ABSTRACTS

The views of the readers of the JOURNAL relative to the usefulness to them of the abstracts regularly published in the JOURNAL will be appreciated. Favorable views are of particular interest. In the absence of a substantial body of opinion to the effect that these abstracts are desired by the membership, their discontinuance may be considered.

Experiments with Visual Aids in High School Classes. W. LEWIN. *Visual Instr. News*, **5**, Nov., 1931, p. 9. Another quite independent experiment to test the efficacy of motion pictures in teaching, the subject being high school physics. Preliminary intelligence, reading, and physics tests showed the control groups to have a very slight advantage. Motion pictures were presented to the experimental group during their preparatory period while the control group met for supervised study. It was concluded that motion pictures impart more information in a given time and also contribute to retention of information. The gain in the test grades of the experimental group over the control group was three times the standard error while at the end of the term, 50 per cent more pupils of the experimental group passed the course. R. P. L.

A Modern Theater for the Classics. N. BEL GEDDES. *Theater Management*, **26**, Nov., 1931, p. 8. A theater specially designed for the staging of Dante's *Divine Comedy* at the Chicago World's Fair has a seating capacity of 5000 and is similar to the ancient Greek theater. Its plan is a half-circle facing the stage without balconies or galleries. No proscenium or curtain divides the auditorium from the stage. The absence of balconies and galleries allows a steeper ramp and better vision from all seats. The stage is circular and composed of steps. In the center is a pit, at the far side of which the slope rises to a height of 50 feet. On the near side, the slope terminates in a ledge only one-fourth as high, which steps down toward the audience in a series of terraces until it reaches the level of the bottom of the pit where it terminates in a valley running half-way around the circle. A 7-foot wall separates the valley from the audience. Mention is made of two other theaters also planned for the World's Fair in which the absence of transverse aisles is notable, the rows of seats being given liberal spacing instead. L. E. M.

Room Noise Reduction for Improved Sound Reception. V. A. SCHLENKER. *Theater Management*, **26**, Nov., 1931, p. 3. A study of the relations of speech, music, and room noise in the theater indicates that the noise level should be reduced below 30 decibels for the speech, and music must be uncomfortably loud to be heard above the noise level of 40 to 50 decibels. Excessive treatment of the theater proper should be avoided in view of a possible interference with the proper reverberation period which is considered essential to the proper diffusion of sound to all parts. The room noise can generally be controlled to suitable value by decreasing street and lobby noise through maximum treatment in the lobby and foyer. L. E. M.

A Clockwork Driven Slow-Motion Camera. *Kinemat. Weekly*, **178,** Dec. 17, 1931, p. 38. A new type of slow-motion picture camera which is actuated by clockwork is claimed to expose 100 feet of 35-mm. film with one winding of the mechanism. The speed can be varied from 40 to 120 frames per second and a reversed fitting allows dissolving to be carried out while the film is being exposed. A pick-up speed has been developed which permits only 18 inches of film passage before full rate is obtained. Stopping and starting can be accomplished with a loss of less than 2 feet of film. A reflex focusing device permits accurate focusing when taking close-ups, and the enclosed view finder is fitted with a device to allow for parallax when the object is near the camera.

A standard speed camera designed similarly to the slow-motion model, but capable of exposing 200 feet of film at speeds from 10 to 24 frames, has also been introduced. A special tripod is used with these models. C. H. S.

Effect Lighting. J. H. KURLANDER. *Theater Management*, **27,** Jan., 1932, p. 10. Suitable lighting effects are proposed for the theaters having a straight sound picture program so as to relieve the show of monotony. A description of equipment required for effect lighting is given. The uses of effect projectors, shutters, framing devices, masks, slides, special screens, *etc.*, for producing different effects are discussed. Color effects, animated scenic effects, silhouettes, trick effects, and others may be used as the occasion suggests. W. J. W.

Diminishing the Fire Hazard. J. J. GREILSHEIMER. *Theater Management*, **27,** Jan., 1932, p. 16. The use of concrete vaults or sheet metal lockers, even though equipped with sprinkler systems and vents, is deemed inefficient in preventing film fires because of the large quantity of film concentrated in one compartment. Several requirements for a safe and efficient film storage cabinet are enumerated. A description is given of a cabinet designed to meet these rigid requirements. The cabinet is constructed in sections featuring individually insulated and ventilated compartments of 10 pounds capacity which are sealed tightly with automatically closing and latching doors. A number of fire tests were carried out on the cabinet filled with film to determine its safety. Detailed results of the tests are given. W. J. W.

Advances in Sound Reproduction Demonstrated to Motion Picture Engineers. *Theater Management*, **27,** Jan., 1932, p. 5. Reproductions of organ, orchestral, and vocal music, which closely approached the quality and volume of the original, were effected by the use of disk records cut by the vertical method. This method employs grooves which vary in depth instead of wavering back and forth along the spiral path as in the commonly used lateral method. The moving element of the electrical reproducer is made of light-weight materials so that it is able to follow vibrations up to 10,000 per second with fidelity. A tiny permanent sapphire point is used which rides smoothly up and down in the grooves. Finished records are pressed in cellulose acetate which has a surface of extremely fine texture. Mr. H. A. Frederick of the Bell Telephone Laboratories made the demonstration. W. J. W.

Television Talkiola. *Theater Management* **26,** Nov., 1931, p. 34. This apparatus incorporates mechanisms for producing six different types of entertainment within a single cabinet, namely, television with synchronized sound, talking motion pictures (16-mm. or silent pictures), phonograph, short wave radio, and

standard broadcast radio. A $^1/_{16}$-horsepower synchronous motor operates the perforated scanning disk used for television, giving a 6- by 8-inch picture. Rear projection is used for the 16 mm.-projector. G. E. M.

New Type Record. *Theater Management*, **26,** Nov., 1931, p. 34. This new disk record is made of much thinner material and is much less easily broken than the old type shellac record. Although only 12 inches in diameter, as compared with the older 16-inch record, the new disk will record sufficient sound for 1000 feet of film. This has been accomplished by employing a lower amplitude of recording, smaller grooves, and by placing the grooves nearer together. G. E. M.

Novel Loud Speaker. R. H. CRICKS. *Kinemat. Weekly*, **173,** July 9, 1931, p. 69. New principles are claimed in the construction of a novel loud speaker which has recently been demonstrated in London. Known as the Cinemavox, it is stated to combine the principles of the piano and violin by providing a large tuned area for the dissemination of sound. A number of speaker armatures are distributed at the back of a sounding board some 5 feet square, and are connected to struts, which are parts of various wooden sections, each having its own natural resonance frequency. A frequency range of from 13 cycles to 17,000 cycles with extremely even response is claimed. The sound output is stated to be almost non-directional. *Kodak Abstract Bulletin*

New "Jofa" Studio. P. HATSCHEK. *Filmtechnik*, **7,** Sept. 19, 1931, p. 6. A description is given of the new "Jofa" sound film studio of Jahannisthal, Berlin, which is the most up-to-date in the city. There are three large studios, 840, 1155, and 840 square meters in area, each associated with a smaller studio, respectively, 480, 480, and 450 square meters in size, and a large number of dressing-rooms, and smaller rooms for operators, technicians, actors, *etc.* There are two studios for re-recording, dubbing, and synchronizing, four projection rooms, two cutting rooms, and a number of work-shops. Thirty thousand square meters of land are available for outdoor work, and an additional seventy thousand meters (the local aerodrome) are at hand if required. The three large studios have enormous sliding doors opening on the outside lots. This provides a natural background for studio sets, if desired, and permits a continuation of the studio action outdoors. For sound-proofing, air spaces are provided between studios, the floors are insulated from the walls by coke-ash, walls and doors are all double, and are packed with sound-absorbing material. Doors are provided with a novel "double-fold system" which is described, and there is a new treatment of the roof. The electrical supply and the projection and cutting rooms are also described. A pool, 35 by 15 meters wide and 2.5 meters deep, is provided.
Kodak Abstract Bulletin

Modern Effect Lighting. J. H. KURLANDER. *Mot. Pict. Proj.*, **5,** Jan., 1932, p. 18. A descriptive article on the production of stage and screen lighting effects, including information on lamp and lens equipment, types of screen and screen materials, and the use of color filters, slides, and design glasses.
A. A. C.

Projected Background Cinematography. R. G. FEAR. *Amer. Cinemat.*, **12,** Jan., 1932, p. 11. A method of composite photography is described in which the foreground action takes place in front of a screen placed so as to receive from a projector an image of the background desired. Translucent screens in back of

the action are now often used for this purpose with a standard camera and projector. The background picture must be absolutely steady on the screen, illuminated to the highest possible extent, and must be synchronized with a camera shutter if good results are to be secured. After a discussion of means of fulfilling these requirements, the author suggests modifications that may prove useful, and gives a list of patents relating to the process. A. A. C.

New Filters for Exterior Photography with Super-Sensitive Film. EMERY HUSE AND GORDON A. CHAMBERS. *Amer. Cinemat.*, **12**, Dec. 1931, p. 13. Two new filters, the 3 *N*5 and 5 *N*5, are combinations of yellow dyes with a neutral density filter of 32 per cent transmission. They combine, in a single unit, a means of decreasing exposure and a color filter suited to the super-sensitive emulsion. This means of reducing light intensity has been found preferable to using a lens diaphragm or a change in shutter opening A. A. C.

Projector Drive Motors. ALBERT PREISMAN. *Mot. Pict. Proj.*, **5**, Jan., 1932, p. 10. Since the advent of sound, the projector drive motor has assumed a greater importance than ever before. Ease and precision of control, affording a constant and definite speed, are imperative. The article discusses the underlying principles of the common types of projector motors and explains how the new demands are met in modern motor design. A. A. C.

Reverberation Time Measurements in Coupled Rooms. CARL F. EYRING. *J. Acoust. Soc. Amer.*, **III**, No. 2, Part I, Oct., 1931, p. 181. The paper presents experimental data on the decay of sound intensity level in acoustically coupled rooms, together with a theoretical study of the subject.

The type of problem investigated is illustrated by one of the experiments, which was a study of the sound decay in an enclosure which consisted of a small live room connecting through an open window into a large dead room. Data were taken with the sound source in the large room and microphone in the small room, and *vice versa*, and with both source and micrpohone in each room. Combinations of other types of rooms are included.

Theoretical equations of decay for acoustically coupled rooms are developed, and are applied to describe the data. The application of these equations to an idealized theater is shown. W. A. M.

Audible Frequency Ranges of Music, Speech, and Noise. W. B. SNOW. *J. Acoust. Soc. Amer.*, **III**, No. 1, Part 1, July, 1931, p. 155. "The program of listening tests described in this paper was undertaken primarily to establish the audible frequency ranges of the sounds most often encountered in sound reproduction. . . ." The sound sources studied included twenty separate musical instruments, an orchestra, male and female speech, and certain noises.

Qualitative observations by the crew of listeners are tabulated for each sound source. Quantitative results are given in a table. Two general conclusions are as follows: "An upper cut-off of 10,000 cycles did not affect the tone of most of the instruments to a marked extent, but every instrument except the bass drum and tympani was affected by the 5000 cycle cut-off. A frequency range of 100 to 10,000 cycles was shown to be entirely satisfactory for speech." ". . . . transmission of the entire audible range would seem much more important for noise reproduction than for reproduction of musical sounds."

The paper contains a great amount of experimental data. W. A. M.

Plane Sound Waves of Finite Amplitude. R. D. FAY. *J. Acoust. Soc. Amer.*, **III,** No. 2, Part I, Oct., 1931, p. 222. The principal object of the analysis is to find the change in type of periodic plane waves of sound of finite amplitude propagated in free air.

A solution of the exact equation of motion is obtained as a Fourier series. Due to the non-linear relation between pressure and specific volume there is found to be a gradual transfer of energy from components of lower frequency to those of higher frequency. Since the effect of viscosity is to attenuate the higher frequency components more than the lower, there is always a wave form having the harmonic components in a stable relation such that the decrease in relative magnitude of any component due to viscosity is compensated by the relative increase due to non-linearity. The conditions for stability vary with intensity. There is therefore no permanent wave form, but the stable wave will change its form more gradually than any other wave of the same intensity and wavelength. The change in type of any wave is toward this stable form. There is a marked departure from the sinusoidal in the stable type even for waves of very moderate amplitude. AUTHOR

A Planetary Reduction Gear System for Recording Turntables. A. V. BEDFORD. *J. Acoust. Soc. Amer.*, **III,** No. 2, Part I, Oct., 1931, p. 207. "The present paper has two objects: to present an example justifying the use of a detailed numerical application of electrical circuit analysis to mechanical rotational systems, and to describe a new planetary turntable drive system that promises increased steadiness."

The conclusion of an analysis of a simple gear system is that, ". . . the error of the turntable position at any moment is about as great as the fundamental error in the angular tooth pitch in the lowest speed gear."

In the planetary gear system described no gear runs as slow as $33^1/_3$ rpm. with respect to its meshed mate, and also no gear in the system runs at a speed lower than 375 rpm. Therefore, disturbances due to errors in gears and irregularities in bearing friction are of a relatively higher frequency than in a simple gear system and consequently can be more easily filtered out.

An experimental model of a planetary gear system drive "exhibited less than 0.03 per cent variation in turntable speed at turntable revolution frequency."

W. A. M.
