Strait a number of species of shells were procured, some of which are widely distributed in the boreal seas while others are local. Many of the specimens were exceptionally large, larger than others of the same species collected elsewhere. In sorting the material, which has been all these years in alcohol, a remarkable new species of *Admete* was found, of which the description follows:

ADMETE REGINA n. sp.

Shell large, solid, white, with a coffee-colored periostracum and five or more whorls, the apex in every case being more or less eroded; spiral sculpture of fine, even-channeled grooves with flattened or even slightly concave wider interspaces, covering the whole shell except a space between the suture and the shoulder of the whorls; there are about two grooves and an interspace to a millimeter; axial sculpture of a few feeble often more or less obsolete, irregular, low plications, not quite reaching the middle of the whorl; suture very deep but not channeled; whorls moderately rounded; base attenuated, with a narrow, deep umbilical perforation; outer lip simple, hardly thickened, throat white, smooth, body with a smooth, white layer of callus; pillar concavely arcuate, with six or more feeble plaits, the anterior end of the pillar projecting over a deep notch.

Height of shell 36, last whorl 27, of aperture 20, max. diam. 22 mm.

Type No. 221473, U. S. N. Mus.; dredged in Plover Bay in 25 fms., hard bottom, by W. H. Dall in 1874.

THE CLASSIFICATION OF THE EUROPEAN NAIADES.

BY DR. A. E. ORTMANN.

(*Concluded from page 7*).

I have divided the family *Unionidæ* into three subfamilies, only two of which are found in Europe (compare: Nautilus, 23, Febr. 10, p. 114–120).

Subfamily: UNIONINÆ Swainson (restr.)

Supraanal opening rarely not separated from the anal, generally well separated. Marsupium formed by all four gills, or only by the outer ones, when charged only moderately swollen, and its edge not

distending. No secondary watertubes developed within the marsupium. Glochidia rather small, either semioval or semielliptic, without hooks, or subtriangular, with hooks.—These forms have a short breeding season.

The typical genus is *Unio* Retzius, of which the European species *Unio pictorum* (Linnæus) is the type.

Unio pictorum (Linnæus). A large number of specimens is at hand, from various parts of Germany and Hungary, representing several "forms."

The anatomy is typical for the family: the supraanal is well separated from the anal by rather long mantle-connections. The marsupium is formed by the outer gills alone, and according to the structure of the edge of the gill, it does not seem capable of distending, when charged.

No gravid females are at hand, but according to various authors, the breeding season is short, and the glochidia are subtriangular, with hooks.

This latter character distinguishes the European genus *Unio* from the genus bearing the same name in North America. In addition, in the latter, the mantle-connection between the anal and supraanal is generally shorter, and the shell chiefly the beak sculpture, is fundamentally different. Thus we cannot place the North American species in the same genus, and I have concluded to use for them the name *Elliptio* Rafinesque.

Unio tumidus Retzius (about 10 specimens from Germany and Hungary at hand); *U. crassus* Retzius (many typical specimens from Thuringia), and the probably conspecific forms: *batavus* Maton & Racket (5 specimens from Germany and Hungary), and *consentaneus* Rossmaessler (one male from Bavaria), have essentially the same anatomical structure as *U. pictorum*. A specimen of *U. batavus* from Hungary had the outer gills partly filled with eggs. No lateral water-tubes were observed.

Subfamily: ANODONTINÆ Ortmann.

Supraanal always well separated from the anal opening, generally by a very long mantle-connection. Marsupium formed only by the two outer gills, when charged greatly swollen, and an extra thickness of tissue at the edge permits them to distend. Within the water-tubes of the marsupial gills, lateral (secondary) water-tubes, lying

toward the faces of the gill, are developed during the breeding season, while only the central part of each original water-tube is used as ovisac. The ovisacs are closed also at the base of the marsupium. Glochidia rather large, subtriangular, with hooks.—These forms have a long breeding season.

Also of this subfamily, the typical genus is European, and the type-species is *Anodonta cygnea* (Linnæus) of Europe.

Anodonta cygnea (Linnæus). I have a large number of specimens, of both sexes, the females sterile or gravid, with eggs as well as with glochidia, in my hands. They represent various forms of this polymorphous species (*piscinalis*, *fluviatilis*, *anatina*, *cellensis* etc.), but I agree with certain European writers in regarding them all as *one* species. At any rate, in the anatomical structure, they are all alike.

The soft parts of this species correspond to the characters given for the subfamily above in every detail, and it is not necessary to describe them again, except to make the statement that the anal and supra-anal openings are separated by a very long interval. It may also be mentioned that I possess slides of this species, which show the formation of the lateral water tubes of the marsupium most beautifully, rendering it beyond doubt that these tubes are actually cut off from the original water-tubes.[1]

Anodonta complanata Rossmaessler. I have six specimens from Bavaria, among them two males, one sterile, and three gravid females, the latter with glochidia.

The structure of the soft parts is absolutely like that of *A. cygnea* in all essential points. For this species the genus *Pseudanodonta* has been created by Bourguignat, which recently has been taken up as valid by Haas (Najadenfauna des Oberrheins, in: Abh. Senckenberg. Naturf. Ges. 32, 1910, p. 170, and Pr. Malacol. Soc., g., 1910, p. 110). The characters originally given by Bourguignat, and added to by Germain (see Haas), are taken from the shell, and, aside from the compressed shape of the latter, are entirely *imaginary*. Later on, the shape of the glochidia was added (Schierholz) as a further difference, and (by Clessin) the structure of the gills, in terms which

[1] An epithelial fold each on two opposing faces of two septa grows into the lumen of the water-tube, and these two folds come into contact. In this species I have not seen them firmly united, as in other species, although this undoubtedly will be the case when they are fully developed.

are hard to understand, and the meaning of which can only be guessed. The latter were referred to by subsequent writers by the mysterious words that there are "anatomical" or "histological" differences. My own investigations have convinced me that all anatomical or histological elements in the gill-structure of *A. complanata* are essentially the same as in *A. cygnea*, the only actual difference being a slighter development of the interlamellar tissue in *A. complanata*. And further, the shape of the glochidium is indeed slightly different, that of *A. cygnea* being a little larger, and higher in proportion to length. For the rest, *A. complanata* is absolutely like *A. cygnea*, and the general shape of the shell, chiefly the conformation of the beaks and their sculpture, indicates clearly that *A. complanata* is not only a true *Anodonta*, but also belongs to the same group of the genus, of which *A. cygnea* is the type (as distinguished, for instance, from the North American group of *A. grandis*). The very slight differences in the anatomy alluded to above, and in the glochidium, cannot be regarded as of more than specific value. *Pseudanodonta*, consequently, is a synonym of *Anodonta*, and I must confess that I rarely have come across a more useless and superfluous genus.

I hope to find occasion, in the future, to give a more detailed and illustrated account of the European forms discussed here, and very likely shall do so in connection with my studies of the soft parts of a number of North American forms, in which I am now engaged.

PUBLICATIONS RECEIVED.

The Recent and Fossil Mollusks of the Genus Cerithiopsis from the West Coast of America. By Paul Bartsch (Proc. U. S. Nat. Mus., vol. 40, May 8, 1911). Former work on the forms is reviewed, followed by a classification of the species into the subgenera *Cerithiopsis* proper, *Cerithiopsina*, *Cerithiopsidella* and *Cerithiopsida*, based upon characters of the embryonic and early neanic whorls. Of 44 species known from the west coast of North and South America, five occur only fossil, and 25 are described as new. All the species are illustrated by photographic figures. It is an important work on a difficult and hitherto little-known genus.

New Species of Shells from Bermuda. By W. H. Dall