manufacturers, designers, architects, sales people, exhibitors, producers and, of course, the customer.

Your future depends on this action.

We need improvements, studies, research, and cost reductions in every phase of the composite theatre, tuned to today's and tomorrow's needs: Functional design of building, use of new materials, boxoffice equipment and security control, floor coverings, lighting and electrical systems, seating, advertising panels, displays, sound and projection (and all items connected therewith), air conditioning and heating, maintenance, merchandise of by-products and the equipment required.

What can, and will you do about it?

At least *until* you get started, I heartily recommend that you support to the fullest those manufacturing concerns which have been desperately attempting to create new and improved products—and we really have quite a few.

There is a new and improved screen that most objects will not break through. There are new lamp-houses employing new principles. While considerable improvements have been made in some U.S.-built projectors, the major advancements have been by foreign companies. The xenon lamp appears to have a bright future.

There are new theatre seats available, but the cost is staggering. Improvements and new approaches have been made in change-letter displays.

Transistorized sound is a *definite* and great improvement. However, we need factor-assembled, plug-in units, eliminating the tremendous on-site assembly costs; and, of course, this principle of simplicity should be a major consideration of any future equipment and furnishings.

In closing, let me again remind you — I believe you must get your feet wet in the industry's problems. Get out of the class of an order-taker and expeditor, or, in fact, a manufacturer's agent.

Get into the business as adviser, counselor, consultant, assisting and guiding manufacturers and exhibitors, architects, engineers, designers. But let me warn you again—this is a great responsibility! Personal opinion—guesswork—must go! Your advice and counsel must stem from *knowledge based on study and research.*

IP



N. Y. UNION PROJECTIONISTS HONOR ALLEN SMITH — Allen Smith, National Theatre Supply Co.'s sales specialist in projection and arc lamp equipment, is being presented with an illuminated Scroll on which is inscribed a resolution by The Twenty Five-Thirty Club, IATSE of New York which says in part - "in recognition of achievement in giving a superior meaning to the word 'service' and for his unusual inspirational ability in bringing commendable benefit to all of the many who have been privileged to work with him." He has been an honorary member of the organization since 1943. Presenting the Scroll to Mr. Smith is Secretary Morris J. Rotker, and President Morris I. Klapholz on the right. The occasion was the annual installation of officers with a banquet and dinner dance.

First Installation of Strong Futura II In Mexico

The first installation of the new Strong Futura II projection arc lamps in the Republic of Mexico has just been completed at the Cine Terraza Mazatlan. Mazatlan. Sinalva, Mexico.

This theatre, which has 3,000 seats and a screen 67 feet wide x 31 feet high, is the property of Cia. Operadore de Teatros. S.A. The lamps were sold through Abastecedora De Cines. S.A. **IP**

New Entrance Mat Offers Choice of Top Surfaces

A choice of pyramid or ribbed surface is now available for the first time in one sectional heel-proof entrance and lobby mat, according to its manufacturer.

This Royal Guardsman mat is constructed from molded links with a special interlocking design for dimensional stability and 100% heel-proof protection. Any pattern or design is produced from multiples of approximately 4" x 4" squares of various colors.

Literature may be obtained from American Mat Corp., Wapakoneta, Ohio 45895. **IP**

TESMA Joins TOA, NAC in Trade Show

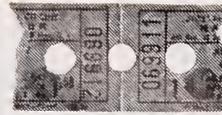
The Theatre Equipment and Supply Manufacturers Assn. will participate with Theatre Owners of America and National Association of Concessionaires in sponsoring the 1965 Motion Picture and Concessions Industries Trade Show in Los Angeles. The show will be held during the concurrent conventions of TOA and NAC at the Ambassador Hotel, Oct. 27-30.

This was announced by Sumner M. Redstone, TOA president; Edward S. Redstone, president of NAC, and Arthur J. Hatch, president of TESMA.

A special section of the Trade Show area has been set aside for theatre equipment manufacturers and suppliers. TESMA last joined with NAC and TOA in a convention trade show in 1963 at the Americana Hotel in New York.

Commenting on TESMA's participation this year, NAC President Edward Redstone said: "By TESMA joining as an active participant in the 1965 Trade Show, delegates attending the concurrent conventions are assured of seeing one of the most

(Continued)



It's no box office secret... every ticket purchaser expects and deserves a well-lighted screen presentation

NATIONAL
TRADE MARK
ARC CARBONS

The No. 1 Choice for

- Uniform Light Distribution
- Superior Arc Stability
- True Color Fidelity
- Unequalled Light Efficiency

UNION CARBIDE

CARBON PRODUCTS DIVISION

MOVING?

Be sure to send IP the label from the cover of your International Projectionist as soon as you have your new address. Please allow five weeks for change.

INTERNATIONAL PROJECTIONIST

1645 Hennepin Ave.

Minneapolis, Minnesota 55403

Norelco

projection equipment

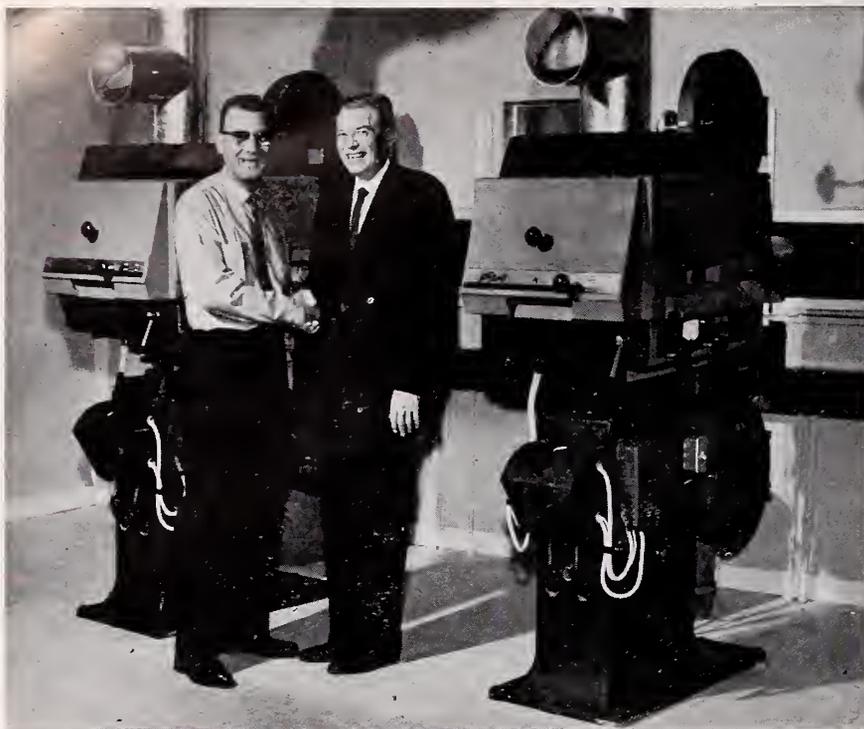
Available from

leading theatre supply dealers

North American Philips Co., Inc.

Motion Picture Equipment Division

100 E. 42nd St., New York 17, N.Y.



That manager and projectionists alike are proud and pleased with the new Strong Futura projection arc lamps recently installed by Western Theatrical Equipment Co., San Francisco, at the Southgate Drive-In Theatre, on Mack Road, Sacramento, Calif., is evident from this picture. Left to right are Harold Eichler, projectionist, and C. H. Granoski, manager. Literature on the Futura projection arc lamps may be procured by addressing a request to the Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio 43601.

complete and all-embracing expositions of concession, theatre and vending equipment, supplies and services displayed under one roof."

TOA President Sumner Redstone stated that the inclusion of TESMA in the 1965 NAC-TOA Trade Show was another reason why every exhibitor should be in Los Angeles in October.

"The new merchandise, plus improvements in existing products, along with the displays of concessions and vending equipment, makes attendance at the convention a sound worthwhile investment," he said.

TESMA President Hatch declared he thought the new TOA-NAC- TESMA pact was a good one, particularly because by the terms of the arrangement, TESMA member-manu-

facturers would display their equipment in one section of the trade show. He also said it was his conviction that plans for the trade show and its location in Los Angeles would give manufacturers an opportunity to talk to many of their customers in the West Coast area and show them equipment that had been discussed only verbally and by mail until this time.

"Our association with TOA and NAC always has been stimulating," Hatch said. "I firmly believe that the attendance at the 1965 Trade Show will live up to expectations and that theatre owners will get a better idea about the newer equipment that they have heard about and become more familiar with improved equipment that has come on the market in the last few years." **iP**

New System Eliminates Sound System Feedback

CHICAGO—The voice of a speaker in the vast expanses of a cathedral, auditorium, theater or gymnasium now may be amplified intelligibly up to 100 times without the risk of screeching "feedback" that heretofore has limited the efficiency of all public address systems.

The inclination to "feedback" is positively eliminated by a new "equalization" system which may be incorporated into any properly engineered public address installation, according to Milton A. Boom, president of Boom Sound Engineering, Inc.

The firm is one of six that have been licensed as agents for the system. Other licensees are Bolt, Beranek & Newman, Inc., Boston, Mass.; Tracor, Inc., Austin, Texas; Commercial Electronic Products, Inc., Indianapolis, Ind.; Everett, Inc., Denver, Colo., and Northwest Sound Services, Inc., Minneapolis, Minn.

The licensor is Dr. C. P. Boner, physicist, former president of the American Acoustical Society and for three years vice-president of the University of Texas, who has been studying the feedback problem for 30 years.

The "Boner System", as it is known, successfully filters out certain sound frequencies—which differ in various structures—that bounce back into the microphone and cause acoustical feedback, Boom said. Narrow-band filters, it was explained, are employed to eliminate the feedback sound waves after precision test equipment locates bounce-back points and identifies offending frequencies.

"Full range sound systems, with high amplification and high fidelity, are now a reality for areas where effective utilization of public address installations has been impossible," Boom said. "Voice reproduction is so true and natural the audience is seldom conscious of the sound reinforcement." **iP**

CARBON ARCS . . . FOR FINEST PROJECTION . . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

CARBONS, INC.

BOONTON, N. J.

IA Covers Ballantyne Sound Service Engineers

The IATSE has signed a nationwide agreement covering, for the first time, the sound service engineers employed by Ballantyne Instruments and Electronics, Inc., it was announced jointly by Richard F. Walsh, international president of the union, and J. Robert Hoff, executive vice president of the company.

The contract is identical with those covering the engineers of RCA, Altec and a number of smaller sound service firms.

Mr. Hoff explained that Ballantyne's expansion program since becoming a division of ABC Consolidated Corporation three years ago "has made it important for our sound men traveling in all parts of the country to establish a closer liaison with projectionists and stage employees. Accordingly, we welcome the long established and well regarded IATSE as exclusive bargaining agent for all our employees engaged in sound installation and sound service work."

A new brochure on replacement reflectors for projection lamps and their relationship to efficient, economical operation has been issued by The Strong Electric Corp. It encompasses the use of second surface rear silvered reflectors and also the first surface (front coated) cold type and tells where each are appropriate. A copy may be obtained by addressing a request to The Strong Electric Corp., 31 City Park Avenue, Toledo, Ohio 43601.

ip

Kneisley Develops Twin Rectifier

The Kneisley Electric Co., Toledo, Ohio, announces the continuous duty 115RTK2 TWIN Silicon Rectifier—two completely independent power sources compactly housed in one case—designed for deluxe theatres where interruptions cannot be tolerated. Transformers consist of two sets of primaries and two sets of secondaries. Either rectifier will operate either lamp—and both lamps at changeover, should emergency arise.

Two 480 ampere (R-1325) silicon stacks, four times the required current rating, assure unlimited stack life. Arc striking current minimizers are not required to protect the heavy duty diodes but are incorporated in the rectifier to prevent sooting and



pitting of expensive reflectors and damage to carbon craters.

Minimizer shunting switches are built in to remove a minimizer from the circuit should an emergency arise. Three pole relays are also incorporated.

Two eight position fine current adjustment switches are conveniently installed on the front panel so that each lamp can be adjusted individually. Full wide range adjustment is obtained on a terminal board behind a hinged door in the front panel. A.C. voltage taps, 190/210/230/250, are located on internal terminal board.

Heavy transformers double-impregnated in special coil varnish, baked 16 hours, operate at minimum temperatures. A quiet fan, lubricated and sealed for life, draws cool air through top, over the stacks and transformers, exhausting out the base.

Kneisley believes this rectifier is unmatched in quantity, quality, and price—only \$1580 for 427 pounds of rectifiers which occupy just three square feet of floor space.

For complete details write The Kneisley Electric Co., P.O. Box 1506, Toledo, Ohio 43603.

ip

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample
ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

DIAMOND

TRADEMARK

PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSOORFF CARBON CORP. East McKeesport, Pa.

HEYER-SHULTZ METAL REFLECTORS

Top Screen Illumination

Will Not Break, Pit or Tarnish

No Replacement or Spare Reflectors Required

See your dealer or write for full particulars

Manufactured By HEYER-SHULTZ, Inc., Cedar Grove, N. J.

Kodak Fair Pavilion Has Fresh New Look

The Eastman Kodak Company's World's Fair Pavilion, one of the ten largest industrial exhibits at the Fair, has taken on a fresh, new look for the 1965 season.

"We think it's important to attract repeat visitors as well as first-time Fair goers," said Lincoln V. Burrows, Kodak's Director of World's Fair Planning. "Thanks to photography's flexible nature, we will offer during 1965 a number of exciting new features plus our major 1964 presentations."

Last year over 6,000,000 people visited the Kodak Pavilion, one of the most popular at the Fair. Special emphasis has been given to photography's role as a medium of international communication and its potential in promoting "Peace Through Understanding" — the theme of the Fair. Throughout the 400-foot-long structure, all the exhibit areas dramatize the phases of

photography's achievements through the media of pictures, films, and visual impressions.

In line with Kodak's "fresh look" for 1965, the pavilion contains a brand new third theater featuring Herb Shriner in a laugh-producing film on home movies.

Screening in the large Tower Theater, the successful award winning Saul Bass-produced movie, "The Searching Eye" has been revamped to make it even more exciting and colorful. In 1964 the film received a Grand Award from the International Film and T.V. Festival of New York. The Dome Theater on the upper "moon deck" is again showing the movie, "Quest," produced for Eastman Chemical Products, Inc.

For the young at heart, motion pictures elsewhere in the pavilion include Disney cartoons; Burr Tillstrom's puppets, Kukla and Ollie; and the frolicsome chimpanzees which proved so popular last year.

The Pavilion itself — winner of

two architectural awards for design and construction — is a two-level, free-form building covering 69,000 square feet. Its undulating upper deck, which provides spectacular views of the Fairgrounds, is topped by an 8-story-high circular Picture Tower.

A landmark, and one of last year's favorite meeting spots for Fair visitors, the Tower is crowned with a changing five-picture series of the World's largest outdoor color prints — each measuring 30 feet by 36 feet. They are illuminated day and night by more kilowatts of electricity than are used for an entire football stadium or 3,000 average U.S. homes. The giant prints are changed every four weeks.

Exhibitions of some of the finest and most unusual photographs ever seen are being displayed in a changing series of shows in the Salon Area. Exhibits include: Applied Photography, Photography in the Fine Arts, Kodak International Color Competition, Best of Kodak Photography Throughout the World, and Photography from the Air.

The information Center, one of the highest traffic areas last year, again is staffed by experts in all phases of photography. In addition, multilingual attendants are on hand to assist foreign visitors.

An additional exhibit, "How to Photograph the Fair," has been added which will provide picture-taking trips for visitors, most of whom use cameras extensively around the Fairgrounds.

Some other exhibits, several of which include audience participation, are: Adventures With Your Camera, International Center, Famous Press Pictures, How Color is Created, Who's Who on your Birthday, and the Motion Picture-TV Story. **iP**

DEALER SERVICES

Irv Turvey, Western Manager, S.O.S. Photo-Cine-Optics, Inc., New York and Hollywood, was recently invited to address the graduating class, Motion Picture Dept. at Brooks Institute of Photography, Santa Barbara, Calif. He stressed the part of the dealer as equipment counsellor, whose wide knowledge of equipment can aid the producer, saving him time and money. The equipment counsellor has the opportunity to see many varied installations and gains a good overall knowledge of the business, all of which can be passed on to his customers, according to Turvey. **iP**

CONVENIENTLY LOCATED DOWNTOWN
"A Short Step From Everywhere"

BURLINGTON

1120 Vermont Ave., N.W. **HOTEL**

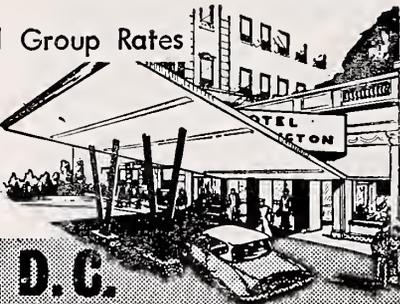
300 COMPLETELY MODERN ROOMS

- All Rooms Air-Conditioned
- Free Parking Adjoining
- Private Tub and Shower Bath in Every Room
- All with Television
- Old Mill Lounge Cafe
- Convention Facilities and Group Rates

Single \$7.50 to \$13.50
Double \$13.50 to \$18.50
Children under 14 Free

Telephone: (202) 265-4000 Teletype: 202-965-0387

Hudson S. Moses W. P. Williams
Gen. Mgr. Mgr.



WASHINGTON, D.C.



INTERNATIONAL PROJECTIONIST

1645 Hennepin Ave.
Minneapolis 34, Minnesota

1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

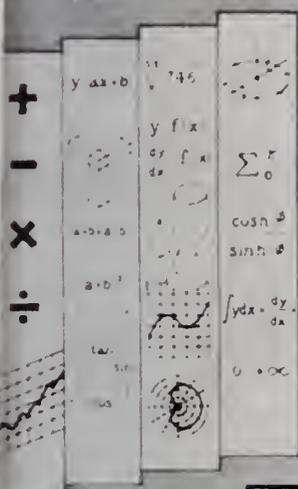
Name

Address

City Zone State

basic mathematics

by **NORMAN H. CROWHURST**



**VOLUMES
1 through 4
COMPLETE**

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by *Norman H. Crowhurst*

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you toward your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol. I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

INTERNATIONAL PROJECTIONIST

1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4-Vols. in one clothbound edition, \$15.95.

Name

Address

City Zone State

The
Ashcraft **SUPER**
CORE-LITE[®]

PROJECTION LAMP
35/70

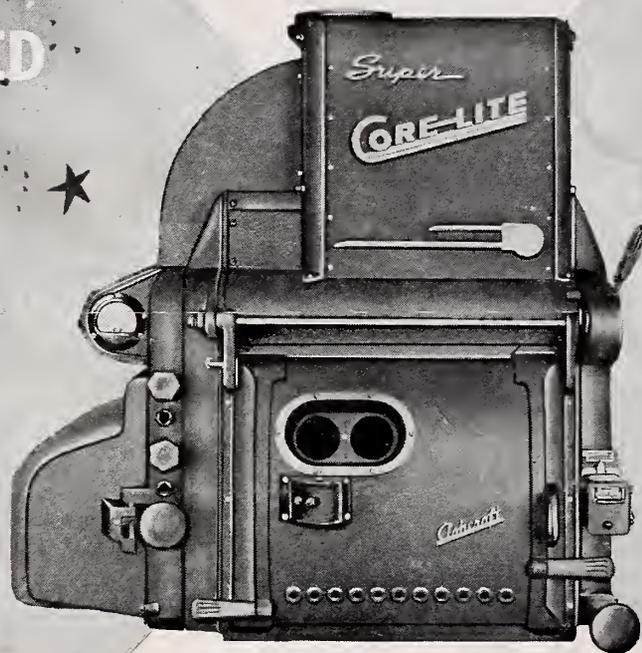
UNEQUALLED

for

LARGEST

INDOOR

THEATRES



UNEQUALLED

for

LARGEST

DRIVE-IN

THEATRES

**OPTICALLY AND MECHANICALLY
PERFECTED TO PROJECT
THE MOST BRILLIANT PICTURE POSSIBLE!**

Now available with the New Core-lite... Front Surface Coated
Cold Reflector with a 2 Year Warranty.

© Registered Trade Mark

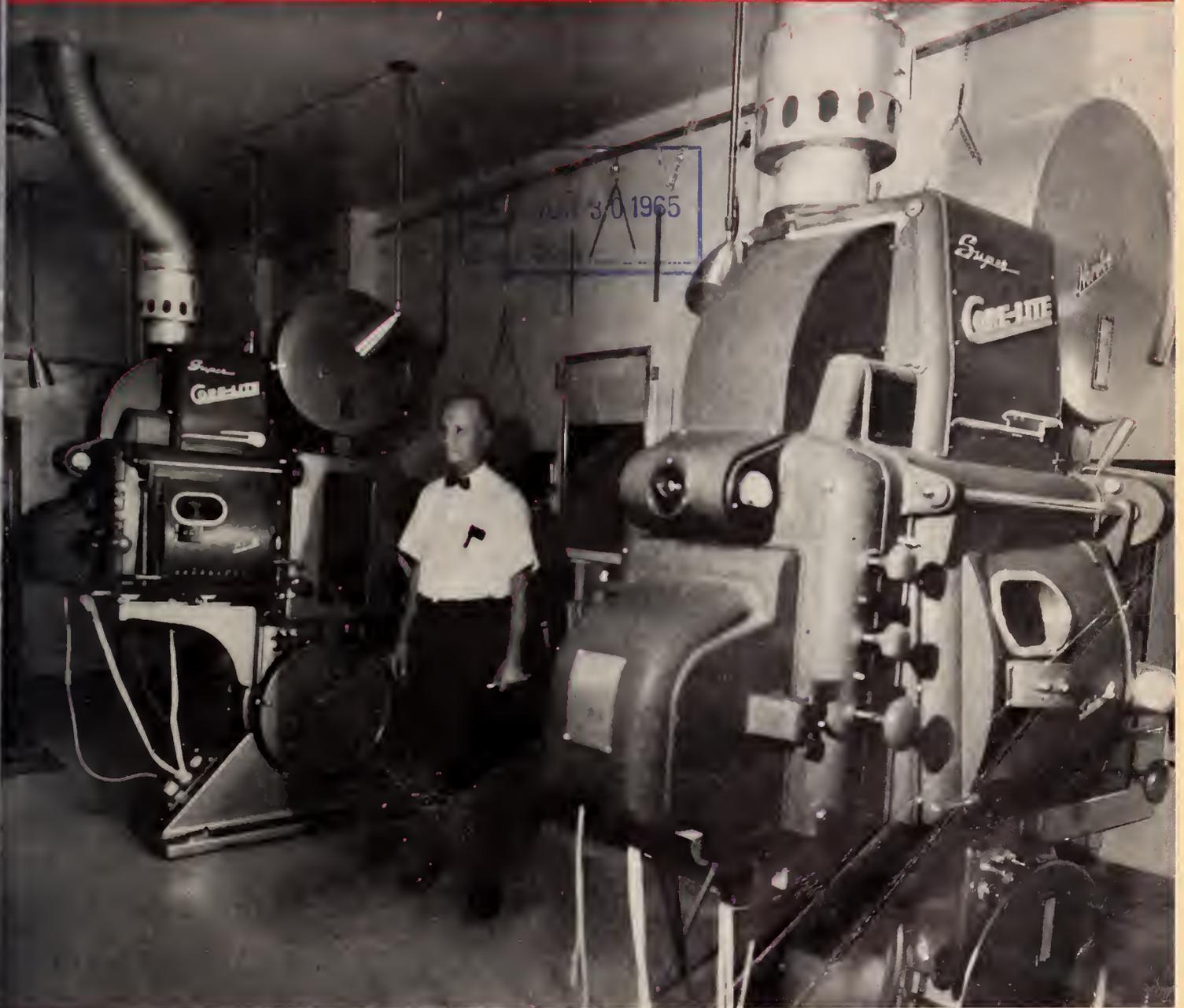
SOLD EVERYWHERE IN THE UNITED STATES BY LEADING AUTHORIZED THEATRE SUPPLY DEALERS

C. S. ASHCRAFT MANUFACTURING CO., INC.

36-32 THIRTY-EIGHTH STREET, LONG ISLAND CITY, NEW YORK

INTERNATIONAL PROJECTIONIST

1965



The projection booth at Jefferson Amusement's new Sharpstown Theatre in Houston, Texas, is equipped with Ashcraft Super Core-Lite projection lamps, using new Core-Lite front surface reflectors. Rectifiers are Ashcraft S-1712/R High Reactance 12 phase. Projected picture screen sizes range from 74x34 ft. for Cinerama to 53x29 ft. for standard. The projectionist is Morris Craig of Local 279 in Houston.

Library of Congress
Order Division (0368X)
Washington 25, D.C.

JUNE

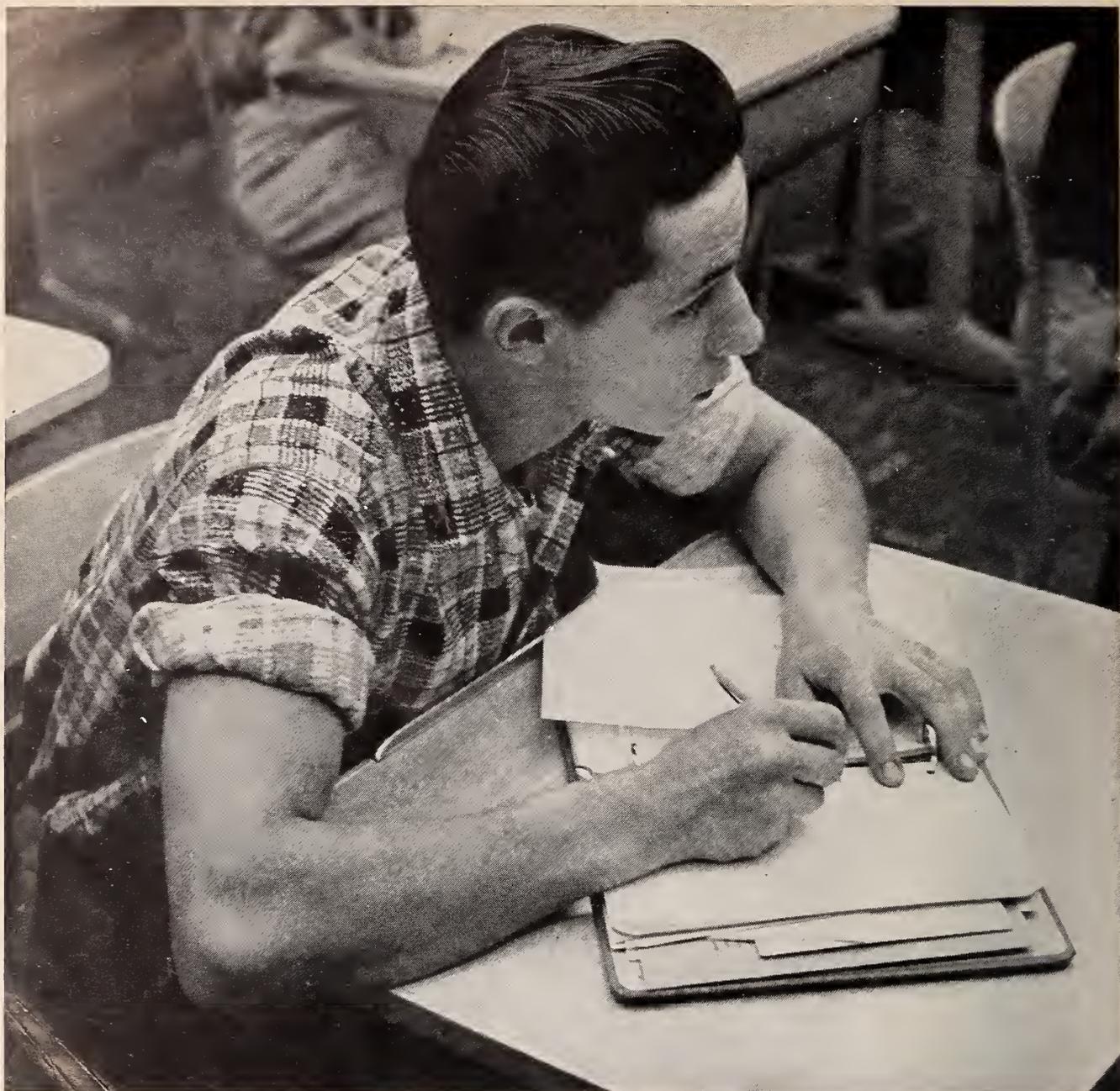
1965

VOLUME 40

NUMBER 6

40c A COPY

\$3.00 A YEAR



Investment Opportunity

The tools this young apprentice is learning to make will one day be used to turn out your company's products.

A great investment in time, money, effort and faith will have to go into making him productive. Every one of us has a stake in his success—and every one of us must invest something—for on the developing skills of America's young tool-makers depends the continued functioning of all industries.

You can protect your investment by joining with other leading American businessmen to promote the Treasury's Payroll Savings Plan for U.S. Savings Bonds. The Treasury Department's Plan helps safeguard the individ-

ual liberties, and encourages the industrious and responsible attitudes so necessary for the growth of our economy and the well-being of our society.

When you bring the Payroll Savings Plan into your plant—*when you encourage your employees to enroll*—you are investing in the next generation of America's skilled craftsmen and technicians. You are investing in our future. In freedom itself.

Don't pass this investment opportunity by. Call your State Savings Bonds Director. Or write today to the Treasury Department, United States Savings Bonds Division, Washington, D.C., 20226.



in your plant...promote the **PAYROLL SAVINGS PLAN** for **U.S. SAVINGS BONDS**



INTERNATIONAL
PROJECTIONIST



Volume 40 June, 1965 No. 6

FRANK W. COOLEY, JR.
Editor and Publisher

RAY GALLO
Executive Publisher

AL BLOOM
Managing Editor

TOM KENNEDY
Equipment Editor

RAY GALLO ASSOCIATES
National Advertising Representatives
545 Fifth Avenue, New York, N. Y., 10017
Telephone Murrayhill 7-7746
(Area Code 212)

IN THIS ISSUE

No Dearth of New Ideas	4
Warner Theatre	10
Century Cine-Focus	11
Century 21 Theatre	12

News Notes — Technical Hints — Miscellaneous Notes

INTERNATIONAL PROJECTIONIST, published monthly by the International Projectionist Publishing Co. division of The Northern Publishing Co., Post Office Box 6174, Minneapolis Minnesota 55424. Editorial offices, 1645 Hennepin Avenue, Minneapolis, Minn. 55403. Subscription Representatives: AUSTRALIA — McGills, 183 Elizabeth St., Melbourne; NEW ZEALAND — Wixon's, Ltd., 64 Courtnay Place, Wellington; ENGLAND and ELSEWHERE — Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2. Subscription Rates: United States, Canada, and U. S. Possessions, \$3.00 per year (12 issues) and \$5.00 for two years (24 issues). Foreign countries: \$4.00 per year and \$7.00 for two years. Changes of address should be submitted four weeks in advance of publication date to insure receipt of current issue. Second-class postage paid at Minneapolis, Minn. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles, or for unsolicited articles. Entire contents copyrighted 1965 by INTERNATIONAL PROJECTIONIST PUBLISHING CO.

IP

Get Your
Copy Every
Month...

Don't depend on pass-on copies . . . depend on your private magazine so you can clip and file important articles for future reference . . . so you can read it at your leisure and get full advantage of the ideas packed between its covers.

We invite you to take regular advantage of the services inside IP. Be sure you receive your copy of IP every month . . . and for a very low cost, too. Only \$6 for 3 years, \$5 for 2 years or \$3 for one year.

WE GUARANTEE
YOU CAN'T LOSE

Subscribe today and benefit from IP every month. If you aren't 100% satisfied, we will gladly refund your subscription price.

Order your subscription today.



No Dearth of New Ideas for Projectionist Craft

By Merle Chamberlin

AS FAR as new ideas, inventions, and technical dreams are concerned, they have not been quite so sparse this last two years.

It seems that every time I write there is one process that keeps popping up. A lot of engineers and technicians in our industry are firmly of the opinion that projection craftsmen are firmly of the opinion that 3-D is dead. But it refuses to lie down.

Now there is another new process announced. This one is another one announced as not needing glasses to view the picture. The basic principle behind this system as far as I can determine is that the film is once again projected from two projectors but it is projected on to two screens, one installed directly in back of the other. The picture on the No. 1 projector is projected through a vertically polarized filter on to the front screen. The picture on

the No. 2 projector is projected through a horizontally polarized filter on to the rear screen.

Those of you who have had experience with polarized filters will have to admit there is some merit in this theory. There are, of course, a couple of questions which remain to be answered.

The first question is, where do we place the speakers for the sound? It is obvious we cannot place them

between the screens, or it will interfere with the picture on the rear screen. It is obvious if we place them behind the two screens we are going to have a frequency response problem, which means modification of all the equipment in all the theatres. We can go back 10 or 12 years and place them around the screen, which was attempted, many of you recall, by RKO.

The other question which would immediately come to anyone's mind who is familiar with polarized filters is, where do we get enough light to project the size of a picture we are all used to today in the average theatre.

As you all know, polarized filters will absorb approximately 50% of the light.

There have been many continued improvements in lenses. In fact, we are at the point where lenses are available on the market today that were unheard of three or four years ago. We have seven-element and nine-element, very fast long focal length lenses.

The only problem as it exists today with this type of a modification is the fact that, due to the precision manufacture of all of these seven- or nine-elements of these lenses, the



Merle Chamberlin

The following address was delivered at the 47th Convention of the IATSE by Merle Chamberlin, member of Hollywood Studio Projectionists Local 165 and supervisor of post-production activities for MGM.

lens naturally is a comparatively expensive item, and because of that, which I am sure is the only reason, we have not seen too many of them in the field.

A new projector on the market is, as I choose to call it, a semi-portable projector. This piece of equipment has now had its field test. It is the projector that is used for all types of work in specialized installations, such as production and censorship.

This projector will run any kind or type of 35mm print regardless of the status of production on that particular picture. It will run a mag-optical composite movie-tone print. It will run a straight optical composite movie-tone print. It will run a separate picture and optical track print and a separate picture and magnetic track print.

In addition to all this, it will run forward, backwards, and it will hold a frame.

Now, the value of this piece of equipment, of course, is basically within the studios, although they are appearing in small screening rooms in various isolated spots around the country.

We at MGM use them for music timing, for synchronizing and for editing. In addition to that, we have secured two of these machines, mounted on wheels, which we use on production stages for the purpose of matching previously photographed scenes, and we also send them on location.

While they are on location, they are used during the daytime or the early evening hours for screening the previous day or two's rushes returning from our laboratory, and at night they are used for the entertainment of the crew.

There is one installation of this type of equipment that has proven very interesting. That is the Beverly Hills Hotel in Beverly Hills, Calif. They have installed this equipment in a new, little theatre they call the "Cinema Room," which is adjacent to their bar and their dining room. This has proven very satisfactory, because it affords the tired, weary independent producer an opportunity to keep on working while he is still having his glass of lunch or dinner.

When we first received our 70mm equipment and the installations started all over the country, I know you will all agree, we received a very finely engineered and manufactured piece of equipment.

There was one minor defect — minor as far as the manufacturer was concerned, but major as far as we were concerned: This was in the

changeover system. Ninety per cent of the changeovers that were made with this 70mm equipment ended up as a dissolve. Many of the shows being screened around the U.S. gave us a free dissolve between every reel. In other words, the last few frames of the outgoing reel were still on the screen when the first few frames of the incoming reel hit the screen.

We have craftsmen in our various I.A. locals who very seriously take care of these dissolves. For example, our editors' locals are responsible for designating where a dissolve should go in a picture. This is part of their dramatic or creative editing. They use this device to signify passage of time or to get an actor quickly from one spot to another.

Our photographers' locals manufacture these dissolves, and our laboratory craftsmen process them and cut them into the negative of the picture.

By the wildest stretch of the imagination, I don't think that any editor has ever signified that a dissolve should go between every reel.

The manufacturers of this equipment continually ignored our complaint but in Chicago the Essanay Electric Co. engineered, designed and is manufacturing a 70mm changeover modification that is in every respect just as clear-cut as any 35mm changeover on the market.

There are quite extensive experiments going on in certain areas of Hollywood in respect to coming up with a liquid gate for projection. Those members of laboratory locals are thoroughly familiar with printing with a liquid gate. But printing with a liquid gate is entirely different than projecting through a liquid gate.

The theory behind this is when you run film through this liquid many evils are cured. It is the same principle as coating a piece of optical glass. All the little scratches, hills and valleys are filled, and you have a perfect optical plane.

The biggest problem, of course, is that when compared to installing liquid gates in anywhere from one to four or five printers in a laboratory, the installation of liquid gates in projectors in maybe even one-fourth or one-fifth of the 14 or 15,000 theatres in the U.S. would be quite a project.

Due to the fact that the film has to enter a liquid gate in a perfect seal, run through the liquid, leave the liquid gate through another perfect seal and be dry before it hits the take-up reel, the expense of this installation now would not anywhere

CONSTANT REFOCUSING IS UNNECESSARY

*when you use
modern
first-surface
(front coated)*

TUFCOLD DICHROIC REFLECTORS

The aperture and lens never become excessively hot. Film gate heat is reduced 50% and emulsion blistering and film buckling are eliminated.

See your dealer for the size you need or write for data on sizes for all lamps.

THE
Strong
ELECTRIC
CORPORATION

31 City Park Avenue
Toledo, Ohio 43601
Phone (419) 248-3741

near warrant the results that have been demonstrated so far.

Another thing we talked about a couple of years ago was Xenon lamps. We had at that time available to us, as I explained to you, a 450-watt Xenon lamp that would very comfortably take care of a 14- or 15-foot picture. By using a high-grain screen we could stretch that to say an 18- or 19-foot picture.

The prediction was made at that time that there would be substantial advances as far as Xenon lamps were concerned, because the advantage of the lamp was obvious. To remind you of those advantages, a Xenon lamp produces a perfectly steady light which remains absolutely constant as far as color temperature is concerned.

The progress has been a little beyond even our expectations. Whereas two years ago we had a 450-watt lamp and let's say a 15-foot picture, we now have available to us a 900-watt lamp which will handle a 25-foot picture, a 1,600-watt lamp which will handle a 30-foot picture, and within a very, very short few weeks we will have a 2,500-watt Xenon lamp that will handle up to a 40-foot picture.

There is one company in the U.S. for your information, that has seriously gone into the Xenon lamp particulars. In other words, they have assembled all the information available from all sources, not only on the lamp, but on the auxiliary equipment required to operate the lamp, on the installation and operating problems, the estimates as far as savings over carbons are concerned, and so on. That company is Carbons, Inc., of New Jersey, better known to all of you, I think, as Lorraine Carbons.

I also spoke to you two years ago about our prints and the treatment of our prints. By treatment of our prints, in this instance, I mean the formula that we use to treat our prints. I told you we were spending money and time searching for a formula that would not only provide sufficient lubrication but would also afford a certain amount of protection to the emulsion on those prints.

The project became much larger than we thought it would. With every change of temperature, with every change of humidity, we have been receiving complaints.

After the expenditure of thousands of feet of film in tests and after the expenditure of quite a few dollars, even to the point of hiring a high-powered consulting chemist, we have

come up with a formula we believe is the answer, and started to apply it to our prints. This does not mean that everything in the field from MGM has got this formula on the film.

We can make surveys and we do make surveys. We can send technicians in the field, and we do send technicians in the field. But this is only a spotcheck at best. The only way we can get the real answer is from the members of the projectionist locals in the Alliance.

There has been quite a bit of comment about automation. Automation as such in the studios seems to be a different type of problem. There is one big laboratory in Southern California that has gone quite extensively into automation and as a result there have been many jobs eliminated.

But when you get on the production phase of the motion pictures, automation or improvements which could be considered automation, instead of actually and absolutely eliminating jobs, tend to shorten those jobs.

With our specialized craftsmen whose basic job is in the production of motion pictures and, as such, a large part of those jobs are satisfying the whims and whimsies (and in all cases very creative whims and whimsies) of producers and directors, automation just does not work. But there have been improvements which will perform a job quicker than previously. It naturally stands to reason that the shorter the job or the less time it takes to perform a specific job, the longer the layoff in between jobs.

The only solution to that, of course, which we can see, is the ultimate goal we are all after and which we hope someday, with the help of everyone concerned, to realize: a steady flow of production.

I would like to say a couple of words about In-Flight Motion Pictures. On the surface, the rental of a movie to an airline flying between New York and Los Angeles and return does not appear to present quite a big item of income to a motion picture studio. But when you couple the rental from that film with some of the other so-called fringe release areas, such as movies enroute, which is the showing of pictures to the passengers on luxury ocean-going liners, this whole pool becomes a substantial item.

Out of just a plain sense of curiosity, I have made four or five trips to Los Angeles International Airport

and have stood around the TWA check-in counter just to hear what I could hear. You delegates would be very surprised, I know, to realize that over 50% of the people I hear checking in for transcontinental flights inquired, "What is the movie?" By the same token, a large number of people checking in at the TWA check-in counter for shorter flights, such as to St. Louis, Chicago, and so forth, were asking, "Is there a movie on this flight?"

I have been asked by many what the situation is on 70mm film. In my personal opinion 70mm film has more or less steadied down to a steady rate. It is by no means finished. And I do not think that by any means we will experience the terrific surge we had for a while.

20th-Century Fox will release three pictures in the granddaddy of all the 70mm systems, Todd-AO.

United Artists is in production on what could be called the baby of 70mm systems, D-150. They are producing "The Bible" in that 70mm system and have scheduled it for 1965 release.

The status, as far as MGM Camera 65 is concerned, the system with the partial anamorph we used in "Ben Hur" and "Mutiny on the Bounty," is that there are no pictures shooting today in that system.

We made 15 prints of "The Unsinkable Molly Brown" in 70mm. I do not know how many of you represent areas where those prints are being shown. These prints are blow-ups from a 35mm Cinemascope negative.

Those of you who have seen it, I am sure, will agree it is an excellent job.

So, immediately posed is the question, "Is it worthwhile to go to all the additional trouble and expense in shooting in 70mm when an excellent 70mm print can be made from an equally excellent 35mm negative?"

This could be the wedge we have all been waiting for for 70mm prints in the drive-in theatres.

Our friends at Cinerama are still going along. They have come up with a new gimmick which they call their single-lens system. Presently in release in the single-lens system is "Mad, Mad, Mad, Mad World" and "Circus World." This is a very controversial subject. Ninety per cent of the technicians you talk to, except those in on the inventing of the system, feel the single-lens system does not hold a candle to the three-strip system.

The single strip system was developed by scientists and engineers and people from outside the industry. There are those of us who feel that the success of Cinerama from the beginning was in a large measure responsible to the excellent craftsmen of the I.A. staff, the technicians they had for the original productions and installations. That staff has more or less been completely depleted and the experimentation and additional work was taken over by the scientists and the engineers. It all remains to be seen as to whether or not a picture in a single-lens system Cinerama will hold up as those in the three-strip did. I think one of the best examples of staying power of a Cinerama production in three-strip was the one we made in conjunction with them. "How the West Was Won."

As soon as "How the West Was Won" was pulled in three-strip, it was our prerogative to release the same picture in 35mm. Some of you might be interested in how those prints were made.

The three Cinerama negatives were optically placed on one 65mm negative. This 65mm negative was then reduced to a 35mm negative, from which the 35mm prints were made. The three lines are still there, we grant you that. But it is impossible to jiggle them.

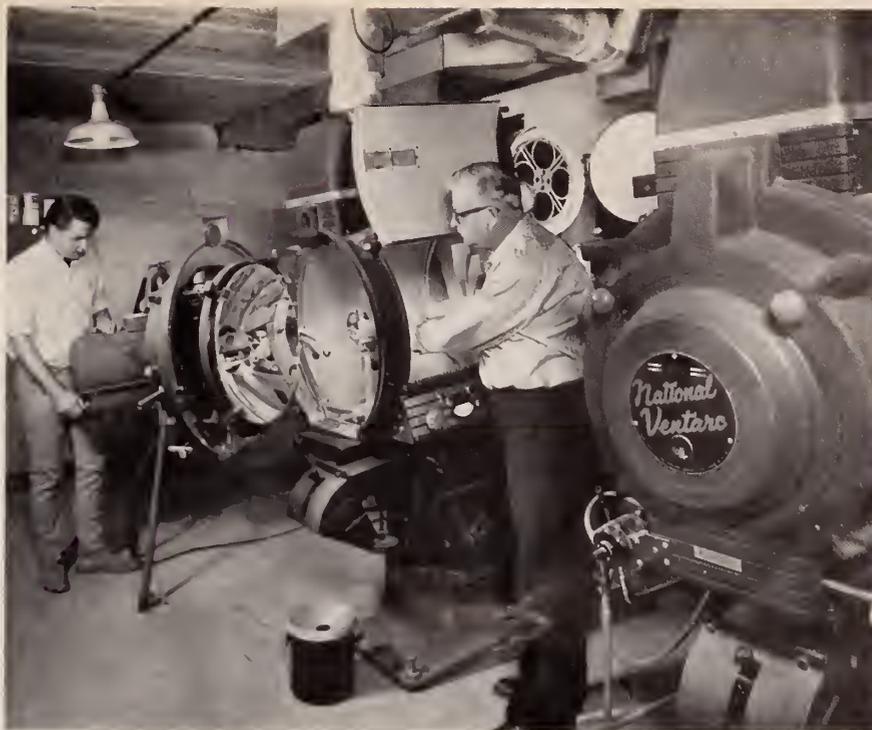
Cinerama equipped the Century Drive-In in Los Angeles with the three projectors and tried the projection of their travelogues in this drive-in theatre. The travelogues met with a relative degree of success in respect to the quality of the product, which, after all, is still the basic answer to all of our problems.

The big picture for Cinerama for this year will be George Stevens' "The Greatest Story Ever Told."

I also have been asked about dual prints—the \$64 question: Our theatres are equipped, so why don't we get dual prints?

Well, there are several reasons for the shortage of dual prints. The first one, of course, is economic. The manufacture of four-track sound will cost about \$2,500 if you make 50 prints. This is \$50 a print. If you stripe and sound each print at four cents a foot, a 10,000-foot picture means you are talking about another \$400. This, however, is not the important reason behind the shortage of dual prints.

The really important reason is that the reports we get from the field are that for some reason or other—and we choose to believe it is the exhibitor—the magnetic installations are not being kept up to snuff. They are



The new Tee & Gee Drive-In, Aurora, Ill., which has attracted such wide spread attention because of the varied attractions offered patrons, constantly employs a carbon arc slide projector as shown in this projection room illustration. The booth equipment, which includes National Ventarc blown type arc lamps and a Strong Universal Arc slide projector, was installed by National Theatre Supply, Chicago. The projectionists are John V. Ray and James P. Ludwig. Literature may be procured by addressing a request to The Strong Electric Corp., 31 City Park Ave., Toledo, Ohio 43601.

attempting to run magnetic prints with worn out magnetic heads, with maladjusted preamplifiers and with surround speakers out of balance with the rest of the system.

Well, a magnetic print projected under these circumstances naturally is worse than even an optical print just projected straight through the one big speaker behind the screen.

Where a projectionist has told an exhibitor employer that he definitely needs these replacements, we have found out that the exhibitor employer will go out of his way to request an optical print. So where we used to make a hundred dual mag-optical prints, on the big subjects, we are now down to about 20 or 25, and the occasion has to be rather exceptional for us to make even 50 prints, as we did on "The Unsinkable Molly Brown" and "How The West Was Won."

Film inspection is another big controversial subject. As part of my responsibilities at the MGM studios, I have to worry about all the film that leaves our plant, where it goes, supposedly how it is handled, and in what condition it ends up after three or four months.

The consolidation of the back rooms has definitely hurt us, and I

have so informed our executives. It will interest those of you from the film exchange locals to know that when we consolidated back rooms, we went all over the world.

Many of our producers feel that they are not getting the projection results that they should be getting, when the expense and effort of making a motion picture is considered.

The majority of those producers also know that it is impossible for a projectionist member of this Alliance to put a good picture on the screen if his employer will not provide him with the wherewithal in tools and equipment to project that picture.

It is difficult for a lot of people to understand why—when it is common knowledge that you can buy anything you want for a theatre on a very easy payment plan. In fact, the Ballantyne Co., as you all know, has just announced that they will lease anything on a weekly rental plan. They will lease anything from a sprocket to a whole theatre, and it is very difficult for a lot of our people to understand how much easier it is going to have to be made to encourage an exhibitor to keep up his theatre.

ip





Wardrobe...\$54,000

and Studio costs ... \$403,000

Production staff ... \$275,000

Talent ... \$390,000

Sets ... \$242,600

Story ... \$143,500

**Would you
make a good
investment
look like
a poor one
...on purpose?**

Certainly not, you say. But why, then, would you—or anybody else—consider making a motion picture on less than Eastman films? Better to consider *this*: the fraction of a cent per foot you *might* save on less than Eastman films may cost you everything in terms of quality.

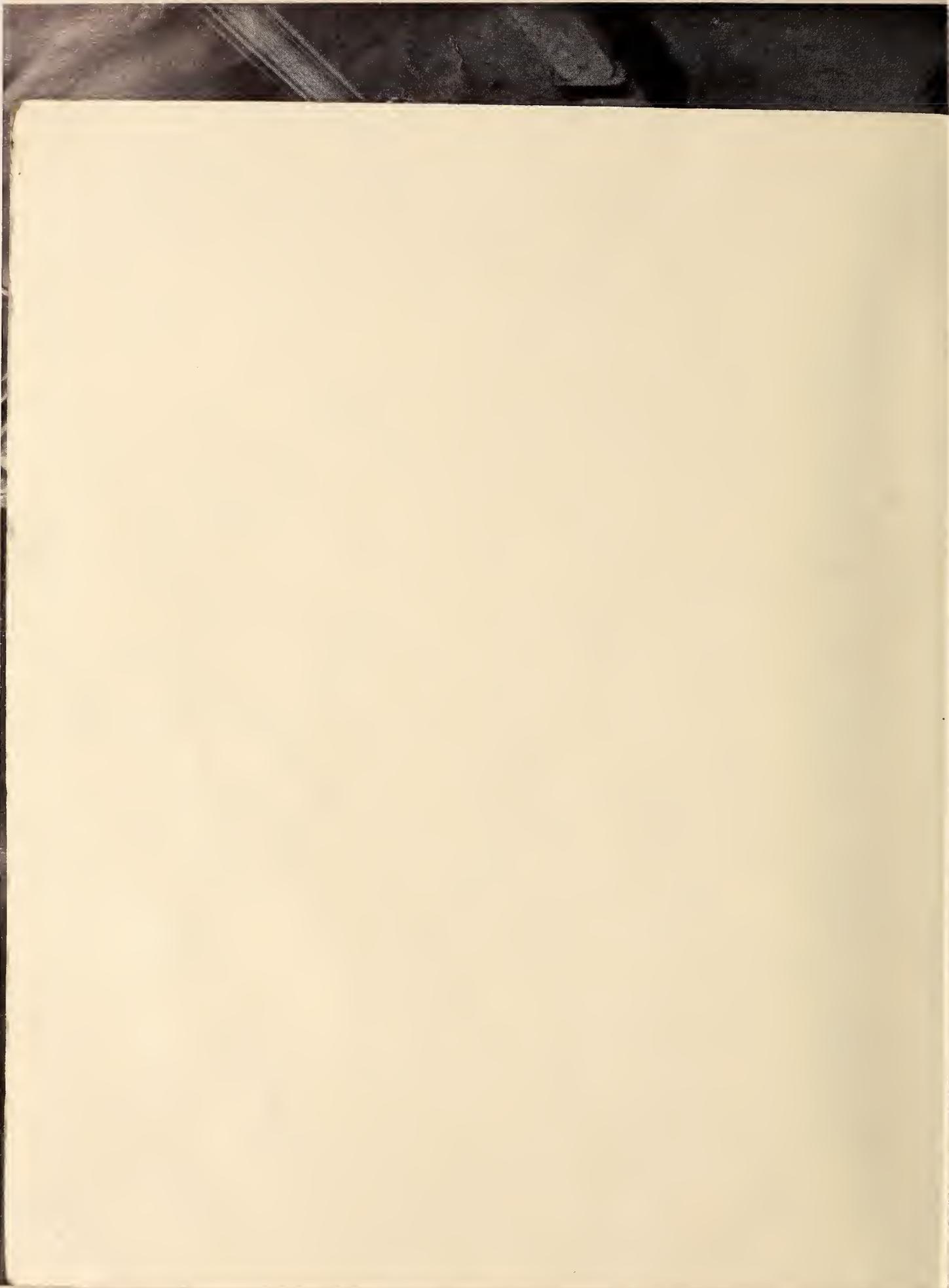
Look at it this way. Film—both negative and print stock—must provide detailed, full-tonal reproductions and must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. Go with anything less than Eastman quality and you may be in for retakes and headaches, reorders and “out-of-orders” — not to mention audience dissatisfaction. The savings you counted on are, in the final accounting, no savings at all.

With Eastman you also enjoy the services of the world's finest film engineering and technical facilities. Your total picture quality is backed by Eastman's total quality control. And Eastman's specialists are always at hand to help you get maximum production efficiency.

Everything considered, doesn't it make good sense to use Eastman all the way?

Motion Picture and
Education Markets Division
EASTMAN KODAK COMPANY
Rochester, N. Y. New York, N. Y.
Chicago, Ill. Hollywood, Calif.

EASTMAN FILM





Wardrobe...\$54,000

and Studio costs...\$403,000

Production staff...\$275,000

Talent...\$390,000

Sets...\$242,600

Story...\$143,500

**Would you
make a good
investment
look like
a poor one
...on purpose?**

Certainly not, you say. But why, then, would you—or anybody else—consider making a motion picture on less than Eastman films? Better to consider *this*: the fraction of a cent per foot you *might* save on less than Eastman film may cost you everything in terms of quality.

Look at it this way: Film—both negative and print stock—must provide detailed, full tonal reproductions and must have consistent speed, uniform processing characteristics, dimensional stability, precision perforations and uniform slit edges. Go with anything less than Eastman quality and you may be in for retakes and headaches, “noisy and out-of-orders”—not to mention audience dissatisfaction. The savings you counted on are, in the final accounting, no savings at all.

With Eastman you also enjoy the services of the world's finest film engineering and technical facilities. Your total picture quality is backed by Eastman's total quality control. And Eastman's specialists are always at hand to help you get maximum production efficiency.

Everything considered, doesn't it make good sense to use Eastman all the way?

Motion Picture and
Education Markets Division
EASTMAN KODAK COMPANY
Rochester, N. Y. New York, N. Y.
Chicago, Ill. Hollywood, Calif.

.....
EASTMAN FILM
.....

Warner Theatre in New York Completes New Projection Installation "Cine-Focus"

ASHCRAFT
SUPER CORE-LITE
CORE-LITE
CINEX SPECIAL
35/70
PROJECTION LAMPS
AND HIGH-REACTANCE
MULTI-PHASE RECTIFIERS
★
World's Standard
of
Projection Excellence

MOVING?
Be sure to send IP the label from the cover of your International Projectionist as soon as you have your new address. Please allow five weeks for change.

**INTERNATIONAL
PROJECTIONIST**
Suite 410, 545 Fifth Ave.
New York, N. Y. 10017

First installation of Century's Cine-Focus projector film stabilizer on Century 70mm projectors was recently made at the Warner Theatre, on Broadway, in New York City, for opening of "The Greatest Story Ever Told." Century Projector Corp. announces.

Century's most recent development, Cine-Focus is reported a device to provide better control of a motion picture film as it is being projected under any conditions. Cine-Focus is a "combination of carefully engineered related film controls," Century adds, which enhances solidity and optical perfection of the picture and, by reducing to a minimum, eliminates, for all practical purposes, film flutter and focus drift. It is also said to solve the problem of breathing necessitating focus readjustments.

Positive Film Control

By correcting several factors causing picture depreciation, Cine-Focus is also reported to maintain strict and positive control over the film while it is being projected and to contribute to its longer life. Reduction of the tension required by the film trap shoes and maintaining positive control of the film positioning, without exerting undue mechanical pressure on the film, results in reduced sprocket hole depreciation and makes prints last longer.

Cine-Focus is "especially valuable where limiting conditions are present," says Century. Included are 70mm presentations on large screens and 35mm in larger theatres and drive-ins. It is also reported particularly adaptable to 35mm projectors in smaller, second-run theatres, as an aid in using films that have been projected under circumstances which cause them to become permanently buckled and cause in and out of focus.

In development of Cine-Focus, Century says its engineers have for some time been studying factors causing loss of picture quality.

One of the problems confronting

all projection is the tendency of the film to distort as soon as the heat from the arc lamp hits it. This distortion is reported well known and has been carefully measured and depicted in high speed photographs. Many technical papers have been written about it, and attempts to eliminate the effects have produced many patents.

The film flutter problem existing during the projection cycle becomes more and more acute as the intensity of the heat of the light source increases. This increase in heat, the firm adds, has been especially marked in the past few years.

Another serious factor affecting the clarity of the projected picture has been demand by theatres for higher speed, shorter focal length lenses, Century states. Higher speed lenses are used in an attempt to obtain more light on the screen (larger screens). Shorter focal length lenses are used to increase the picture size with shorter projection distances.

Introduction of new developments has, also, usually been preceded by "improvements" in associated equipment—such as arc lamps, projection lenses, screens, theatre interiors, camera techniques, film and film processing (including introduction of motion pictures in color).

Each phase of these developments has created additional problems in the projectors, it is said. Larger arc lamps using higher power create heat problems. New lenses with higher "speeds" accentuate film flutter problems. Larger screens require either larger films or shorter focal length lenses. Larger films create mechanical problems. Higher gain screens create reflection problems. Higher screen illuminations create film flicker problems as well as print density problems. Use of color magnifies the problem of selecting and controlling all of the essential contributing factors outlined as well as numerous others.

iP

"Cine-Focus"

Century Proj. Corp. Develops New Projection System

Century Projector Corp., New York, has announced development of a film stabilizer kit called "Cine-Focus." The announcement states the trade name was coined "to include not one but several ideas, any one of which would improve the operation of a projector but in combination produces a screen result which has been acclaimed everywhere it has been used."

The announcement describes the equipment further as follows:

"By the use of water, air and cooling, a film control has been achieved which results in a picture having a solidity and optical perfection never before achieved commercially. In combination with other well known devices such as the Century water cooled film traps plus the quartz coated heat filters, film flutter and focus drift has been reduced to a minimum if not (for all practical purposes) eliminated.

"Cine-Focus is a device to better control a motion picture film as it is being projected under any and all conditions. It is especially valuable where limiting conditions are present as, for example, 70mm presentations on large screens and 35mm in larger theatres and drive-ins. It is also particularly adaptable to 35mm project-

ors in smaller theatres, second runs, etc., where films that have been projected under circumstances which have caused them to become permanently buckled as to cause in and out of focus.

"Correcting several factors causing picture depreciation Cine-Focus maintains strict and positive control over the film while it is being projected as well as contributing to its longer life. Cine-Focus not only controls the positive positioning of the film but it may also contribute to the reduction of the tension required by the film trap shoes. It accomplishes this by maintaining a positive control of the film positioning without exerting undue mechanical pressure on the film. This results in reduced sprocket hole depreciation and makes prints last longer.

"It should be explained that Cine-Focus is not a so-called air pressure gate." **iP**

EPRAD Announces New Drive-In Speaker

A new drive-in theatre speaker named the "Super Blazer" has been announced by Paul Voudouris, sales manager for EPRAD, Inc., Toledo, Ohio.

The "Super Blazer" features a 4-inch weatherproofed cone and a 1.47 oz. Alnico V magnet. The die-cast aluminum case is manufactured from a high grade corrosion resistant aluminum alloy. Other features include a deluxe wire wound volume control, rugged long lasting cord and theft-proof screws to reduce tampering, are standard. The "Super Blazer" has a full 2 year warranty, according to Voudouris.

The "Super Blazer," which is priced at \$4.36 with a straight cord, is available only through EPRAD theatre equipment dealers. **iP**

TESMA to Join with TOA, NAC for Show

Theatre Equipment and Supply Manufacturers Assn. will participate with Theatre Owners of America and National Association of Concessionaires in sponsoring the 1965 Motion Picture and Concessions Industries

Trade Show in Los Angeles. The show will be held during the concurrent conventions of TOA and NAC at the Ambassador Hotel, Oct. 27-30.

This was announced jointly by Sumner M. Redstone, TOA president; Edward S. Redstone, president of NAC, and Arthur J. Hatch, president of TESMA.

A special section of the trade show area has been set aside for theatre equipment manufacturers and suppliers.

iP

Norelco

projection
equipment

Available from
leading theatre supply
dealers

North American Philips Co., Inc.
Motion Picture Equipment Division
100 E. 42nd St., New York 17, N.Y.



Cine-Focus projector film stabilizer mounted in the Century 70mm projector operating side—inside view.

America's
headquarters
for all
theatre equipment
and
supplies



National
THEATRE SUPPLY COMPANY

Century 21 Theatre Gets Newest Of Sound Systems in Ampex Installation

The Ampex Corp. has delivered its 3000th theatre sound system - a six-channel, 960-watt installation in the new circular-domed Century 21 theatre in San Jose, Calif.

Ampex, a pioneer in magnetic tape recording and sound reproduction, entered the theatre sound field in 1953. Working closely with motion

picture studios, the company developed the first true stereo sound systems for theatres. The system was first used in theatres across the country in conjunction with the showing of the motion picture "The Robe," one of the first pictures filmed with stereophonic sound tracks.

The system, which used a magnetic recording head to pick up sound from the magnetic track on the film, offered a number of technical advancements over optical sound track or disc recording. The advantages of four channel, multi-directional systems with the superior sound produced by magnetic recording even after hundreds of runs attracted the movie industry.

Later, in 1955, Ampex developed a new magnetic sound system with six channels for the motion picture "Oklahoma." This system earned an "Oscar" for Ampex from the Motion Picture Academy of Arts and Sciences.

Since then virtually all motion pictures have utilized the magnetic recording sound track technique. The Ampex sound systems have become a standard of the industry.

Cinerama, which uses the Ampex system exclusively, utilizes up to eight channels of sound. The Century 21 theatre in San Jose employs five Voice of the Theatre A4X speakers on stage and eight Voice of the Theatre A7-500 speakers surrounding the audience. Each of eight amplifiers has a rating of 120 watts with a total of 960 watts.

The quality of today's theatre sound system is indicative of a mark-



THEATER-IN-THE-ROUND — The new circular-domed Century 21 theatre in San Jose, Calif., is designed for the ultimate in acoustics, with the 940 seat auditorium encircled by a 960-watt, six-channel sound system by Ampex. The new installation is the 3000th theatre sound system by Ampex Corp., which has similar equipment in theatres around the world.



PROJECTION ROOM — Ampex amplifiers and allied equipment (foreground) have been installed in the projection room of the new Century 21 theatre in San Jose, Calif., to power the 960-watt six-channel sound system.

ed trend in growth and sophistication in this field, according to Al Lewis, manager of Ampex's theatre sound system operations. Theatre owners and motion picture executives, more keenly aware than ever before of the competition for entertainment dollars, are turning to wide screen productions and the multi-channel multi-speaker sound systems that accompany them as offering new dimen-

CARBON ARCS . . .

FOR FINEST PROJECTION

. . . Compact Xenon Arcs

Lorraine Arc Carbons

division

- Brighter Light on Screen
- Longer Burning per Carbon
- More Economical . . .



XETRON products

division

XETRON LAMPHOUSES • XETRON POWER SUPPLIES

CARBONS, INC.

BOONTON, N. J.

sions in motion picture entertainment.

Seventy millimeter films, which are used on the wide screen, will be produced in growing numbers, Lewis said. During the next two years some 29 new U.S. made 70mm films are scheduled for release. Foreign producers are also making a number of these films.

Of the 320 theatres in the United States equipped with 70mm process and six channel sound systems, the majority employ Ampex systems, it is claimed. Ampex also has 70mm installations in theatres around the world including Paris, Brussels, Buenos Aires, Madrid and Taipei. Formosa. During the next few years, hundreds of theatres in the United States and overseas will be installing six channel sound systems, Lewis adds.

In addition to manufacture of a complete line of sound systems for all theatre requirements including control centers, preamplifiers, power amplifiers, speakers and recording and playback heads. Ampex sound specialists are trained in the science of acoustics and correct system installation. Ampex also manufactures and markets professional recorders for broadcast and the phonograph record industry, home stereo recorders, television and instrumentation recorders, electronic recording and data storage, geophysical exploration, and automation equipment. **IP**

New General Electric Lighting System claimed Four Times Brighter

CLEVELAND, OHIO — A revolutionary new projection lighting system producing up to four times the screen brightness of current 8mm and 16mm systems has been developed by the General Electric Company's Photo Lamp Department.

Lester W. Dettman, department general manager, said the new system called "MARC-300" consists of a two-inch-long, 300-watt quartz arc lamp and a power supply unit.

The lamp itself, under development by General Electric for the past several years, is small enough to permit minimum redesign of current projectors for its use, Dettman said. It looks like an ordinary tubular quartz lamp except for a half-inch bulge near one end. The bulge is the "arc chamber" where the light is produced.

The power supply unit, which starts the lamp and controls it during operation, weighs about 25 lbs. It



BRIGHT EYE—The new "MARC-300" projection lighting system developed by the General Electric Co.'s photo lamp department produces up to four times the screen brightness of current 8mm and 16mm systems. MARC-300 includes this 300-watt quartz arc lamp, a power supply unit and accessories.

may be used as a base under the projector or close to the projector.

In screen brightness, MARC-300 "outshines" current 1,000-watt incandescent systems by up to 400%.

"The experience of seeing MARC-300 projection for the first time is truly exciting, even for professional users," Dettman said.

"The whites, in particular, are made so much more brilliant and crisp. All the darker colors seem to come to life too."

Demonstrated in side-by-side tests with a standard 1,000-watt 16mm projector, MARC-300 shows its added brilliance most dramatically, he said. "The viewer is immediately

Projectionists
who like quality
always use the best

ACE

Blue★Star

Film Cement
Sold by Supply Dealers
Send for FREE Sample

ACE CHEMICAL CO.
(Division of the
Ace Electric Mfg. Co.)
1923 Bay Road
Miami Beach, Florida

DIAMOND

TRADEMARK

PROJECTOR CARBONS

Better Light! Lower Costs!

RINGSORFF CARBON CORP. East McKeesport, Pa.

THE VERY FINEST PROJECTOR PARTS

ARE MADE BY

There's nothing like them for precision manufacture, close inspection, efficiency in operation, dependability and long life. Obtainable from your Theatre Supply Dealer.

LaVeZZi MACHINE WORKS
SINCE 1908 4635 W. LAKE ST., CHICAGO 44, ILL.
TELEPHONE—AREA 312—ES 8-1636

struck by the bright colors of the MARC-300 screen image and the comparatively drab hues of the incandescent projector's image."

Because of its added brightness and smaller source size, MARC-300 will increase the range of applications of all projectors, both movie and still, in which it is used.

16mm projectors with MARC-300 would, for instance, be suitable for use in smaller theaters. It is conceivable, Dettman admitted, that MARC-300 could broaden the use of the new Super 8 projectors in education and industry.

The lamp provides a brilliant source of light about the size of a drop of water. Because of its ultra small arc chamber with its uniform brightness, MARC-300 permits smaller and less complex optics than other systems. Key to the high brightness of MARC-300 is the lamp's super-bright gaseous atmosphere caused by the intense level of electric discharge between two molten electrodes.

In spite of its high brightness, MARC-300 requires little cooling. As a result, this 300-watt source permits more cooling air to be diverted to the film and projector parts than possible with 1,000-watt systems.

The new projection lighting system — the lamp, power supply unit and accessories — will be sold to projector manufacturers. Dettman said MARC-300 is not interchangeable with any existing projection lighting source. Prototype models of MARC-300 have already been provided to these manufacturers for integration into future projectors. He added that replacement lamps would be available to users.

"Projectors with MARC-300 systems will find greatest acceptance in audio-visual markets where high brightness and portability are important — mainly schools, the military and industry," Dettman said. **iP**

New Lens Sweeps Focus

A lens that can sweep its focus along any given plane without move-

ment of the camera, and draw the viewer's attention to one then other side-by-side objects is now ready for use, according to its manufacturer.

The lens, called the Swing Sweep Focus Lens, is a development of the Fred A. Niles Communications Centers, Inc., Chicago, New York, Hollywood. The firm announced several months ago that the lens was in the development stage.

Now, according to Fred A. Niles, president of the production firm, the lens has been refined to a point where it is ready for use in all types of production.

Niles said that the development of the lens was under the direction of Lionel Grover Niles, vice president, Hollywood, who worked jointly with a staff member of the California Institute of Technology.

A side benefit of the construction of the lens is that it can be adjusted to keep objects in focus from three feet to infinity, along a narrow plane within the scene, while maintaining a natural perspective. A straight road, for example, could be in focus stretching off into the distance, while both sides would be out of focus. **iP**

CONVENIENTLY LOCATED DOWNTOWN
"A Short Step From Everywhere"

BURLINGTON

1120 Vermont Ave., N.W. **HOTEL**

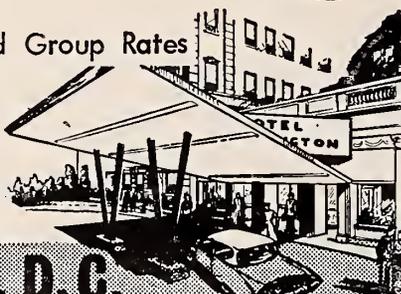
300 COMPLETELY MODERN ROOMS

- All Rooms Air-Conditioned
- Free Parking Adjoining
- Private Tub and Shower Bath in Every Room
- All with Television
- Old Mill Lounge Cafe
- Convention Facilities and Group Rates

Single \$7.50 to \$13.50
Double \$13.50 to \$18.50
Children under 14 Free

Telephone: (202) 265-4000 Teletype: 202-965-0387

Hudson S. Moses W. P. Williams
Gen. Mgr. Mgr.



WASHINGTON, D.C.

\$700,000 Theatre For Houston

The multi-million dollar cost of Houston's "Magic Circle" development will be complemented by a new Loew's luxury theatre, representing an investment of \$700,000. A long-term lease for the new showplace, to be known as Loew's Magic Circle, was signed by Art Tolchin and Bernard Myerson, chief executives of the theatre division of Loew's Theatres, Inc., and George A. Butler, president, and John Cater, Jr., vice president of the Houston Corporation, builders.

The Magic Circle area, surrounded by the lush Tanglewood, Memorial, Spring Branch with River Oaks residential sections, contains branches of the southwest's leading department stores — Neiman-Marcus, Sakowitz, Joske's, and magnificent, high-rise apartment condominiums, and is rated by real estate experts as one of the top areas of its kind in the entire southwest.

Loew's Magic Circle, in keeping with the nature of the area, will be of luxury type, seat 1,200, provide acres of free parking, and be equipped with 70mm projection and a 60-foot screen. There will be "rocking-chair" seating and a new type of acoustical treatment of auditorium walls and ceiling. **iP**



INTERNATIONAL PROJECTIONIST

SUITE 410, 545 FIFTH AVENUE
New York, N. Y. 10017

Enter my subscription for 1 year (12) issues—\$3.00
 2 years (24) issues—\$5.00

FOREIGN: Add \$1.00 per year

Name

Address

City Zone State

basic mathematics

by NORMAN H. CROWHURST

VOLUMES
1 through 4
COMPLETE

FROM COUNTING
THROUGH CALCULUS
... A MODERN,
UNIFIED APPROACH
TO MATHEMATICS
AND ITS USES



A NEW PRACTICAL METHOD OF LEARNING MATHEMATICS

BASIC MATHEMATICS

by Norman H. Crowhurst

4-volume 'pictured-text' course makes it easier than ever before possible to learn all the math you'll need to know to speed your progress in electronics—no short cuts—no gimmicks.

This remarkable 4-volume course takes you in easy stages from counting through algebra, geometry, trigonometry to calculus so that you will understand easily, quickly, all the math you will need to get ahead in electronics — regardless of your previous education! It employs an exciting new technique presenting basic mathematics as on continuous development of mathematics. The individual branches of mathematics are not divided into separate and unrelated subjects. Algebra, geometry, trigonometry, calculus are interwoven at progressively rising levels in the different volumes. Each volume reinforces your understanding as you penetrate more deeply into the subjects. Selected illustrations create clear images of mathematical ideas formerly difficult to understand.

A KNOWLEDGE OF MATH SPEEDS YOUR PROGRESS IN ELECTRONICS — No matter what your plans are in electronics — mathematics plays a vital role. The

more math you know, the easier it is to learn electronics. And, if you've set your sights on being an advanced technician or an engineer, this course will speed you towards your goal.

Volume I — ARITHMETIC AS AN OUTGROWTH OF LEARNING TO COUNT — You gain the self-confidence you need to master mathematics! You build a solid foundation in mathematics without realizing that you are being introduced to subjects usually considered dry and difficult to master. #268-1, \$3.90

Volume II — INTRODUCING ALGEBRA, GEOMETRY, TRIGONOMETRY AS WAYS OF THINKING IN MATHEMATICS — Building on the solid foundation laid in Vol I., you learn to apply algebra, geometry and trigonometry as better methods of solving a problem when the arithmetic begins to get involved. #268-2, \$3.90

Volume III — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS WORKING METHODS IN MATHEMATICS — This volume continues the search for new and better methods of calculating, and adds calculus to the group of 'tools' already introduced. #268-3, \$3.90

Volume IV — DEVELOPING ALGEBRA, GEOMETRY, TRIGONOMETRY, CALCULUS AS ANALYTICAL METHODS IN MATHEMATICS — Once you've reached volume IV,

you're ready to apply all that you've learned in the earlier volumes. You'll be able to find the right approach to each individual problem. You'll be ready for a career in which mathematics play a most important part. #268-4, \$3.90

Available at parts distributors, bookstores, or direct.

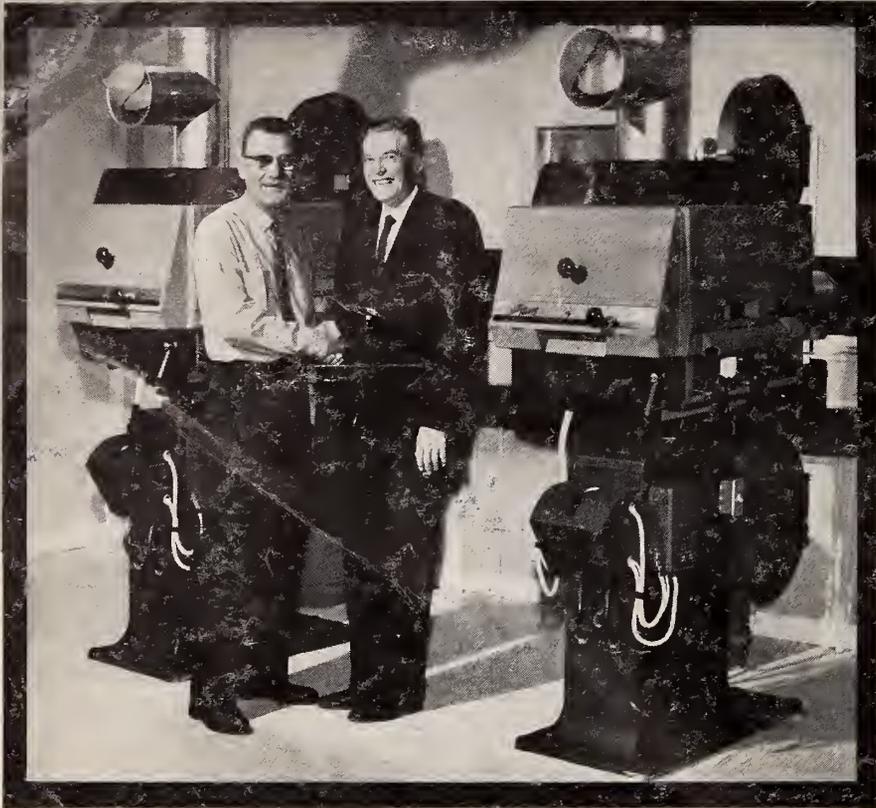
INTERNATIONAL PROJECTIONIST
1645 Hennepin Avenue, Suite 212
Minneapolis, Minnesota 55403

Please send these paperback volumes:

Vol. I—\$3.90; Vol. II—\$3.90; Vol. III—\$3.90; Vol. IV—\$3.90; Send 4 Vols. in one clothbound edition, \$15.95.

Name
Address
City Zone State

Theatre men Like the Futura



They like its looks.

They like the brilliant light it projects on the biggest screens.

They like the low initial cost, low operating cost, low carbon bills.

They like the ease of changing from 35mm to 70mm . . . instantly.

They like its convenience in cleaning and inspection.

They like the many new exclusive features.

They like the . . . but what else is there to like?

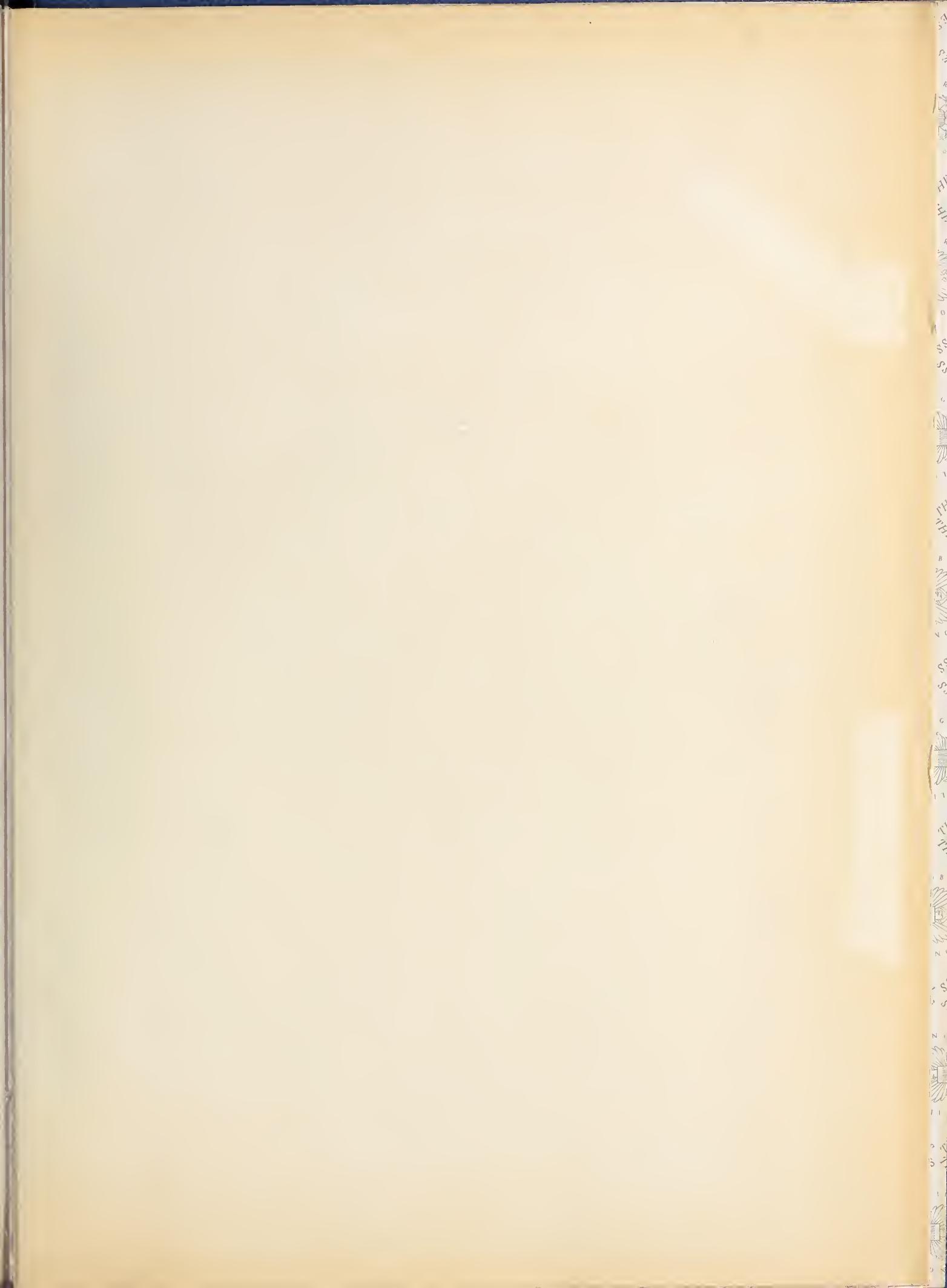
Get brochures on the 75-105 ampere Futura I and 100-125/120-160 ampere Futura II or see your Strong dealer. You'll like him, too.

THE *Strong* ELECTRIC CORPORATION

31 City Park Avenue

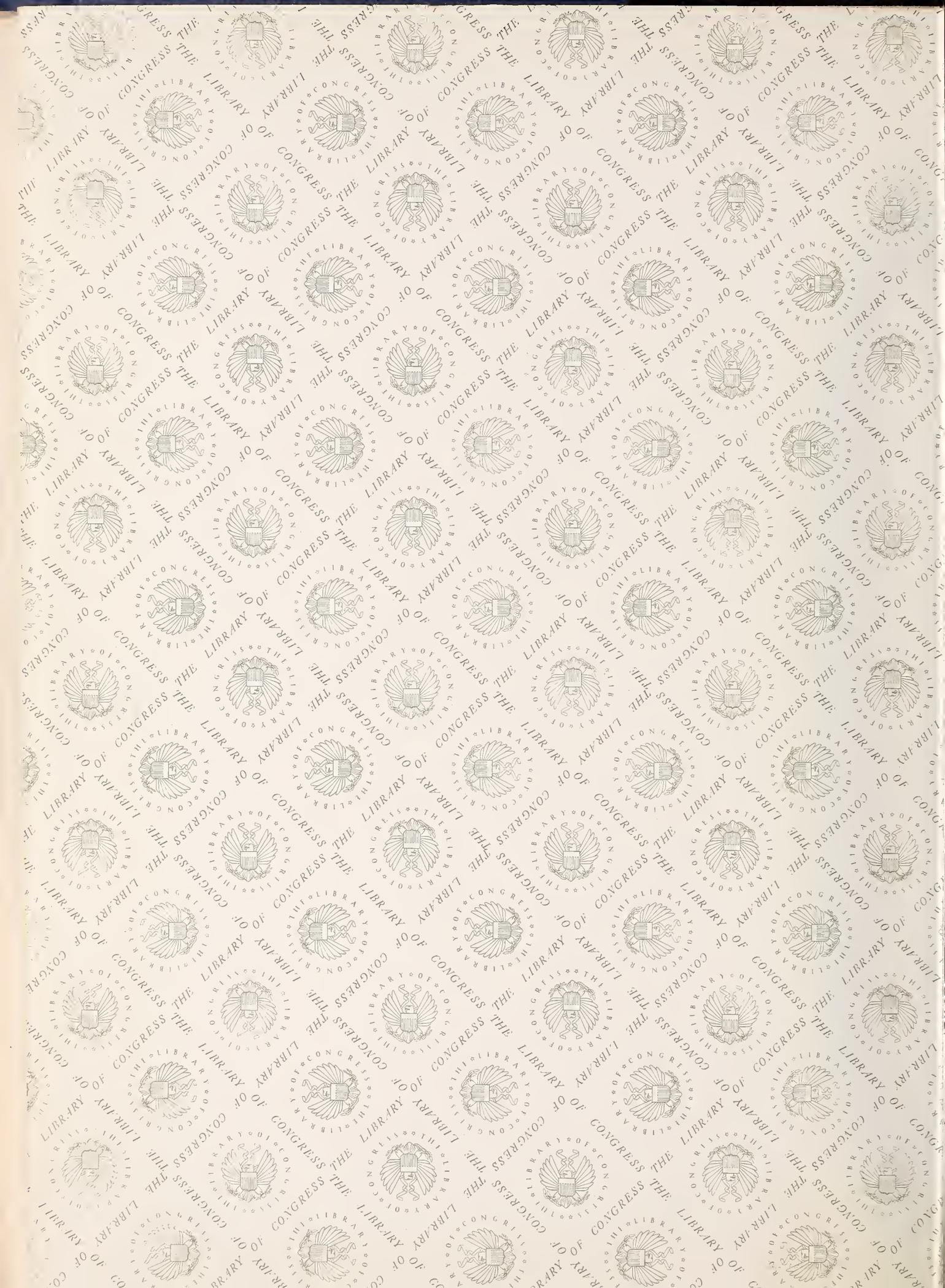
Toledo, Ohio 43601

Phone: (419) 248-3741





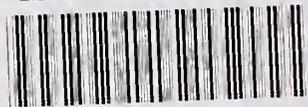
RESSE
P.E.S.S.
U R
1 2
THE
THE
B
M
N O
P.S.S.
P.S.S.
U R
1 2
THE
THE
I B
N O
P.S.S.
P.S.S.
N G
I B
S T
S T
I B
N G
S T
N G
I B
S S
S S
I B
N G





BOUND TO PLEASE
Heckman Bindery INC.
MAR 68
N. MANCHESTER
INDIANA

LIBRARY OF CONGRESS



0 013 660 278 0