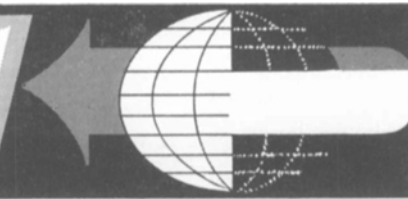


ABSTRACTS OF PAPERS FROM OTHER JOURNALS



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 Televideniya* 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 Engineering Index, Inc., 345 E. 47 St., New York, N.Y. 10017, with the editorial cooperation of the Society of Photographic Scientists & Engineers. The subject areas are grouped below:

Film and Its Properties
General

Lasers
Light Sources
Photographic Theory and Materials
Projection
Sound Recording
Television

FILM AND ITS PROPERTIES

The most important factors in the manufacture of thin-layer motion-picture films (in Russian), V. L. Zelikman and V. A. Dmitrieva, *Usp. Nauch. Fot.*, 11: 161-170, 1966.

Some of the most important points in the manufacture of negative emulsions with high silver and low gelatin concentrations are discussed, and also points in the preparation of thin-layer motion-picture films, based on these emulsions, suitable for use in rapid methods of processing. Data are given on the kinetics of development of such thin-layer negative films (the "stop-gamma" effect) and on the influence of a number of technological factors on that effect.—S.C.G. (Translation of authors' abstract.)

Some peculiarities of motion-picture film on triacetate base (in Russian), E. K. Podgorodetskiĭ, *Tekh. Kino i Televideniya*, 10: 24-28, Oct. 1966.

Disadvantages and advantages of motion-picture films on triacetate base are discussed in comparison with nitrate films. Comparative data are given for the properties of films on triacetate and nitrate base and their behavior in relation to the moisture and temperature of the surrounding air. The chief causes of the increase in brittleness and curl of triacetate films and measures for eliminating them are discussed.—S.C.G. (Translation of author's abstract.)

GENERAL

The uses of a professional society, William G. Shepherd, *IEEE Spectrum*, 3: 35-38, Dec. 1966.

If an engineering society is to be effective, it should not be hampered by traditions handed down from societies formed to serve other objectives. Rather, it should reflect the needs of a membership that includes not only those who contribute to the field in a scholarly way but also those who implement science and technology for the public benefit.

Chameleon in the sun: photochromic glass, Gail P. Smith, *IEEE Spectrum*, 3: 39-47, Dec. 1966.

Photochromic compounds have been known for a century but it is only recently that they have attracted serious attention. Their future promises to encompass many areas, including data storage and display, photography, and the protection of light-sensitive materials.

Achievements and problems of modern motion-picture technology (VII Congress of UNIATEC) (in Russian), G. A. Golostenov, B. N. Konoplev, A. M. Melik-Stepanyan, S. M. Provornov, V. G. Rudakov, and V. I. Ushagina, *Tekh. Kino i Televideniya*, 10: 3-17, Oct. 1966.

In June 1966 the VII Congress of UNIATEC was held in Prague together with the Second Intercamera Symposium. The papers presented at the combined conference are reviewed.—S.C.G.

LASERS

Deep-space optical communications, E. Brookner, M. Kolker and R. M. Wilmette, *IEEE Spectrum*, 4: 75-82, Jan. 1967.

Recent investigations have shown that laser systems, particularly the incoherent direct detection and transmitted reference systems, have important potential advantages over local heterodyning techniques for achieving effective deep-space communications.

Applications of lasers to photooptical instrumentation problems, Robert L. Leighton, *SPIE Jour.* 4: 263-266, No. 6, Aug./Sept., 1966.

A number of recent applications of lasers to the solution of photooptical instrumentation problems are described. These include analytical and experimental studies performed to evaluate the use of both pulsed solid-state and CW gas lasers as light sources for schlieren and interferometer



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systems, the application of a CW gas laser and a high-speed camera to investigate dynamic acoustic pressure waves and the investigation of a laser source for a back-scattering photometer for measuring light transmission through the atmosphere. Each application described serves to illustrate one or more of the laser's unique properties in meeting a particular photo-optical instrumentation requirement.

LIGHT SOURCES

Gas-filled incandescent lamps containing bromine and chlorine, G. R. T'jampens and M. H. A. van de Weijer, *Philips Tech. Rev.*, 27: 173-179, No. 7, 1966.

It seems very likely that the first cyclical process introduced for incandescent lamps—the tungsten-iodine cycle—will be followed by several others. After the iodine lamp, there are now various types of bromine lamps on the market, and the possibilities of chlorine and fluorine lamps are at present under investigation.

New lighting equipment for motion-pictures (in Russian), V. G. Pell' and A. N. Lazareva, *Tekh. Kino i Televideniya*, 10: 60-64, Nov. 1966.

New Soviet equipment for studio motion-picture lighting is reviewed.—S.C.G.

PHOTOGRAPHIC THEORY AND MATERIALS

Optical image processing in incoherent and coherent illumination, Arwind S. Marathay, *SPIE Jour.*, 4: 267-271, No. 6, Aug./Sept. 1966.

A brief review from a physical point of view of coherence theory and linear systems analysis as applied to optical systems used under coherent and incoherent conditions of illumination will be given. Image processing will then be looked upon as a problem of achieving a prespecified optical transfer function for both cases of illumination separately. A conceptual solution to this problem is given followed by simple illustrative examples.

Characteristic curves of motion-picture and photographic materials and the general sensitometric parameters (in Russian), G. S. Baranov and E. I. Klyuenkova, *Tekh. Kino i Televideniya*, 10: 3-11, Dec. 1966.

Following the work of Bayer, Simonds and Williams (*Photo. Sci. Eng.* 5: No. 1, 1961), it is shown that the individual properties of a photographic material can be obtained by comparing the experimental characteristic curve with a standard curve set up for a given group of materials. Differences between the experimental and standard curves can be used to calculate speeds for any density criterion, and the contrast may be obtained at any part of the curve, not only over the straight-line portion. The standard curves are obtained by constructing the mean curve of $\frac{D-D_0}{\gamma}$ against $\log \frac{E_i}{E_0}$, the values being obtained by direct sensitometric measurement on as many samples of the given type of material as possible.—S.C.G.

Improvement in the precision of methods of the photographic evaluation of black-and-white reversal films (in Russian), B. N. Modestov *Tekh. Kino i Televideniya*, 10: 47-54, Nov. 1966.

On the basis of an experimental comparison of a number of current Soviet reversal materials a density of 0.85 unit above the minimum density in the reversed image is chosen as the criterion for the speed of reversal materials. The method of speed determination advocated gives values agreeing with the calibration of exposures meters of the "Leningrad" type. Conditions for sensitometric exposures and of the reversing exposure during processing are specified.—S.C.G.

A process for the quantitative analysis of high-speed films (in French), F. Topfer, *Forschungsfilm*, 5: 354-356, No. 4, 1965; *Ref. Zh., Fotokinetika*, Abstract No. 8.46.259, 1966.

The construction of curves of motion in high-speed cinematography presents some difficulty. In the most widely used method of quantitative analysis timing marks are made on the film with a luminescent lamp, fed from a pulse generator at a known frequency. The film is projected frame by frame onto a transparent screen in front of which is a paper band. The position of a given point of the image is marked on the paper for each frame. The lengthwise direction of the band forms the time axis, the scale of which is determined by the reference marks on the film. The method and apparatus by means of which the analysis is carried out is described.—S.C.G. (Abridged from *Ref. Zh., Fotokinetika*).

A method for the determination of the optimal frame frequency and the exposure factor of ultra high-speed cameras (in Russian), I. I. Kryzhanovskii, *Zh. Nauch. i Prikl. Fot. i Kinemat.*, 11: 334-338, No. 5, Sept.-Oct., 1966.

A formula is derived for the calculation of the optimal frame frequency for a given rate of motion of the subject. A method for the experimental determination of the exposure is based on measurement of the image formed of an object moving with a constant known velocity. A knowledge of the optimal frame frequency for the task in hand, and the exposure required is of value in the choice of camera for a particular problem.—S.C.G.

PROJECTION

Factors determining the exhibition quality of 70mm motion-picture films (in Russian), K. Entz, *Tekh. Kino i Televideniya*, 10: 36-46, Nov., 1966.

A discussion is given of the geometrical characteristics of the screen and the auditorium, and also points in the construction of the projector, which affect the projection quality of 70mm films.—S.C.G. (Translation of author's abstract.)

A study of the conditions of continuous printing of images on a sprocket (in Russian), I. S. Golod, V. B. Liberson, and V. F. Piyavskii, *Tekh. Kino i Televideniya*, 10: 12-20, Dec., 1966.

Results are given of an experimental

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The design of the cam profile in the pulldown mechanism for an 8-mm motion-picture projector (in Russian), V. M. Gradoboev, *Tekh. Kino i Televideniya*, 10: 57-61, Dec. 1966.

Methods of graphical and analytical design of the central profile of the cam in a pulldown mechanism with a rocking arm, as used in contemporary 8mm motion-picture projectors, are discussed.—S.C.G. (Translation of author's abstract.)

The accuracy required in the control of lighting systems of motion-picture projectors with incandescent lamps (in Russian), V. I. Artishevskii and S. M. Provornov, *Tekh. Kino i Televideniya*, 10: 36-39, Oct. 1966.

An analysis has been carried out of the influence of errors in the adjustment of the incandescent lamps in three Soviet motion-picture projectors on the magnitude of the useful light flux and the uniformity of illumination of the screen.—S.C.G.

SOUND RECORDING

Development of portable apparatus for news cinematography, A. S. Bazilevskii, E. N. Fridman, and V. K. Zaitsevskii, *Tekh. Kino i Televideniya*, 10: 69-71, Nov. 1966.

A transistorized synchronizing unit has been developed for use with the Konvas-Avtomat camera and the MAG-8 magnetic tape recorder to give a portable sound camera for news and documentary work.—S.C.G.

SPECIAL APPLICATIONS

Now technology from the moon will advance photography on earth, *Am. Cinemat.*, 48: 48-50, Jan. 1967.

Computerized techniques for enhancing resolution of moon pictures taken by spacecraft may have startling applications to commercial cinematography.

Ultimate sensitivity of space-camera imaging devices with particular reference to the slow-scan vidicon, Leonard R. Malling, *SPIE Jour.*, 4: 272-276, No. 6, Aug./Sept. 1966.

The sensitivity of differing space photographic imaging concepts is compared in terms of the photoelectron population of the discrete picture element. The velocity of the scanning beam is included for storage surfaces. The photon population has been photometrically established for blackbody temperatures of interest. The method is illustrated for a slow-scan vidicon for which the quantum efficiency is shown to be $\eta = 0.4$.

Time-lapse cinematography for traffic research, T. Constantine, A. P. Young and M. H. E. Larcombe, Assigned to:

University of Newcastle upon Tyne, *Phot. J.* 106: 311-318, No. 10, Oct. 1966.

Time-lapse cinematography is being increasingly used by research workers in the field of traffic engineering to define quantitatively the microscopic and macroscopic behaviour of traffic on the open highway and at channelized and signal-controlled intersections. The information obtained is being used to confirm and extend traffic flow theories and to provide the necessary field data to enable traffic situations to be realistically simulated on the electronic digital computer. The success of the method depends to a large extent on the reliability of the equipment used and the ease with which the analysis work can be carried out, since this part of the work can be extremely tedious. In this paper the authors describe in detail the equipment they have developed and used with success. The electronic time-pulse unit which operates a standard Vinten Mark 3 16mm cine camera is portable and is powered by 12-V lead acid accumulators and nickel cadmium button cells. The unit, which incorporates two multivibrator circuits, produces pulses of the required magnitude and duration to operate the camera at set speeds of 1, 2, or 4 pulses or a variable rate between 1 pulse/s and 1 pulse/8s with a maximum error in the order of 0.7 per cent. The complete circuit diagram is given. The analysis unit incorporates a Specto Mark 2 analysis projector with 32 X 23-in rear projection screen. The projected image is reflected through 180° on to the screen, thus enabling the projection to be placed adjacent to the viewing position so that the operator can readily operate the projector and abstract data from the screen image. An accurate measuring device with 2 fiducial marks extending the full depth of the screen is incorporated.—(Authors' abstract.)

TELEVISION

Planning the new master control room at TWV, Roy Sonnex, Int. Broadcast Eng., 447-454, No. 26, Nov. 1966.

In 1963, Teledu Cymru, the British Independent Television Programme Contract for West and North Wales, finally came under the control of TWV, the company operating in South Wales and the West of England. Since then the TWV Master Switching Operation at the Cardiff Studio Centre has presented operational and engineering problems quite unique in the television broadcasting industry. Prior to this, the commitment required only that one sound and vision output should be fed to one transmitter station, with occasional contributions to the network by way of separate lines. This was a relatively simple problem, simply but elegantly solved by devising a scheme that has since been called "Open Plan" television. It required the construction of a large master control room which, though small by present standards, nonetheless comfortably housed the master control desk, the telecine control desk, four telecine machines, and at the front, the master clock and monitoring installation sited so as to be clearly visible to presentation engineers and telecine operators.