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RECORD OF A
HERMAPHRODITIC HORSESHOE CRAB,
LIMULUS POLYPHEMUS L.

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A hermaphroditic horseshoe crab, *Limulus polyphemus* L., was picked up by a small scallop dredge from the channel of Plum Island Sound, Massachusetts on May 16, 1952. As far as can be determined, this is the first such *Limulus* to be recorded.

The general appearance was that of a mature male. Its width (125 mm.) was about average for males in this area. (The widths of 606 mature males measured this summer ranged from 88 mm. to 140 mm., with an average of 117 mm., while 489 mature females ranged from 130 mm. to 199 mm. in width, with an average of 155 mm.) It had mating claspers, and the anterior edge of the prosoma was curved upward in the middle, which also is a male characteristic. The left genital aperture was typically male, round and located on a definite papilla. The right genital aperture was typically female, a horizontal slit and not on a papilla (Lochhead, 1950). The genital operculum, showing both male and female genital apertures, may be seen in the upper illustration of Plate 1. On the dorsal surface of the opisthosoma near the telson were darkened areas normally present on mated females. These may be barely discernible in Plate 2. They are produced by the abrasive action of the anterior edge of the male as he clings tenaciously to the female during the mating period. Females which have mated for prolonged periods exhibit deep scars on the last pair of immobile spines, caused by the powerful claspers of the male.

Such scars were not evident on the hermaphrodite, suggesting that it had been mated as a female for a comparatively short time.

Gross dissection of the prosoma and histological sections revealed both male and female gonads. The right and anterior portions were full of eggs in various stages of development (Plate 2), comparable to those of mature females. Histological sections of the tissue on the left side demonstrated sperm sacs full of tail-less sperm, diverticula of the hepatopancreas and connective tissue (Plate 1, lower illustration). The same structures were visible in sections of gonads from normal males. According to Benham (1885) the tails are apparently produced as the sperm approach the aperture.

The presence of both eggs and sperm confirms the external evidence that this specimen is a true hermaphrodite.

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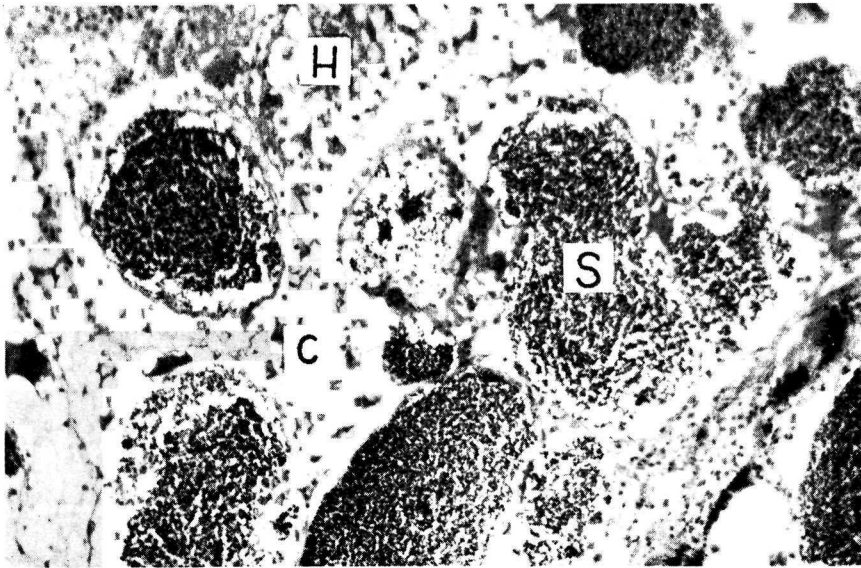
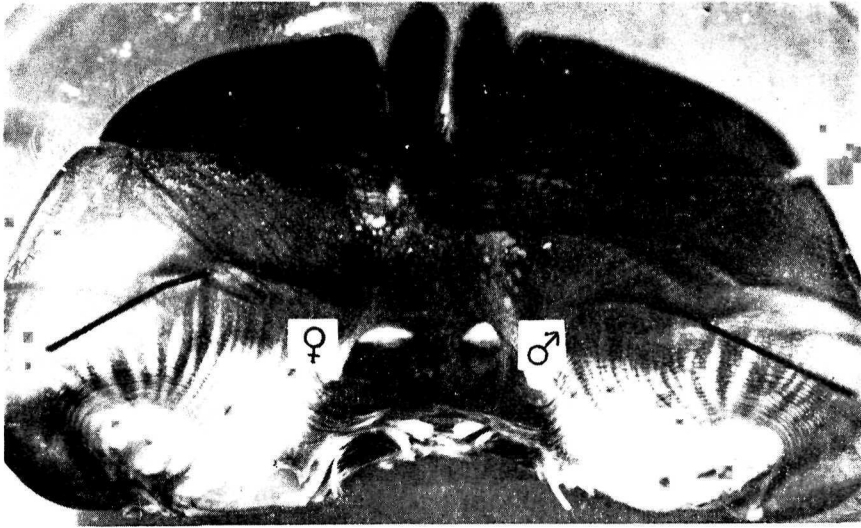


PLATE I

Upper — Ventral view of posterior surface of genital operculum (enlarged), showing right genital aperture (♀) and left genital aperture (♂).

Lower — Photomicrograph of section through testis (X 120). *S*, sperm sacs containing tail-less sperm. *H*, hepatopancreas. *C*, connective tissue.

(Photographs by Alden P. Stickney)



PLATE 2

Dorsal view of *Limulus polyphemus* with carapace of the prosoma removed, showing mass of eggs on the right side, but only a few scattered eggs on the left side. (Telson has been cut off). (Photograph by Alden P. Stickney.)