

prestige in the eyes of his classmates as a result of his very different type of project.

Perhaps the thing which most strongly recommends this type project, however, is its

versatility. It lends itself not only to presenting the animal life of an area but also the plants, agriculture, landforms, culture, economic life and a whole host of other topics.

Adapting a Camera Lucida for Drawing by Microprojection

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In a previous issue of this journal the authors presented a method of constructing an easily made microprojector for use on a vertical microscope for drawing purposes.¹ The device consisted of two front-surfaced mirrors in a mailing tube, utilizing the periscopic principle for bending light rays from a microscope horizontally and then downward onto drawing paper. For many types of drawings this method of tracing projected images was easier than using a camera lucida.

The authors have incorporated a camera lucida in a similar type of microprojector which is even easier to construct than the previously described one. For those who possess a camera lucida, the only other materials needed are one front-surfaced mirror and a cardboard tube.

A cardboard tube was selected which would slide down over the ocular and the draw tube of the microscope. The one illustrated was from a mailing tube which had a metal end crimped to the ends of the cardboard for extra strength. This tube was notched to hold the mirror at a 45° angle over the top of the ocular. The notch was made by inserting a wooden rod into the tube for support while sawing part way through both the tube and the rod at a 45° angle. With the wooden rod in place, a 3/4 inch drill was used to cut a hole in the wall of the tube to provide an outlet for the light beam reflected from the center of the mirror (Fig. 1).

The lower part of the tube was notched in such a manner that it could be pushed down over the ocular to rest on the top of the clamp of the camera lucida with the prism and filter portion of the camera lucida turned back out of the way, as shown in Fig. 1. The mirror should be almost in contact with the knurled rim of the ocular. Care must be taken to prevent the mirror surface from being marred.

The inside of the tube was painted with waterproof black drawing ink to reduce reflections. Black lacquer was used on the outside. After the photograph was made, black plastic electrical tape was used to seal the notch holding the mirror to reduce the entry of dust.

As shown in Fig. 2, another temporary mount for a front-surfaced mirror can be made by cutting a 45° angle slot in a short piece of thick-walled rubber tubing. Cellulose tape, as shown in the illustration, or a rubber band can be used to hold the tubing against the draw tube of the microscope with the slot just above the top of the ocular.

A 45° angle microprojection prism could be used in lieu of the two types of mirror mounts mentioned above, but mounted prisms are expensive and most of these cannot be clamped to the draw tube of the microscope while the camera lucida is clamped in place. An unmounted, silvered prism, obtainable from war surplus supply companies, can be used if a soft ring of rubber or other material is utilized to support the prism above the ocular in such a way as to prevent damage to the upper lens.

¹Davis, L. R. and Bowman, G. W. An Easily Constructed Microprojector for Drawing Purposes, *Amer. Biol. Teacher*, Vol. 15 (6): 150-151, 1953.

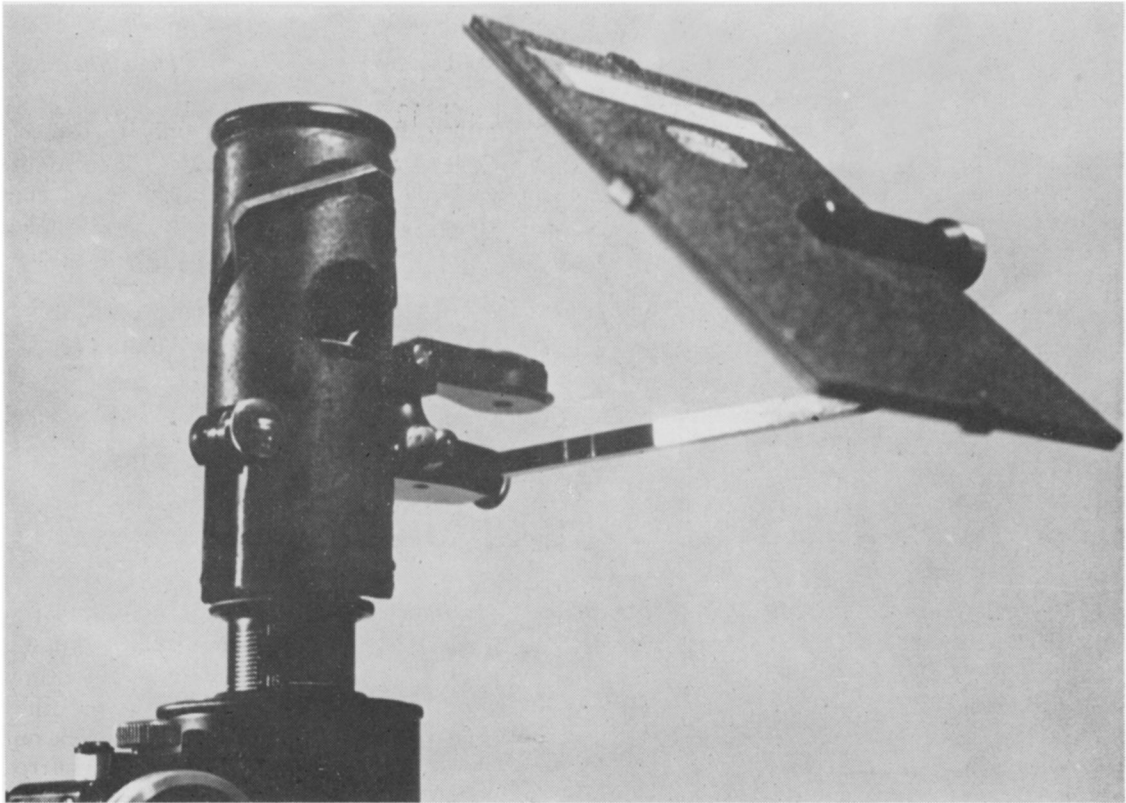


FIGURE 1. A front-surfaced mirror supported in a 45° angle slot over the ocular of a microscope enables a camera lucida to be used for projecting an image onto drawing paper for tracing.

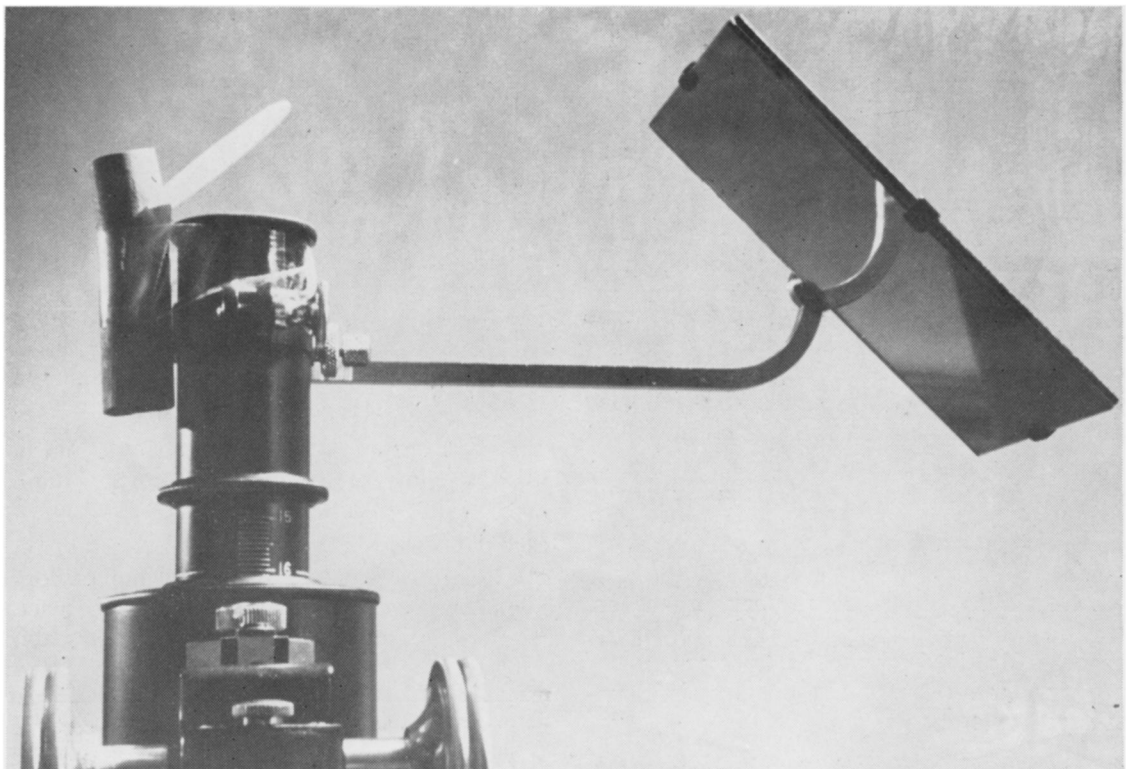


FIGURE 2. A front-surfaced mirror can be held at a 45° angle in a slot in rubber tubing fastened to the microscope with cellulose tape.