

and a rather small, deep, tubular umbilicus. It is covered with beautiful oblique epidermal elevated ridges, which are easily lost, and do not agree with the lines of growth. The *H. cæca* is much smaller, olive-greenish, with a silky lustre and few inflated whorls the first of which is usually finely punctate.

The suture is very deep and the umbilicus proportionally larger than in *H. granum*.

ON A SINGULAR CASE OF IMITATION IN *OSTREA VIRGINICA*.

BY CHAS. T. SIMPSON.

I have before me a shell of *Cerithium atratum* about 18^{mm.} in length, which has attached to it and growing on the side of its spire a young *Ostrea virginica* about 10^{mm.} in length, and 6^{mm.} in width. There is nothing at all surprising in the fact that a young oyster should so attach itself to a *Cerithium* or any other shell, but it is surprising that the oyster should attempt to pass itself off for a part of the shell on which it grew. For, strangely enough, the upper valve of the oyster is sculptured exactly like the surface of the *Cerithium*. Each revolving ridge and nodule is repeated on the bivalve exactly as it is found on the spire of the shell on which it grows, just as perfect and distinct in every respect; the only difference being that they are not quite so strongly elevated as they are on the *Cerithium*.

Nor is this all. Not only is the sculpture repeated on the valve of the oyster, but the coloring of the *Cerithium* is carried over upon it; it being a yellowish-white throughout, covered with brown flecks and spots. When I first examined the shell I supposed that its spire had been injured, and that it had repaired it with an awkward patch; but only after the closest scrutiny did I discover the truth. Two other very small oysters had attached themselves to other parts of the shell, but as their upper valves were missing at the time I first examined it, I could not tell whether they had been similarly marked or not.

It is no uncommon thing for shells which attach themselves to others, to imitate those on which they grow; though I have never seen quite so remarkable a case as this. The shells of *Anomia glabra* and sometimes *Crepidula fornicata*, when growing on the *Pecten* imitate them by being ribbed, and *Crepidula plana* has often the texture of the interior or exterior of the shells on which it

grows, and sometimes *Crepidula convexa* which I found quite abundantly on *Modulus floridanus*, has the color and something of the corrugation of that shell, so that at first glance it appears to be merely a patch.

What is the object of this singular species of imitation? I believe without exception it is a means of protection against the rapacity of boring molluscs; one of the tricks which nature is constantly exhibiting by which the "survival of the fittest" is attained. The shells of the young oyster on the *Cerithium*, the *Crepidula convexa* on the *Modulus*, the *Anomias* and *Crepidulas* on the *Pectens*, were in every case thinner than those on which they grew, hence more liable to be pierced by carnivorous molluscs—but by imitating the shells on which they lived they stood a better chance of deceiving their enemies, a better chance of self-preservation. Does this not look almost like intelligence, almost akin to what we call thought in man—like reason; like studying from cause to effect? and I believe that such variation as this is often perhaps one of the first steps towards the formation of a new variety, a variation which if continued by circumstances fixes certain characters that define a species, and that these characters remain permanently—often after the causes which produced them have passed away.

**LIST OF SHELLS OF THE NEW JERSEY COAST SOUTH OF
BRIGANTINE ISLAND.**

BY JOHN FORD.

ED. NAUTILUS, Dear Sir:

As a list of the species of Mollusks found on the coast of New Jersey, South of Brigantine Island, may be of interest to your readers, I take the liberty of sending it.

If any others can be added it would be a pleasure to hear of them.

Yours truly,

JOHN FORD.

Phila. June 15th, 1889.

Anomia ephippium, Linn.

Arca pexata, Say.

Arca ponderosa, Say. (Fossil.)

Arca transversa, Say



Simpson, Charles Torrey. 1889. "On a singular case of imitation in *Ostrea virginica*." *The Nautilus* 3, 26–27.

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