

Myers

ly in the region of the siphons has often been here suggested that our knowledge of the be- neurophysiology of the unionid mantle is still in particular, seems to exhibit complex be- mctional bilateral symmetry of its mantle.

HISTOLOGICAL STUDIES OF THE NEPHRIDIUM AND PERICARDIAL LINING OF *QUADRULA NODULATA*

PAUL ROBERT MYERS AND DOROTHEA S. FRANZEN
Illinois Wesleyan University

ABSTRACT

Histological examination of the epithelium of the nephridium and the lining of the pericardial cavity of *Quadrula nodulata* (Rafinesque, 1820) revealed excretory activity on the cellular level. Apparently materials are ingested by certain cells, enzymatically broken down, and excreted by way of constriction of secondary vesicles into either the nephridial lumen or the pericardial cavity. The cells, as observed, are of three types: (A) Simple ciliated columnar cells which contain a large, granular, centrally located nucleus with one to two nucleoli. This type was found to be the most numerous, distributed at random in nephridial epithelial tissue, pericardial lining, and also lining the nephridiopore and the nephrostome. (B) Simple columnar cells containing a large, non-granular vacuole which displaces the nucleus laterally and ventrally to a basal position. This type of cell appeared mainly in the posterior region of the nephridium and less frequently in the lining of the pericardial cavity. The constriction of secondary vesicles off these cells and their liberation into the lumen of the nephridium or the pericardial cavity was observed. (C) Simple columnar cells abundant in the nephridial tissue and the lining of the pericardium, in close contact with the blood of the pericardial sinus. Secondary vesicles containing granular materials are constricted off these cells.

HOW TO FIND FRESHWATER MOLLUSKS IN CREEK-SIZE STREAMS

H. D. ATHEARN
Cleveland, Tennessee

The term 'Creek-size Streams' as used herein, applies to streams ranging from large brooks or branches to small rivers. Various types of equipment are needed in order to do any appreciable amount of collecting in freshwater. Standard equipment usually comprises a pair of hip boots, a glass-bottomed bucket, a long handled sieve, a vial or two and one or several cloth bags. In hot weather, I use shorter boots and a bathing suit, allowing the boots to fill with water. While in cool weather one may use boots primarily to keep his feet dry and warm, but an additional purpose is to protect one's feet from sharp objects and reptiles. A round bucket with a bail-type handle is most convenient for carrying. The glass bottom should be constructed of tough automobile safety glass and placed at the wide end of a tapered bucket. This bucket has many uses. Visibility of the stream bottom becomes much plainer as it removes sky and wave reflections. On gravel bottom, use of the bucket saves much wear and tear on the fingers. Most mollusks may be seen so that one need not pick up dozens of pebbles for every mollusk taken. The bucket makes a convenient temporary receptacle for one's catch. When

NT IN THE THREE-RIDGE NAIAD, *IA PPLICATA* (SAY, 1817)

CAROL B. STEIN
seum and The Ohio State University

ons of the gonad region of the visceral mass ed to determine the age at maturity, rate of nce of hermaphroditism in the naiad *Amblema*

ed were three years old, as determined by the one of the nine three-year-old specimens was i possessed undifferentiated primary gonads; nished as males or females, but none possessed

ly differentiated ovaries was a four-year-old, onia were differentiating into young oocytes a of the ovarian follicles. Ripe oocytes were females. In mid-June and early July many follicle walls and pass through the ciliated does not seem to be any resting period be- g of oogenesis for the next year's egg crop. bryos in the gills already contain enlarged ian follicles.

specimen was three years old, 34 mm long, in the testicular follicles, but no mature four-year-old male specimens have been nt in the testicular follicles of five-year-old al maturity is attained during the fourth

n western Lake Erie, four were found to r follicles in the gonads. Two of these ng both normal spermatozoa and normal other two appeared to be functioning as ure ovarian follicles also present. In all testicular follicles were distinctly separate ixed follicles were seen. Several hundred uskingum, and Ohio Rivers have been dividuals have been found in the popula-