ABSTRACTS

A 35-Mm. Portable Sound-Film Projector. H. GRIFFIN. *Mot. Pict. Proj.*, IV, July, 1931, p. 24. While designed primarily as a portable unit, this equipment has an optical system said to be equal to those used in theater outfits and there is nothing to prevent its use in any moderate sized auditorium. For this purpose it would be used with a 900-watt, 30-volt projection lamp and transformer. Any amplifier can be connected to the equipment, and the reproduction is stated to be at least equal to that obtained in first class theaters at the present time. A. A. C.

A Portable Non-intermittent Cine Projector. *Brit. J. Phot.*, 78, June 19, 1931, p. 362. Gaumont has demonstrated a fully developed portable cine projector with continuous film movement. It employs multiple lenses on the periphery of a cylindrical drum which is free to rotate on its axis and is made to turn by the motion of the film. The light cone from the film plate is reflected by a prism system back through 360 degrees to the objective, and to the projection screen. A. A. C.

The Silent Mitchell Camera. WILLIAM STULL. *Amer. Cinemat.*, 12, July, 1931, p. 9. An illustrated description of the latest Mitchell product, expressly designed for talking picture use. "It is not perfectly noiseless, yet the nearest thing to perfect silence that has yet appeared." The movement is much simplified, the dissolving shutter is eliminated and the adjustable shutter is placed much nearer the film than on previous models. The camera has no turret, the lens being fitted to a large slip-mount of standard design, to which any modern lens may be fitted. Focusing is done from the rear of the camera and the objective lens mounts are so made that the lens does not rotate during this operation. A. A. C.

Photographic Lens Tests. W. B. RAYTON. *Amer. Cinemat.*, 12, July, 1931, p. 11. A projection method of testing photographic lenses is described, which consists of recording on a panchromatic plate the projected image of a small round aperture located at any selected point in the image plane. This reversal of object and image planes, for testing purposes, results in a negative whose defects are magnified and can easily be seen; the method is said to be free of all the uncertainties of the ordinary camera tests. The illustrations show the defining power of several different standard makes of lenses. A. A. C.

Are Stereoscopic "Movies" Possible? FRANK FOWELL. *Mot. Pict. Proj.*, IV, August, 1931, p. 11. The principal methods of securing stereoscopic effects on the screen are enumerated and discussed. Ives' recent work with multiple projectors and special screens is not mentioned, and the article closes with an expression of doubt as to the possibility of a commercial solution of the problem. A. A. C.

Wide Image from Standard 35-Mm. Film. *Mot. Pict. Proj.*, IV, August, 1931, p. 19. This article describes the Fulvue process—which has occasioned much favorable comment in England—with a sketch showing the optical system

and illustrations of the results obtained. It is a cylindrical lens system designed to magnify the scene in the horizontal plane only, and is used in both camera and projector. The sketch shows an auxiliary lens of four elements, which would indicate a loss in illumination of at least 32 per cent both in photography and in projection. A. A. C.

Sound Equipment Sales Abroad. C. J. NORTH AND N. D. GOLDEN. *Electronics*, July, 1931, p. 11. An analysis of the market for sound picture equipment in all the principal countries throughout the world. According to the authors, there are some 37,000 motion picture theaters outside the United States, 12,000 of which have been already wired. Of the remainder, only approximately 4000 represent a potential market for sound equipment.

The article contains much valuable information on foreign competition, tariffs, credits, patents, and methods of establishing foreign contacts. A. C. H.

Electronic Musical Instruments. R. RAVEN-HART. *Electronics*, July, 1931, p. 18. Principally a description of the "Tratonium" invented by Dr. Trautwein of the Radio Research section of the Berlin Academy of Music. In this instrument, the fundamental frequency is generated by an oscillating neon lamp and the quality is adjusted by a filter circuit. A. C. H.

Phototube Circuit Design for Sound Pictures. C. A. WYETH. *Electronics*, July, 1931, p. 22. Concerned primarily with the characteristics of phototubes and the method by which they are coupled to an amplifier. A. C. H.

Electroöptical and Magnetoöptical Phenomena in Relation to Sound Recording. A. LOVICKI. *Technique Cinemat.*, **2**, May, 1931, pp. 15–22. The principle of application of the electrical bi-refringence phenomenon, as used in the Kerr cell for modulation of a light beam, is discussed. This type of cell is used by Tobis Klangfilm. Another phenomenon, that of rotatory polarization in a magnetic field, is described as representing possible usefulness in modulating light for sound recording. C. E. I.

Purported Disadvantages in Desensitizing. C. EMMERMANN. *Filmtechnik*, **7**, Apr. 4, 1931, pp. 5–6. Mention is made of the claims of P. V. Neugebauer and H. Windisch that the use of pinakryptol green as a desensitizer decreases the emulsion speed to one-fourth or one-fifth the original speed. This claim was immediately refuted by Lüppo-Cramer. Further work by K. Jacobsohn and H. Dürr has shown that bathing in a preliminary bath of pinakryptol green has the effect of decreasing the gamma for a given time of development so that an increased time of development is required to give a gamma equal to that of the untreated film. With films developed to equal gammas, the maximum loss in threshold speed was found to be 4° Eder-Hecht. This slight decrease has practically no significance even when films are badly underexposed. Also, for the films developed to equal gammas, the gradation shown in the higher exposures of the H & D curve was slightly improved when pinakryptol green was used. Emmermann has made tests using the instructions of Jacobsohn and Dürr with orthochromatic film of high gamma properties and an MQ developer. The results of these tests show a decrease of gamma for a given time of development, the decrease being proportionally greater for the shorter times of development. An average decrease in threshold speed of 2° to 3° Eder-Hecht and a maximum decrease of 4° Eder-Hecht were found. The slight decrease in threshold speed is only perceptible with grossly underexposed films. The use of pinakryptol

green was found to have no effect upon the shape of the characteristic curve. L. E. M.

Spicer-Dufay Color Film Process. A. PEREIRA. *Kine. Weekly*, **171**, May 28, 1931, p. 49. Describes a demonstration of a three-color screen process and a visit to the manufacturing plant where the film is made. It is stated that 1000-foot lengths of film, nearly 2 feet wide, are ruled with a three-color screen so that about a half million squares cover each frame of 35-mm. film. An aceto-cellulose support is first prepared to receive the screen mosaic. A coating of collodion, stained green, is put on the base and a greasy ink resist applied to the surface by means of an engraved steel roller. A bleaching bath then destroys the green dye where it is not protected by the resist. After a wash, the film is treated in a red dye solution which produces a series of red lines between the green lines. The resist is then removed and a new one added crosswise of the red and green mosaic. The film is next passed through a final bath of blue. When the resist is removed the film is ready for preliminary treatment previous to coating with a panchromatic emulsion. It is stated to be possible to make satisfactory duplicates. G. E. M.

Synchronous Negative and Sound Track Rewinder. *Sound Waves*, **5**, June, 1931, p 6. Describes a rewinder for cutting the two negatives made by a bi-pack process and the accompanying sound negative to match an accepted positive. Four reels are mounted on a common shaft (hand cranked) at one side of the cutting bench, and a similar group on the other side. A bank of four sprockets is mounted in the center, over which the films pass. All four films are wound in synchronism until the first splice is reached on the positive. The negatives are then cut, if necessary, and a similar practice is followed throughout the editing of the entire reel. G. E. M.

Analyzing Theater Acoustics Electrically. *Mot. Pict. Herald*, **103**, Sect. 2, June 6, 1931, pp. 48–50. Describes a reverberation meter for the measurement of the rate of sound decay. Sound energy is converted into electrical energy and a series of points is recorded on the surface of a waxed paper drum which gives graphically an exact history of the sound decay from which the reverberation time may be determined. The meter has found extensive application in connection with the study of the acoustics of theaters, studios, broadcasting rooms, *etc.*, and offers a means for correcting acoustic defects.

A sound meter is also described which was designed to record the effect of sounds in terms comparable with the loudness sensations judged by the ear. It consists of a microphone, an amplifier, a weighing network, indicating meter, and the necessary battery supply. The meter scale reads directly in decibels. The amplifier is adjusted so that its sensitivity is greatest near a frequency of 2000 cycles per second. A level recorder may also be substituted for the visual meter. Either broad band analyses or single frequency analyses may be made. G. E. M.

Western Electric Theater Horns. *Mot. Pict. Herald*, **103**, Sect. 2, June 6, 1931, p. 54. The exponential type of horn, used in conjunction with a suitably designed receiver, is considered the most satisfactory for theater use. Several types of exponential horns, available commercially, are described. These types are classified into two groups: (*a*) curling and (*b*) folding. Combinations of the two groups are also known. A shallow type for installation in narrow stages

has also been designed, which consists of two horns opening into a common mouthpiece. G. E. M.

Reversing the Slope of the Main Floor of a Theater. G. SCHUTZ. *Mot. Pict. Herald*, **104**, Sect. 2, July 4, 1931, p. 12. Commenting on the paper by B. Schlanger (*J. Soc. Mot. Pict. Eng.*, **XVII** (Aug., 1931) No. 2, p. 161) on this subject, it is stated that the scheme suggested restricts the width of the auditorium close to the limitations of the angle of good vision. Another effect of the scheme would be a substantial reduction of the angle of projection. A considerable change in the design of the decorative treatment of the theater would also be necessary with a probable decrease in the "grandiose" type of "exotic ornamentation." The design is considered a hopeful one, however, in keeping with the character of the motion picture itself, which is a radical departure from the world's previous art-forms. G. E. M.

The Measurement of the Output of Amplifiers. P. HATSCHEK. *Kinotechnik*, **13**, March 20, 1931, pp. 112–114. The "Audimeter" is an instrument for measuring the output of amplifiers in order to suit the power delivered to the loud speaker to the size and acoustical properties of the theater. The output is measured under conditions that simulate practice. M. W. S.

The Measurement of the Sensitivity of Photographic Emulsions. L. LOBEL AND M. DUBOIS. *Kinotechnik*, **13**, April 20, 1931, pp. 142–146. The relative speeds of a number of photographic plates and of three kinds of motion picture negative film were determined from strips exposed in a Scheiner sensitometer and developed to a constant gamma of 1.6. These speeds were expressed in terms of the relative exposures required to give the same result, and were expressed according to the following four systems: (1) The Hurter and Driffield system based on the inertia point; (2) the Labussière system based on the value of 0.5 for the least useful gradient of the density *vs.* log exposure curve; (3) the system of Jones and Russell, a variation of No. 2, but based on the value 0.2; (4) the Scheiner system, based on the threshold value. The relative exposures thus determined were compared with each other and with the relative exposures required under practical conditions in the camera to attain the same rendering of shadow detail in the negatives. The shadow rendering was judged from positive prints on paper. The authors conclude that, taking the exposure of the fastest plate tested as the unit according to each system, the exposure required according to the practical test is the longest. The exposure according to the H & D system comes next for normal emulsions. The differences between the results of the H & D system and the practical determinations are within the experimental error of the practical method. (These conclusions are based on what appears to be a purely arbitrary assumption; *viz.*, that the exposures required for the standard emulsion according to the practical method and according to the sensitometric methods are equal.—Abstractor.) M. W. S.

Slow Motion Investigations. W. ENDE. *Kinotechnik*, **13**, April 20, 1931, pp. 139–142, and May 5, 1931, pp. 158–161. A number of industrial applications of slow motion photography are described. These include investigations of typewriters, gasoline engines, relay contacts, ticket printing machines, thermal regulators, and electric arcs. Various operating defects were studied and overcome. M. W. S.

The Annual Technical Report of the A. E. G. for 1930. A New Re-recording

Apparatus. *Kinotechnik*, **13**, April 20, 1931, pp. 150–151. In a re-recording apparatus for sound film, the sound film is uniformly unrolled, and the sound record is transferred to a phonograph disk by means of a photocell, amplifier, and stylus. A multiple synchronizing apparatus serves to synchronize music, noises, *etc.*, taken on separate films with dialog. Three films pass through the apparatus simultaneously so that the synchronization can be recorded on a fourth film or on a disk. M. W. S.

Synchronization. L. KUTZLEB. *Kinotechnik*, **13**, May 5, 1931, pp. 163–165. Three systems for synchronizing speech and pictures are in use in Germany.

In the "Rythmographie" system, a moving film conveys the printed words before the eyes of the speaker, the time being indicated by the passage of a mark by the word in question.

The system of R. Thun employs a similar device to aid the speaker, but also provides for comparing the sound record and the picture and making corrections automatically in a printing process. Cutting of the negative is thus avoided.

The Czerny system makes the picture visible to the speaker and provides him with the original text through head phones. M. W. S.

A Method for Determining the Shape of the Curve of a Variable Width Sound Record. L. WEINGLASS. *Kinotechnik*, **13**, May 5, 1931, p. 162. The curve of a sound record with a frequency of 7000–8000 becomes very difficult to follow by optical means in the direction of the motion of the film. The author proposes to move a narrow beam of light of definite length across the sound records, *i. e.*, at right angles to the visual slit image. The variation in the integrated transparency is expressed as a function of the curve of the sound record. M. W. S.

Measuring Instrument with Photocell. *Kinotechnik*, **13**, May 5, 1931, pp. 166–167. The measuring instrument built by Gans and Goldschmidt, and including a photoelectric cell and Mihaly circuit, is said to have been improved to facilitate measurement of screen brightness. The cell has been made movable with respect to the moving coil galvanometer case, without danger from external fields, by placing the electrostatically sensitive part of the Mihaly circuit in the cell container. The cell is fitted with an iris diaphragm and shutter. M. W. S.

New Incandescent Lamps for Motion Picture Projectors for Amateur and Professional Film. *Kinotechnik*, **13**, May 5, 1931, pp. 167–168. A description and drawings with dimensions of the Osram projection lamps. M. W. S.

Lenses of Large Aperture in Motion Picture Photography. K. KÖFINGER. *Kinotechnik*, **13**, May 20, 1931, pp. 178–180. Charts are reproduced showing the depth of focus at different focus settings and diaphragm openings for the 50-mm. Biotar $f/1.4$ and the 35-mm. Plasmat $f/2$ lenses. Some of the advantages and disadvantages of large aperture lenses are discussed. M. W. S.

Closing of the Eyelids and the Viewing of Motion Pictures. G. KÖGEL. *Kinotechnik*, **13**, June 5, 1931, pp. 191–192. A discussion of eye-strain in the viewing of motion pictures as caused by the various involuntary movements of the eyelid and eyeballs. It is considered that sound films strain the eyes more than silent films. M. W. S.

The Applicability of Selenium Cells for Sound Film. Compensation Methods for Attaining Straight Line Reproduction. F. O. ROTHY. *Kinotechnik*, **13**,

May 20, 1931, pp. 175–177. On account of the lack of sensitivity of a selenium cell at the higher frequencies, it is necessary to introduce some form of compensation into the circuit. The introduction of a condenser into a resistance coupling gives a nearer approach to a straight-line reproduction but does not give full correction. Also, there is a considerable reduction of amplitude at all frequencies. By the introduction of several tuned oscillatory circuits into various stages of amplification, the overemphasized frequencies may be damped, and straight-line reproduction attained. The output from a selenium cell with a hook-up of this kind is said to be about 200 times greater than that from a photoelectric cell combination. It is claimed that high-efficiency speakers can be operated with a selenium cell and three stages of amplification. M. W. S.

The Determination, by the Use of the Watkins Factor, of the Necessary Development Time to Attain a Definite Gamma in a Used Solution. L. LOBEL AND M. DUBOIS. *Kinotechnik*, **13**, June 5, 1931, pp. 196–197. Working with Kodak duplicating film and Kodak fine grain developer, the authors found that differences in temperature and extent of exhaustion have no marked influence on the gammas attained with a given Watkins factor. With increased bromide in the developer, higher gammas were obtained with the same factor. It is recommended that the Watkins factor be used in practice to attain definite gammas. Since the greatest difficulty lies in judging the exact time of appearance of the image, a strip of film with a standard exposure should be placed in the developer along with the film to be developed, and the time of appearance judged on the strip. M. W. S.

The Preservation and Treatment of Films in School Cinematography. W. RAHTS. *Internat. Rev. of Educational Cinemat.*, **3**, April, 1931, pp. 339–351. Unfortunately, many of the films used in school motion picture programs, for either education or entertainment, are on nitrocellulose base, being either ordinary commercial films, or teaching films printed on nitrate base. On combustion of this film, under average conditions, quantities of the poisonous gases, carbon monoxide, oxides of nitrogen, and hydrocyanic acid are formed, so in the event of fire on the school premises, the lives of many children would be endangered. The rules of the German X-Ray Society and those of the National Fire Prevention Association for the storage and handling of photographic films are given in detail, and their application to schools is explained. One important consideration is that all rooms or cupboards must be arranged to open to the outer air on the accumulation of a small internal pressure.

The deterioration of film from causes other than fire, such as excessive drying, scratching, and other mechanical injury is discussed. The proper technic of projection, rewinding, inspecting, and handling is described. A properly treated print on nitrate film should last for 100 or 120 projections. H. P.

Cinematography and Culture. W. GÜNTHER. *Internat. Rev. of Educational Cinemat.*, **3**, April, 1931, pp. 319–338. A comprehensive discussion of films as educational accessories. From the standpoint of the services they render to the community, films are classified as follows: (1) propaganda films; (2) instructional films; and (3) entertainment films. The newsreel and the animated drawing are stated in an editorial commentary to have displaced films of a documentary or educational character. It is suggested that sound films of the

scientific type should be prepared as a valuable educational feature of present-day programs. G. E. M.

Some Tentative Standards for City Visual Education Programs. E. R. ENLOW. *Educational Screen*, **10**, June, 1931, p. 167. The result of a questionnaire sent from the National Academy of Visual Instruction to city directors. An empirical equation has been deduced for the average number of staff members of an adequate department, *viz.*, $Y = \frac{x}{30{,}000 + 0.03x}$ where Y = number of staff members and x = population of city. Each adequately supplied school building should possess about $1000 worth of visual equipment with a conservative range of from $600 to $1400. The cost per pupil, in an adequate program, would be 60 cents per year or with a possible range of 30 to 90 cents. Other facts of value in planning such a program are given. R. P. L.

Performance of Output Pentodes. J. M. GLESSNER. *Proc. I. R. E.*, **19**, No. 8, Aug., 1931, p. 1391. This paper compares a group of experimental pentodes with corresponding triodes. Four principal factors are considered, namely: power output, distortion, power sensitivity and a-c./d-c. power economy. Generally it was found that the a-c./d-c. power economy and the power sensitivity of the pentode is higher than that of the corresponding triodes. Harmonic distortion appears to be worse with the pentode and the variation in power output with variation in load resistance is shown to be practically the same for both types of tubes. The article is illustrated with various curves supporting the results obtained. A. H. H.