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By William Paul Burch

Various methods have been devised for injecting and mounting embryos for study of the early stages of the circulatory system. The purpose of this paper is to demonstrate what the author feels is a more suitable means to accomplish this objective, not only from the standpoint of technique but for the interest and educational value received also.

The following general scheme of apparatus in the diagram, and the accompanying legend is self-explanatory.

1. A ¼ inch glass tube is drawn out by heating it over a bunsen burner (turn tube while heating).
2. By lightly heating the tube at point X bend the tube at right angles, then draw out the point B to as fine a capillary as possible. (The distance from A to B should not exceed 2 to 2¼ inches as long slender pipettes tend to be too flexible, breaking easily. The length from A to D may be as long as desired.
3. A board with augered ⅜ inch holes to hold pipettes ready for use.
4. System of injecting ink into pipette by use of a syringe, thereby preventing clogging of capillary tube by drying of ink.
5. A close up view of the assembled unit consists of a pipette (a), a 1 by 1 by 1½ inch rectangular piece of cork (b), a straight glass tube (c), and a utility clamp (d). All fittings are snug but moveable except at the point where the utility clamp holds tube (c) which is secured tightly. By this set up, movement of the injection point can be in any direction with a great amount of steadiness.
6. Method of using apparatus with extendable binocular dissecting microscope (here pictured as if injecting a chicken embryo still in the shell). The air pressure used is produced by a good grade of DeVilbiss' atomizer bulb, on the floor for foot operation or to a convenient position for hand manipulation.

India ink is used, diluted 10 parts water to 1 part ink. This minimizes clogging, prevents a too dark injection, and allows the student to study embryonic circulation for some time before sludging occurs and blood flow ceases.

Injection completed, the embryo is fixed in Bouin's Picro-Formol solution for 12 to 18 hours, then imbedded by a procedure indicated

in Wards Natural Science Establishment Service Bulletin No. 6, 1948.

For the best results with injected specimens, the staining instructions in Wards' procedure are bypassed, the final result being that only the injected veins and arteries appear in the final product.

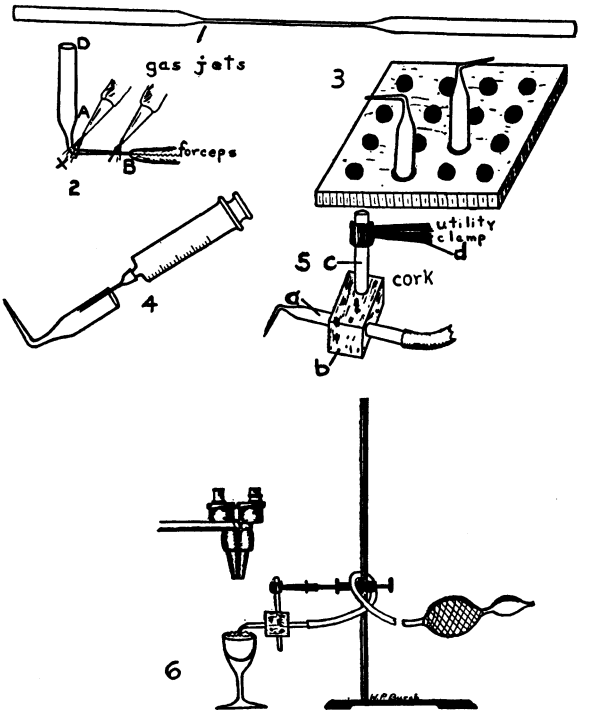

PLATE I

Although various containers are being used to imbed specimens in plastic, a cubed or rectangular block is the more desirable as a finished piece so that the student may view all four planes of the injections under magnification. This outmodes the old slide and coverslip system where the student sees but one view of his specimen.

Not only will this work be interesting to the student, but it will greatly enhance the quality and quantity of the schools embryological specimens. Let your students make their own mounts rather than buy them. Science is advancing, so must our ways of teaching.

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