

obliqua, in one dextral animal of which was a sinistral embryo. Incidentally, a few yards distant I collected one pure white shell of *Ach. decipiens kaliuawaensis* (dextral), the animal of which yielded four (4) dextral embryos. You will appreciate the rarity of this, knowing that an animal of the genus *Achatinella* bears ordinarily but one young, although occasionally two are found. The latter specimens have been given to the Bishop Museum.

Dr. Cooke informs me that he has noticed in several instances a different coil in the embryo from that of the mother.

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FOSSIL MOLLUSKS AND OTHER INVERTEBRATES FROM THE
HUDSON RIVER TUNNEL, NEW YORK AND NEW JERSEY

BY HORACE G. RICHARDS

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About 1906 some bluish mud containing shells taken from the Pennsylvania Railroad tunnel under the Hudson River connecting New York City, N. Y. and Jersey City, N. J. was sent to Dr. Amos Brown, then professor of Geology at the University of Pennsylvania. Dr. Brown turned over the material to Dr. Burnett Smith who was then on the staff of the department. However before Dr. Smith could complete his studies on the shells he was called to Syracuse University, and consequently the material was turned over to the Geological Department of the University of Pennsylvania. Through the kindness of Dr. Smith, now associated with the New York State Museum at Albany, N. Y. and Dr. Frederick Ehrenfeld, head of the Department of Geology of the University of Pennsylvania, I have been permitted to examine this material.

Very few species are represented, and many of these only by fragments, but it is thought worth while to report these specimens even after the lapse of so many years.

The material was stated to have come from 90 feet below the bottom of the river, but no information is available concerning the part of the tunnel from which the material was collected.

The following species are represented:¹

Mytilus edulis (unusually thick shells).

Arca transversa Say.

Macra lateralis Say.

Abra aequalis Say.

Crepidula fornicata L.

Alectrion trivittata (Say).

Polinices lactea Guilding.

Odostomia impressa var. *granitina* Dall.

Spine of *Arbacia*.

Balanus eburneus Gould.

Panopeus herbstii M.-Edw.

P. lactea and *O. impressa* var. *granitina* are now restricted to southern waters, and *A. aequalis*, although reported as far north as Connecticut is more common toward the south; the other species are all to be found living in the waters today.

Because of the insufficient data concerning the exact locality of the shells, and because of the complexity of the geological formations at the mouth of the Hudson River, it does not seem possible to date the fossils accurately except to say that they are probably from some part of the Pleistocene. The presence of the two southern forms might be taken as an indication that they belong to an interglacial warm stage.

¹ I am indebted to Mr. E. G. Vanatta of the Academy of Natural Sciences of Philadelphia for help in the identification of certain of these specimens.



Richards, Horace G. 1930. "Fossil mollusks and other invertebrates from the Hudson River Tunnel, New York and New Jersey." *The Nautilus* 43, 131–132.

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