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# THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

## SCIENCE, COMMON SENSE AND DECENCY[1]

By Dr. IRVING LANGMUIR

ASSOCIATE DIRECTOR OF THE GENERAL ELECTRIC RESEARCH LABORATORIES

UP to the beginning of the present century one of the main goals of science was to discover natural laws. This was usually accomplished by making experiments under carefully controlled conditions and observing the results. Most experiments when repeated under identical conditions gave the same results.

The scientist, through his own experiments or from previous knowledge based on the work of others, usually developed some theory or explanation of the results of his experiments. In the beginning this might be a mere guess or hypothesis which he would proceed to test by new types of experiments. If a satisfactory theory is obtained which seems in accord with all the data and with other known facts, the solution or goal of the investigation was considered to have been reached.

A satisfactory theory should make possible the predictions of new relationships or the forecasting of the results of new experiments under different conditions. The usefulness of the theory lies just in its ability to predict the results of future experiments. The extraordinary accomplishments of the great mathematical physicists in applying Newton's Laws to the

[1] Address of the retiring president of the American Association for the Advancement of Science. Owing to the postponement of the New York meeting, at the request of the Office of Defense Transportation, the address was broadcast by Science Service over the Columbia Broadcasting System on December 26, 1942.

camera. Two right-angle hooks are placed opposite each other at each end of the camera. The camera is fastened down firmly by slipping two wide elastic bands over the hooks. It can thus be removed for other use or replaced in a few seconds.

To support non-folding cameras, holes are drilled into the board to provide for protuberances on the face of the camera (support *D* of Fig. 2 was made for a Brownie).

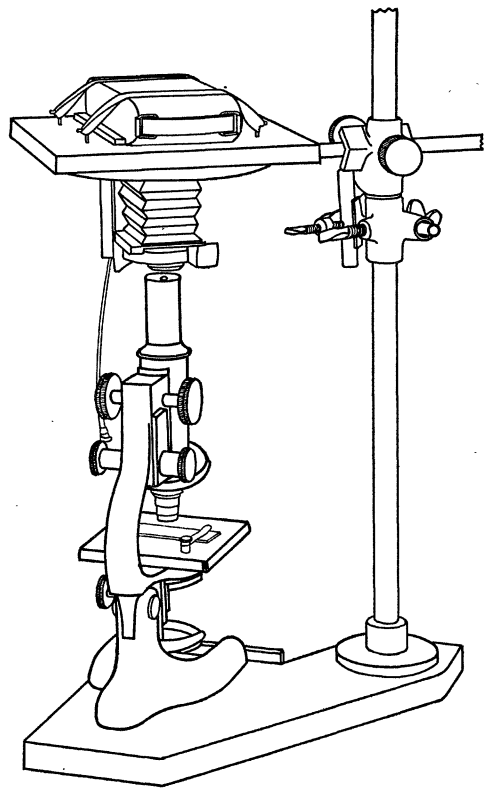

FIG. 1

By placing another clamp below the right-angle clamp that supports the camera ring, the camera can be swung out of the way when not in use. Moreover, by placing a short vertical rod (Fig. 2 C) as shown in Fig. 1, the camera is instantly realigned when its supporting clamp hits the vertical rod.

### EXPOSURE CONTROL

The camera shutter is imaged on the field especially if the camera lens is slightly raised above the eyepoint, and this will vignette at very short exposure times to give apparent uneven field illumination. It is perfectly satisfactory when used with a watch on time exposures. A simple but satisfactory procedure for black-and-white pictures is to use a "blinker connection" such as is sold for Christmas-tree lights and to count the number of flashes to determine the exposure time.

### DIRECTIONS

After the apparatus is set up and it is desired to photograph some specimen under the microscope, the procedure is as follows:

Determine the eyepoint of the microscope (illuminated disk of minimum diameter) with a piece of white paper.

Focus the camera at 25 feet or other predetermined distance.

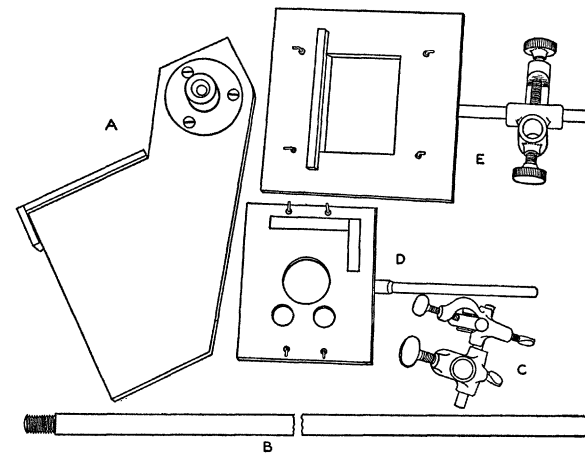


FIG. 2.

Lower the camera to make the front surface of the lens coincide with this point or be slightly above it.

Bring the lower clamp up to the other one and clamp it.

Loosening the upper clamp, align the camera lens with the ocular. This is best done the first time through the open back of the camera (containing no film) by looking through the lens. Tighten the upper clamp.

Rotate the lower clamp until the short vertical rod hits the upper clamp and again tighten it.

The camera can then be swung aside and a light-tight-connector attached to the lens.

Focus the microscope visually, preferably through a telescope.

Swing back the camera and take the picture.

R. P. LOVELAND

KODAK RESEARCH LABORATORIES,
ROCHESTER, N. Y.

## BOOKS RECEIVED

DRESCHER, ARTHUR B. and OTHERS. *Studies of Cenozoic Vertebrates of Western North America and of Fossil Primates (Contributions to Paleontology).* Illustrated. Pp. iii + 222. Carnegie Institution of Washington. Paper cover, $2.25; cloth binding, $2.75.

LLOYD, FRANCIS ERNEST. *The Carnivorous Plants.* Illustrated. Pp. xv + 352. Chronica Botanica, Waltham, Mass.; G. E. Stechert, New York. $6.00.

MAYR, ERNST. *Systematics and the Origin of Species.* Illustrated. Pp. xiv + 334. Columbia University Press. $4.00.

NEEDHAM, JOSEPH. *Biochemistry and Morphogenesis.* Illustrated. Pp. xvi + 785. Macmillan. $12.50.

WELCH, D'ALTÉ E. *Distribution and Variation of the Hawaiian Tree Snail Achatinella Apexfulva Dixon in the Koolau Range, Oahu.* Illustrated. Pp. 236. Smithsonian Institution.