

ABSTRACTS

The following abstracts are published by courtesy of the Eastman Kodak Company, publishers of the Monthly Abstract Bulletin of the Kodak Research Laboratories.

Variation of the Brilliance of Distant Objects with Distance. M. HUGON. *Sci. Ind. Phot.*, 1, May, 1930, p. 161. A mathematical study of the variation of the brilliance of distant objects with the distance has been made, considering atmospheric absorption and light scattering. The wave-length used in viewing the objects must be chosen, considering the relative values of absorption and scattering. The results are employed in connection with some photometric studies using wedge and photography. Using filters, it was found that the ratio of direct sunlight to diffused light from the sky is practically constant when the sun is 30 degrees above the horizon. Contrast is found to increase with the wave-length. The experimental results are closely in agreement with theory. As an application, photographs have been taken of distant objects using panchromatic and infra-red sensitive plates and suitable filters.

Deterioration of Sulfite Hydroquinone Solutions and the Mode of Activity of Old Solutions. J. PINNOW. *Z. Wiss. Phot.*, 27, No. 11-12, 1930, p. 344. By careful oxidation with permanganate in sulfuric acid solution in the cold, α - and β -hydroquinone disulfonic acid gave compounds which liberate, by boiling, oxalic acid and large amounts of sulfurous acid. A similar oxidation by air could explain the formation of the complex compound observed by Schilow and Fedotoff, which is formed in solutions having no more developing power. The sulfite solution in the developer is better protected against oxidation by a mixture of α - and β -hydroquinone disulfonate than by hydroquinone.

Receiving the Image. D. L. WEST. *Mov. Pict. Rev. Theater Management*, 25, September, 1930, p. 8. Details of television images as received have improved markedly since 1926. A type of home receiver is briefly described. Synchronization in these sets is accomplished by utilizing one of the main component frequencies in the received television image current to drive a small synchronous motor coupled directly to the shaft of the scanning disk motor. For a showing at the London Coliseum, in July, 1930, a large multi-lamp screen was used consisting of a bank of small electric lamps. Each lamp was connected to a commutator device. A ground glass screen was placed in front of the lamp bank.

F/2.5 Leica Camera. *Amat. Phot.*, 70, Oct. 15, 1930, p. 375. A new model of the Leitz "Leica" has an $f/2.5$ lens, and takes interchangeable lenses, one an $f/3.5$ lens of 35 mm. focus and the other an $f/4.5$ lens of 135 mm. focus.

Small Film Pictures. J. J. HANSMA. *Focus*, 17, Aug. 30, 1930, p. 468. Equipment and technic for developing and printing small negatives, such as "stills," made on motion picture film. The following negative developer formula is recommended: (a) Oxalic acid, 0.4 gm.; metol, 4.0 gm.; pyrogallol, 12.0 gm.; potassium metabisulfite, 1.0 gm., and water to 200 cc. (b) Sodium sulfite

(crys.), 48 gm.; water to 168 cc. (c) Acetone, 40 cc.; water to 200 cc. For use, 15 parts of each of the three solutions are diluted with 80 parts of water.

Tanar Corporation Introduces New Sound Truck. *Amer. Cinemat.*, 11, September, 1930, p. 15. The first Roos portable recorder used the single film system, and the apparatus, weighing 70 pounds, could be packed into two cases. The second portable outfit is fitted into a Dodge speed truck which is insulated to serve as a monitor room. A flashing lamp is used and amplification is sufficient for four microphones and six cameras. Power is obtained from storage batteries which can be charged from the truck motor in the field.

Air Column Speaker. *Amer. Projectionist*, 8, August, 1930, p. 11. The new unit uses the amplifying system feeding a magnetic or dynamic speaker in the usual way. The speaker has a vibrating reed which is actuated by the amplified signals from a radio set or phonograph and it in turn acts on a sensitive air valve, causing it to open and close in accordance with the frequency of the sound being produced. The opening of the air valve allows a minute jet of air under twenty pounds pressure to escape, the sequence of these jets forming a musical note which is amplified by resonance in the exponential horn. Laboratory tests show that the air valve responds to frequencies quite uniformly from 30 to 14,000 cycles. It is pointed out that the great volume obtained by the speaker is not caused by the blast of air but only by the escape of air through the minute air valve.

Triergon Process for Making Phonograph Records by the Use of Sound Films. H. VOGT. *Kinotechnik*, 12, July 20, 1930, p. 385. A sound record of the variable density type is made on film. This is reproduced on a wax record by means of a lamp, light-sensitive cell, amplifiers, and electromagnetic stylus. For the best reproduction, it is stated to be necessary to make the reproduction at one-fortieth the speed at which the original record was made. In this way, the effect of the natural frequency of the armature of the electromagnetic stylus is said to be nullified.

Transmitting Images. D. L. WEST. *Mov. Pict. Rev. Theater Management*, 25, August, 1930, p. 12. Visible light sources commonly used for subject scanning have been replaced by a scanning source composed of invisible radiation, which is claimed to make the physical conditions more pleasant for the subject being "televised." With present scanning equipment it is possible to accommodate several at a time, although, unless the size of the light spot is reduced in proportion to the increase in area scanned, detail is obviously lost. The article includes illustrations of equipment used as well as views of the transmitting studio.

Eberhard Effect and Its Significance for Photographic Photometry. N. VALENKOV. *Z. Wiss. Phot.*, 27, No. 8-9, 1930 p. 236. The Eberhard effect is in a high degree dependent upon the sharpness of the photographic picture. For the straight line portion of the H. & D. curve the effect is proportional to the difference of the densities between the pictured object and the surrounding field. If the surface of the object is large the Eberhard effect shows an edge effect which is never wider than 1.5 mm. Pictures smaller than 3 mm. in diameter show increased densities through the Eberhard effect. The effect is independent of the form of the picture. Very fine grain photographic emulsions show no Eberhard effect. With increasing average grain size the effect increases. For x-rays there is almost no effect. The increase of density caused by the Eberhard effect is in

all cases very small. Development with metol-hydroquinone and potassium bromide did not show any more effect than development with ferrous oxalate developer. The effect is independent of the intensity of the light source. The effect has little significance for both astrophotometry and spectrophotometry. With x-rays especially, it has no significance at all.

Peko Camera on the Way. *Movie Makers*, 5, September, 1930, p. 476. This amateur standard spring driven camera is of the vertical type, having one reel located above the other inside a cast metal case. Features are: a self-contained footage meter; a finder adapted for either waist or eye level exposures; and a non-buckling film guide. The spring release button is located on the front of the camera.

Wide Film Cinematography. A. EDESON. *Amer. Cinemat.*, 11, September, 1930, p. 8. More than half a million feet of film was used in photographing *The Big Trail*. No trouble was encountered from abrasion, but film buckle, leading to the destruction of several camera motor drives, was experienced when the film spools were not carefully smoothed before insertion in the magazines. It was found necessary to use lenses of exactly double the focal length of those employed for 35 mm. shots. The photographic quality in the large film is claimed to be greatly superior.

European Sound Picture Industry. *Electronics*, 1, September, 1930, p. 282. An outline is given of interrelations of the various sound picture interests dealing with the relationships brought about by capital and patent pools and technical advances.

Walturdaw's Projector Range. *Kinemat. Weekly (Design and Equipment Supp.)*, 164, Oct. 9, 1930, p. 41. Notes are given on the Hahn II, the Ernemann II, and the Ernemann III projectors. All are fitted with a fire prevention device. Should the film break above the intermittent sprocket, the top loop naturally enlarges, lifts a flap, actuates a mercury switch, and cuts off the light beam and motor current. The Ernemann III projector has a lens mount capable of carrying lenses of 80 and 100 mm. diameter, thus enabling an aperture of $f/1.9$ to be used on lenses of almost any focal length. By replacement of the standard gate, this model can be rapidly adapted for wide film; the exact width is not specified.

Theory of the Motion Picture Claw Pulldown Mechanism. C. FORCH. *Kinotechnik*, 12, Aug. 5, 1930, p. 407. A mathematical analysis is made of several claw, pull-down movements. It is concluded that, with the usual claw pull-down mechanisms, conditions can be arranged to obtain a movement that very closely approximates that obtained with a Geneva pull-down. If a radially slotted disk is mounted on the end of the pull-down crank shaft so as to be driven by the pin of a crank with its shaft parallel but eccentric to the pull-down crank shaft, the pull-down can be effected in 90 degrees or less, instead of 180 degrees. With a Geneva pull-down, the steadiness of the picture depends upon the absolute identity of the four members of the Maltese cross. With the claw pull-down, each stroke is made with the same member, and a source of unsteadiness is thus removed.

An Aspheric Mirror of High Efficiency for Motion Picture Projectors. F. HAUSER. *Kinotechnik*, 12, July 20, 1930, p. 379. A mirror for motion picture projectors is said to combine the advantages of the spherical and the elliptical mirrors. It is built up from several zones in such a manner as to have a small amount of spherical aberration. The mirror is said not to be as sensitive to the

longitudinal adjustment of the arc as the elliptical mirror, but to be highly efficient.

Subjective Density Measurements. P. LOB. *Kinotechnik*, 12, Aug. 20, 1930, p. 435. In the instruments for measuring densities subjectively, two parts of a photometric field are matched visually. The optical systems of a number of different types of photometers are described, and the advantages and disadvantages pointed out. Some of the precautions necessary for the different types are given. The polarization photometer has the disadvantage of requiring a monochromatic light. With the wedge type of photometer, the wedge should be of the same material as the object whose density is to be measured, and it is advisable to increase the intensity of the light with increase in the density to be measured, so that a beam of moderate brightness will always enter the eye. In diaphragm photometers, the diaphragm must be exactly in the plane of an optical pupil. Sector photometers have the advantage that no lenses are required. The Callier effect must always be avoided. Instruments in which the conditions are identical in the two optical paths automatically eliminate this source of error.

Lagorio's Color Table. L. KUTZLEB. *Kinotechnik*, 12, July 20, 1930, p. 383. A color chart is made of a number of narrow vertical color strips of different spectral hue and known saturation alternating with neutral strips, each having a number of steps of different reflecting power from top to bottom. The spectral brightness curve, as rendered by any plate or film may, it is claimed, be obtained by photographing the chart and tracing a line through the points where the images of the color strips match the images of the adjacent neutral strips. The ideal visual brightness curve is printed on the chart, so that the rendering of any plate may be compared with it. The chart is intended for testing panchromatic plates and films and for determining proper correcting filters.

Wide Film versus Wide Image on Standard Film. J. J. FINN. *Mot. Pict. Projectionist*, 3, August, 1930, p. 31. A number of producers and exhibitors oppose the adoption of Grandeur 70 mm. film or any other wide film by the motion picture industry, because it would necessitate the installation and operation of entirely new equipment. They favor a process which will give a satisfactory wide film image with slightly modified standard reproducing equipment. In the Fear process, using a wide image on standard film, the film is run horizontally in the camera and the projector. By this method pictures of proper proportionate height and width are possible. A system has been proposed in which the picture is taken on 70 mm. film and is subsequently reduced in the printing operation on 35 mm. film. A special three-combination lens of extremely short focal length is used in reproduction. High intensity lamps drawing 160 amperes are employed for illumination. Some blank space is left between the film frames, which is dealt with in projection by a masking arrangement. Many printing difficulties and optical problems are encountered in the new system. Loss of definition in printing from 70 mm. to 35 mm. and the great magnification required to secure a screen image of 45 feet are problems confronting the proponents of this process.