

(endocarp) is found thick, horny, and in all respects like that of *J. nigra*. The lower portion of the shell projects into the lower section of the nut, and resembles the point of a butternut. The engraving is from a carefully executed drawing, representing the nut of natural size.

The matter as above presented is left in the hands of those more familiar with subjects in teratology. There is no doubt that in the cross-fertilization of plants we may have a deviation from the parent form, even in the development of the seed thus fertilized, or in its surrounding parts. Some strawberry-growers are very careful what 'perfect' varieties are grown among their pistillate sorts to fertilize them. The fleshy receptacle, which is the edible portion of the strawberry, is more remote from the ovules which are fertilized on its surface than the covering of a shellbark or walnut is from the embryo within.

Hybridization between closely related genera is well established in several cases. Sachs mentions that it has been observed between species of *Lychnis* and *Silene*, *Rhododendron* and *Azalea*, *Rhododendron* and *Rhodora*, *Azalea* and *Rhodora*, *Rhododendron* and *Kalmia*, *Aegilops* and *Triticum*, and between *Echinocactus*, *Cereus*, and *Phyllocactus*. The two genera *Juglans* and *Carya* compose a small order of closely related species. A study of the generic characters, as set down in the classification of these species, does not reveal any more striking difference than that shown in the exocarp. The male and female flowers are separated on the same tree (monoecious), and pollen must pass from flower to flower. This fertilizing-dust is produced in great abundance; and the distance between the black walnut and the pecan, or even the shellbark, is easily traversed by the pollen. There is probably no difficulty in the way of hybridizing from a difference of time in the flowering of the species.

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New York, Oct. 26, 1883.

#### *MANAYUNKIA SPECIOSA.*

In a paper, illustrated with a plate, recently presented to the Academy of natural sciences of Philadelphia, Professor Joseph Leidy describes *Manayunkia* as a cephalobranchiate annelid living in fresh water, the only one of the order yet discovered not living in the ocean. It was found with the equally remarkable polyzoan *Urnatella*, with its tubes of mud attached to the same stones, in the Schuylkill River, at Philadelphia. It was first noticed, and a brief description given of it, in the Proceedings of the academy in 1858.

*Manayunkia* is nearly related to the marine genus *Fabricia*, with a species of which, described by Professor Verrill, the writer compared it, through specimens collected at Newport, R.I., and Gloucester, Mass. *Manayunkia* has not been observed elsewhere until recently, when it was found by Mr. Edward Potts, attached to a fragment of pine bark from Egg-Harbor River, New Jersey.

The tubes of *Manayunkia* are simple or compound, and in one instance five tubes branched and were pendent from a common stock in a candelabra-like manner. The little worm is very active and sensitive, and on the slightest disturbance withdraws into its tube. When quiet it protrudes its head, and spreads its cephalic tentacles or branchiae. The mature worm is three or four millimetres long, and is divided into twelve segments, including the head. The color is olive-greenish, due to the bright green blood circulating in the vessels of the animal. The head is furnished with a pair of conspicuous eyes, and supports a lateral pair of lophophores, each provided with sixteen cylindrical tentacles, invested with actively moving cilia, and closely resembling those of the polyzoa. The segments succeeding the head are provided with lateral fascicles of locomotive setae, and in addition, except the first one, are further provided with fascicles of pedal hooks.

The seventh segment is much larger than any of the others, and further differs from them in being greatly expanded in front; so that it gave rise to the idea that the worm undergoes division, though the process was at no time observed. The intestine is quite simple. The chief portions of the vascular system consist in a vast sinus enclosing the intestinal canal, giving off lateral pairs of branches to the segments, and a large vessel which extends from each side of the head into one of the tentacles, which is larger than the others. The blood is bright green, and is observed to be incessantly pumped into and expelled from the larger pair of tentacles. Ovaries occupy the segments from the fourth to the sixth inclusive. Organs supposed to be the testes extend from within the head into the third segment.

*Manayunkia* lays its eggs and rears its young within its own tube. The young, measuring about three-fourths of a millimetre, had the body divided into nine segments, and each lophophore provided with four tentacles.

In the species of *Fabricia* of our coast the number of segments of the body is the same as in *Manayunkia*; but the lophophores supporting the tentacles, instead of being simple, are trilobed or trifurcate. *Fabricia* has eyes in the tail, or last segment, as well as in the head, which is not the case with *Manayunkia*.

#### *DRAINAGE SYSTEM AND LOESS DISTRIBUTION OF EASTERN IOWA.*

THESE are described by Mr. W. J. McGee in a recent communication to the Philosophical society of Washington. The Mississippi River, where it forms the eastern limit of Iowa, flows somewhat to the east