

AN UNUSUAL PEARL FROM A FRESHWATER MUSSEL AND A PEARL-LIKE GROWTH FROM A CRAYFISH

RALPH W. DEXTER

Kent State University, Kent, Ohio

In the study and dissection of invertebrate animals used for laboratory teaching of zoology over the past twelve years, two unusual specimens were discovered which are worthy of note. One was the shell of a freshwater mussel with a large pearl imbedded within the valve, and the other was a crayfish with a cyst-like growth on the carapace which contained a laminated body resembling a pearl in its manner of formation. These are described below.

In the winter of 1946 a student discovered immediately upon opening a freshwater mussel that it contained a large pearl. It was almost completely enveloped by a pocket formed at the edge of the mantle and was half-sunken within a cavity of the shell. The mussel was a 11.5 cm. specimen of *Amblema costata* Raf. which had been collected from the vicinity of Oshkosh, Wisconsin. The pearl was not perfectly spherical, but was nearly so. Its greatest diameter was 6.33 mm. and it weighed 308.8 mg. The surface finish was satiny-white but not of bright lustre, probably because of the acid reaction of the formaldehyde in which the mussel had been preserved.

Kunz (1898) described and figured a freshwater pearl similar to the one reported here. However, his specimen was nearly hemispherical in shape, presumably because it had been pressed into the nacre. Kunz (1898) wrote that "pearls are sometimes imbedded in the shell or growing so as to form a socket in it; this fact is well known, though of rare occurrence." Another hemispherical pearl within a cavity was reported by Hodgson (1902).

Blister pearls and various pustules or concretions are common on the nacre of many species of freshwater bivalves. When perfect pearls are found they are usually enclosed within the mantle and have no contact with the valves. It is unusual to find a nearly spherical pearl imbedded within a cavity of the nacre and apparently the specimen described here is the first of its kind to be reported. X-ray pictures taken of the pearl, ranging from 32Kv. for 0.1 sec. to 64Kv. for 0.75 sec., failed to disclose any discernible nucleus.

While distributing crayfish to a zoology class in 1950, the writer discovered one with a conspicuous cyst-like growth on the side of the carapace. It was a specimen of *Orconectes propinquus* (Girard), commonly known as *Cambarus propinquus* Girard, from a shipment which had been collected from shallow waters of Lake Michigan near Green Bay, Wisconsin. This crayfish was a male specimen 85 mm. in total length from the tip of the rostrum to the end of the telson. The anomalous growth, situated 2 mm. from the posterior margin of the carapace on the right side, measured 12.0 mm. long, 8.0 mm. wide, and 6.0 mm. high (fig. 1). Upon dissection there was found inside a rubbery mass 9.5 x 6.0 x 2.5 mm.

Possibly a foreign body was in some way thrust under the carapace at or about the time of molting and caused the flexible carapace to bulge at that point, eventually forming a cyst-like growth around it. It is known that some parasitic organisms such as certain trematodes, copepods, and bopyrid isopods and some commensals such as certain branchiobdellid oligochaetes and ostracods infest the gills of crayfish. While it is possible that such an organism might have formed the nucleus which produced the anomalous growth, no trace of an organism could be detected by either gross or microscopic sectioning. A central homogeneous mass was enveloped by successive layers, each consisting of compact columnar

units. Histochemical tests (Gomori, 1952) made by Dr. Elizabeth Smith indicate that the object is apparently composed of chitin. It appears, then, that a foreign body was accidentally introduced under the lining of the carapace which stimulated the deposition of laminations of chitin about it much as a pearl is produced by a bivalve. This pearl-like growth in turn caused the hypodermis of the carapace to form a cyst-like wall about it. No similar case has been found in the literature.

Acknowledgment is made to Dr. Elizabeth Smith for making the histochemical tests, to Dr. Emanuel Hertzler for preparation of the stained slides, to Miss Catherine Baker for making X-ray pictures, to Robert Burrs for the photograph of the crayfish, and to Pres. Blair Coursen of the General Biological Supply House for tracing the source of the specimens which had been purchased from that organization.

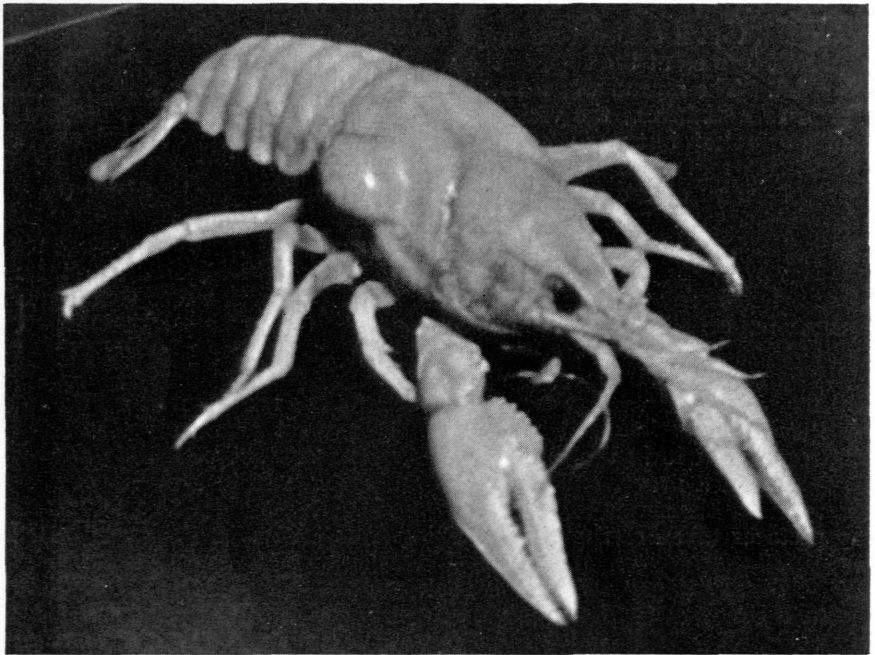


FIGURE 1. Specimen of *Orconectes propinquus* showing growth on carapace which contained a foreign body of pearl-like formation.

LITERATURE CITED

- Gomori, G. 1952. Microscopic histochemistry. The University of Chicago Press.
Hodgson, C. S. 1902. A large pearl. *Nautilus* 16: 60.
Kunz, G. F. 1898. The freshwater pearls and pearl fisheries of the United States. *Bull. U. S. Fish Comm.* (for 1897), 17: 375-426.