

from the sandy shores of tropical and temperate seas ; many species enter rivers and some are permanently fluviatile.

I have examined skeletons of *Solea* (vertebræ 9-10 + 31-41), *Synaptura* (9 + 41-48), *Achirus* (9 + 20), *Pardachirus* (10 + 27), and *Liachirus* (10 + 23). *Achirus* is certainly generically distinct from *Solea*, but there are no structural characters which entitle it to rank as the type of a distinct subfamily, as in Jordan and Evermann's classification.

## Family 2. Cynoglossidæ.

Sinistral. Vertical fins confluent ; no pectorals ; pelvic fin of blind side present, 4-rayed, median in position, that of eyed side displaced upwards and reduced, or entirely wanting ; pelvic bone of the reduced or absent fin much smaller than the other. Vertebræ 47-65 (9-10 + 38-56).

Principal genera :—*Symphurus*, *Paraplagusia*, *Cynoglossus*, from tropical and temperate seas.

I have examined skeletons of *Symphurus* (vertebræ 9 + 40), *Paraplagusia* (9 + 43), and *Cynoglossus* (9 + 56). The skeleton is strikingly similar to that of the Soleidæ, and there can be no doubt that the two families are closely related ; as in *Achirus* and other Soleid genera without pectoral fins, the coracoid bones are absent.

## LV.—*New Unionidæ from East Asia.* By Dr. F. HAAS, Senckenberg Museum, Frankfurt-a.-M.

IN preparing a continuation of Küster's Monograph of *Unio* in the 'Martini-Chemnitzsches Conchyliencabinet' I examined a large number of shells, which, for the greater part, belonged to the Senckenberg Museum or were purchased from Messrs. Sowerby and Fulton, Kew, and Mr. H. Rolle, Berlin. The East-Asiatic Unionidæ of the Zoological Museum of Berlin were also at my disposal. Among all these shells I found the following new species and subspecies, the types of which, with the only exception of *Nodularia undulata*, belonging to the Berlin Museum, are in the collection of the Senckenberg Museum, and which I shall figure in my monograph mentioned above.

### 1. *Nodularia denserugata*, sp. n.

Shell elongate-elliptical, rather solid and inflated, rounded



in front, distinctly biangulate behind. Posterior ridge rather high, rounded. Basal margin almost straight. Beaks not prominent, situated at  $\frac{26}{100}$  of the total length, greatly eroded; their sculpture covers the greatest part of the disk and consists of concentric, wavy wrinkles standing very close. Epidermis of a dull blackish grey. Hinge consisting of two cardinals and two laterals in the left, one cardinal and one lateral in the right valve. Cardinals rather solid, stumpy, that of the right valve accompanied in front by a low lamellar auxiliary tooth. Laterals nearly straight, high. Interval short, rather smooth. Anterior cicatrices distinct, deep; posterior distinct and very faint. Dorsal cicatrices united to a narrow groove situated at the inner side of the interval. Beak-cavities rather deep. Nacre silvery.

Length 53, height 26, diam. 18 mm.

*Hab.* Hainan. Collected by Mr. B. Schmacker.

Four specimens in the Senckenberg Museum.

## 2. *Nodularia continentalis*, sp. n.

Shell elongate-elliptical, solid, inflated, somewhat truncated in front and slightly arcuate behind. Posterior ridge moderate, rounded. Basal margin slightly sinuate at its posterior part. Beaks not prominent, eroded, situated at  $\frac{21}{100}$  of the total length; their sculpture is not to be seen when adult, in young shells it consists of few concentric, slightly looped ridges, the posterior loops running upwards across the posterior slope. Epidermis of a rather dull black. Hinge consisting of two cardinals and two laterals in the left, one cardinal and one lateral in the right valve. Cardinals solid, stumpy, jagged on the surface, a narrow lamellar auxiliary tooth standing in front of the one of the right valve. Laterals long, high and curved. Interval short, broad, covered with small denticular structures. Anterior cicatrices distinct, deep; posterior distinct, faint. Dorsal cicatrices united to a narrow short groove situated at the inner side of the interval. Beak-cavities deep. Nacre silvery, brilliant.

Length 62, height 36, diam. 25 mm.

*Hab.* Hunan, Middle China. Collected by Dr. O. v. Moellendorff.

Two specimens in the Senckenberg Museum.

Very near to *Nod. japonensis*, Lea, of Japan, the first form of this group recorded from the continent.

## 3. *Nodularia undulata*, sp. n.

Shell rhomboid-elliptical, rather thin and moderately



inflated, rounded in front and nearly vertically truncated behind. Posterior ridge high, distinctly angulated. Basal margin straight or slightly curved. Beaks somewhat prominent, situated at  $\frac{23}{100}$  of the total length; their sculpture consists of concentric, undulated ridges, covering about one-half of the disk, and running upwards and backwards across the posterior slope. Epidermis of a yellowish green, shining. Hinge consisting of two cardinals and two laterals in the left, one cardinal and one lateral in the right valve. The cardinals are solid, lamellated, that of the right valve accompanied in front by a very low lamellar auxiliary tooth. Laterals long, straight. Interval short, broad, not distinctly separated from the cardinal teeth. Anterior cicatrices distinct, deep; posterior distinct, faint. Dorsal cicatrices united to a groove situated at the inner side of the interval. Beak-cavities shallow. Nacre silvery, brilliant.

Length 43, height 25, diam. 16 mm.

*Hab.* Pisui, Hainan. Collected by Mr. Schöde.

Two specimens in the Senckenberg Museum; five specimens, including the type, in the Berlin Museum.

#### 4. *Ptychorhynchus lævis*, sp. n.

Shell elongate-elliptical, subsolid, rather compressed, rounded in front, bluntly pointed behind about the middle of the height. Posterior ridge low, rounded angulate, basal margin regularly curved. Beaks somewhat prominent, situated at  $\frac{29}{100}$  of the total length; their sculpture is invisible on account of erosion. Epidermis smooth, shining, of a blackish brown, with darker lines of growth. Hinge consisting of two cardinals and vestiges of two laterals in the left, one cardinal and vestiges of one lateral in the right valve. Cardinals high, the one of the right valve pyramidal, the anterior one of the left valve smaller and lower than the posterior one almost triangular. Laterals very short, low, only indicated, interval long, narrow and smooth. Anterior cicatrices deep, rough, that of the anterior adductor and that of the anterior retractor confluent. Posterior cicatrices distinct, faint. Dorsal cicatrices united to a narrow groove situated at the inner side of the interval. Beak-cavities shallow. Nacre reddish, bluish at the margin, not brilliant.

Length 59, height 31, diam. 16 mm.

*Hab.* Saghalin Island. Collected by Admiral Keppel.

Two specimens in the Senckenberg Museum, presented by Messrs. Sowerby and Fulton.



5. *Cristaria inangulata*, sp. n.

Shell short-elliptical, nearly unwinged, rather thin and inflated, rounded in front and behind. Posterior ridge rounded, low. Basal margin regularly curved. Beaks not prominent, situated at  $\frac{35}{100}$  of the total length, with low wide ridges grouped round an apical protuberance, the first ones doubly looped, the following ones becoming slightly undulate. Epidermis greenish brown, shining, rayed. Hinge consisting of a single, low, lamellar præumbonal, and a single, low, nearly reduced, postumbonal claustrum in each valve. Anterior cicatrices faint, that of the anterior adductor and that of the anterior retractor confluent. Posterior cicatrices confluent, faint. 2-3 dorsal cicatrices lying in a row, often united to a groove, situated under the beaks. Beak-cavities shallow. Nacre reddish, bluish towards the edge.

Length 99, height 59, diam. 39 mm.

*Hab.* Tonkin. Collected by Mr. Messenger.

Four specimens in the Senckenberg Museum, purchased from Mr. H. Rolle.

6. *Anodontites lautus tumens*, subsp. n.

A highly inflated form of *A. lautus*, Marts., characterized by the strong ridges of the beak-sculpture, which, on the upper part of the disk, become very high and nearly terrace-shaped. There exist all the intermediate stages between the type form and this subspecies.

*Hab.* Yamashiro, Japan.

Three specimens in the Senckenberg Museum, presented by Messrs. Sowerby and Fulton.

7. *Cristaria discoidea sautteri*, subsp. n.

Differs from typical *discoidea* by the strongly developed claustra, which are double in the left valve in their præumbonal as well as in their postumbonal portion.

*Hab.* Lake Candidins, Formosa. Collected by Mr. Sautter.

Three specimens with the animals preserved in alcohol and three pairs of shells in the Senckenberg Museum.

8. *Nodularia douglasiae crassidens*, subsp. n.

Among the typical specimens of *N. douglasiae* of nearly all localities, there occur heavy inflated shells with extremely thick and deeply jagged cardinals and strong curved laterals, upon which I bestow the subspecific name of *crassidens*. I have examined specimens from Hainan, from Hunan, and from Ningpo, Northern China.



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