ry Handling of Motion-Picture and Other Long Films which was held in Hollywood, New York and Chicago.—R. L. Renaud, *Secretary-Treasurer*, (Browne Renaud Associates, Inc.), 2820 Maple Rd., Troy, MI 48084.

OHIO, Mar. 23 — The meeting was held at Cinecraft, Inc., in Cleveland with an attendance of 44 members and guests, including members from the Detroit Section. The guest speaker was William Hedden of Calvin Productions, Inc., who presented a paper by Edward Ancona, Color Consultant of NBC in Hollywood, on "The Nature of Light and Color." This presentation, which requires three slide projectors, discusses and demonstrates the fundamentals of light in physical, physiological and psychological terms. A lively question-and-answer period followed the presentation, after which coffee and pastries were served. Robert Schneider, Staff Film Director of Cinecraft, conducted a tour of Cinecraft's motion-picture production facilities, including a new screening and sound mixing theater.—Matthew M. Bracic, *Secretary-Treasurer*, (NBC), 6429 Hamden Rd., Parma Heights, OH 44130.

AUSTRALIA, Mar. 29 — The meeting was held in Science House on Gloucester St. in Sydney. The guest speaker was E. G. McDonald of the Overseas Telecommunications Commission who spoke on "Satellite Communication." The attendance at the meeting was below expectation since only 16 members were present; however, the meeting was held during Easter week and many members were out of the city. Those who were present enjoyed an unusually interesting meeting. Mr. McDonald covered the field of satellite communication with special reference to TV transmissions. A film, *A Measure of Distance*, was shown. The film was made in Australia for the Overseas Telecommunications Commission and showed the part the Commission and other organizations play in making it possible for sound and vision to encircle the globe. By special request, a standby film on the Apollo 15 Mission, which Mr. McDonald had with him, was shown. An item of special interest was a scale model of an Apollo Rocket, made in the United States, which was on display. A question-and-answer period enlivened the evening and tea and biscuits were served.—Eddy Berlage, *Secretary-Treasurer*, (ABC-TV), Pacific Highway-Gore Hill, Sydney, N.S.W., Australia.

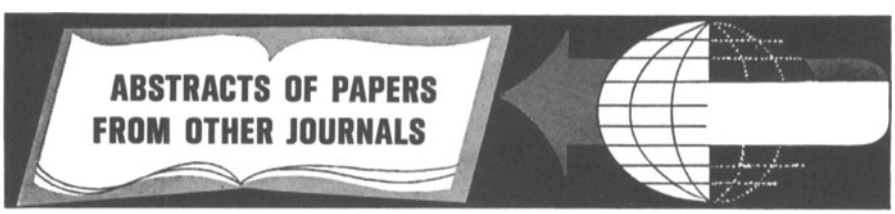
CHICAGO, Apr. 6 — The meeting was held at the Eastman Kodak offices in Oakbrook, Ill., with an attendance of 90 members and guests. The speakers (all of Eastman Kodak) were John A. Pistor and Robert T. Scott, who spoke on a Kodak Videofilm Express, and Harold Vincient who spoke on Exposure of Film for Use in a TV Videofilm System. The Videofilm Express, a mobile unit, was manufactured and equipped under the supervision of Mr. Pistor and Mr. Scott. The aim was to achieve low-cost, good-quality sound color film with the use of lightweight equipment. The speakers described the problems encountered in achieving this aim.

Mr. Vincient gave an excellent talk on how best to expose a film to get the proper contrast for use in a TV videofilm system that will give the best possible quality on home television. The talk was illustrated by slides.

Highlighting the evening was a tour through the mobile unit. The meeting was concluded by the serving of coffee and rolls through the courtesy of Eastman Kodak Co. Preceding the meeting, a dinner at Andy's Steak House in Oakbrook was attended by 38 members and guests.—Mathias J. Herman, *Secretary-Treasurer*, (Geo. W. Colburn Labs), 9104 Birch Ave., Morton Grove, IL 60053.

ROCHESTER, Apr. 13 — The meeting was held in the Memorial Art Gallery in Rochester with an attendance of 147 members and guests. The speakers were John Leermakers, Director of Kodak Research Laboratories, Peter Warter, Director of Research, Business Products Div., Xerox Corp., and Walter Clark, formerly Head of Kodak Photo Research Div., now retired. The three distinguished speakers presented an analysis entitled "The Future of Photography." Subjects discussed included silver halide photography; xerography and its potential in color reproduction, graphic arts, printing applications and general photography; and future developments in graphic arts utilizing photographic processes.—John R. Hester, *Secretary-Treasurer*, (Eastman Kodak Co.), 274 Churchill Dr., Rochester, NY 14616.

OHIO, Apr. 18 — The meeting was held at Ohio State University's Center for Tomorrow in Columbus with an attendance of 41 members and guests. The first part of the program was held in the auditorium where Pat T. Kurtz, of Eastman Kodak Co., gave a talk, illustrated with slides, on videofilm fundamentals. Following the talk a tour of WOSU's educational TV facilities and its AM and FM facilities, all located in the Center for Tomorrow building, was conducted. The tour was followed by a demonstration of Eastman Kodak's Videofilm Express Van, which was parked in front of the building. The demonstration was conducted by Robert T. Scott, of Eastman Kodak, who described and demonstrated the various videofilm assemblages which included super-8 color videofilm, a versatile TV film chain and low-cost processing of 16mm and super-8 color videofilm and 35mm slides.—Matthew M. Bracic, *Secretary-Treasurer*, (NBC), 6429 Hamden Rd., Parma Heights, OH 44130.



Abstracts of papers appearing in other journals chosen for their importance and possible value to researchers, as well as those of timely interest, are published in the *Journal* from time to time. Many translations of abstracts from foreign journals, chiefly those of the USSR, are made available to the *Journal* by the Research Laboratories of the Eastman Kodak Company. As a rule, translations are made of the abstracts and not of the papers. The journals in which the papers appear can be consulted at some libraries. Current issues of *Tekhinika Kino i Televidinya* can be consulted at, or borrowed from the Society's Headquarters Office.

Those requiring definitive and thorough searches of current literature and patents are referred to *Abstracts of Photographic Science & Engineering Literature (APSE)*, produced by the Graphic Arts Research Center, College of Graphic Arts and Photography, Rochester Institute of Technology, Rochester, NY 14623, with the editorial cooperation of the Society of Photographic Scientists & Engineers.

The subject areas are grouped below:

Holography
Optics
Photographic Theory and Materials
Projectors
Sound
Special Applications
Television

HOLOGRAPHY

Pulsed laser holography, R. F. Wuerker and L. O. Heflinger, *SPIE, 9:* 10-17, Oct./Nov. 1970.

In most cases, holography of high-speed phenomena necessitates the use of a ruby laser to record the hologram. Work at a laboratory had led to the development of "holocameras," i.e., optical systems which compensate for the limited spatial and temporal coherence of common Q-switched ruby laser illuminators. Holocameras for both transmission and reflection action holography have been built. One of the former type has been employed to holograph combustion phenomena in liquid rocket engines, including one of 18-in diameter and 25,000 lb thrust. It can also be used to record projectiles in flight, aerodynamic wakes (via holographic interferometry) electric discharge plasmas, etc. A reflected light holocamera has been used to record holographic interferograms of impulsively loaded plates. Ruby laser holograms made with these holocameras reconstruct as brightly as comparable holograms made with a helium-neon gas laser. They exhibit high contrast ratios and are free of extraneous fringes and mottling throughout the reconstruction volume.

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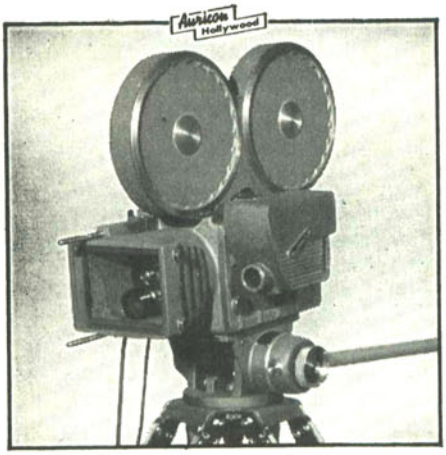

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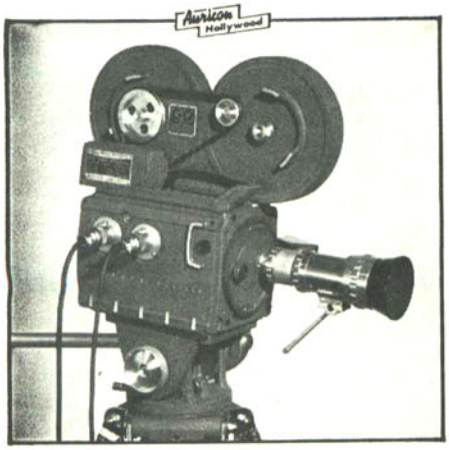

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CONTENTS

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phenomena. The added feature of double exposure holography makes interferometric measurement applicable to hitherto impossible situations.

OPTICS

The connection between calculated and subjective evaluations of resolving power (in Russian), V.I.Resin. *Tekh. Kino i Televideniya, 14:* 57–61, Oct. 1970.

An estimation of resolving power by calculation with the least-square criterion and subjective estimations with a two-band test-object are in agreement, although differences are observed between estimations made with two-band and multiple-band test-objects. A method of measuring the resolving power is proposed which decreased the a priori knowledge of the observer about the test-object by the introduction of a false test-object.—S.C.G. (Translated from *Tekh. Kino i Televideniya.*)

Modern fast wide-angle motion-picture objectives (in Russian), D.S.Volosov, E.B.Kontorovich, N.A.Lebedeva, and M.V.Tsivkin. *Tekh. Kino i Televideniya, 15:* 17–23, Feb. 1971.

The great difficulties in the design of wide-angle lenses are those of providing sufficient uniformity of illumination and picture quality over the whole image plane. The design of the Likar objectives from the laboratories of the Leningrad Institute of Motion-Picture Engineers is discussed in the light of these problems.—S.C.G.

A simple method of measuring the spread function of an optical system (in Russian), G.N.Buinov, A.V.Lukin, and K.S.Mustafin. *Zh. Nauch. i Prikl. Fotogr. i Kinomatogr., 16:* 46–48, No. 1, Jan./Feb. 1971.

A simple method of measuring the line spread function of an optical system is described, in which a sharp edge oscillates harmonically in such a way that its image formed by the optical system moves across a parallel slit behind which is a photomultiplier and recording apparatus. A complex signal is recorded, consisting of a constant component proportional to the edge function at a given point on the axis perpendicular to the slit, and the first, second, etc., derivatives. The first derivative corresponds to the line spread function. The complete function is obtained by scanning across the slit.—S.C.G.

PHOTOGRAPHIC THEORY AND MATERIALS

Standards of silver recovery in the processing of motion-picture films (in Russian), S.N.Kuznetsova and T.A.Novatskaya. *Trudy Leningrad Inst. Kinoinzhenerov:* 188–192, No. 16, 1970, *Ref. Zh., Fotokinotekhnika,* Abstract No. 10.46.206, 1970.

A method is given for calculating a standard for silver recovery for undertaking the processing of motion-picture film. Some factors are considered which have an effect on the magnitude of the nonrecoverable loss of silver in the developing machines of processing laboratories and motion-picture studios. Data are given on the loss of silver in the developing machines of these undertakings, and also on its regeneration from fixers and wash water.—S.C.G. (Translated from *Ref. Zh., Fotokinotekhnika.*)

Auto-potentiometric methods of testing phenidone - hydroquinone developers (in Russian), P.K.Norkus, D.A.Norkene, and M.V.Peslyakene, *Tekh.Kino. i Televideniya, 14:* 39–43, Oct. 1970.

Methods for the automatic potentiometric titration of developer solutions for phenidone, hydroquinone, bromide and carbonate are described.—S.C.G.

The granularity of fog and density formed by the action of light (in Russian), K.V.Vendrovskii and I.G.Minkevich, *Zh.Nauch. i Prikl.Fotogr. i Kinematogr., 15:* 446–448, No. 6, Nov./Dec. 1970.

The granularity of fog increases at a slower rate than the granularity of the image as the duration of development is increased. Similar curves were obtained when the densities were varied, not by altering the development, but by varying the coating weight. To explain the phenomenon, it is pointed out that fog centers are distributed evenly over emulsion grains of all sizes, and the granularity of fog will be comparatively independent of exposure, while the granularity in image densities depends on exposure in a way which allows development and coating weight to have an effect.—S.C.G.

The problem of the separate evaluation of halation due to scattering and to reflection in photographic materials (in Russian), G.A.Istomin and G.G.Gribakin. *Zh.Nauch. i Prikl.Fotogr. i Kinematogr., 15:* 451–452, No. 6, November-December, 1970.

Errors in the treatment of the subject given by Levenberg and Chernyak *(Trudy Leningrad Inst.Kinoinzh., 89:* No. 12, 1967) are discussed.—S.C.G.

An experimental study of phase irregularities of a photographic film (in Russian), I.Ya.Brusin, F.A.Markus, and A.M.Cheremukhin, *Zh.Nauch. i Prikl. Fotogr. i Kinematogr., 15:* 408–412, No. 6, Nov./Dec. 1970.

The results are given of measurements of the phase modulation of a light wave which has passed through a uniformly exposed photographic plate. Determinations have been made of the correlation function and of the one-dimensional probability distribution function. The random phase fluctuation obeys a normal distribution law with a standard deviation of about 4 radian. The linear dimensions of phase irregularities over which the phase changes by π is of the order of 1 cm. Parameters have been found which are necessary for evaluating the quality of optical systems in which a photographic film is used as a memory element.—S.C.G. (Translated from *Zh.Nauch. i Prikl.Fotogr. i Kinematogr.*)

Photographic metrology (in Russian), Yu.N. Gorokhovskii, *Usp.Nauch.Fotogr., 15:* 183–195, 1970.

This review is devoted to a group of problems concerning the quantitative evaluation of the different properties of photographic materials and images on them. Main attention is given to the definition of the discipline of photographic metrology, the Soviet system of sensitometry, the theory of densitometry and methods of studying the grain structure of density,

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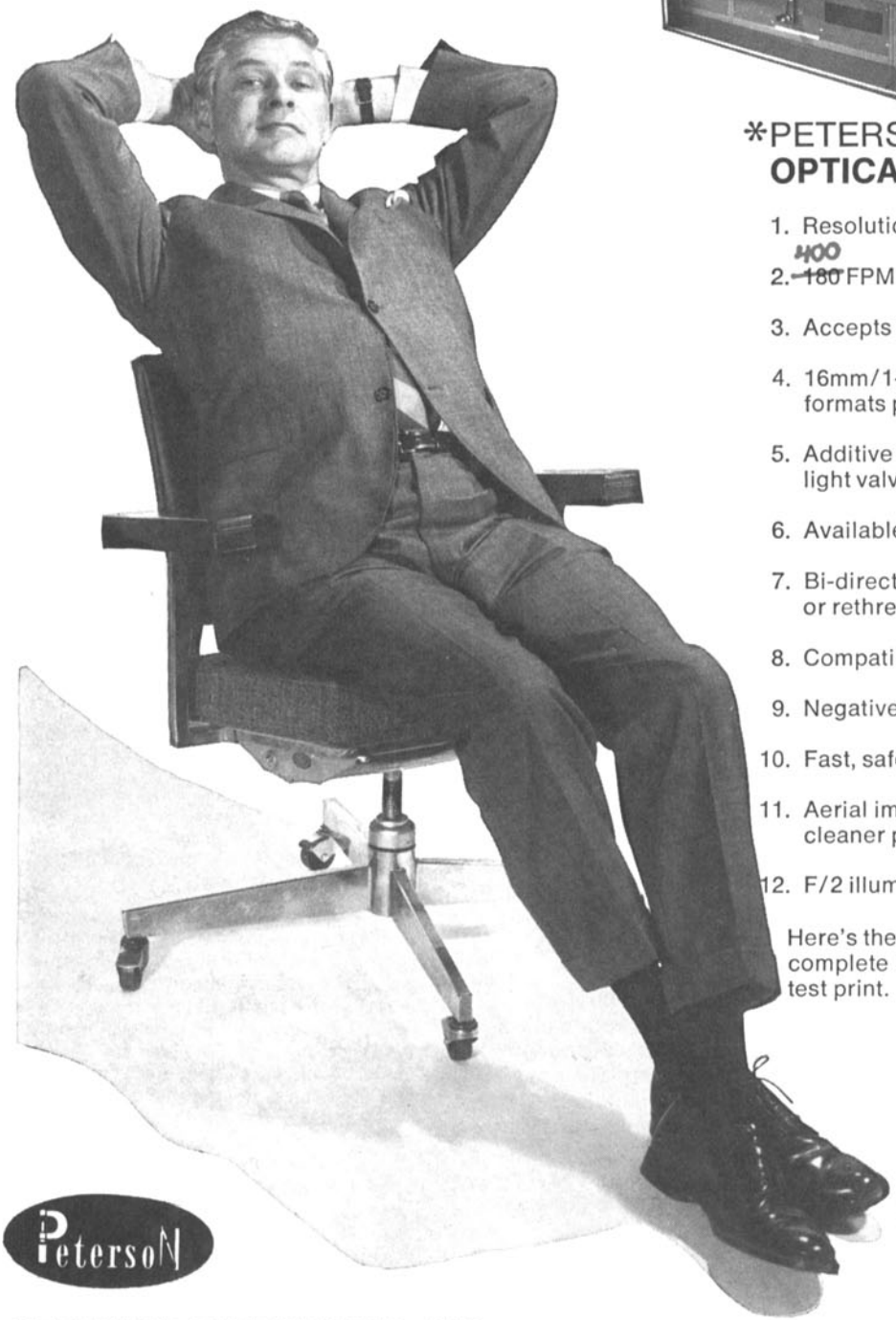

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and methods of evaluating the fine-structure of the photographic image. Bibliography of 81 references.—S.C.G. (Translated from *Usp.Nauch.Fotogr.*)

The objective evaluation of the quality of the motion-picture image (in Russian), V.I.Artishevskii, *Tekh. Kino i Televideniya, 15:* 24–30, Feb. 1971.

The perception of flicker during the projection of a motion picture has been studied by applying electrodes to the observer's head and obtaining electroencephalograms. The encephalograms and their interpretation are given for a number of shutter apertures.—S.C.G.

A new method of evaluating the edge sharpness and transfer characteristics of photographic materials (in Russian), T.Barna, *Zh. Nauch. i Prikl. Fotogr. i Kinematogr., 16:* 24–30, No. 1, Jan./Feb. 1971.

A new characteristic is proposed — the logarithmic modulation transfer function (MDF), combining the numerical evaluation of image sharpness with the transfer properties of light-sensitive materials. MDF can be calculated if the density distribution at an edge is known. The parameter describing the MDF in its simplest form is connected with the value of the sharpness according to Jones and Higgins, while at the same time it allows the determination of the properties of a complex photographic system consisting of a number of links, e.g., the negative-positive process or the duping process. This characteristic gives a numerical characteristic for the sharpness of different parts of a photographic image, such as the shadows, intermediate tones, highlights, and regions of special effects where the contrast is very large. It was found that this suggested sharpness evaluation agrees well with the visual perception of a photographic or motion-picture image.—S.C.G. (Translated from *Zh.Nauch. i Prikl. Fotogr. i Kinematogr.*)

Problems in the fight against static electricity in the manufacture and use of motion-picture and photographic materials (in Russian), A.N.Perepelkin, E.K.-Podgorodetskii, and L.B.Varshavskaya. *Trudy Vses. Nauch.-Issled. i Proekt. Inst. Khim.-Fotogr. Prom.*, 151–173, No. 3, 1970; *Ref. Zh., Fotokinotekhnika*, Abstract No. 1.46.82, 1971.

A review is given of existing methods and the fundamental principles of the antistatic protection of motion-picture and photographic materials. A study has been made of the relation between the specific surface conductivity of antistatic lacquers based on hydrophilic polymers and lacquers based on polymeric semiconductors and the relative humidity and temperature of the surrounding medium. It was found that the surface conductivity of antistatic layers based on polymeric semiconductors has little relation to the thermo-hydrometric conditions and keeps a fairly high value at a relative humidity of 5% and a temperature of −40°. It is shown that in principle it is possible to use antistatic coatings based on organic polymers, semiconductors.—S.C.G. (Translated from *Ref. Zh. Fotokinotekhnika.*)

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Cinema Research

The use of photochromics in large-scale laser display systems, Robert J. Anderson, *Image Technology, 13:* 17–22, 30–33, Aug./Sept. 1971.

A number of photochromic materials have been evaluated for use in projection display systems in which the information is written using a laser as the energy source. The response of these materials has been measured using a helium-cadmium laser (325nm and 441.6nm) for activation and a neodymium: YAG laser (.06μm) for deactivation. Two modes of operation have been shown to be possible, the first being that in which bright characters appear on a dark background, and the second being that in which dark characters appear on a bright background. The characteristics of the projected display, for example luminance, contrast, resolution, bandwidth and response time, have been related to the physical properties of the photochromic material, and expressions describing the dynamic behavior of the display in terms of the characteristics of the photochromic material have been developed.

Pollution monitoring by flame emission spectroscopy, Manfred J. Prager, 28–31, *Optical Spectra,* Oct. 1971.

While most first-generation instrumentation for air pollution monitoring has involved the use of wet chemicals, with their inherent limitations, the emphasis now is on the development of spectroscopic techniques that offer greater sensitivity, selectivity and speed of response.

Expanding the horizons of multispectral photography, N. Gutlove and R. Bashe, *Optical Spectra,* 23–27, Oct. 1971.

Use of multispectral photography is growing rapidly with increased interest in the earth observation program. Precision digital image processing techniques, originally developed to permit analysis of such photography, have opened the door to a widening range of scientific and industrial applications.

PROJECTORS

Stereoscopic cinematography in the Soviet Pavillion at Expo 70 (in Russian), A.G. Boltyanskiĭ and N.A.Ovsyanikova, *Tekh.Kino i Televideniya, 14:* 22–27, Oct. 1970.

The equipment and systems used for stereoscopic projection in the Soviet Pavillion at Expo 70 in Japan are described.—S.C.G.

Showing 70mm varioscopic motion-picture films (in Russian), N.D.Bernshteĭn, T.V.Derbisher, Yu.I.Ionin, and A.N.-Karal'nik, *Tekh.Kino i Televideniya, 14:* 15–21, Oct. 1970.

A description is given of a 70mm motion-picture projector for varioscopic films. It may also be used for multiple projection in panoramic systems.—S.C.G.

Motion-picture and slide projection – effective means of exhibition (in Russian), Anon., *Tekh.Kino. i Televideniya, 14:* 3–6, Oct. 1970.

The various forms of motion-picture and slide projection are discussed from the

point of view of their use in exhibitions.—S.C.G.

Calculation of the thermoelastic deformations in the film-gate of a motion-picture projector (in Russian), G.G.Mel'nik and A.I. Babchin, *Zh.Nauch. i Prikl.-Fotogr. i Kinematogr., 16:* 61–63, No. 1, Jan./Feb. 1971.

The curvature due to thermoelastic deformation of a thin sheet held at its edges is calculated.—S.C.G.

SOUND

Frequency response, SNR and nonlinear distortion of photographic soundtracks (in Russian), V.V.Rakovskii, *Tekh.Kino i Televideniya, 14:* 31–36, Nov. 1970.

In cinematographic sound reproduction, owing to the physical peculiarities of the loudspeakers used in cinemas, methods of automatic linear frequency filtration are used, giving a gain in SNR of about 2.5 dB for a photographic soundtrack. Additional linear filtration only raises SNR by an insignificant amount with a considerable growth of nonlinear distortion. It is recommended that linear (flat) frequency responses of soundtracks should be standardized as well as the electrical frequency responses in their reproduction.—S.C.G. (Translated from *Tekh.Kino i Televideniya.*)

The exact synchronization of sound and image of 8mm and super-8 motion-picture films (in Russian), Yu. V.Kuznetsov, *Tekh.Kino i Televideniya, 14:* 62–65, Nov. 1970.

Apparatus is described for adding sound to 8mm and super-8 films with the aid of 6.25mm perforated magnetic tape or gramaphone recordings. A contact monitor of the speed of rotation of the gramaphone disc which has been designed is the electrical analog of a synchronizer.—S.C.G. (Translated from *Tekh.Kino i Televideniya.*)

SPECIAL APPLICATIONS

Application of synchronizing marks (in Russian), Yu.Ya.Sboev, *Tekh.Kino i Televideniya, 14:* 71–72, Nov. 1970.

Two small pieces of apparatus are described for accurately placing magnetic synchronizing marks on magnetic sound tracks.—S.C.G.

Raster device for the production of photographic stencils (in Russian), P.P.Goidenko, A.V.Ignashova, L.S.Tsenter, and G.N.Shadurskii, *Electron. Tekh. Nauchno-Tekh. sb. Poluprovodn. Pribory,* 264–268, No. 2(52), 1970, *Ref. Zh. Fotokinotekhnika,* Abstract No. 1.46.220. 1971.

A description is given of the construction and characteristics of the EM-501 raster camera for obtaining photographic stencils used in the production of diodes, transistors, etc. Elements with minimum dimensions down to 20m may be obtained with the camera.—S.C.G. (Translated from *Ref. Zh. Fotokinotekhnika.*)

Reconstruction of the underwater object, J. Höhle, *Photogrammetric Eng., 36:* 948–954, Sept. 1971.

The situations encountered in taking photographs of underwater objects may be very different from those for conventional photogrammetric mapping, especially with regard to the number of media the image rays must pass through. Analytical methods enable the highest precision because corrections for systematic disturbances can be applied easily, and complete flexibility is offered relative to the choice of the taking camera. Analog devices result in a graphic output of the system. Examples of applications include the measurement of hydrogen bubbles in water tanks, the calibration of underwater cameras, and the mapping of an ancient shipwreck.

Prof. Dr. Eng. Reinhard Hugershoff, Heinz Gruner, *Photogrammetric Eng., 36:* 939–947, Sept. 1971.

Hugershoff's masterpiece, the Aerocartograph, introduced to the U. S. in 1927, opened a new era of mapping performance and aerotriangulation.

TELEVISION

The recording of phototelevision images (in Russian), A.S.Efimov. *Tekh. Kino i Televideniya, 15:* 61–63, Feb. 1971.

The quality of photographs transmitted by television may be improved by a form of spatial filtration in which detail is sharpened up by reduction of the lower frequencies. Some examples of pictures treated in this way are reproduced.—S.C.G.

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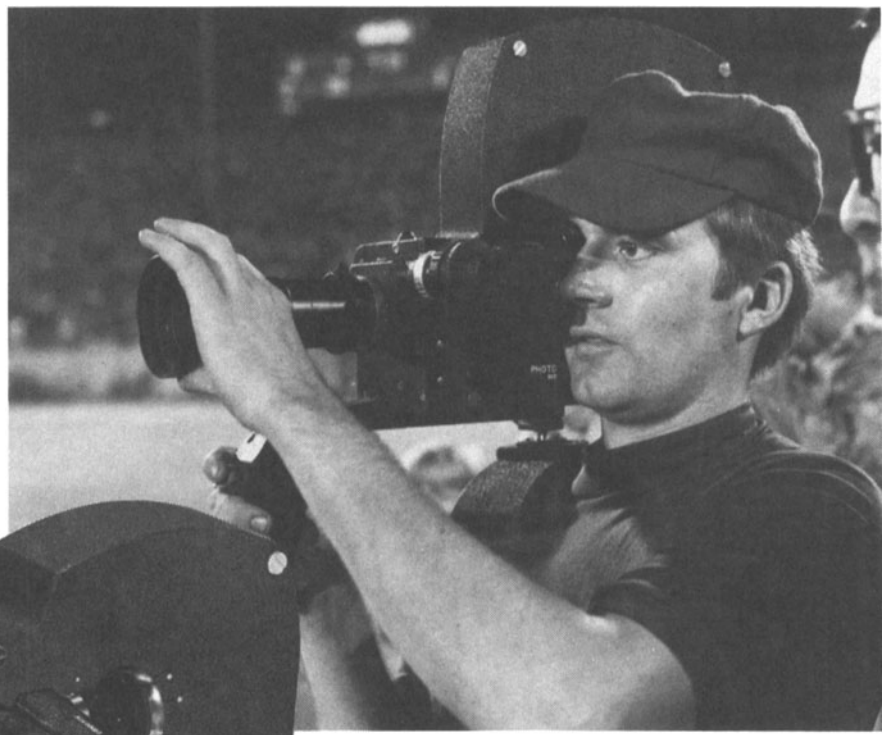
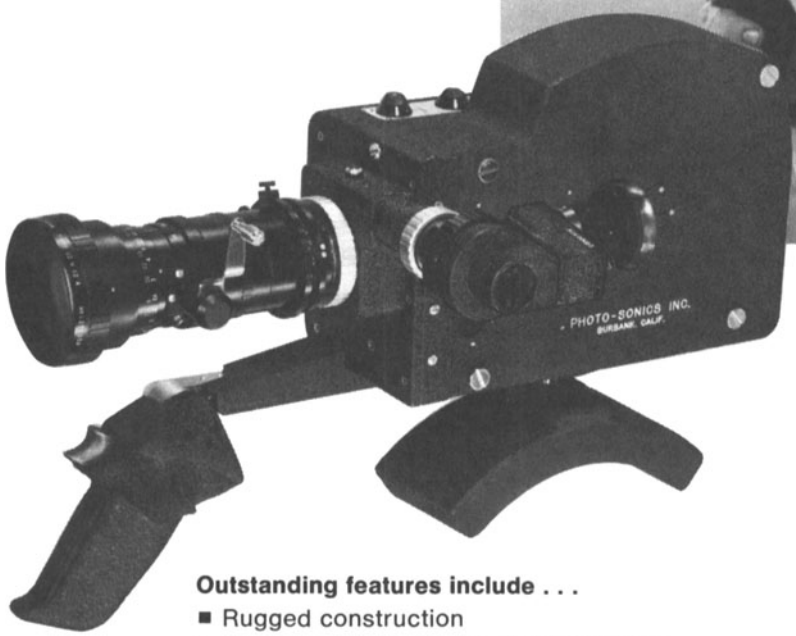


Dave Marx, NFL Films, uses the unique and highly versatile 1PD sports and documentation camera to capture all the intricate maneuvers during a recent game.



This new camera, Model 1PD, designed to meet the more sophisticated requirements of documentation and sports, is a direct by-product of Photo-Sonics' 36-year record of meeting and exceeding the most rigid specifications for cine and high-speed motion picture photography.

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16mm film: image steadiness in television presentation, Part II: causes of unsteadiness, J.R.Sanders, *Brit. Kinemat. Sound and TV 53:* 396–401, Nov. 1971.

The causes of unsteadiness in pictures derived from 16mm film and presented by television are investigated by the techniques described in Part I (D.T.Wright *Ibid,* 360–366, Oct. 1971). Estimates are made of the contributions made by film, camera, printer and telecine. Unsteadiness caused by the printing operation was found to be greater than that due to all the causes added together. It is concluded that the perforation accuracy of the film stock is just adequate and is better than the specification implies. With original camera film in the type of telecine that was investigated the overall steadiness was found to be just acceptable, but with no tolerance against substandard performance by any part of the system.—W.R.G.

The KTU-67 experimental cinetelevision installation for making films (in Russian), V.A.Blazhenkov, A.N.Litvishko, T.P.Rybin, N.I.Tel'nov, V.I.Ulichev, and A.K.Feist, *Tekh. Kino i Televideniya, 15:* 28–33, Jan. 1971.

The KTU-67 is an experimental television channel for use with the 3KSS-T motion-picture camera, the latter being designed for cinematography from a television screen. The complete installation allows standard 35mm and wide-screen anamorphotic films to be shot by television.—S.C.G.

Color film recording from TV, Stephen P. Robinson and Lee S. Horst, *SPIE Jour. 9:* 196–200, Aug.-Sept. 1971.

Film recording has been an integral part of the operation of broadcast television ever since its conception. The development of the videotape TV storage system was hailed by some as the death knell to film recording. However, the continuing need for this transfer technique is demonstrated by the interest of broadcast and military users and by the financial success of studios offering this service. It thus becomes clear that the purpose of film recording of TV images is not in the use of that medium for the dissemination of programs. In fact, in retrospect, it appears that videotape not only did not replace film recording but gave it a new lease on life by allowing the process to be used in an "off-line" mode.

For some years we have been associated with broadcast facilities and with studios offering film transfer services. Over these years, it has become increasingly apparent that there is a need for a film transfer system engineered to allow this process to be carried out by personnel who are not "experts" in film chemistry and television. Some studios have develped a process for this TV transfer onto film. Usually the operating personnel who have carried out the hardware development use the process. Knowledge of the process is thus used in a day by day manner to allow successful transfer of program material. Should these key operators become ill, the transfer process has to be closed down until they are again available. We decided, therefore, that we should not only engineer a system incorporating the latest hardware available, but we should build into this system facilities to replace the intimate knowledge that has been shown by our associates, thereby allowing the process to be "mechanized" to the extent where less skilled personnel can carry out this complex process.

Technical problems in the production of black-and-white test patterns for television, Milan Vecera, *British Kinemat. Sound and TV, 53:* 244–247, June, 1971.

The Czechoslovak current production of the complete assortment of black-and-white test patterns for television, resulted from a long term investigation in the domain of precise picture standard processing. Recently the series results and further development of the test pattern will be provided by the Research Institute of Sound and Picture, and new measuring methods and appropriate types of test patterns will be elaborated in the Research Institute of Radio and Television, in co-operation with the studios of Czechoslovak Television.

In the course of elaboration of the recent method of test pattern production a number of disadvantages and inaccuracies of the photographic method of processing appeared in relation to the requirements of the television measuring technique. Thus the latest results attained in this domain, on the one hand improve the usual procedures to a certain degree and, on the other hand, bring about various possibilities for new technologies.

In the first place, let us present the fundamental technological principles as applied to the photographic processing of the test patterns for television.