ABSTRACTS

Selenophone: A Variable Area Sound Film Device. P. HATSCHEK. *Kinotechnik*, **11,** Aug. 20, 1929, pp. 436–8. A description of the general principles of the Selenophone sound film system. The torsion galvanometer employed consists of a transverse vibrating metal band in a strong magnetic field. The motion of an illuminated slit attached to the vibrating band is optically magnified 100 times and recorded on the film. For reproduction the "condenser" type of selenium cell is used. The change of resistance of selenium cells upon illumination is known to be accompanied by considerable lag, the greatest lag occurring when the light is decreased. This undesirable property of the selenium cell can be compensated largely by the use of an amplifier vacuum tube operated during the lag period. With the rapid light fluctuations and such an arrangement, the fatigue of the selenium cell is also minimized. The exact details of the compensation method employed in the Selenophone have not been made public.

Talkies Have a Past! J. F. RIDER. *Mot. Pict. News*, **39,** Mar. 2, 1929, p. 627. A brief description of the outstanding discoveries which made sound motion pictures possible. In 1857, M. Leon Scott made the first record of sound vibrations. Sound was first recorded and reproduced by Edison in 1877 in a tinfoil record; the process was improved by Bell and Tainter in 1887 who used wax records. In 1889 Emil Berliner patented the disk record which, with improvements, is now in use. The change in resistance of selenium with change of light intensity was first observed in the 19th century by May, the operator of the Ireland terminal of the transatlantic cable. Interest in the sensitivity of selenium and an effort to overcome the lag in its response caused much investigation which ultimately produced the photo-electric cell. This cell was improved by deForest in 1907 who produced the vacuum amplifying tube.

Running the Talkies. XXII. Naturetone. R. H. CRICKS. *Kinemat. Weekly*, **150,** Aug. 15, 1929, p. 69. Comments on the Naturetone equipment for the reproduction of disk-recorded sound. Separate turntables must be used for low speed and high speed records. The speed control is described and stated to be satisfactory. The sound is to be recorded on cylinders in place of the usual disks.

Sound-proof Studios. *Kinemat. Weekly*, **150,** Aug. 22, 1929, p. 54. The construction of the new sound-proof studio of the British Talking Pictures is described. To exclude exterior noises and prevent internal reverberation, air-spaced concrete walls are used, with an inner shell of sound absorbing material. The floor is laid on thick felt runners, with a layer of plastic material [bitumen—*Abstr.*] adhering to the underside of the boards. There is a tank 33 by 32 ft. sunk in the studio floor, arranged for underwater shots. The studio is 120 by 90 ft. in size, stated to be the largest of its kind in Europe. Production lighting is incandescent. [The wiring of the lighting system is arranged in a false ceiling, and all leads and lamps will be dropped from galleries above the studio so leaving the floor clear.—*Abstr.*]

Acoustical Control of Theater Design. H. L. COOKE. *J. Frank. Inst.*, **208,**

September, 1929, pp. 319–24. By proper adaptation of ceiling design to the design of the rest of the auditorium it is possible to provide all members of the audience seated beyond $^2/_5$ the distance from front to back with equally clear reception. In general the longitudinal vertical median section of the computed ceiling shows increasing curvature toward the back of the hall. The visual and acoustical advantages of having the vertical sections of the auditorium surfaces through the stage conform to the equation $r = e^{\alpha\theta}$ are pointed out.

Mazdas Make Good in Severe Studio Test. *Mot. Pict. News*, **39**, April 6, 1929, p. 1055. In the lighting of a large set in the sound picture, *Broadway*, three 163 units were used which had a connected load of 33,000 amperes. The main set was 170 ft. long and 125 ft. wide and with 4 auxiliary sets made a total length of 220 ft. For the color sequences, a maximum of 22,000 amp. was required; for black and white work, 17,000 amp. A large electrical crane was used for many of the camera shots. The boom of the crane was 25 ft. long and it was mounted on a steel column 12 ft. high. Rapid upward or circular movements were possible with the equipment, which had a circular platform, 5 ft. in diameter at the end, for the camera equipment and operators.

Properties and Use of Hypersensitized and Panchromatic Negative Film. K. JACOBSOHN. *Kinotechnik*, **10**, April 5, 1928, pp. 175–83. A summary of previous work, giving the literature references, on hypersensitizing with ammonia, ammoniacal silver chloride solutions; color sensitizing with pinaflavol-pinacyanol and pinachrome-pinachrome violet. Other subjects treated are the use of infrared sensitized film; the development of night exposures on hypersensitized film in a special pyro developer to avoid glaring high-light contrast; and tone rendering with panchromatic materials. References to the literature are given.

Method for the Measurement of the Effective Transparency of Photographic Objectives. J. HRDLICKA. *Compt. rend.*, **189**, July 22, 1929, pp. 153–5. The author advocates photographic photometry for determining the effective transparency of a photographic objective and quotes an instance in which this value does not check with the maker's *f*/ value within a reasonable amount.

Maximum Light Flux Obtainable in Kine Projection. H. NAUMANN. *Kinotechnik*, **10**, 1928, p. 523. The theoretical maximum of illumination obtainable with the mirror-arc system, taking into account the effects of size of source, type, and aberrations of mirror and projection lens aperture, has been closely approached in practice. Owing to the smaller surface intensity and the presence of the glass bulb, tungsten filament lamp-mirror systems cannot be made to give more than about one-sixth of the light flux of arc systems.

Muybridge's Motion Pictures. L. F. RONDINELLA. *J. Frank. Inst.*, **208**, September, 1929, pp. 417–20. The author, who was an assistant of Muybridge, defends the latter's claim as inventor of motion pictures. He takes exception to some statements made by Leffmann. Leffmann appends a reply stating that Heyl exhibited motion pictures in 1870.

Kinematography in the Service of Medicine. E. DEGNER. *Phot. Korr.*, **64**, 1928, p. 347, p. 378. In addition to an enumeration of various medical subjects in which motion picture photography has been of value, there is a description of von Rothe's apparatus and that of Brusten. The former is constructed as far as possible in a room above the operating theater. The camera is mounted on an arm suspended vertically through the ceiling. The main disadvantages are cost

and limitation to normal speeds. Brusten's apparatus is mounted on a counterbalanced lever on a movable stand. Pictures can be made from almost any angle and speeds up to 100 per second are possible.

Goal of Photographic Optics. A. SONNEFELD. *Phot. Korr.* **64,** 1928, p. 376. Because of light losses due to reflection and absorption, the useful limit of aperture has been reached with lenses of ordinary types of $f/2$ to $f/1.5$. Such lenses, however, have the defect of not being perfectly zonally corrected. Nonspherical refracting surfaces (Abbé surfaces) might remove the defect and result in fewer components and less light absorption.

New Actinometer. Luminous Source of Constant Spectral Composition. R. LANDAU. *S. & J. P. Inf. Ciné.*, **8,** 1928, p. 131; **9,** 1929, p. 5. An image of the subject is formed on a phosphorescent screen. A mirror placed clear of the objective axis is inclined so that light received from the surface is reflected in a direction parallel to that of the light from the objective. This light consists of polychromatic reflected light and monochromatic light due to phosphorescence. A shutter is so placed that it will allow the light from the objective to reach the screen but will intercept the reflected image light from the mirror. The shutter will allow the phosphorescent light to pass intermittently. The phosphorescent light is of constant spectral composition and is proportional to the actinic light in the image. The phosphorescent image light may be inspected with a photo-cell.