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TWO SOUND



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## *50 years ago in the Journal*

C. Francis Jenkins, "Television Systems," October 1930

A study of the problem of television projection systems seems logically to suggest a lantern slide in which the density areas of its picture are changed in accord with the changes in the lens image of the subject-scene at the distant broadcasting station.

. . . The newly proposed scheme is a magic lantern slide, the density areas of which may be changed at will. That is, if these elementary areas of the picture could be changed in density from moment to moment, then the resultant picture itself would change.

Our concept consists . . . of a picture divided into 2304 elementary areas, i. e., 48 lines of 48 elementary areas in each line, much like halftone picture dots; and if these elementary areas or dots can be changed the picture changes, and we have a motion picture.

. . . Now if a satisfactory scheme could be devised for closing at will each of these tiny cells, dark areas could be built up, and these dark areas might easily represent figures. And changing the figure means only that some of the closed cells would be opened and new ones closed. If this re-arrangement is completed every fifteenth of a second, for example, a motion picture results. And again as these changes are made by incoming controlled radio signals, each change of figure represents the image at the distant broadcast station.

. . . So the day seems now within sight when distant scenes and events may be reproduced on the screens of theaters; and when motion pictures will be distributed from Hollywood to the nation's theaters direct by radio instead of film.

L. I. Monosson, "The Soviet Cinematography," October 1930

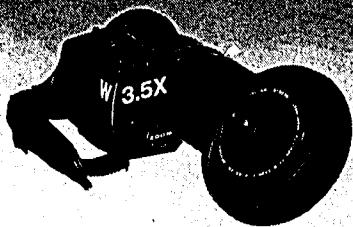
What is the technical basis for the production of sound film in the Soviet Union and what are the practical results already achieved?

The first work in the realm of sound film, or rather in creating, recording, and reproducing apparatus was begun in 1926. Two Soviet inventors, one in Moscow and the other in Leningrad, the engineers, Shorin and Tager, independently of each other began their research.

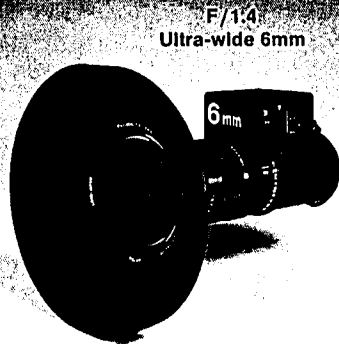
The mechanism for recording of sound in the device of the engineer Shorin is built in the following manner: The current from the microphone is amplified by a special amplifier and runs through a light, thin, movable thread placed between the two poles of a horseshoe shaped magnet. The

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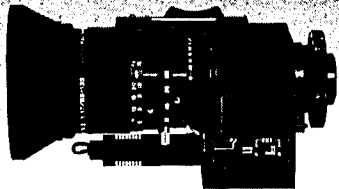
F/1.6 10x11 lightweight zoom



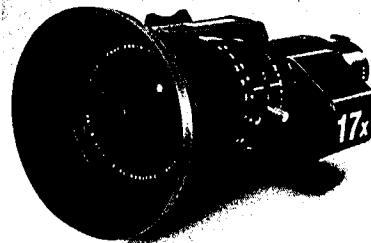
F/1.7 12x9 lightweight zoom with 2.2X extender



F/1.7 14x9.5 lightweight zoom with 2X extender



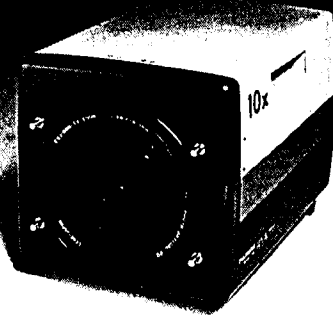
F/1.7 14x9.5 lightweight zoom with diascope and 2X extender



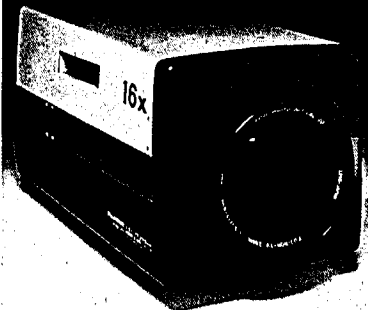
F/1.7 17x9 zoom with built-in 2X extender



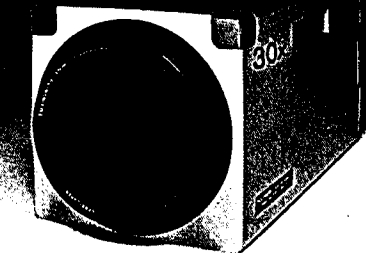
F/2 22x12.5 zoom with built-in 2X extender



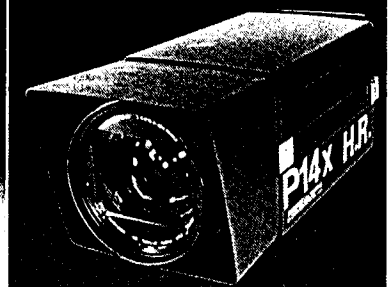
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poles of the magnet are drilled. The optical system is adjusted so that the image of the line is magnified. On the optical axis between the thread and the film is a cylindrical lens which condenses the light falling on it into an optical line. The length of this line is limited by its diaphragm, so that on the film there is obtained a line of the maximum length of 2.5 mm., but the length of this "light" part depends on the projected line, so that in changing the film there is obtained a variable area record similar to that used in the Photophone system. The absence of the diaphragm opening is a special feature, as the optical line may be obtained as fine as desirable.

For the reproduction of sound by the Shorin device, a form of regular projection machine with the usual form of sound pick-up is used.

The system of Tager is based on different principles. The inside of his sound recording camera contains two film mechanisms working in synchronism. In the left part is a regular camera with an 18 x 22 mm. frame.

In the right side of the camera is the mechanism for the recording of sound. Both mechanisms are united by a roller and work in synchronism. The Tager system employs the Kerr cell principle for photographic recording of the sound.

## 25 years ago

Edwin C. Fritts, "A 16mm Projector for Operation with a Television Film-Chain on a Partial-Storage Basis," October 1955

This paper pertains to a modification of the Eastman 16mm Television Projector Model 250 previously described in the *Journal*.

With the development of a vidicon camera tube having superior storage characteristics, it is now possible to obtain much better results in projecting motion pictures into a television film-chain than is possible with the iconoscope. The latter operates on a full-storage basis, which restricts the exposure time to the extremely short blanking interval between television fields. The vidicon also affords one means of projecting color films into television. Neuhauser and Kozanowski have described its use for film reproduction. This type of operation requires the extension of the exposure into the field itself, while actual scanning is taking place. To distinguish this from full storage with the iconoscope, it is

called partial storage here. If the exposure extends over 30% or more of the scanning interval, no difference is observed on receiving screens between the areas that are lighted when they are scanned and those that are dark. However, the flicker caused by differences in the illumination pattern between fields is much more critical. For this reason, it is necessary to have the pattern of dark-scanned and light-scanned areas the same in each field.

### Conclusion

This paper describes a means of adapting the Eastman 16mm Television Projector Model 250 for operation on a partial-storage basis. By this change, the Model 250, which has already established itself in the television field, can be used for the projection of color film into a three-vidicon chain.

Any of the Model 250 projectors now in use can be alerted as described above without interference with scheduled programs. A projector so modified can still be used with the iconoscope if the old shutter is retained. However, with the new shutter, the advantages inherent in projection of black-and-white film into a single vidicon become available, and the projector is ready for use with the three-vidicon color chain.

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