Figure 9-2

Cross section of a planarian (diagrammatic). **A,** Anterior section. **B,** Section through the region of the pharynx. **C,** Posterior section.

Nerve cords, reproductive and excretory ducts, testes, and ovaries are found in the parenchyma of adult animals, but they are difficult to identify.

Drawings

Make a drawing on p. 144 of such section(s) as your instructor directs. Label completely.

Projects and Demonstrations

1. *Observing flame cells*. Flame cells of the excretory system are difficult to see in living planarians because they are usually obscured by pigment in the integument. To demonstrate flame cells, compress the body (or sectioned portion of the body) of a planarian between a slide and coverslip to crush and partially disperse the tissues. Search the tissue debris with high power of a compound microscope. Flame cells appear as a rapidly flickering movement of the ciliated tuft, resembling a wavering current of water. Once located (often several flame cells are found close together), switch to oil immersion for closer study.

2. *Anterior-posterior activity gradients in planaria*. A variation on the planarian regeneration theme (Experimenting in Zoology, p. 153) is a project study of gradients in planarians. Section each of several live planarians into three parts—cephalic, body, and caudal pieces—and place the parts in separate dishes or vials containing pond water and appropriately labeled. In 3 to 5 days, colorless blastemas will protrude from the cut edges. Submerge the pieces in a 1% methylene blue solution for 5 to 8 hours or until the specimens are stained. Place stained pieces on a depression slide under anaerobic conditions by sealing the cover glass with petrolatum (Vaseline). When the oxygen is used up, the color disappears. Note which end of the pieces shows the color response first. Upon reexposure to air, blastemas at the more active (anterior) ends should regain color more rapidly. This experiment demonstrates polarity, the gradients of activity along the anterior-posterior axis.