of Xerography, by J. T. Bickmore, C. R. Mayo, G. R. Mott and R. G. Vyverberg) the book is not for the layman. Rather, it is directed to the scientifically oriented person whose background includes more than an elementary knowledge of solid-state physics and photoconductivity.

Profusely illustrated and with impressive literature references at the end of each chapter, the book would seem to have considerable importance for researchers and students interested primarily in the scientific aspects of this new technology.

Chapters, contributed by specialists in the particular field discussed, include: I. History of Electrostatic Recording; II. Introduction to the Xerographic Process; III. Properties of Amorphous Photoconductors; IV. Xerographic Photoreceptors Employing Selenium; V. Xerographic Properties of Photoconductor Binder Layers; VI. Organic Photoconductors; VII. Charging Photoconductive Surfaces; VIII. Electrostatic Fields of Xerographic Images; IX. Development of Electrostatic Images; X. Characteristics of Cascade Development; XI. Aerosol Development; XII. Liquid Development; XIII. Imaging by Plastic Deformation; XIV. Principles of Image Transfer and Fixation; XV. Electrostatic Image Transfer From Photoconductive and Metallic Surfaces; XVI. Applications of Electrostatic Image Transfer; XVII. Miscellaneous Electrostatic Imaging Phenomena; and XVIII. Some Applications of Xerography.—*Ben Thompson*, Printing Section, United Nations, New York, N. Y.

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 *Tekhnika 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*), published monthly by the Engineering Index, Inc., 35 E. 47 St., New York, N.Y. 10017, with the editorial cooperation of the Society of Photographic Scientists & Engineers.

(Although, normally, the abstracts appearing in this column cover a wide range of subject areas, papers in journals currently examined relate to various aspects of sound recording and reproduction and television; therefore, it has seemed feasible to limit abstracts appearing in this issue of the *Journal* to those of papers dealing with those subjects.)

SOUND RECORDING AND REPRODUCTION

The accuracy of condenser microphone calibration methods, Pt. I, V. Brüel *Brüel & Kjaer Technical Rev.*, 3–29, No. 4, 1964.

The accuracy of nine different methods of sensitivity calibration of laboratory standard microphones are critically investigated. The results show that the reciprocity method is the most accurate when considering the absolute calibration of condenser microphone cartridges, but when dealing with the measurement of absolute sound pressure levels, the most accurate results are obtained when a double piston pistonphone is used as reference.

The accuracy of condenser microphone calibration methods, Pt. II, V. Brüel,

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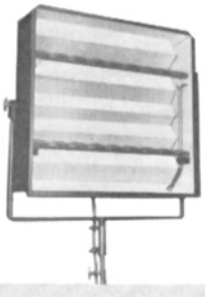

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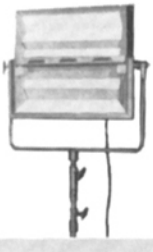

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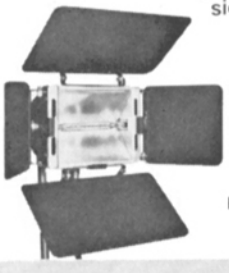

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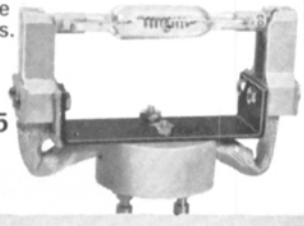

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Bürel & Kjaer Technical Rev., 3–30, No. 1, 1965.

The object of this investigation is to try to find the accuracy with which it is possible to calibrate standard microphones. Throughout this investigation, two standard microphones of the type 4132, i.e., with a flat pressure response curve, and one type 4131 with a flat free field response curve were used as test objects. The frequency range of investigation has been from 48 Hz (c/s) to 800 Hz (c/s) and it has been assumed that the relative frequency characteristic is flat within this range. The following fundamentally different test methods have been investigated and their uncertainties determined.

TELEVISION

The similarity of the reproduction characteristics in television and photography (in Russian), S. B. Gurevich, *Usp. Nauch. Foto., 10:* 130-11, 1964.

The methods of evaluating image quality in photography and television are different, although the situation is essentially the same in each case; the input is an image and the output is another image, irrespective of the process of image formation. Since photography and television are often used together a unified system is obviously desirable. A general system for the determination of the accuracy of reproduction could be based on ideas which are being developed in information theory. The better system would be that which performs the reproduction of an image with the smaller loss of information. The existing systems of evaluating sensitivity in television and photography are not only essentially different but are inadequate since they do not connect sensitivity with the quantity of information transmitted. A unified system which allows apparatus of different kinds to be compared is the "specific" sensitivity, which is a magnitude inversely proportional to the quantity of radiant energy at the input associated with unit quantity of information transmitted at the output of the television or photographic system.—S.C.G. (Abridged from author's abstract).

Improvement of a motion-picture channel operating with a vidicon (in Russian), I. I. Shel'fis, V. F. Rodionov, A. A. Sokolin, and K. O. Zagorovskiĭ, *Tekh. Kino i Televid., 9:* 8–16, June, 1965.

Methods are discussed for improving the quality of the transmission by television of motion-picture films, based on the use of a complex antinoise correction, aperture correction (with automatic regulation of the degree of correction depending on signal swing) and a gamma correction for the automatic control of the level depending on the density of the film.—S.C.G. (translation of authors' abstract).

Correlation between amplitudes of radio waves of different frequencies in UHF beyond-the-horizon propagation, Masaichi Hirai, Madoka Fukushima and Yoshitaka Kurihara, *J. Radio Research Laboratories, 33:* 509–529, Sept. 1960.

Selective fading in UHF beyond-the-horizon propagation is caused by the interference between multipath waves. Based on this phenomenon, a correlation coefficient between amplitudes of radio waves of different frequencies is derived theoretically. Relations of this coefficient with amplitude ratio distribution and multipath wave distribution are also derived. These relations are examined by use of the experimental data in 600 and 2, 120 mc bands on circuits of 226 km from Kokubunji to Nihonmatsu and of 345 km from Kokubunji to Furukawa, and thus the applicability of the theoretical formulas is illustrated.

Mariner Mars 1964 telemetry and command system, R. P. Mathison, *IEEE Spectrum*, 76–84, July 1965.

The Mariner Mars telecommunication system was designed to transmit video data from the vicinity of Mars and additional scientific data during the flight, as well as direct and quantitative commands to the spacecraft.

Television methods of increasing the visual sharpness of photographic images (in Russian), V. A. Makhonin, *Usp. Nauch. Foto, 10:* 142–45, 1964.

The corrections which are used to improve the quality of the image on a television screen can be used to improve the sharpness of a photographic image by a type of automatic unsharp masking, and at the same time an aperture correction can be applied for the eye.—S.C.G.

Variable linear phase-shifting network, S. S. Hakim, *Proc. IEEE, III:* 303–307, Feb. 1964.

A network is described enabling the variation of a linear phase characteristic by a single terminating resistor. The network is based on one form of Bode's variable equalizer, the theory of which is briefly presented. Design equations are developed for evaluating the elements of the network. It is shown that variation of the basic loss of the network provides another means of controlling the slope of the resulting phase characteristic.

The starting point in the design procedure is the formulation of a realizable linear phase characteristic. This characteristic is realized by two constant-resistance bridged-T networks and an all-pass structure connected in cascade with a variable terminating resistor. Experimental results are given and close agreement with theory is demonstrated.

Application de la modulation de fréquence a la transmission du signal de chrominance de la télévision en couleurs: étude de la modulation SECAM; comparison avec le NTSC (in French), J. Fagot, *Annales de Radioélectricité, XVIII:* 3–14, Jan. 1963.

The author refers to the signals used in color television and to the general principles adopted for their transmission in broadcasting for the NTSC and SECAM (sequential) systems. Performance regarding frequency modulation in the SECAM, for chrominance, are examined under the following aspects, with comparison against the NTSC system: (1) subcarrier visibility; (2) signal-noise ratio; (3) action of phase and of differential amplitude; (4) magnetic recording. A comparison table is given at the end of the article.

Étude théorique et experimentale des problèmes de fluctuations rapides en propagation tropospérique (in French), R. Tremblay, *Annales de Radioélectricité, XVII:* 280–296, Oct. 1962.

This study concerns the problem of rapid fluctuation of the received signal in tropospheric transmission. The instantaneous frequency analysis of the received signal explains the linear aspect of the observed spectra. It also determines the spreading of the instantaneous values of the frequency bandwidth of the tropospheric link, and, finally, gives information about the structure of the propagation medium. The study of the problem of the signal fluctuations as a function of time shows the correlation which exists between the rate of fluctuation and the transverse component of the altitude wind. It puts emphasis on the similarity which exists in this case between the amplitude-frequency spectra and the amplitude-time spectra. In the case where the fluctuations in time are caused by atmospheric turbulence the preceding conclusions do not apply. An elaborate experimental study confirms the theoretical results obtained. It is presented along with the theoretical study.

Schneider objectives for vidicon television, P. Himmelsbach and H. Klarmann, *Hausmitt. Jos. Schneider & Co. 16:* 29–55, No. 2, 1965.

Objectives for photographing vidicon television images are described. The mechanical construction, electrical remote control, and optical performance are particularly considered.—F.H.P.

FK7-TV camera for nuclear engineering, S. Kaiser and G. Schaaf, *Bild und Ton, 18:* 229–232 No. 8, 1965.

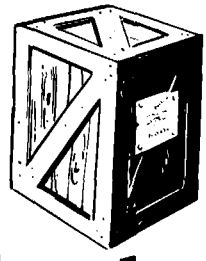
An experimental TV camera installed for indirect observation of dangerous nuclear processes is described. The Endikon type tube, exposed to irradiation from a Co^{60} source of 4.45 to 100 roentgen/sec for a total dose of 1.5×10^6 roentgen, showed 87% transmittance before irradiation, 75% after. Irradiation of a Biotar lens also decreased its transmittance. Diagrams are given for the electronic circuit and optical system of the camera.– M.C.

A new television test card for trade test transmissions, G. Hersee, A. James, T. N. J. Archard, D. H. Runsey, R. Sims, G. S. Ashburner and A. Port, *Radio and Electronic Eng., 30:* 21–36, July 1965.

The paper discusses the basic requirements for test cards and the specification and production of the British Television Test Cards D and E. Particular emphasis is laid on the production of accurate sine-wave resolution bars and the high-precision photographic techniques involved.

The calculation of Schmidt objectives for television projection systems (in Russian), R. V. Voronov, *Tekh. Kino i Televideniya, 9:* 38–42, March 1965.

The design of Schmidt objectives for projection of television images onto large screens, and the characteristics of some Soviet systems of this type are discussed.—S.C.G.



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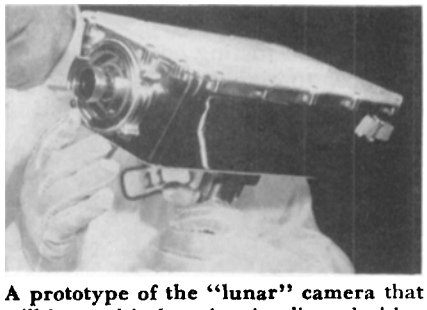
Further information about these items can be obtained direct from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement of the products or services.

A Polaroid Kine Camera system designed to photograph a dual display consisting of a 2×2 kinescope image and a 1.3×11-in. data identification display has been developed by Photomechanisms, Inc., 15 Stepar Place, Huntington Sta., New York 11746. Built under contract to RCA's Astro-Electronics Div., the camera was developed especially to photograph ground-displayed television pictures of cloud cover transmitted from the Nimbus Weather Satellite. Called the "quick look" camera, it also simultaneously records alpha numeric mission identification data. Both displays are recorded simultaneously by an optical system that includes two camera lenses to image the displays within a $2 \times 2\frac{1}{2}$-in. format at the camera's film plane. The hard copy prints show the size, type, density and movement of clouds. Features include a vernier focusing arrangement to permit precise focus of the recording lens.

The system is interchangeable with other Photomechanisms equipment designed for continuous recording and processing of displayed data. Intended for use with Polaroid 46L film which gives a slide transparency of the data display, the system can also be used with other Polaroid films.



A prototype of the "lunar" camera that will be used in broadcasting live television from the moon during the first manned Apollo lunar exploration mission has been built by the Aerospace Div. of Westinghouse Defense and Space Center, Westinghouse Electric Corp., Box 2278, Pittsburgh, Pa. 15230, for NASA. The camera's primary scanning rate is 10 frames/sec with 320 scan lines. It has a second mode of operation in which the scanning rate is 0.625 frames/sec to enable detailed observation of the moon's features by scientists on earth. During the mission, signals produced by the camera will be trans-