

ABSTRACTS

Sound and Image. CH. W. VAN DER PYL. *Technique Cinemat.*, 2, Feb., 1931, p. 11. In the technical development of equipment for optical and sound reproduction purposes the principal attention should be directed toward life-like reproduction instead of abstract technical perfection. As an example, the author states that psychological considerations show that camera objectives which give better depth of focus would be preferable to those giving critical sharpness in a limited plane. In this connection he calls attention to a lens devised by F. Diedrichs with which a reasonable degree of sharpness is obtained in all planes from a near object to infinity. This result is produced by shifting the central elements of the objective during the exposure. Application of this principle to motion picture purposes would be difficult because of the frequency of oscillation of the moving parts necessitated when pictures are made at the usual rate. The improved results, however, would be well worth the trouble. C. E. I.

New Air-Blast High Intensity Lamp. *Film Daily*, 55, March 15, 1931, p. 7. A new high intensity projection lamp has been marketed by a Hollywood concern. Features of this lamp are: two equalized contacts on each side that cannot oxidize or pit; a powerful and dependable automatic, fully enclosed striker; an arc image visible from both sides of the lamp; a pyrex mirror cooled by circulating air; a carbon release operating outside the lamp house. The entire mechanism is removable by sliding it out with the rear housing. The air-blast in the cooling system is generated by a silent, powerful blower operated by the arc control motor. The air stream is diverted to all parts of the lamp housing, lowering the operating temperature to such an extent that a smooth running machine is maintained. Besides serving as a protective feature, the air blast insures an increase of illumination by allowing a greater amount of current to be carried in the same diameter of carbon. Heretofore, it is said, lamps of the high intensity reflector type were only designed to operate at 72 amperes when using a 9 mm. electrode. With this new type lamp, the normal current is 85 amperes and can be worked up to currents as high as 90 amperes. C. H. S.

Improved Metallic Surface Sound Screen. *Film Daily*, 55, April 12, 1931, p. 30. A new and improved metallic surface sound screen, known as "silvers heat," has been designed primarily to meet the constant demand for more light. It is claimed that this screen will give three times more screen brightness than any ordinary white surface screen. Webbed with double reinforced webbing it can be laced in any present type lacing frame. C. H. S.

The High Output Incandescent Lamp in the Motion Picture Industry. A. SALMONY. *Kinotechnik*, 13, Jan. 20, 1931, pp. 28-9. The lamps described are the Osram tungsten filament lamps of 10,000 and 50,000 watts, such as are used in motion picture studios. The total output of the 10,000 watt lamp is about 228,000 Hefner lumens and that of the 50,000 watt lamp, about 1,000,000 Hefner lumens. Curves are reproduced showing the distribution of the

light of the 10,000 watt, 220 volt lamp in both a horizontal plane and a vertical plane.

M. W. S.

Third Dimension System Based on Screen Evolved by Bell Laboratories. *Mot. Pict. Herald*, 102, Sect. 1, Mar. 7, 1931, p. 12. In this improved process of stereoscopic photography, a special screen, two feet square, is used composed of 200 solid celluloid cylinders set in a vertical position. A panoramic view and a different image is thus provided for each eye of a person viewing the picture. Recent developments include a single exposure and stationary camera instead of the moving camera. Either a large concave mirror or a large lens and a grating may be used to photograph the subject. Much research is considered necessary to perfect the process, however, and factors which are requisite include: (a) an extremely fine-grain, high-speed film, (b) a projection lens free of distortion and having excellent definition, and (c) elimination of all lateral movement of the film while passing through the projector gate.

G. E. M.

Television Impractical for Wide Use in Its Present Stage. D. K. GANNETT. *Mot. Pict. Herald*, 102, April 18, 1931, p. 12. Regular broadcasting of television images by the usual methods would require a frequency band 4,000,000 cycles wide, which is equivalent to 400 ordinary broadcast channels. Such a band is considered impractical as it would mean nearly complete monopolization of present transmitting channels. A scanning disk, having 125 holes, would be required compared with a 50 hole disk used in 1927, which transmitted about 2000 elements, making a very indistinct picture. The 125 hole disk would give images comprising about 12,500 elements. Good telephotographs contain about 250,000 elements.

G. E. M.

Equipment Exports in 1930 Up \$4,000,000. *Mot. Pict. Herald*, 102, Sect. 1, Mar. 14, 1931, p. 18. Sound apparatus and arc lamps were not listed under export classification in 1929. Estimating the export value of these as \$3,500,000 and adding listed exports of \$1,442,803, gives a total of approximately \$5,000,000 for 1929 exports of motion picture equipment compared with \$9,172,824 for 1930. Partial compilation of equipment is as follows: 35 mm. projectors, 2160; 35 mm. cameras, 945; substandard projectors, 1634; substandard cameras, 1677; arc lamps, 967. Sound apparatus valued at \$7,736,059 was exported during 1930, chiefly to Europe. The figures were supplied by the Motion Picture Division of the U. S. Department of Commerce.

G. E. M.

Ground Noise Reduction—RCA Photophone System. R. H. TOWNSEND, H. McDOWELL, JR., AND L. E. CLARK. *Mot. Pict. Herald*, 102, Sect. 2, Mar. 14, 1931, p. 74. In normal variable width recording the sound track is always made up of equal portions of exposed and clear film. Dirt or foreign matter on the clear side intercepts the light normally falling on the photo-cell and produces noise which is very noticeable if the modulation of the recorded sound is low. The experiments of Hanna and of Hewlett have been extended by the authors and a method is described in detail whereby noise produced in this type of sound record is greatly reduced. A little of the output of the amplifier, before it is fed into the recording mechanism, is amplified and rectified, and the resulting direct current is used to furnish a secondary control over the vibrator. A moving shutter actuated by two voice coils is placed mechanically in the beam of light reflected by the vibrator of the recording system. This shutter moves in proportion to the amount of input to the two-stage amplifier. When no modulation occurs, the shutter

admits a beam of light onto the film approximately one-seventh the width of the beam used in the normal variable width recording system. Diagrams of circuits are included and 29 reproductions of different sound records. G. E. M.

Electron Tubes in Industrial Service. W. R. G. BAKER, A. S. FITZGERALD, AND C. F. WHITNEY. *Electronics*, April, 1931, p. 581. Discusses various circuits for the use of the thyatron tube in the production of alternating current of adjustable frequency from a d-c. source. The paper also discusses some special applications such as time-delay relays and telemetering systems. A. C. H.

Developments in Automatic Record Changers. FRANKLIN S. IRBY. *Electronics*, April, 1931, p. 584. A very complete discussion of the characteristics of seven commercial types of automatic record changers for phonographs. A. C. H.

Variable Area Sound Recording. JOHN P. LIVADARY. *Electronics*, April, 1931, p. 587. A mathematical investigation of the distortion introduced in the variable area method of recording by the finite width of the recording slit. A. C. H.

Progress in Two-Way Television. HERBERT E. IVES. *Bell Lab. Record*, 9, February, 1931, p. 262. The television apparatus developed at Bell Telephone Laboratories has been further improved by the substitution of an incandescent lamp for the arc used in scanning and the addition of a red component in the scanning beam, with two caesium-oxygen cells added to the receiving equipment. A better design of neon lamp has also been applied. The final effect is an orthochromatic image which is much more faithful to the original and shows better definition than the earlier arrangement of the apparatus. A. A. C.

New Types of Photoelectric Cells. A. R. OLPIN. *Bell Lab. Record*, 9, March, 1931, p. 310. Recent advances in photoelectric cells have been made by treating the surfaces of alkali metals with gases or with vapors of dielectrics such as sulfur or organic dyes. The response curves of these new types show that selective sensitivity to light of almost any color may now be obtained. A. A. C.

Measuring Reverberation. CARL F. EYRING. *Bell Lab. Record*, 9, March, 1931, p. 315. The acoustical properties of a room cannot be accurately given by reverberation time alone. Oscillograms recording the loss of intensity at short intervals are presented to show that the rate of decay is the important factor, and that each rate, with the range of drop in intensity over which it applies, should also be given to characterize a room. A. A. C.

New Simplex Triple Lens Turret. *Mot. Pict. Proj.*, IV, April, 1931, p. 19. Projectors, as well as cameras, may now be equipped with a means for quickly interchanging prefocused lenses to suit whatever magnification the program demands. This turret provides space for three half-size lenses of standard dimensions, with adapters available for the quarter-size lens tube; it may be fitted to any standard Simplex machine. A. A. C.

Quality of Television Images. D. K. GANNETT. *Bell Lab. Record*, 9, April, 1931, p. 358. The limit of detail available in a television image depends upon the number of elements which can be transmitted in the time allotted to each single picture, that is, upon the frequency band which can be sent from the sending to the receiving point. With the ordinary ten-kilocycle broadcasting channel the limit is 625 elements in one-sixteenth second, which corresponds to a picture of about 22 by 28 elements. By using two or more channels pictures of finer detail

can be obtained. The illustrations of this article, made by transmission as tele-photographs, show the possibilities of pictures with the number of elements ranging from 625 to 12,500. Allowance must be made for the fact that coarseness of detail in a moving scene is less objectionable than in a still picture. A. A. C.

Talking Picture Equipment for Portable Use. JOHN DUNSHEATH. *Proj. Eng.*, III, April, 1931, p. 14. The growing field for portable sound projectors requires dependable, fire-proof equipment of limited size and weight; simplicity of operation is essential. The article describes a projector designed with these requirements in view. It has an automatic switch which turns the light on only when the mechanism has attained normal speed and cuts it off in case the film breaks or runs out. Film magazines are in enclosed compartments. The amplifier is in a separate case, designed to operate from either of two projectors, and is so placed that the light from the sound track, coming through an opening in the projector case, can fall upon the photo-cell. Half-size projection lenses are used, together with special condensers and a 1000 watt lamp, which are claimed to give a good picture at a screen distance of 100 to 125 feet. A. A. C.

Film for Home Record Reproduction. A. L. WALKER. *Proj. Eng.*, III, April, 1931, p. 16. The Austrian Selenophone Company is now making home reproducing equipment which embodies sound-on-film recording. The record is a paper strip one-half inch wide with four sound tracks printed side by side, thus giving about seventy minutes playing time to a single 300 meter strip. Modulation is by light reflected from the strip and a selenium cell is used with the variable area record, for the printing of which a special ink method has been developed. Quality of reproduction is said to be "not far less" than that of the commercial disk record. A. A. C.

Visual Fatigue and the Motion Picture. DR. LUCIANO DE FEO. *Mot. Pict. Proj.*, IV, February and April, 1931, p. 27. The author, who is director of the International Educational Cinematographic Institute, presents in this paper the results of an inquiry into visual fatigue conducted throughout twenty-seven Italian provinces. Analysis of replies to a questionnaire presented to thirteen thousand school children shows that 29 per cent normally experience visual fatigue after a motion picture performance. The effect appears more pronounced among the younger children.

Opinions are quoted from specialists on the subject, most of whom seem to agree that well-managed presentations do not cause eye-strain. There follows a long list of the common conditions in auditoriums, films, and projection methods which cause fatigue and a discussion of the regulations necessary for eliminating them. A. A. C.

A System for Suppressing Hum by a New Filter Arrangement. PALMER H. CRAIG. *Proc. I. R. E.*, 19, April, 1931, p. 664. A new system for suppressing hum, either in the output of a rectifying system or the output of a generator, is discussed thoroughly. The mathematical design of the filter is given as well as the points of superiority of the proposed system over the usual capacity-inductance system are shown. The proposed system is based on the superposition of a current displaced in phase by a wave filter, on a current not so displaced. A. H. H.

Improvement of Thin Film Caesium Photoelectric Tubes. S. ASAO AND M. SUZUKI. *Proc. I. R. E.*, 19, April, 1931, p. 655. The sensitivity of photoelectric

tubes, specially treated by the application of a thin layer of gold or silver over caesium deposited on oxidized silver, is shown to be increased in the red and infra-red. The process of making the tube and the laboratory set-up of apparatus used in testing the tube are explained. Curves illustrate the increase of sensitivity.

A. H. H.

The French Solution of the Wide Screen Problem. P. AUTRÉ. *Cinemat. franç. Supp.*, 13, Feb. 28, 1931, p. 1. One of the most attractive solutions of the wide screen problem is that involving the use of standard 35 mm. positives with cylindrical supplementary lenses for giving a uniform increase in the width of the projected image. Such an increase in one dimension during projection is possible without distortion of the picture if the positive has been produced by a printing process involving a corresponding reduction in width of the image from a wide negative. The economic advantage to the exhibitor is obviously great.

Successful application of this method depends on satisfactory optical devices for the purpose and photographic materials having sufficiently fine grain. As to the optical equipment, a highly corrected cylindrical lens has been devised by H. Chrétien which gives satisfactory results with the regular type of illumination system in the projector. This and the corresponding corrective lens used in the printing process consist of five elements having cylindrical surfaces. Recent progress in the direction of fine grain in photographic negative film gives assurance of satisfaction and since only the positive film which has fine grain is subjected to the unusual enlargement no trouble exists in that quarter.

Inasmuch as it may not always be required to produce an extremely wide screen image, the same principle can be turned to advantage in providing more width on the positive for the sound record.

C. E. I.

A Study of Certain Photographic Reducers. G. ROBIN. *Science et ind. phot.*, 2nd Series, II, Jan., 1931, p. 24-6. Sensitometric studies of the action of the following photographic reducers were made using Lumière "Etiquette Blue" plates developed to a gamma of 1.5 in an elon-hydroquinone developer:

- (1) Ceric sulfate and sulfuric acid.
- (2) Potassium ferricyanide and sodium thiosulfate.
- (3) Potassium permanganate and sulfuric acid.
- (4) Ammonium persulfate and sulfuric acid.

The results obtained with the reducers prepared, using various concentrations of the constituents and by treatment for increasing times, are given in tabular form. The values D_0 , D_s , D_s/D_0 , $D_0 - D_s$, and γ_s/γ_0 are given, " D_0 " and " D_s " representing the densities before and after reduction, respectively, and " γ_s/γ_0 ," the ratio of the gamma after reduction to the gamma before reduction. Under the conditions of the tests the author found that all of the reducers decreased contrast (as measured by gamma) more or less rapidly, depending upon the composition of the solution. The action of a dilute solution of permanganate with a trace of sulfuric acid was approximately proportional while still further decrease in the acid gave super-proportional results. The removal of fog without serious reduction of the middle tones was not possible with any of the formulas tested. Plates exposed from either the front or back gave similar results upon reduction.

L. E. M.