

compliments of the writer. *WB*

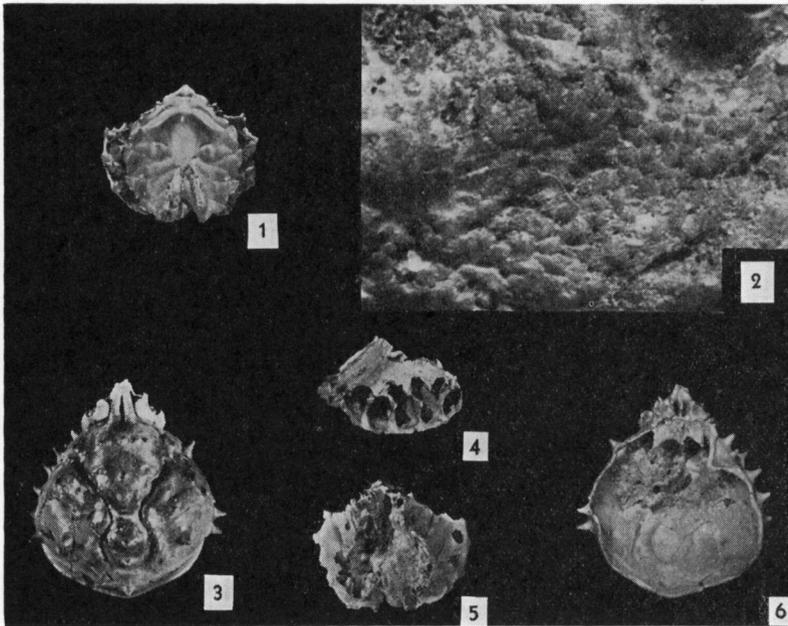
A PLEISTOCENE OCCURRENCE OF LIBINIA DUBIA, A BRACHYURAN

WILLIAM H. EASTON

Walker Museum, The University of Chicago, Chicago, Ill.

IN THE summer of 1938 an unusual specimen of the spider crab, *Libinia dubia* Milne Edwards, was collected from the Pamlico formation (late Pleistocene) at Wailes Bluff on the Potomac River near Point Lookout, Maryland. The fossil was

length and 24.5 mm. in width, including spines, so the animal at death was probably about one-third grown. By reason of subsequent accidental breaking of the cephalothorax, the inner part of the animal was revealed. As the thoracic walls are almost



FIGS. 1-6.—*Libinia dubia* Milne Edwards. 1, Ventral view of sternum, $\times 1$; 2, surface of digestive gland shown at right center of 5; $\times 10$; 3, dorsal view of carapace, $\times 1$; 4, left side of sternum with thoracic wall above the five openings for leg muscles, $\times 1$; 5, dorsal view of sternum, looking in the thoracic cavity, $\times 1$; 6, ventral view of interior of carapace with digestive gland adhering to the carapace $\times 1$.

removed from a layer one foot below the top of the so-called "bed below the oyster bed."

The specimen consists of the cephalothorax and the sternum, the abdomen and appendages (except a few fragments of the pleopods or swimmerets adhering to the sternum) not being found. The individual was a female crab measuring 28.0 mm. in

complete, details of the partially calcified chitinous interior skeleton can be studied. Moreover, within, and occupying about half of the thoracic cavity, is a brown nodosely tubular structure, which, when carefully examined, appears to be no encrusting organism, but part of the viscera of the spider crab itself. Because of its size, its manner of filling the thoracic cavity, its

vesicular structure, its color, and its caecal-like appearance, it is concluded that this chitinous material was within the hepatopancreas of the crab. Thus, although the remains of *Callinectes* so commonly found in the same deposit are fragmental and poorly preserved, this representative of *Libinia*, apparently by reason of better calcification of its chitinous skeleton, is so remarkably well preserved as to retain part of its digestive gland.

The openings in the thorax for the muscles of the five large appendages are well shown, as are also at least three other much smaller openings for the muscles of the mouth appendages. These three openings successively decrease in size anteriorly as the size of the muscles decreases. Likewise, the area of cross section of the gill chamber (used as an index of volume) is restricted anteriorly, resulting in the presence of either smaller or fewer gills associated with the appendages of the mouth. From this decided reduction in gill size it might be postulated that *Libinia dubia* is evolving toward the decapod crustaceans with five pairs of gills, and that most of the transition had already been achieved by the Pleistocene epoch.

Modern representatives of *L. dubia* are distributed along the Atlantic coast from Cape Cod, Massachusetts to Corpus Christi, Texas, and also along Cuban and West African strands. This crab is found on mud flats, oyster bars, and as deep as 25 fathoms in varying bottom habitats. *Libinia dubia* is one of nine modern species of the genus but is not the most common spider crab today. As a fossil, it has been reported previously only in the form of isolated claws. One right finger is known from the Yorktown formation (upper Miocene) of Virginia and eight fingers were recovered from the Cape May formation of New Jersey (Rathbun, 1925, 1935). The latter deposit is approximately the same age as the Pamlico formation.

The author wishes to thank Miss Phoebe Jane Beall, who discovered this specimen (Walker Museum no. 45193) and presented it to him for study.

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