

before males. The remaining adults continue to spawn up to September. There are more males than females in the population with an average ratio of 1 female to 2.24 males and a range from 1:1.28 in August to greater than 1:4.5 in May. The length frequency histogram suggests that *E. fusiforme* is an annual darter.

100 *Owenia fusiformis (Polychaeta) and Its Significance for Annelid Phylogeny.* Stephen L. Gardiner. The epithelium on the oral surface of the feeding tentacles of adult *Owenia fusiformis* and the epithelium of the stomodeum and ciliated bands of its mitraria larva consist mostly of unspecialized monociliated cells. Each cilium is provided with a diplosomal basal body and two striated rootlets. The peritoneal cells and almost all of the muscle cells in the adult each possess a rudimentary cilium that is provided with a diplosomal basal body, but striated rootlets are absent. These cytological features of *Owenia* are more similar to those observed in the lower deuterostomes and lophophorates (archicoelomates) and primitive Metazoa than to those of other Annelida. Moreover, *Owenia* is the only representative from a major spiraliu group known to possess this primitive cytology. It appears evident, therefore, that *Owenia* should occupy an important position in future discussions of the evolution of the Annelida from other groups in the Metazoa.

Abstracts of Papers Presented at the Meeting of the Collegiate Academy of the North Carolina Academy of Science, April 8-9, 1983, at the University of North Carolina at Chapel Hill, NC

PHYSICAL SCIENCES

101 *68000 Arithmetic Processor for the Apple II.* Michael T. Potter. This project was designed to meet the requirements for a course, Microcomputer Interfacing. The project involved researching details of Apple II floating point formats and subroutines, developing co-processor specifications, designing and implementing hardware logic, and writing assembly language routines in both 6502 and 68000 assembly language. Once the project is completed, competency is all of the above areas will have been demonstrated.

102 *The Use of High-Voltage Photography for Materials Testing. II. Distinguishing Materials Irrespective of Surface Phenomena.* Rodney Rountree. The ability of high-voltage photographic techniques to detect subsurface phenomena and distinguish between materials independent of surface characteristics is examined. The effects of inter-electrode spacing, air gap and frequency on corona discharge patterns are shown. An important effect of the thickness of dielectric insulation and uncontrolled intrasample air spaces on the ability to detect subsurface materials is suggested.