fluorescent substance by means of the main filter alone. When this was the case, the desired bands were added by the introduction of a supplementary light source and appropriate filters (Fig. 2_4).

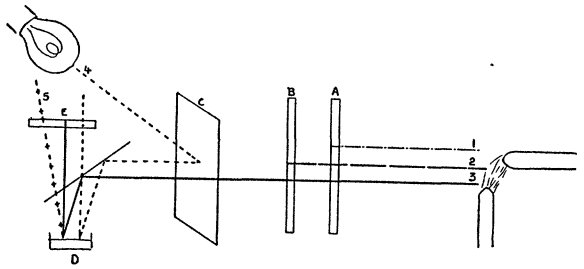

FIG. 2. The path of the rays. (1) Infra-red rays; (2) visible rays; (3) ultra-violet rays; (4) rays of the supplementary illumination; (5) fluorescent rays. (A) Heat-absorbing filter; (B) main absorbing filter; (C) reflector (Corex D Glass 2.10 mm thick); (D) tissue and fluorescence fluid; (E) complementary absorbing filter.

In order to make the outlines of the objects clearer, a complementary absorbing filter was inserted in the tube of the microscope between the eyepiece and the vertical illuminator. Different filters were required for different colored fluorescent light. With aesculine, which gives a blue light, a green filter (Nultra, Corning Glass Works) was used. Green required a yellow complementary filter, while violet fluorescence required none.

The important and difficult part of the technique deals with the light source and lens equipment. The procedure for making observations can be given briefly. Aesculine will be given as an example because it gives a brilliant fluorescence. The experimental animal (frogs, rats and mice have been used) was anesthetized and fixed to the adjustable operating board (Flg. 1 E). After the desired tissue or organ was exposed, it was brought into focus with ordinary white light. A concentrated aqueous solution of the fluorescent substance was injected subcutaneously. The filters (Figs. 1 A and B) were inserted and observation made through the microscope until fluorescence appeared.

This technique not only gives us a new application of a method (Thiel, '26, Ellinger and Hirt, '29)[2] for observing the interior of the living organism, a subject of interest in itself, but it has opened up a new experimental approach to other problems. It has given some unexpected information concerning the penetration of the layers of the skin by different wave-lengths of light. The excretion of aesculine by the liver and kidney causes the bile capillaries and uriniferous tubules to become brilliantly illuminated, and this is being used as the basis for physiological studies of these organs.

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[2] Thiel, "Contribution to the Slit Lamp Microscopy of the Eye in Ultra-violet Light," *Ztschr. f. Augenheilk.*, Vol. 58, p. 56, 1926; Ellinger and Hirt, "Microscopical Observation on Living Organs," *Zschr. f. Anat. u. Entw.*, Abt. i, 90: 791–802, 1929.

AN IMPROVED PROSPECTING PICK

GEOLOGISTS and fossil collectors have long felt the need of an accurately adjusted light prospecting pick, but heretofore only hand-made tools of this description have been obtainable.

After years of experience the American Museum of Natural History has developed what is considered a perfect tool of the kind, of drop-forged highest grade 85 carbon tool steel, with a perfect eye extended so as to secure the full purchase power of the

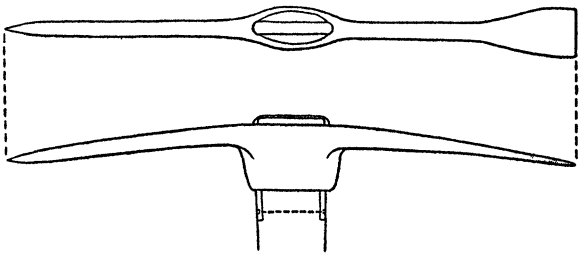

FIG. 1

handle. A metal bar inset over the head of the handle and riveted insures a perfect fit during the life of the tool regardless of shrinkage or number of times the pick is removed from the handle. Length of metal head fifteen inches, length of handle twenty-one and one half inches, total weight one pound and ten ounces.

These picks can be obtained from the Department of Vertebrate Paleontology, American Museum of Natural History, New York City.

BARNUM BROWN

JANUARY 26, 1932

A QUICK METHOD OF EMBEDDING SOFT MATERIAL IN CELLOIDIN

AT the suggestion of Dr. A. F. Hemenway some experiments were made with celloidin dissolved in acetone for embedding green material that requires no softening. The blocks of material were prepared for cutting in three days by ordinary laboratory methods. Under reduced pressure leaf and soft stem material of *Hedera helix* and *Olea europea* were prepared in 50 minutes from the time the fresh material was gathered until the sections were mounted in balsam on the slides. There was little or no plasmolysis, no alteration of the natural color of the material, but it was necessary to bleach with 95 per cent. alcohol when staining was desired.