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8mm — Part II. The second portion of the 8mm section of the program took place on Tuesday afternoon under the direction of Topic Chairman John Flory and Vice-Chairman E. W. Hamilton. A 20-minute German short subject, *Capriccio*, was shown at the opening of the session. Papers were delivered which discussed a self-contained recorder, magnetic striping developments, the manufacture of 8mm prints, high-speed inspection of magnetic-striped release prints and photographic sound. A progress report on 8mm color positive release prints with magnetic sound was presented in this session.

A major portion of the 8mm papers is scheduled to appear in the next issue of the *Journal*.

Film Projection. Data on the energy absorption characteristics of color and black-and-white release film; and the historical development of the xenon light were among the reports presented in a session on Film Projection and Television Film, Tuesday evening. Eric C. Johnson and John G. Stott presided at this meeing which was told that the future of 70mm production was largely dependent on medium-sized theaters making it imperative that economy of installation be made a primary consideration. The problems of film-making in Canada, some of which are unique, were also discussed.

Sound Recording and Reproduction. The Wednesday morning and afternoon sessions, devoted to sound recording and reproduction closed early to allow delegates to prepare for the evening's entertainment gala. In the morning session, chaired by George Lewin and Leonard A. Green, an electronic tape recorder for special sound effects was introduced; multilingual and bilingual sound was discussed as well as the improvement of 16mm optical sound, modifications of tape producing equipment, re-recording applications, integrated audio systems and projection equipment. A Canadian short subject, *Operation Vulcan*, opened the meeting.

Richard Ranger and Leo H. O'Donnell presided at the afternoon session. A 20-minute German film *Jonny*, was screened at the beginning of this session. Papers were presented on two new equipments for producing artificial reverberation and on the design and operation of an instrument for oscilloscopic observation of frequency fluctations in the output of sound recording equipment. Two approaches to solving the television intercom problem were examined; a new 16-input fully transistorized audio console was introduced and a demonstration was given of bilingual and stereophonic recordings on 16mm film.

Lab Practices Discussed. A 20-minute Australian short subject, *Animal Parade*, opened the Thursday Morning Session on Laboratory Practices which was conducted by Arthur J. Miller and George J. Bova. Next to the 8mm session, this proved to be the second best attended session, with 250–300 present. Three papers from the Technicolor Corp. were presented in this session, including some excellent film presentations. Originating in London, Rome and Hollywood, these papers dealt with Technicolor's international facilities for release printing, arbitrary scales and selective printing. Delegates to this session were told also of a national network of processing laboratories for Kodachrome film; how color negative film surface characteristics affect picture quality; reversal color printing through masters; and a new process for rating the film speed according to location conditions.

William H. Metzger and John M. Waner chaired the second session on Lab Practices Thursday afternoon. Two English short subjects, *Cultured Ape*, and *Insolent Matador*, were shown at the beginning of the meeting.

Two papers on the rapid processing of motion-picture film by the application of viscous coatings were highlights of this session. Other topics dealt with were: fiber optics in the motion-picture laboratory; a medium-priced microdensitometer for photographic research; a sensitometer designed to make sensitometric strips for film investigation in the microsecond region. A high-speed continuous 16mm to 8mm reduction printer was discussed as well as a damping device to improve image sharpness and steadiness of prints made on a continuous 16mm motion-picture printer. The session was closed with a description of a method for determining the steadiness of printers independently of the steadiness of any projection used to examine the prints.

TV Recording. Television recording was the subject of the Thursday evening session,

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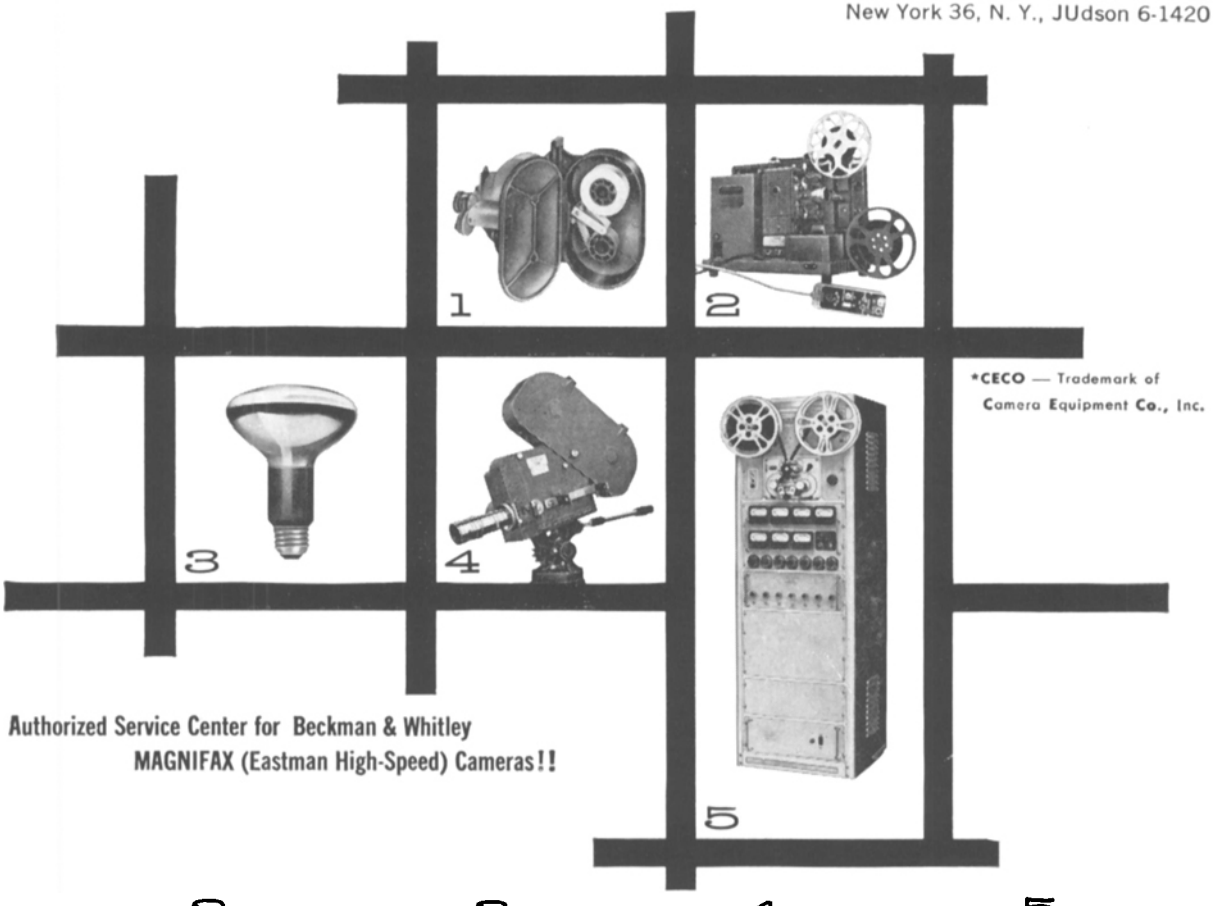

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was hailed as one of the great successes of the week. The Canadian Broadcasting Corp., through Norman Olding, graciously provided entertainment for the affair, including performances by Juliette, Yoland-Guerard and the Mart Kenny Orchestra. Emcee Gordie Tapp conducted the show that was produced by Doug MacDonald and recorded for broadcast over the CBC Radio Network the following Friday. The Association of Motion Picture Producers and Laboratories of Canada kindly provided dinner wine.

During the week conventioneers had many occasions to appreciate the Pye closed-circuit equipment, and the photocopy service in the Press Room made available through the courtesy of Minnesota Mining and Manufacturing of Canada Ltd., The excellent short film subjects were kindly offered by Fremantle of Canada Ltd. E.M.I.-Cossor Electronics Ltd. and Minnesota Mining and Manufacturing of Canada Ltd. made available the magnetic tape used in recording the technical sessions.

Ladies Program

The interesting program for the ladies was planned in a flexible manner to allow plenty of free time for shopping and sightseeing. Photo Importing Agencies Ltd. gave a cocktail party for ladies and their husbands on Monday evening. Tuesday morning there was a trip to Niagara Falls and a luncheon at the Sheraton Brock Hotel, courtesy of Minnesota Mining and Manufacturing of Canada Ltd. That evening, the ladies attended "Front Page Challenge," a live television show, as guests of the Canadian Broadcasting Corp. Alex L. Clark Ltd. sponsored a flower show and tea at Toronto's showplace, the famed Casa Loma, later in the week.

Complimentary Theater Admissions

Complimentary theater passes were distributed to all delegates through the courtesy of Famous Players Theatres, Odeon Theatres, and Loew's.

Motion-Picture Record

Almost 2000 ft of 16mm black-and-white footage was exposed at the Convention by cameramen covering the important aspects of the week's activities. This record was made possible through the cooperative efforts of Don Virgo, George Sebb and Robert Brooks of Chetwynd Films Ltd., Toronto; Roger Beaudry of Pathe-DeLuxe Laboratories Ltd., Toronto; and Sydney Banks of S. W. Caldwell Ltd., Toronto. Film and laboratory processing were contributed by these three companies.

The film will be edited and released as a 12-minute sound short subject, and presented at the Lake Placid Convention next fall.

From all quarters, the 89th Convention in Toronto has been hailed as one of the most successful in the Society's history. Those who have worked on Conventions know that its success was possible because of the untiring efforts of our Canadian Section in charge of arrangements under the very able direction of Gerald G. Graham. The careful groundwork laid nearly two years before by Executive Vice-President Reid H. Ray, then Convention VP, contributed a great deal, as did the high caliber of work done by each person concerned with the Convention. Someone remarked in Toronto at the close of the week that the success of the meeting lay in the great capacity of those who worked on all aspects, and especially the "little" jobs, to take those jobs seriously and do them well. This, it is believed, sums up the reason behind the success.

A tremendous "Thank You" is offered to our northern members and a wish that SMPTE shall not wait another three decades to visit Canada. Within the not too distant future it is hoped that another Canadian convention may be scheduled.—*Barbara Skeeter.*

90th Convention, Lake Placid Club, New York. A brief note on the progress being made in planning the technical program of the Fall Convention will be found on p. 541 of this issue.

Education, Industry News

A sapphire-covered satellite is being constructed by Bell Telephone Laboratories as part of its satellite communication program for transoceanic transmission of television, telephone calls, data, and other communications. Working toward the long-range goal of communication satellites that can exist in space for 10 years or longer, thousands of pieces of man-made sapphires are being used to protect the satellite's solar cells from electron bombardment in space and to reduce the effects of proton bombardment. The solar cells, developed at the Laboratories, are small silicon wafers which have the property of converting sunlight to electricity. The cells, attached to the surface of the satellite, will be covered by slices of sapphire. Experimental satellites are being developed in two sizes, one 27 in. in diameter and the other 4 ft in diameter.

Statistics reported in the January 15, 1961, issue of *West Coast Contours*, an informational bulletin published by Chris Dunkle & Associates, 740 So. Western Ave., Los Angeles 5, show a total of 29,000 persons employed by the motion-picture industry in the Los Angeles-Long Beach metropolitan area during the month of November 1960, the highest monthly total since May 1947 the report states. Figures for total film attendance (in billions) show a decline from 3.5 in 1948 to 2 in 1958, with a rise in 1959 to meet the 1954 total of 2.2. The report also noted a rise in the average weekly attendance during 1959 amounting to 2.3 million over the 1958 total of 40.2 million.

An IBM 7090 electronic digital computer is used at Bell Telephone Laboratories, 463 West St., New York 14, to index scientific documents alphabetically, according to important words in the title. In one instance the computer indexed 1700 documents, according to title, author, number and project in 12 minutes. The titles are fed to the machine on punched cards, along with other cards containing the names of authors and identification numbers. The machine is then instructed to ignore "unimportant" words, and is programmed to scan the cards, reorganize the information and print out the index.

Plans for the Second Workshop-Seminar sponsored by Florman & Babb, Inc., have been announced. The first seminar was held June 12–15, 1960. (*Journal*, p. 444, June 1960.) The first Seminar was limited to 100 participants but expanded facilities, this year, will provide accommodations for 200. The date of the 1961 Seminar has not been announced (although announcement is expected shortly); nevertheless, in view of last year's response and the number of applicants who applied after the registration list was filled, the sponsors suggest that those wishing to attend the Second F&B Workshop-Seminar apply immediately to: Charles Lipow, Workshop-Seminar Coordinator, Florman & Babb, Inc., 68 W. 45 St., New York 36. There is no registration fee or other charge for attendance.

The four-day schedule (including evening sesssions) will include intensive discussions, workshop demonstrations and practice sessions. Roundtable discussions will include frame-by-frame technical analyses of animation films. Other activities will include special equipment exhibits, visits to animation film studios and surveys and evaluations of the latest animation techniques. Thirty animation experts have been selected to lead discussions and conduct demonstrations on various aspects of animation film production. Seminar schedules and materials are arranged with attention to the specific requirements of producers of animation films, representatives of industrial, university and government motion-picture departments, cameramen, and directors.

A four-day Animation Seminar and Work Shop to be held in November, 1961, has been announced by Photo Animation, Inc., 34 West Street, So., Mt. Vernon, N.Y. The meeting is planned to cover all phases of animation production from basic artwork to complete camera operation, including three-dimensional and multiplane animation and modern high-speed animation techniques. Persons attending will be given the opportunity of using equipment and making animation films. Each day's schedule will include morning, afternoon and evening sessions. Announced as "Second Annual Animation Seminar and Work Shop," there will be no charge for registration or attendance but attendance will be limited to approximately 100 persons.

A training conference on the operation and servicing of transistor sound systems, held recently at the factory of the Century Projector Corp., 729 Seventh Ave., New York 19, was conducted by Gio Gagliardi, Chief Engineer of Stanley Warner Theatres. The new transistorized sound systems (Century multiple channel (6-4-1)) are being installed in a number of the Stanley Warner Corp. theaters.

The Association of Cinema Laboratories, comprising some 60 commercial motion-picture laboratories throughout the country, held several meetings in Toronto during the recent SMPTE 89th Convention there and has announced a considerably expanded program of activities. Among these will be studies to improve the industry's technical practices, the quality and performance of its products, and its relations with government in such areas as product specifications, taxation and related matters.

To coordinate this work, the ACL has appointed as Executive Secretary *Preston B. Bergin.* Mr. Bergin will be at the ACL office, 1925 K Street, N.W., Washington 6, D.C.

The various parts of the ACL's program will be shaped by a number of Standing Committees whose titles and chairmen are: Government Affairs, *James A. Barker,* Capital Film Laboratories, Inc.; Nominating, *William E. Gephart, Jr.,* General Film Laboratories, Inc.; Trade Practices, *Sidney P. Solow,* Consolidated Film Industries; Product Specifications, *Garland C. Misener,* Capital Film Laboratories, Inc.; Membership, *Saul Jeffee,* Movielab Film Laboratories, Inc.; Publications, *Reid H. Ray,* Reid H. Ray Film Industries, Inc.; Technical Practices, *Fred Scobey,* General Film Laboratories, Inc.; Program, *G. Carleton Hunt,* General Film Laboratories, Inc.

ACL's current officers are *Byron Roudabush,* Byron Motion Pictures, Inc., President; *G. Carleton Hunt,* General Film Laboratories, Inc., Vice-President; *Louis Feldman,* Du Art Film Laboratories, Inc., Treasurer; and *Dudley Spruill,* Byron Motion Pictures, Inc., Secretary.

The Annual Conference of the University Film Producers Association will be held August 20–26, at the University of California, Berkeley. Meeting with the UFPA Conference as Conference guests will be the Congress of the International Schools of Cinema and Television. Last year's Congress, which was attended by Charles N. Hockman, UFPA President, was held in Warsaw-Lodz, Poland.

The 13th International Congress on Motion-Picture Engineering, sponsored by the Associazione Tecnica Italiana per la Cinematografia (ATIC), will be held September 24–27, 1961, in Turin. This year, the Congress will be host to the 4th Congress of UNIATEC (International Association of Motion-Picture Engineering Societies), of which ATIC is a member.

The theme of the technical program will be: Evolution and Orientation of Motion-Picture Techniques as a Function of Basic Scientific Principles. Abstracts should be submitted by July 22 and manuscripts by August 5 to the XIII Congress International de la Technique Cinematographique, 60 Corso Galileo Ferraris, Turin, Italy. Other information, including hotel reservations, is available from the same address.

The Motion Picture Division of the Photographic Society of America has announced the 3d Annual Ten Best International Cinema Competition. Films entered in the PSA-sponsored contest may be in black-and-white or color and there are no restrictions as to width or length. Both silent and sound films are acceptable and a competing film may be produced by an individual or by a group. Entries are placed in one of two categories — amateur and commercial. The PSA Gold Medal is awarded for the best amateur film and other awards are granted for films in the amateur category. The film judged to be the best in the commercial category is recognized by presentation of an Award of Merit. August 15 has been set as the deadline for entries. Additional information is available from Charles J. Ross, 3350 Wilshire Blvd., Los Angeles 5.

Three Fellowship Awards and three Senior Memberships were announced at the Annual Banquet of the Society of Photographic Scientists & Engineers held May 25, 1961, in Binghamton, N.Y. The three newly named Fellows of the SPSE, so

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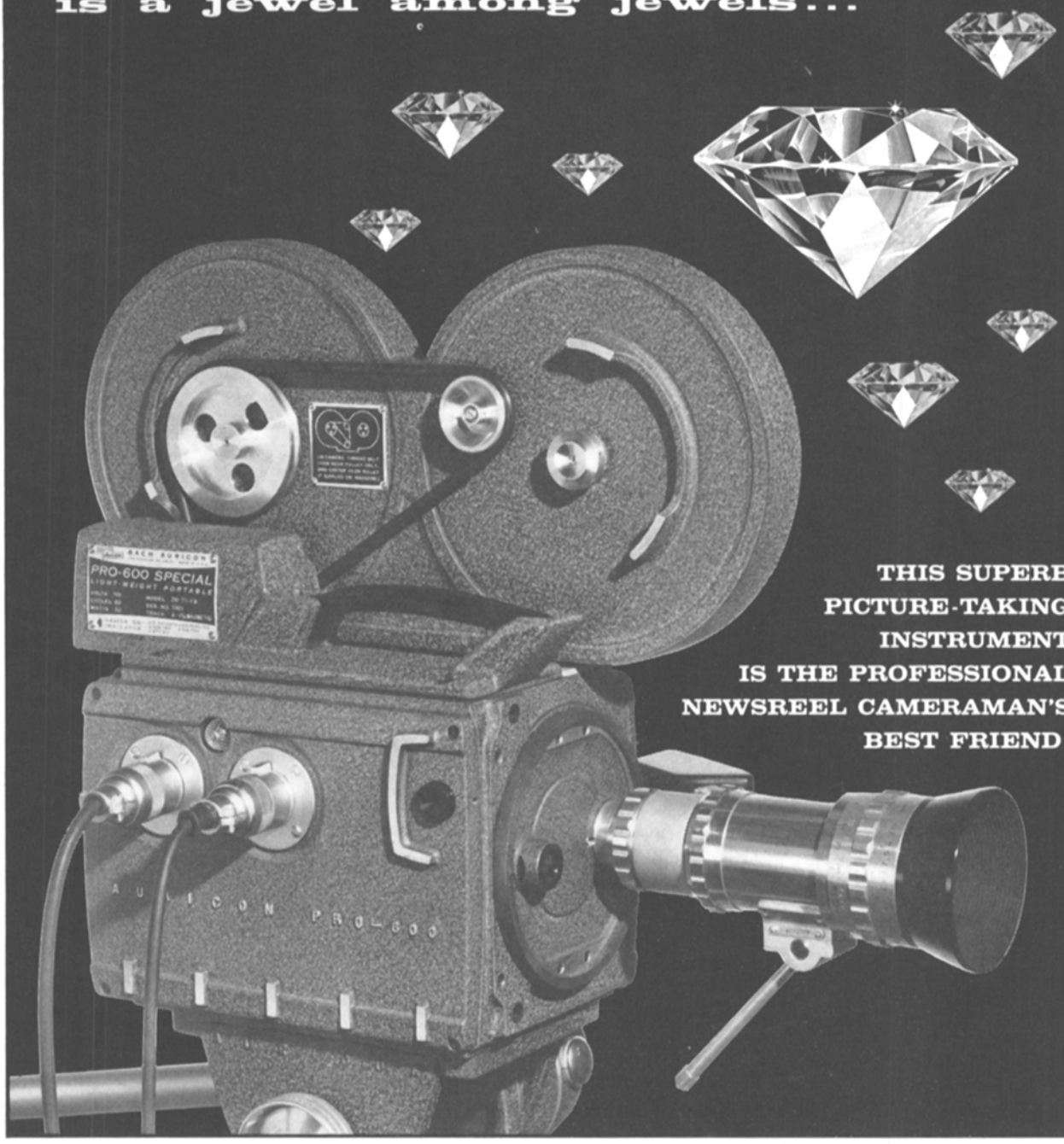

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honored for "contributions to photographic science and engineering," are: Frank Back, President of Zoomar Corp.; Heinz F. Nitka, Associate Director of Research and Development, Ansco Division of General Aniline & Film Corp.; and Robert S. Quackenbush, Jr., honored for "early work in the field of aerial photography and interpretation." A former commander of the Naval Air Station at Key West, he is now a special technial representative for Polaroid Corp.

The three newly named Senior Members are: George T. Eaton, a founding member and first SPSE President. He is Assistant Head of the Applied Photography Division of Kodak Research Laboratories; Ira R. Kohlman, Conference Coordinator for SPSE and Manager of Technical Services for LogEtronics, Inc., Alexandria, Va.; and Joseph Mangiaracina, Chief Instructor and Training Administrator, U.S. Army Signal School, Fort Monmouth, N.J. He was cited for "exceptional work on behalf of SPSE."

The Fifth Annual International Film Festival will be held November 1–14, at the Metro Theatre, San Francisco. The Festival has received official recognition from the International Federation of Film Producers Association and representatives of 61 countries have been invited to participate. Additional information is available from The Editor, Festival Footnotes, San Francisco International Film Festival, 172 Golden Gate Ave., San Francisco 2, Calif.

The Fourth Annual Motion Picture Workshop of the Department of Television, Motion Pictures and Radio, New York University, Washington Square, New York 3, will be held July 24 – September 1, 1961. The workshop is an intensive six-week course in professional production, direction and writing, primarily for motion-picture students, special students and teachers, and professionals desiring complete production-direction experience. Emphasis is on creative film making. Enrollment is limited to 30 and the fee is $335.

A new photoinstrumentation unit to provide specialized photographic services for research laboratories on a company-wide basis has been established in the Nuclear and Basic Research Laboratory of the Dow Chemical Co., Midland, Mich. R. Wayne Anderson has been appointed Research Photographer in charge of the new unit. Mr. Anderson, author of two papers presented at the Fifth International Congress on High-Speed Photography ("High-Speed Photography Using Ultraviolet Light to Eliminate Visible Light Masking in Self-Illuminating Events," and "Value Received — The Use of High-Speed Photographic Techniques in Research and Industry"), has been with the firm since 1945. Techniques to be used by the new unit include high-speed and time-lapse photography, photocinemicrography and photocinemacrography, and infrared and ultraviolet photography.

An experimental electronic system that can help a composer to create new music by suggesting variations and new tone combinations based on his original ideas has been developed by Radio Corp. of America. This electronic composer's assistant is a special-purpose type of computer called a "random probability" system. It consists of an arrangement of circuits designed to select notes in random fashion from among many choices, with the probability of the choice determined by the frequency with which various note sequences occur in the style favored by the composer. The composer sets the pattern of the controlling circuits, then the computer may range over the many possible variations that may be used to develop the basic theme. The machine, in a laboratory demonstration, produced original tunes in the style of Stephen Foster, guided by circuit arrangements based on the melodic and rhythmic characteristics of Foster's music. Rearrangement of the circuits would provide variations on any other style of music favored by the (human) composer, including unconventional scales and rhythms.

A new firm specializing in the design and production of electromechanical and electronic accessories for closed-circuit TV has been announced by Leonard T. Winship, former Manager of the TV Sales Application Engineering Group of GPL. The new firm, called Nassau Laboratories, is temporarily located at 42 Valley Road, Plandome, L.I., N.Y. Products immediately available include video switches, video distribution amplifiers, weatherproof housings, and similar items.

Michael W. Chitty has been appointed

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Chief Engineer for Reevesound Co., a subsidiary of Reeves Soundcraft Corp. He was formerly Division Manager for Canadian Marconi Ltd. In his new post he will inaugurate and supervise a general program of product engineering.

Frank A. Comerci has been appointed Manager of the Magnetics Research Department of CBS Laboratories, Stamford, Conn. Prior to his present appointment he was Senior Electronics Engineer with Audio Devices, Inc. He has also been associated with Rangertone Corp. and later joined the Naval Material Laboratory, Brooklyn, N.Y., where he was head of the Acoustics and Communications Section.

John C. Pennock, a Vice-President of Flight Research, Inc., Richmond, Va., has been appointed Manager of the firm's new Western Division, 2121 C Placentia Ave., Costa Mesa, Calif. Donald Bass has been elected a Vice-President and will succeed Mr. Pennock as head of Application Engineering, which has been transferred from Richmond to the firm's New York office at 116–55 Queens Blvd., Forest Hills, N.Y. The new appointments were made as part of the firm's expansion program in the photoinstrumentation field. Expansion plans include emphasis on photographic data acquisition equipment and exploration of related nonphotographic techniques.

John W. Lang, Jr., has been appointed Manager of Design for the Photo Products Division of Bell & Howell Co. He has been with Bell & Howell since 1954, and, earlier, held the post of Assistant Chief Engineer for DeVry Corp.

Arthur E. Thake has been appointed General Manager of Manufacturing Engineering, Photo Products Division, Bell & Howell Co., Chicago. He has been with Bell & Howell since 1950, first as Chief Optical Production Engineer, and later he was given successive appointments as Assistant Director and Chief Engineer of the Optical Division, followed by an appointment in 1960 to the post of General Manager of the Government and Special Products Division.

Rodney D. Chipp & Associates, Consulting Engineers, 15 Ward St., Bloomfield, N.J., is a newly organized firm equipped to offer consulting services on an international as well as a nationwide scale in the fields of electronics, communications systems, radio and television broadcasting systems, industrial TV and engineering management. Consultation services include planning, design, construction, operation, maintenance and management of the various systems. Head of the new firm is Rodney D. Chipp whose extensive background in engineering has included an appointment (with his wife, Dr. Beatrice A. Hicks) to Project Ambassador, sponsored by the National Society of Professional Engineers. This assignment involved a detailed survey and report on problems faced by engineers overseas, with a view toward improving intercontinental relationships on a scientific and engineering level. He has also traveled widely on other engineering projects. An engineering executive at International Telephone and Telegraph Corp., he resigned his post to head the new firm. His engineering background also includes many years with National Broadcasting Co. and the Allen B. DuMont Laboratories. In addition to developing operational equipment and techniques he has also engineered large-scale military communications systems and has previously been retained as consultant to military and civilian governmental agencies as well as many large industrial organizations.

Mediterranean Studios Association (MSA), a newly organized production company, reportedly backed by the governments of Greece, Morocco and Turkey, will utilize the services of the Anzervos Studios in Athens; Souissi Studios in Rabat, Morocco; and Fitas Studios in Istanbul, Turkey. Organized by Motion-Picture Director Marion Gering, formation of the new company was announced at the Cannes Film Festival. According to Mr. Gering, plans are to employ American as well as native actors and directors, and to make the new company's facilities and services available to other companies in the film industry.

Aerol Associates, Inc., 9024 Olympic Blvd., Beverly Hills, Calif., has been appointed national sales representative for closed-circuit TV and data transmission equipment manufactured by American Microwave and Television Corp., 1369 Industrial Rd., San Carlos, Calif. The equipment includes four types of vidicon cameras, microwave transmissions systems and a newly developed system for transmitting documents over closed-circuit TV.

Establishment of a new district office for closed-circuit TV equipment sales activities in General Electric's Communications Sales Center, 565 Broadway, Redwood City, Calif., has been announced. Head of the new office will be Raleigh E. Utterback who has been appointed West Coast District Manger for closed-circuit equipment sales of General Electric Technical Products Operation. The Technical Products Operation, which is part of the GE Communication Products Department, manufactures closed-circuit TV systems and equipment. Other products include special projection and display devices and broadcast equipment.

Purchase of a nationwide network of new Eidophor television projectors for large-screen closed-circuit TV has been announced by Theatre Network Television, Inc. (TNT), 575 Madison Ave., New York 22. Reportedly the largest single contract in the history of closed-circuit television, the agreement between Ciba, which manufactures the Eidophor, and TNT involved more than $600,000. TNT plans to install the new projectors in all major markets in its network.

Cinebox, the Italian-born, sophisticated granddaughter of the raucous old jukebox, is an "automatic sound-motion picture unit for showing selections of short films in public places." Coin-operated, it can, if desired, be adapted to free institu-

tional or promotional use. Patrons can select any one, or any number in succession, of 32 individual films in monochrome and color, running about 11 minutes. Manufactured in Italy by Societa Internazionale Fonovisione, the device is distributed in the United States by Don Twomey Associates, Inc., Suite 1512, 230 Fifth Ave., New York.

An all-purpose satellite communications system that would be available to all nations through two or three relay stations "fixed" in space high above the equator has been proposed to the Federal Communications Commission by the Radio Corp. of America. The proposed system would employ synchronous satellite repeaters — space-borne relay orbiting 22,300 miles above the equator, where their speed would match the speed of the Earth's rotation to keep each satellite effectively "fixed" above one point on the Earth's surface. Each satellite would carry relay equipment to receive, amplify and re-transmit signals between ground stations in various parts of the world, providing a high-capacity link for simultaneous telephone, radio and other services. The satellites are pictured as relatively small units, each consisting of a slender cylindrical body 13 ft long, with wide fins bearing solar cells to generate power from sunlight. A dish-shaped antenna at one end is directed constantly toward the center of the Earth. According to the proposal, such a system could be put in effect within the present decade.

Biographical Note

Arthur C. Hardy

Professor Arthur C. Hardy has announced his plans to stop teaching on June 30, 1961, at Massachusetts Institute of Technology where he has taught 41 years. He plans to do writing and consulting work at his home at 15 Kenilworth Rd., Wellesley 81, Mass., and as he says "reserve a little time for some of the things I've always wanted to do but never had time to do."

Dr. Hardy is a Fellow of the SMPTE, and has served on several committees, the Board of Editors and the Board of Governors. He has published more than 40 papers of which 8 appeared in the *Transactions* or the *Journal* of our Society. Dr. Hardy's paper on "Graininess of Photographic Materials Used in the Motion Picture Industry," which appeared in the *Transactions* in 1922, was the forerunner of a number of papers on that subject that came out of the Kodak Research Laboratories.

A world authority on optics and photography, Professor Hardy is perhaps best known in the field of motion pictures for his work in the middle twenties on sound recording on film that was done as a consultant for General Electric Company. His researches in developing the concepts and instrumentation of colorimetry are important as well as the application of these concepts to color reproduction. His book *The Principles of Optics*, authored jointly with F. H. Perrin, is one of the standard references in this field.

Dr. Hardy completed his studies for the B.A. at the University of California in 1917. Almost immediately thereafter, he enlisted in the Photographic Branch of the Signal Corps, was later transferred to the newly formed Air Service, and served in France as the Commanding Officer of the 23rd Photographic Section.

After the war, he completed his Master's work at California and was an instructor at the Massachusetts Institute of Technology until 1920, when he accepted a position in the Research Laboratories of the Eastman Kodak Company. He returned to M.I.T. as an assistant professor in 1922, and in 1933 was made Professor of Optics and Photography.

During World War II, Professor Hardy was Chief of NDRC Section 16.3 (Camouflage) of the OSRD. In that capacity, he inspired and guided researchers in visibility, atmospheric optics, and the influence of color on the perception and recognition of distant objects. In recognition of the value of his war work, he was awarded a Presidential Certificate of Merit.

The St. Lawrence University conferred an honorary Sc.D. upon Professor Hardy in 1938. The next year, he received the Longstreth Medal of The Franklin Institute, which cited his invention of the recording spectrophotometer.

In his recording spectrophotometer, his pioneering use of the null balance principle throughout the optical and electrical systems established an ideal which is rarely attained to the same degree even in instruments designed now, a quarter-century later. The same instrument employed one of the first successful photoelectric servo systems, almost a decade before these systems attained prominence and commanded confidence in war-tested devices.

The commercial version of his spectrophotometer was a remarkably close copy of this prototype, and was not appreciably changed during twenty years, while hundreds were being delivered and used to establish color measurement laboratories throughout the world. The recent redesign by a new generation of engineers left all the basic features of his spectrophotometer unaltered, but used modern components and made concessions to mass-production requirements.

The invention of his spectrophotometer in 1931 coincided with the adoption, by the International Commission on Illumination, of data specifying the standard observer

and coordinate system for colorimetry. Professor Hardy immediately recognized the usefulness of this information, especially when used in combination with accurate spectrophotometric data. He spent many years devising and teaching methods for facilitating the combined use of these two groups of data, for color measurement in myriad applications.

Early in his program for facilitating the application of spectrophotometry to color measurement, Professor Hardy developed the selected-ordinate method of color calculation, which eliminates almost all of the nearly one hundred multiplications per sample required in other methods. This method employs spectrophotometric data at the closest wavelength intervals in spectrum regions where they are most needed according to the standard-observer data.

The selected-ordinate method and extensive tables to facilitate color computations by both this and the older methods were presented with clear descriptions and examples in the *Handbook of Colorimetry*, prepared under his direction and published in 1936 by The Technology Press. That book also contained a monumental set of large-scale sections of the chromaticity diagram, available nowhere else, for the convenient graphical representation and analysis of the relations among colors. Consequently, the Handbook is still a standard reference work in daily use in hundred of color measurement laboratories throughout the world.

He invented and had built during 1936, as an attachment for his spectrophotometer, an automatic digital integrator that calculated the color specifications for each sample which its spectrophotometric curve was being drawn.

Professor Hardy early recognized that the 1931 recommendations of the International Commission on Illumination necessitated a revision of the report of the 1922 Colorimetry Committee of the Optical Society of America, which had established similar data for use in this country. As Vice-President of the Optical Society, he was instrumental in persuading the late Dr. Loyd A. Jones, a member of the 1922 Committee and his chief during his two years at Kodak, to accept the chairmanship of a committee appointed in 1933 to revise the original Colorimetry Report. Professor Hardy served actively on that committee for almost two decades, until the revised report was published. He played an important role, often lonely and sometimes unpopular, in bringing about the final adoption of the psychophysical and operational basis of the revised report. The report finally appeared as a book, *The Science of Color*, published by the Thomas Y. Crowell Company of New York City in 1953.

Professor Hardy served as President of the Optical Society of America from 1935 to 1937, and as Secretary from 1939 to 1957. During his period of service as Secretary, the memberhsip of the Society almost quadrupled, from 650 to over 2400. In recognition of his distinguished work in optics and related fields, he was awarded the Frederic Ives Medal of the Optical Society of America in 1957.—*Glenn E. Matthews.*

section reports

The Atlanta Section met on April 11 at the Protestant Radio and Television Center with an attendance of 15. Guest speakers were Dr. Ernest Arnold, President of the Center and Carl Degan, Production Manager.

Dr. Arnold welcomed the Section to the Center and explained its work pointing out that it is a nonprofit organization, producing religious programs exclusively for radio and television. It is the largest organization and the only interdenominational one doing this type of production work.

The excellently equipped center has a staff of 31 and handles 1200 taped radio programs each week. In addition to the present ¼-in. sound tape duplication equipment, plans are being made for the installation of facilities for originating and duplicating programs on video tape.

Mr. Degan escorted the group to the Chapel Studio where two films produced by the organization were shown. One, a 27-minute 16mm color film *The Triumphant Tradition* was of interest primarily because it demonstrated the multiple-camera technique used by Mr. Degan in his past experience in producing TV advertising films.

The other example shown was a 9-minute film strip in color with sound. This was an excellent example of the use of contemporary art to illustrate the origin of Christianity.

Following this latter presentation, there was a discussion period and a tour of the facilities of the Center.—John C. Horne, *Secretary-Treasurer*, 404 Page Ave., N.E., Atlanta 7, Ga.

The Atlanta Section met on May 15 at the Georgia Tech Library with an attend-

Erratum

January 1961, New York Section

On p. 56, lines 4–10 of second paragraph:

For: "In commenting on the future of 8mm sound films, he noted that about 8,000,000 8mm projectors are now in use, as against 600,000 16mm projectors, with production running at a rate of 800,000 8mm units versus 50,000 16mm projectors per year."

Read: "In commenting on the future of 8mm sound films, he noted that by the end of 1961 there will probably be between 4 and 5 million 8mm silent projectors in use in the United States as against an estimated figure of 727,000 16mm sound projectors in use in the U.S. as of January 1, 1961. Approximately 700,000 8mm silent units are sold in the United States annually versus 40 to 50,000 16mm sound projectors per year.

all taken from a Commercial Ektachrome original, on Kodachrome Reversal print stock, color negative-positive print stock, and black-and-white Ortho, Pan, and TV release film.

A second comparison was shown illustrating results on 5269 Duplicating stock from a Commercial Ektachrome original and Kodachrome Type II original.

A third film illustrated the effects, timing and color corrections on color printing. A fourth film was shown which compared various black-and-white prints including reversal as well as negative-positive printing. The audience was thus able to judge the merits and effectiveness of the various types of printing stocks and techniques used.

During the afternoon, a Board of Managers' meeting was held at the Behrend Cine Corp. offices followed by dinner at Tracey's Restaurant.—Philip E. Smith, *Secretary-Treasurer*, Kodak Processing Lab., 1712 Prairie Ave., Chicago 16.

The Chicago Section met on May 16 at the St. Clair Hotel with an attendance of 80. Dr. Walter P. Siegmund, Assistant Director of Research, American Optical Co., was the guest speaker. His subject was "Fiber Optics."

During his discussion of the theory of transmission of light by glass fibers, Dr. Siegmund used slides to illustrate the practical applications of fiber optics in the transmission of light and the modification, dissection, scrambling and reconstruction of images transmitted through a fiber optics system. A few of the many applications of fiber optics are found in coding work and medical photography.

Prior to the meeting, there was a brief Board of Managers' conference, followed by dinner. A coffee break was held following Dr. Siegmund's presentation.—Philip E. Smith, *Secretary-Treasurer*, Kodak Processing Lab., 1712 Prairie Ave., Chicago 16.

The Hollywood Section met on May 16 at the Metro-Goldwyn-Mayer Theatre with an attendance of 285. Guest speakers were Walter Beyer, Cordova, Inc.; Eric House, Technicolor Corp.; G. M. Sprague, MGM Sound Dept.; and John Waner, Eastman Kodak Co.

MGM Studios generously provided a meeting place and facilities for the meeting which was opened with a 16mm color documentary film prepared by North American Aviation Co. The film showed the X15 in manufacture, information on studies and research necessary both before and during actual flight.

Mr. Beyer described a new cartridge type projector and film system that facilitates the showing of a vast amount of picture information contained in a relatively small reel. Other applications such as educational and training films, double-frame projection and 3-D projection were also demonstrated and discussed.

Mr. House described the methods used by Technicolor for preparation of 8mm magnetic-sound release prints made from 35mm Eastman color negative and 16mm Ektachrome source material.

Mr. Sprague described the transfer from a magnetic master to quadruple rows of magnetic striping in the preparation and

making of 8mm magnetic-sound release prints.

Mr. Waner discussed the system used by Eastman Kodak Co. to provide 8mm Sonotrack. Quality control data from operating experience were reviewed to indicate reasonable production control for the guidance of laboratories that may wish to design similar striping systems.—John Kiel, *Secretary-Treasurer*, Photo-Sonics, Inc., 820 South Mariposa St., Burbank, Calif.

The Nashville Section met on May 20 at the Studios of WLAC-TV with an attendance of 16 members and guests. Guest speaker Jack West, Manager of the Central Division of General Film Laboratories, discussed "Video Tape-to-Film Transfers."

Mr. West's talk was concerned with the demand which has arisen for video tape-to-film transfer and the way in which his laboratory is accomplishing it. His discussion was followed by the presentation of several examples of 16mm transfers, the playback of a program on WLAC-TV's video-tape facilities and its corresponding film transfer for direct comparison.

Coffee was served, courtesy of WLAC-TV.—H. R. Briscoe, *Secretary-Treasurer*, 403 Signal View, Chattanooga 5, Tenn.

Executive Vice-President Glen G. Magnuson of the Kalvar Corp. was guest speaker at the May 17 meeting of the **New York Section.** One hundred ten persons attended the meeting at the World Affairs Center Auditorium to hear Mr. Magnuson discuss "The Kalvar Story."

The speaker presented a new system of photography which does not require chemical processing. The system of Kalvar entails exposure of the film to light and subsequent heating to produce a developed image. The material may be safely handled in daylight without deterioration. Kalvar is unique in that the opaque area of the film is composed of light-scattering centers rather than the light-absorbing grains of conventional photographic films. Although the opaque area appears white to the eye, it projects black on the screen.

A demonstration was made with a simple engineering drawing negative placed in contact with a sheet of Kalvar film and exposed and developed in a 300-w slide projector. The entire process took about three seconds to complete and the developed image was then projected. A further demonstration proved that the film was inert to the action of water, alcohol and carbonated beverages. A simple cleaning with a dry cloth returned the product to its original state.

Mr. Magnuson stated that the United States Bureau of Standards has assigned a shelf life of 5 years to this product. He pointed out, however, that a much longer period of life is probably more realistic. Because insufficient time has elapsed since the inception of this process, longer official shelf life times could not be assigned.

Many applications of the product were discussed including data recording by the Armed Forces, and professional motion pictures. A new company owned jointly by Kalvar and MGM has been formed to develop motion-picture techniques.

Mr. Magnuson's talk did not elaborate on technical aspects, but a question-and-answer period provoked interest along these lines. He did mention, however, that currently they are using Mylar base and that other bases have been tried on an experimental basis. He promised to send technical manuals to those members requesting them.—William H. Metzger, *Chairman*, Ansco, 405 Lexington Ave., New York, N.Y.

Allen L. Sorem of the Applied Photography Div., Research Laboratories, Eastman Kodak Co., addressed the April 27 meeting of the **Rochester Section.** His subject was "The Potential Role of Photography in Space." Fifty-one persons attended the meeting at Dryden Theatre.

Mr. Sorem traced man's attempt to obtain aerial photographs from various carriers such as the pigeon, balloon, airplane and rocket. Examples of the results obtained by the use of each type of carrier were shown in slide form along with the cost on a per square mile photographed basis.

Recent developments in films enabling the user to make detailed ground photographs from high altitudes were shown as examples of improvements in film definition and resolution capabilities.

According to Mr. Sorem, "Photography has been made so easy that many people take it for granted. However," he pointed out, "photographic quality of a level that would warrant an attempt to take pictures from space vehicles will only be obtained by the most careful engineering of the complete photographic system."

The speaker's discussion showed how photographic results may be predicted in advance from laboratory data and aerial tests.

The film *This is Color* preceded the meeting.

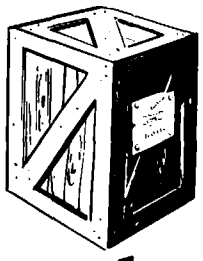
A group of members met at the Treadway Inn before the meeting where Mr. Sorem was our guest at dinner.—D. Lyle Conway, *Secretary-Treasurer*, Maple Hill Farm, R.D.2, West Monroe, N.Y.

The Washington Section met on April 17 at the National Academy of Sciences Auditorium with an attendance of 35. Guest speakers were: Arthur L. Foster, Chief, Film Processing Laboratory, U.S. Dept. of Agriculture, whose subject was "Quality Control in Film Processing"; and John H. Roe, Manager, TV Camera Engineering, Broadcast and Television Equipment Div., RCA, who discussed "New Camera Tubes and Cameras."

Mr. Foster's paper was based on the SMPTE book, "Control Techniques in Film Processing." The set of slides accompanying the lecture contributed to the better understanding of the subject. The Section expressed its appreciation to Mr. Foster and Walter E. Shea of Eastman Kodak Co., who handled the projection for this part of the program.

From Mr. Roe's well presented paper and the clarifying assistance of pertinent slides, the Section gained a good understanding of various models of image-orthicon picture tubes and RCA's model TK-12 television camera.

Informal discussion over refreshments furnished by John Waller of Bell & Howell Co., followed the formal presentations.—David E. Strom, *Secretary-Treasurer*, 1002 By-Pass Rd., Williamsburg, Va.



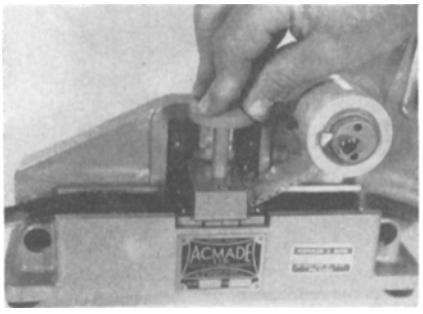
new products

(and developments)

Further information about these items can be obtained direct from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement of the products or services.

Application of the "stimulated emission" principle of the maser to direct amplification of sound waves was demonstrated at General Electric Research Laboratory for the first time, according to an announcement issued May 17. Source of power for the amplification of sound waves (phonons) is microwave radio energy. The effects (called the phonon maser effect) is accomplished by stimulated emission of energy by atoms as they move from a higher to a lower energy level. The effect has been demonstrated with short pulses of very high frequency (9.3 kilomegacycles) sound in a ruby crystal which consists of alumina (Al_2O_3) with chromium ions as an impurity. When it is subjected to a magnetic field, the electrons on the chromium ions, acting as small magnets, tend to line up with the field. Each electron has four characteristic energy levels, corresponding to how closely it lines up with the applied field. Most of the electrons are in the lowest energy level, but can move to higher energy levels by absorbing energy at a certain resonant frequency, which is set by the magnetic field strength and the characteristics of the electrons in the crystal. The reverse transition, from a high to a low energy level, can be made by emission of energy at the resonant frequency.

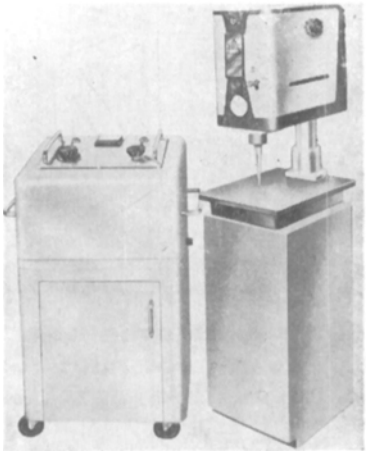
From Coon Peak in the Oquirrh Mountains in Utah to the top of Albion Peak in Idaho, a single microwave beam, sent from a 10-ft, dish-shaped parabola antenna, traverses the Great Salt Lake, crosses the salt flats at the north and slices through a 5400-ft mountain pass to reach the receiving point on Mt. Albion, 7000 ft above sea level. From Albion Peak, a connecting microwave link flashes the signal to the transmitter site of Station KID-TV, Idaho Falls. The system, designed by RCA, has been announced as the "longest line-of-sight microwave transmission ever accomplished for television relay."(Since the microwave signal requires an unobstructed line-of-sight, relay stations ordinarily are located no more than 25 to 30 miles apart.) The equipment used in the system is RCA's TVM-1B microwave relay equipment.



The Acmade Automatic film splicer is available from Florman & Babb, Inc., 68 W. 45 St., New York 36, distributors for the English firm. Used for making butt splices, it applies Mylar perforated tape on 35mm and 16mm film as well as on all film bases, including Cronar. To make a splice, the operator presses a button after the film has been registered on precision pins and the splicing arm moved over until it is in place above the film. The push-button operation simultaneously cuts the adhesive and applies it to the film. The cutting arm, used to cut both sides of the film simultaneously after the film has been registered on pins in the horizontal channel, also operates automatically when the pushbutton is pressed. When the film is cut, the cutting arm can be moved to one side so that the splicing operation can be completed. Both arms are precision registered to exact specifications. The splicer is priced at $295.

HFC Repair Splicers produced by Hollywood Film Co., 956 Seward St., Hollywood 28, employ Mylar tape with an adhesive back to splice or repair film for general purposes or for use in processing machines. The tape is applied onto the film and a solenoid action perforates the tape in alignment with the film perforation while simultaneously shearing both sides of the film. The 35mm models are available with negative or positive perforations and the area covered is one frame. On the 16mm model two frames are covered. Models for 65mm negative, 70mm theater release film, or military specifications #1 or #2 are available on special order.

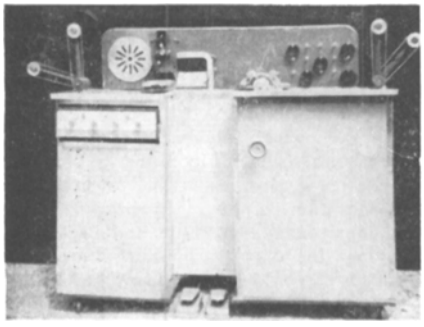
A newly developed table-model splicer capable of being used for darkroom splicing of raw stock and preparation of A&B roll printing has been announced by Harwald Co., 1245 Chicago Ave., Evanston, Ill. The splicer features an automatic pre-set scraper said to require only three seconds of preparation for an accurate (reported within 1/10,000-in.) splice, with the entire splicing process completed within nine seconds. Available in three models, Model A, priced at $99.50, has its registration pins in the conventional position at the rear of the splicing plate; Model B, priced at $175, has registration pins in the center of the plate so that 16mm and 8mm splices can be made in any emulsion position without "criss-crossing," and Model C, priced at $175, for 35mm film.



The Zephyr 300 Ultra Sonic Sealer produced by Ultra Sonic Seal, Inc., a Subsidiary of Kleer-Vu Industries, Inc., 76 Madison Ave., New York 16, depends on ultrasonic energy for its sealing and welding operations. Used on Mylar and Cronar as well as other types of film and other materials, it is said to be suitable also for splicing video tape and sealing leaders to coated surfaces of magnetic recording tape. In operation, according to the announcement, the welding device, or operating tool, moves at the rate of 20,000 vibrations per second, and the splicing or welding takes place because of the release of kinetic energy within the materials to be joined. The sealer consists of two separate units. The driver unit, which weighs approximately 200 lb, houses a 25-kc power generator and associated control panel. The head section contains an air-cooled transducer and the operating tool and is mounted on an adjustable base which can be used as an anvil. This section weighs about 85 lb and can be operated from a 115-v a-c line. When film or other material to be spliced or bonded is placed in contact with the operating tool, an imperceptible vertical motion generates heat internally between the sandwiched layers of material creating a molecular bond, while leaving the outer surfaces cool. The machine has been tested on film and other materials ranging in thickness from ¼ mil to 100 mil at speeds up to 100 ft/min.

The HFC Sound Speed Attachment (SSA-1) for synchronizers, announced by Hollywood Film Co., 956 Seward St., Hollywood 38, is designed to aid in editing and dubbing operations by driving the sychronizer at sound speed (36 ft/min in 16mm and 90 ft/min in 35mm). The attachment consists of a geared motor, capacitor, coupling and a 3-way toggle switch. It can be attached to any synchronizer. It is priced at $192.

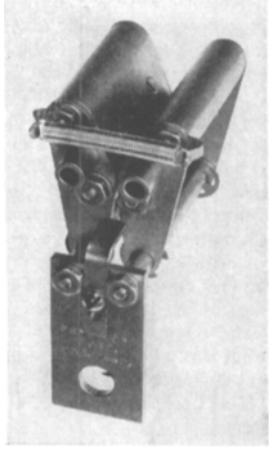
Membership Certificates (Active and Associate members only). Attractive hand-engrossed certificates, suitable for framing for display in offices or homes, may be obtained by writing to Society headquarters, at 55 West 42d St., New York 36, Price: $2.50.



A new 16mm editor in the Editors Desk series has been announced by Palmer Editors, 73–40 Vleigh Place, Flushing 67, N. Y. The machine has two channels, one for picture and one for sprocketed magnetic film. The soundhead is directly over the picture aperture for easy editing. The takeup reels are power driven, forward and reverse. Instant stopping is provided and a clutch release allows for hand operation. A standard type of synchronizer is provided which indicates frame and footage. The table measures 48 by 18 in.

Improvements on the Model "U" Inspect-O-Film machine for inspecting, editing and cleaning motion-picture film and the development of the Inspect-O-Film Junior (Junior Consolette Model 61) have been announced by Harwald Co., 1245 Chicago Ave., Evanston, Ill. Improvements on the Model "U" machine include a new speed control and braking system which can be electrically adjusted. The work surface (546 sq in.) has been arranged to provide overall illumination with built-in adjustable shade.

The new Junior model is 48 in. long and 22 in. deep. Designed especially for use in small film centers and libraries, the machine is reported to have a 2000-ft reel capacity, maximum inspection speed of 650 ft/min and 2000 ft/min rewind speed with automatic stop. The machine is designed so that splices can be made without unthreading the film. It is priced at under $2000.



A new air sqeegee, the Model HB-2, designed for use on any 16mm or 35mm continuous film-processing machine, has been announced by Gryphon Corp., P.O. Box 854, Burbank, Calif. Using a combined Venturi-airfoil principle, the unit is designed to remove all surface liquid from the film as it passes through the sqeegee on an air cushion, thus avoiding contacting with metal parts. The sqeegee is also designed to open automatically for passage of all commonly used film splices. The machine is made of stainless steeel and is constructed for easy adjustment to any processing machine. It has been tested by the manufacturer at speeds in excess of 200 ft/min. It is priced at $100.

Availability of a U/L approved "SCR" Dimmer in 4, 5, and 6 kw capacity has been announced by Kliegl Bros., 321 W. 50 St., New York 19. Designed for flexibility, the dimmer can be operated remotely, or can be installed as part of a control console or incorporated in a lighting cross-connect circuit selected system. The dimmer is a plug-in type and each dimmer incorporates two silicon controlled rectifiers in a back-to-back circuit to provide a symmetrical alternating current output to the lighting load it controls. The control voltage does not exceed 28 v d-c at 12 ma. Full line voltage to the lights is carried and controlled solely by the rectifiers. Each unit is equipped with a circuit breaker and a pilot light which indicates the operational state of the unit.

A new series of U/L approved dimmers with silicon-controlled rectifiers has been announced by Century Lighting. First installation was in the Yale University Drama School Auditorium. Presently available is a plug-in type in sizes up to 6000 w. Equipment for higher wattages is expected to be available soon. The new system, as well as other lighting control systems and equipments, is described in the Century Data Book, available without charge from Century Lighting, 521 W. 43 St., New York.

A new lens bench for rapid electronic testing of photographic lenses has been introduced by Eastman Kodak Co. The machine compares the amount of energy concentrated by the lens in a circle of very small diameter with the total amount of light in the image to determine if the lens under test is up to standard. The total energy and the energy passing through a small circular aperture are shown on a cathode-ray tube for comparison. A series of the test apertures drilled in a spiral on a rotating plate scans the image from side to side to determine the uniformity of the light-concentrating power of the lens being tested. Modifications of the testing machine make it possible to use the electronic signal that appears on the cathode-ray tube—the difference between total energy and energy passed through the scanning disc—for electronic positioning of the lens in its mount. The bench was described by William T. Sherwood at the recent meeting of the Society of Photographic Scientists and Engineers.

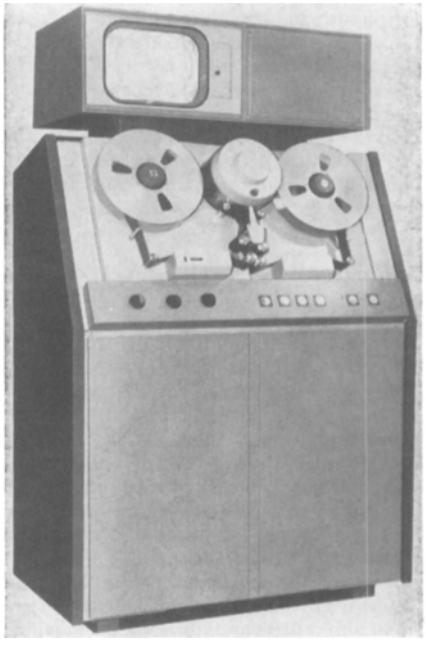
A 90mm *f*/1.0 lens has been designed by Bausch & Lomb especially for use in the Fluoricon x-ray image intensifier developed by General Electric. This fluoroscopic

system, used for medical research and diagnosis, uses mirror magnification, closed-circuit TV and motion pictures to display x-ray images. Functioning as a relay lens system, the new lens picks up the image from a phosphor screen rather than directly from the x-rays, and is designed to photograph in the region of 0.550-micron light. The five-element design of the optical system is said to produce increased light transmission and uniformity of screen illumination. The lens is also said to have a high degree of aberrational correction without resorting to aspheric surfaces. Detailed information is available from the Photographic and Optics Sales Dept., Bausch & Lomb Inc., Rochester 2, N.Y.

A vidicon TV film camera (Model V-900), designed for maximum horizontal resolution, gray-scale response and linearity, has been announced by the Vicon Division of the American Microwave and Television Corp., 1369 Industrial Rd., San Carlos, Calif. Introduced at the NAB Convention held in May in Washington, D.C., the camera is said to provide the broadcaster with film reproduction of 800-line horizontal resolution in the center and 600 lines in the corners. Response is reported at 50% at 800 lines and 75% at 600 lines. The design incorporates electron optics, which produce an extremely small, high-density electron beam, to eliminate the need for aperture correction. All voltages, including camera filaments are regulated electronically. A cascode input stage and special low noise resisters are incorporated to achieve a high signal-to-noise ratio.

An image orthicon camera, the V-600, is a product of Foto-Video Electronics, Inc., 36 Commerce Rd., Cedar Grove, N.J. Designed for live-image or closed-circuit monochrome use at 600-line minimum resolution, the camera weighs 25 lb and occupies 25 cu ft of space. It can be fitted with conventional studio lenses or with a variety of Zoomar lenses. Designed for high sensitivity, the camera is said to provide good fidelity at light levels of less than 1ft-c. Modular in construction with wing side doors and hinged top, a transistorized preamplifier plug-in module uses a high-gain, double cascode circuit arrangement to assure maximum freedom from noise. Other features include an individual high peaker in the camera head to produce high-frequency response with high signal-to-noise ratio; built-in adjustable independent aperture and phase corrector; and an all-transistorized constant-current regulator for focusing.

An electronic device called AMTEC (Ampex Time Element Compensator), designed to provide instantaneous and automatic line-by-line compensation of timing errors in the composite video signal, has been announced by Ampex Video Products Co., Box 3000, Redwood City, Calif. An engineering model of the device, originally developed at CBS, was introduced at the Society's 1960 Spring Convention in Los Angeles. Further developmental work has been conducted at Ampex laboratories and the production model, demonstrated at the NAB Convention held in Washington, D.C., in May, has been fully transistorized. With its fully contained power supply the device occupies only 5¼ in. of rack space. In operation it samples the timing accuracy of the recorder's playback signal at the rate of once each horizontal interval. The timing error (if present) is detected and compensation completed in time to correct each horizontal sync pulse and its accompanying line of picture information. The device has been described as an "automatic watchman" to prevent picture distortions such as skewing, scalloping and horizontal line displacement, from reaching the viewing screen.



A closed-circuit TV tape recorder, designed specifically for nonbroadcast applications (educational, military, industrial, etc.), has been announced by Ampex Video Products Co. 2755 Bay Road, Redwood City, Calif. The new Recorder, called the VR-8000, incorporates a single record/reproduce video-head helical scan recording technique specifically designed for closed-circuit application. The new recorder is said to provide all the detail and gray scale tone values the TV camera is capable of picking up. A video erase unit incorporated in the machine covers the full 2-in. width of the tape. A separate audio erase head is included. The 7½-in./sec tape speed permits the recording of two hours of material on a standard 12½-in. reel of 2-in. tape. The machine weighs approximately 500 lb and is self-contained in a cabinet 24 in. deep, 56 in. high, and 42 in. wide and occupies 7 sq ft of floor space. It operates from 117 v nominal a-c, 60-cycle at 15 amp. Also available are 220-v, 50-cycle versions. The basic price is $20,400.

A miniaturized color conversion unit for Ampex VR-1000 Videotape Recorders has been announced by Ampex Video Products Co., Box 3000, Redwood City, Calif. Trade-marked as the Colorter system, it occupies only 4¼ in. of rack space. According to the announcement, the device eliminates the complex conventional signal proc-

essing of decode–encode systems or heterodyning systems. The device is described as a direct color recovery system employing precise time-base compensation of the tape signal so that the resultant signal is within the required stability limits. In operation it is said to accomplish line-by-line compensation of timing errors in the composite color signal by sampling burst phase of the signal each horizontal interval, with respect to the external 3.58-mc signal. The instantaneous phase difference between the sampled and reference signals is converted to a proportional voltage which adjusts the delay time of a voltage controlled delay line in the video signal path. The unit was demonstrated at the NAB Convention held in Washington, D.C., in May.

A dynamic, nondirectional, voice-range microphone, the E.V Model 652, designed for use in small stations or studios with an acoustic problem that can be alleviated by use of a close microphone, has been announced by Electro-Voice, Inc., Buchanan, Mich. A 24-in. "neck" of semi-rigid ½-in. tubing permits mobility of the microphone in relation to the speaker or performer. Supplied with two transparent baffles to allow accentuation of the presence range, the smaller baffle is used for a 3-db boost and the larger for a 6-db boost at 5000 cycles/sec. Used without a baffle, the microphone is said to provide smooth response from 80 to 8000 cycles.

A motion-picture projection system called Strato-Cinema developed especially for showing entertainment films to passengers on airliners, has been tested on a TWA jet New York-Miami flight and will soon be installed on TWA jet transcontinental and transatlantic flights for the entertainment of first class passengers. Installation kits will be manufactured exclusively for Inflight Motion Pictures, Inc., by Lockheed Aircraft Service, New York International Airport, Jamaica 30, N.Y.

Brumberger Reel Chests for storage of motion-picture reels and cans and magnetic tape reels are products of Brumberger, 68 34th St., Brooklyn 32, N.Y. Available in Economy and DeLuxe models and in various sizes, prices range from $3.25 for an Economy Model chest accommodating twelve 200-ft reels of 8mm film or 5-in. magnetic tape reels to $7.50 for a DeLuxe chest (with a device for automatic reel selection) which holds nine 400-ft reels of 16mm film or 7-in. magnetic tape reels.

Minute pencil tubes (so called because of the size and shape) designed by RCA's Electron Tube Division, Harrison, N. J., were installed in the Mercury Space Capsule's two-way radio system used for Earth-to-Space/Space-to-Earth communications in May while Astronaut Shepard was traveling in Space at the rate of 6000 ft/sec (more that 4000 mi/hr). The tube, designated RCA-5876, is an ultra-high-frequency high-gain triode. It was designed mainly for use in grounded-grid service as an r-f amplifier in transmitters or receivers operating up to 1000 mc/sec. Plans for a manned space flight in orbit, scheduled for later this year, include use of the RCA-5876 in the communication system.

employment service

These notices are published for the service of the membership and the field. They are inserted three months, at no charge to the member. The Society's address cannot be used for replies.

Positions Wanted

Supervisory Photographic Technologist. Excellent instrumentation background obtained at four leading ordnance and missile Test Centers. Wide knowledge of cameras, lenses, mounts; including metric, engineering sequential, and documentary types. Broad film background. Supr. photo lab for 4 yrs. Purchasing and quality control background. Complete résumé upon request. Will relocate. Robert J. Millikin, 148 St. George Rd, Melbourne, Fla. PA 3-7819.

Cameraman/Producer. Extensive cine and still experience in training, public relations and industrial fields. Also experienced in cutting and sound recording. High-quality, low-budget script-to-screen producer. Interested in photo-instrumentation. Electronic engineering background. Recently completed Arctic assignment. Seeking challenging position in photography enabling use of past experience. Willing to travel and relocate worldwide. J.C.K., 3351 Alma St., Apt. 328, Palo Alto, Calif. DAvenport 6-2737.

Sound Recording Technician. Over 5 yrs experience in all phases of sound recording. Thoroughly familiar with mixing and recording sound for motion pictures, editing magnetic tapes and producing tapes for TV and radio. Interested in a permanent position with future. Willing to relocate. Thomas J. Hammeral, 137 92nd St., Brooklyn 9, N.Y. SH 5-7172.

Film Production Supervisor. 20 yrs experience in motion-picture and general photographic production. Presently in supervisory position in large inplant unit. Experienced in documentary, training and P.R. film productions. Do "A & B" cutting and sound recording. Hold Secret and "Q" Clearances. Resume upon request. Would consider Tech. Rep. position. Mo-pic, P.O. Box 9123, Montclair Station, Denver 20, Colo.

Positions Available

Assistant Chief Engineer. Seeking college graduate electronics engineer to assist Chief Engineer of commercial VHF television station in growing market. CBS affiliate; progressive management with long broadcast experience; good record of low personnel turnover. Majority of equipment RCA; two Ampex Videotape Recorders; maximum power; 1000-ft tower. Applicant should be capable of doing design and construction work, and should have some administrative ability. Salary commensurate with experience and ability. Replies treated in confidence. Write Chief Engineer, WLAC-TV, Nashville, Tenn.

Mechanical Engineer (Motion Picture Cameras). Must have Mech. Eng. degree. Prefer 3 yrs experience in design of professional motion-picture cameras for theatrical and instrumentation fields. Work involves design and manufacture of 16mm and 35mm professional double-system and single-system cameras as well as high-speed instrumentation cameras. Excellent opportunities. Submit detailed resume in triplicate to 126 Warren Rd., Park Ridge, N. J.

Sales Representative for well known motion-picture processing laboratory, N.Y.C. Experienced in laboratory processes, motion-picture production, sound recording and re-recording operations. Must be able to deal with professional cameramen, producers and directors in the advertising and educational fields. Salary open. Unusual opportunity for advancement. Outstanding company benefits. Send résumé in complete confidence, including salary desired, to: Hokar Corp., 110 West 40 St., New York, N.Y.

Assistant to Owner of Film Lab. Unusual opportunity for man who is expert in timing and printing 16mm color and black & white. Must also have basic knowledge of general business practices and be endowed with the ability to lead and supervise. Write to CINE-CRAFT, 8764 Beverly Blvd., West Hollywood 48, California.

Staff Director, for medium-sized production company located in Louisville, Kentucky. Must have credits for TV commercials, industrials and slidefilms. Basic requirement is a creative attitude. We offer unlimited opportunities, pay in accord with experience, and an expanding company with which to be associated. Although location work is to be expected, off hours are pleasantly spent in this friendly, midwestern community. All replies are held in confidence. Vogue Film Productions, Inc., Bowman Field, Louisville, Ky.

Motion-Picture Laboratory Engineer. Experienced in lab procedures, design and maintenance of motion-picture lab equipment. Knowledge of air conditioning, chemical piping and pumps desirable. Located New York City. Send resume giving experience and salary desired to Box 1979, 125 West 41 St., New York 36.

Television Broadcast Technician. Seeking experienced, qualified television technician for maintenance and operation at commercial VHF station in growing market. CBS affiliate; progressive management with long broadcast experience. Station is well-equipped; maximum power; 1000-ft tower; two Ampex Videotape Recorders. Applicant must be ambitious, dependable, and have First-Class Phone License. Some formal schooling in electronics preferred. Salary commensurate with experience and ability. Replies treated in confidence. Write Chief Engineer, WLAC-TV, Nashville, Tenn.

Photographic Instrumentation Technicians. Opportunities for qualified technicians exist in the Pacific Island area assisting in the operation of the Pacific Missile Range. Requirements: High level of technical competence, good moral character, single, widowed, or divorced (no housing presently available for married applicants). Position offers good pay, overtime premium, broad technical experience, chance for advancement with progressive company. Technical areas open: Operation maintenance of Askania theodolites, LA-24 (ME-16), M-45 tracking telescopes and high speed sequential cameras. Electronics capability very desirable. Positions also available for Photo Laboratory Technicians. Wide experience in all phases desirable. Ample opportunity for cross training in related fields. Many fringe benefits. Please submit resume to: Vought Range Systems Div., P.O. Box 51, Naval Missile Center, Pt. Mugu, Calif. Attn: H. S. Weisbrod, Photo-Optics Supervisor.

verhältnis von mehr als 10^6:1 besitzt. Die Zelle wird durch einen Ubertragungsleitung- Impulsgenerator aktiviert, der imstande ist einen 60.000 V Rechteckwellen-Impuls zu liefern.

Die Lichtquelle besteht aus drei handelsüblichen mit Xenon gefüllten Blitzröhren, welche durch einen Wasserstoff-Thyatron Impulsgeber aktiviert werden. In den Impulsgeber der Blitzröhre wurde ein Übertragungsleitungssystem eingebaut, um einen Synchronisierimpuls hoher Spannung zu erzeugen, sobald die Blitzröhren aufflammen. Dieser Impuls wird durch ein Verzögerungskabel zir Auslöse-Elektrode des Luftspaltschalters geleitet, der den Verschluss der Kerrzelle betätigt. Die Synchronisation geschieht mit einer Genauigkeit von 5 Millimikrosekunden. Die Kamera wurde dazu benützt die ersten Stadien elektrisch explodierter Metallfolien und Höchstgeschwindigkeits-Aufschläge auf einer Schiesstätte zu photographieren.

Elektronische Bildverstärkung: Bildverstärker benutzt Kathoden-Leitungsfähigkeit

R. A. CHIPPENDALE und J. R. FOLKES [527]

Durch jüngst vorgenommene Arbeiten an dem Bildverstärker eines Elektronenmikroskops wurde festgestellt, dass dünne Schichten von amorphem Selen, wenn mit Hochenergie-Elektronen bombardiert, die Aufladung um ungefähr das 2000 fache vervielfachen können. Es wird eine geschlossene Röhre beschrieben, welche eine Verstärkung vor dem Abtasten in einer solchen Selenschicht erzielt. Bei der "schreibe"-Funktion werden Elektronen einer halbtransparenten photonausstrahlenden Kathode gesammelt und in eine nicht gestützte Selenhaut von 10 Mikrons hineinbeschleungit. Dadurch dass an der Vorderseite dieser Haut eine elektronendurchlässige Signalplatte vorgesehen ist, können die Landungen nach rückwärts getrieben werden, von wo sie durch einen Abtaststrahl niedriger Spannung entfernt werden, der die Oberfläche wieder auf das Potenzial der Ablesekathode zurückbringt. Um Rechteckigkeit zu erzielen wird elektrostatisches Abtasten in Verbindung mit verzögernden Feldelektroden verwendet.

Die Gesamtempfindlichkeit hängt sowohl von der Wirksamkeit der Photokathode wie auch von der Ladungsvervielfachung im Selen ab, die selbst von der schreibenden Elektronenspannung abhängig ist. Es lässt sich theoretisch beweisen, dass es bei Verwendung einer entsprechend beschränkten Bandbreite und optimalen Verstärkungsverhältnissen möglich sein sollte, einzelne Photoelektronen zu entdecken. Untersuchungen mit experimentellen Röhren haben gezeigt, dass eine Verstärkung von 500 vor dem Abtasten möglich sein sollte. In diesem Fall sollte die Röhre fähig sein, 40 Photonen je Bildpunkt der Kathode je Bild zu entdecken.

Ed. Note: Titles and abstracts of all papers published in the *Journal* are published in French, Spanish and German. This department (Résumés/Resumenes/Zusammenfassungen) was set up in recognition of the growth in the Society's overseas membership, and first appeared as a regular feature of the *Journal* in the January 1961 issue. Comments and suggestions are invited on the quality and possible improvement of the translations. Because of the prohibitive cost of commercial translations, volunteer help is needed, and such assistance will represent an important contribution to the Society. Contributors will, of course, be given full acknowledgment in the *Journal*.