

## THE CINE KODAK AND KODASCOPE

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FOR use with the new substandard film described in a previous paper, the Eastman Kodak Company has developed a new motion picture camera and projector. The camera, which it is proposed to call the Cine Kodak, was designed and built in the instrument shop of the optical factory and is, on the whole, of standard type. The lens equipment consists of a Kodak Anastigmat of 25 mm. focal length, working at  $f/3.5$ , with a focusing mechanism which can

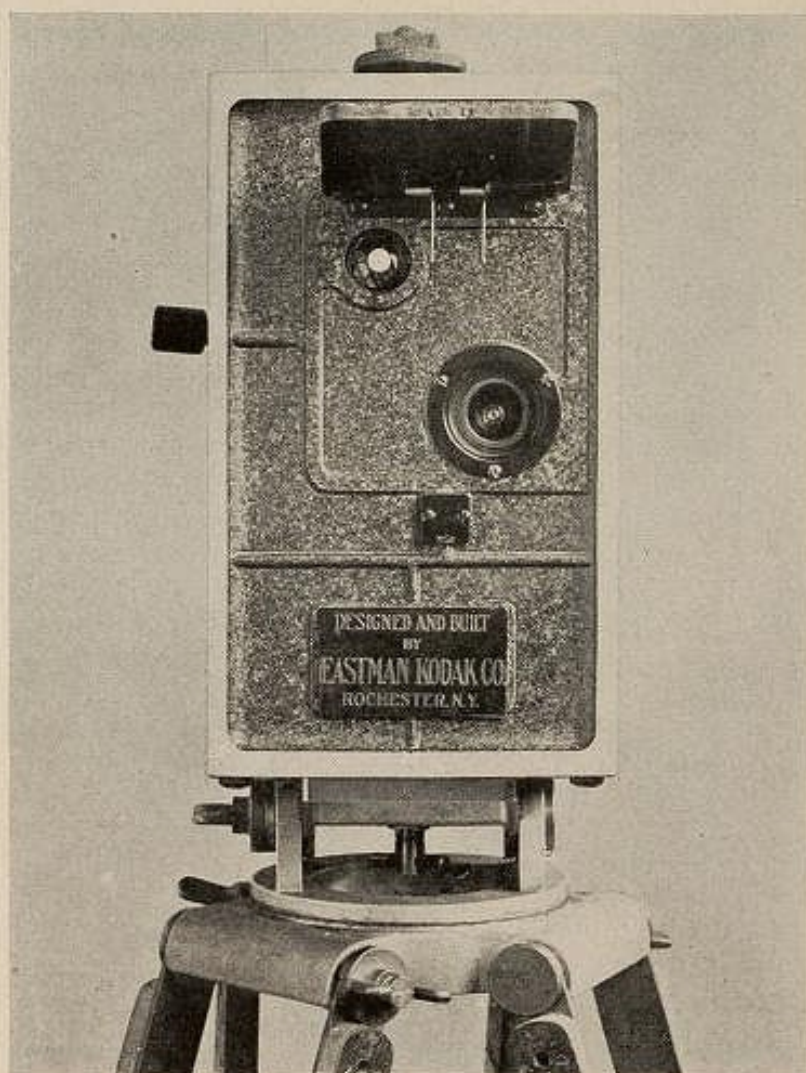


FIG. 1. Front



be operated from the back of the camera, the lens being focused by scale for any distance from infinity to four feet. The diaphragm control is also carried to the back of the camera, and at the center of the back is the footage indicator (Fig. 1).

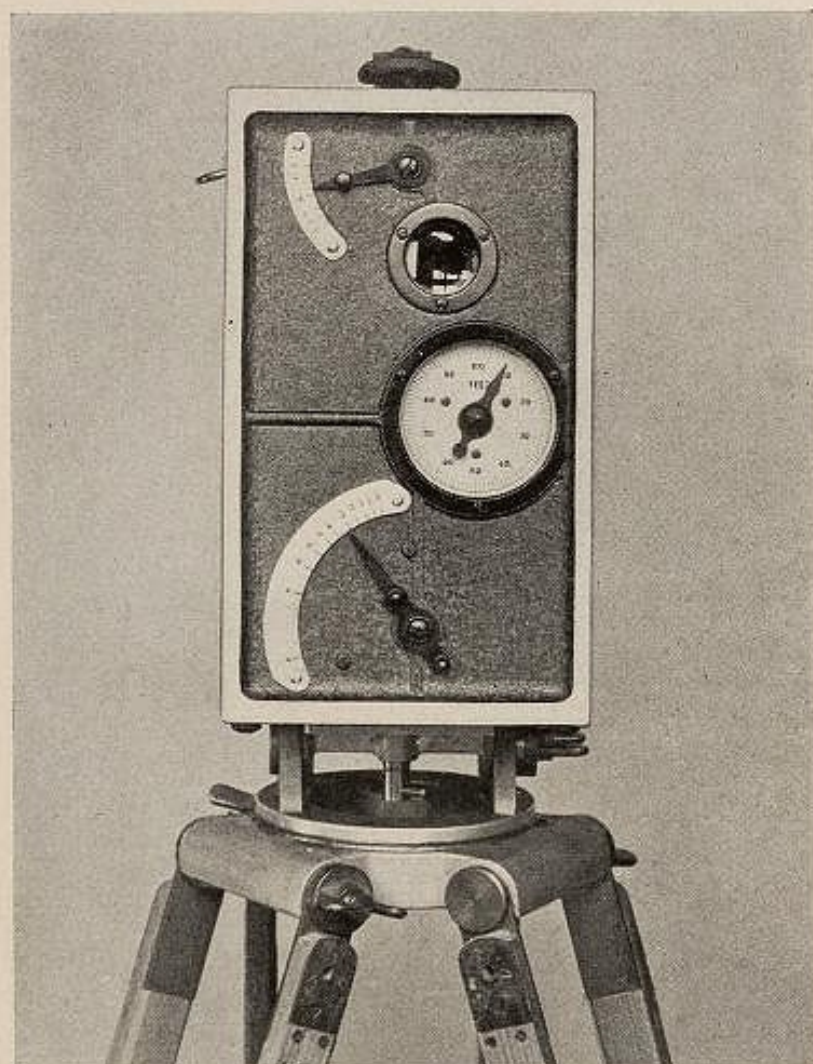


FIG. 1. Back

The mechanism of the camera is a Lumiere cam operating a claw, the film being fed by a single sprocket to the gate and thence back to the wind-up spool (Fig. 2). A special feature of the camera is the finder, which passes through the box from front to rear and gives a large clear image. Since the finder is not exactly in the same position as the taking lens, there would be a certain amount of parallax between the finder image and that produced on the film, especially when taking near objects. This is eliminated by a movement of the finder lens geared to the focusing movement, so that the image shown in the finder always coincides with that actually obtained on the film. The whole case of the camera is made by die casting and is a beautiful example of the die-caster's art, which has been so greatly improved of recent years.

Since it is impossible to turn steadily the crank of a camera held in the hand, even an amateur motion picture camera must be used



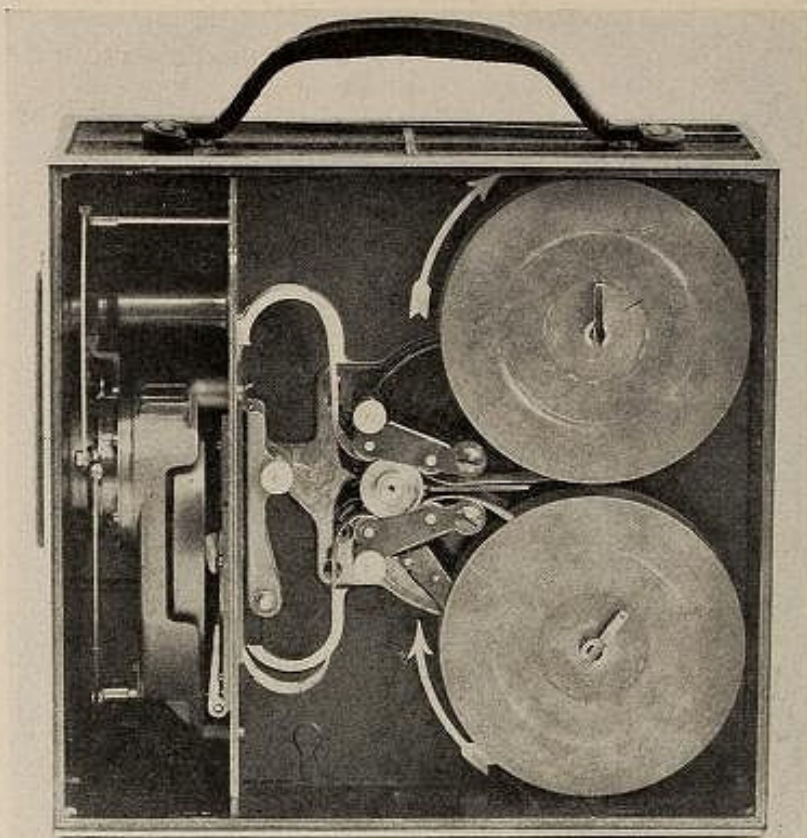


FIG. 2

upon a tripod, and for this purpose a special tripod has been made which is as light as possible, the tripod head being made to rotate and move in a vertical direction for the convenience of the operator. It is not intended that the tripod should be used to produce panoramic pictures by rotating while the camera is cranked. It is extremely difficult to do this smoothly, and the result when obtained rarely gives a pleasing effect when projected, but a moving head is necessary to enable the camera to be moved in its direction rapidly in order to follow objects in the field. The weight of the camera loaded is eight pounds and of the tripod with its special head, nine pounds.

In order to load the camera, the outer cover is removed from the film spool, but the inner cover is left in position as an additional protection to the film to prevent any possible fogging during loading. The leader is pulled out to a mark and is threaded to the sprocket and gate, and back to the wind-up spool. When the camera is ready for use, the inner cover of the film spool is removed and the door closed. After the film is all wound up, the door is opened, the first cover put on the spool, which is then removed from the camera, the second cover put on, and the film is ready to be sent for development.

The projector, which is called the "Kodascope," is, like the camera, a standard projector with such changes as are necessary to make it suitable for use by amateurs and for the small film (Fig. 3). The mechanism is of the same cam and claw type as that used in the camera. This would result in a pull down of  $120^\circ$ , which would, of course, be impossible, and in order to avoid this, the pull down works at twice the normal speed and has a two to one cam attachment which



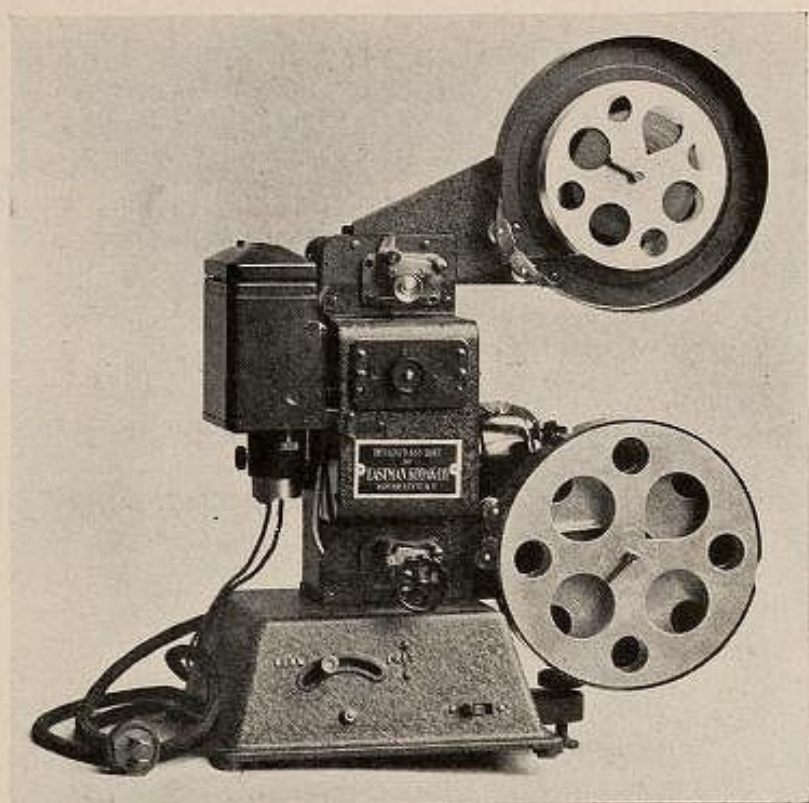


FIG. 3

produces a misstep at every other stroke, so that the pull down actually takes place in  $60^\circ$ . A three-blade shutter is used, and the machine is effectively free from flicker. The reels for the projector are made to take 400 feet of the small film, which are equivalent to one thousand feet of the standard reel. The film is threaded through an upper sprocket, which feeds the film in a loop to the gate, then through a lower sprocket to the take-up reel, which is placed on the bottom shaft. The standard lens is of 2" focal length, which fills a 30"x40" screen at 18 feet and a 40"x54" screen at 24 feet distance. A 4" lens can be fitted if necessary for long throws.

The Kodascope is driven by a motor, the speed of which is regulated by a resistance fitted into the base, and is entirely automatic in its operation. Once a film is threaded, there is no need to go near the machine until the film is exhausted unless a break occurs, so that an operator is quite unnecessary.

The light is supplied by a tungsten lamp through a condenser which is fitted in a swinging lamp house just behind the gate. The standard equipment for this is a 14-volt, 56-watt lamp in a T-8 bulb, which, however, has been made to fit the standard base instead of the candelabrum base, the lamp having a reflector focused behind it which greatly increases its efficiency. After a number of experiments with transformers of different types, it was decided to use a resistance unit with ammeter for controlling the current. This resistance consists of two resistance units giving a total value of 22 ohms and a variable resistance of 5 ohms in series with these, by which the current can be adjusted to four amperes for a range of initial voltages from 105 to 125. This lamp gives ample light for a  $4\frac{1}{2}$  foot screen,



and it is intended to use it for all work in the home. For use in assembly rooms, where more than a hundred people are present, it is necessary to use a larger screen, and an extra lamp-house has been devised which can be substituted for the standard one, into which is fitted a 200 watt lamp of 50 volts operating with a slight modification of the standard resistance on four amperes so that a seven foot screen can be covered. It may be interesting to mention that experimentally the machine has been used with a small arc lamp and good ten-foot pictures have been thrown with it.

In order to protect the film from the heat of the lamp when the projector is not running, a safety shutter is supplied which is operated by a centrifugal governor so that the shutter does not move out of the way until the machine is running at an appreciable speed. It is thus quite impossible to damage the film by allowing the light to fall upon it with the machine standing still.

The weight of the Kodascope projector with motor ready for use is about 20 pounds.

A special projection screen has been made with a surface having a high reflection power but which is still satisfactory when viewed at a considerable angle. This screen is fitted on a spring roller so that it can be made to roll up in its case and when erected is surrounded by a black frame, thus giving a good appearance to the picture.

The introduction of motion pictures into the home will, of course, produce a demand for pictures other than those taken by the owner of the machine, and we are arranging therefore to supply for the Kodascope a library of films made by the reduction of standard reels to Kodascope size. We hope in the next year to have several hundred subjects available, including scenic pictures, stories for children, and pictures of all kinds of a type suitable for use in the home. We believe that the spreading use of the motion picture at home will increase the public interest in the motion picture and will rouse the interest of many people who have not up to the present been regular attendants at the motion pictures theaters, so that they will follow the progress of the art and will take a real interest in the development of pictures as shown in the large theaters. Just as the widespread use of photography by the amateur has been the chief contributing cause to its marvelous development in the last thirty years and to its extension to every field of human activity, so I believe the use of the motion picture by photographers throughout the world will make possible developments in the art of the motion picture that are at present undreamt of, and that the use of the motion picture in schools, institutions, and homes has a future to which the Cine Kodak and Kodascope will contribute in no small degree.



## DISCUSSION

MR. PALMER: Has this camera the same angle of view as the standard 2 inch lens gives on the standard size film?

DR. MEES: It has the same angle of view that a  $2\frac{1}{2}$  inch lens would give.

MR. EGELER: What are the maximum picture sizes and projection distances you think will be used with a home type of projector?

DR. MEES: Four feet six inches is the largest screen we are making for home use. With a special lamp house we can go to seven feet, and with an arc to ten, but I don't think anything beyond seven feet is necessary. This is large enough for a classroom, which is probably the largest field for this.

There is a point I want to explain, perhaps some time we could have some discussion on it.

The motion picture as an art is in a peculiar position. It is similar to literature but as though it were impossible for anybody to write a book until they had persuaded the publisher, whose interest is financial, to take a risk of \$1000 in printing it. From this standpoint many authors would not have got a book published. For years Stevenson hawked his manuscripts around before he could get a book printed. So an introduction of new ideas in the motion picture is confined to the group of people doing it commercially. If we place the motion picture in the hands of the amateur, then, the amateur having an idea can make a picture and get people interested in it so as to induce them to produce it.

MR. R. C. HUBBARD: Do they expect to make any sort of library of films for the projectors?

DR. MEES: Yes. We expect to supply library films and no doubt other people will do it too. It is an open field.