

Neuquen, Patagonia*. Mr. Mawson's discovery of the Pterodactyl seems to be the first of the kind in the Southern Hemisphere; that of the Plesiosaur adds another important locality to the known distribution of an order that has an equally wide geographical range in both Hemispheres.

XLII.—*Notes on African Mollusca*. By EDGAR A. SMITH.

I. *UNIONIDÆ* OF SOUTH AFRICA.

At present nine species of this family have been described from the southern extremity of the African continent, namely seven so-called species of the genus *Unio* and two species of *Mutela*. Five, if not six, of the forms of *Unio* really belong, I believe, to one and the same species. They have been separated on account of slight differences of form and sculpture, which, when a large series of specimens is examined, prove to be very unreliable and inconstant. Intermediate forms both in respect of outline and sculpture are met with, showing that the separation of these various forms cannot be maintained. The synonymy is as follows:—

1. *Unio caffer*, Krauss.

- 1848. *Unio caffer*, Krauss, Südafr. Moll. p. 18, pl. i. fig. 14.
- 1856. *Unio caffer*, Küster, Conch.-Cab. p. 143, pl. xlii. figs. 2, 3.
- 1866. *Unio caffer*, Sowerby, Conch. Icon. pl. xli. fig. 226.
- 1850. *Unio Verreauxianus*, Lea, Proc. Acad. Nat. Sci. Philad. vol. viii. p. 94.
- 1858. *Unio Verreauxianus*, id. Journ. Acad. Nat. Sci. Philad. vol. iii. p. 301, pl. xxvii. fig. 16.
- 1868. *Unio Verreauxianus*, Sowerby, l. c. pl. lxix. fig. 352.
- 1850. *Unio africanus*, Lea, Proc. Acad. Nat. Sci. Philad. vol. viii. p. 94.
- 1858. *Unio africanus*, id. Journal, vol. iii. p. 300, pl. xxvii. fig. 15.
- 1865. *Unio africanus*, Sowerby, l. c. pl. xxii. fig. 100 (wrong locality given).
- 1864. *Unio natalensis*, Lea, Proc. Ac. N. Sci. Phil. vol. xxii. p. 113.
- 1866. *Unio natalensis*, id. Journal, vol. vi. p. 59, pl. xx. fig. 57.
- 1868. *Unio natalensis*, Sowerby, l. c. pl. lxxi. fig. 362.
- 1885. *Unio vaalensis*, Chaper, Bull. Soc. Zool. France, vol. x. p. 480, pl. xi. figs. 1-3.

Hab. Rivers of Natal and Cape Colony.

This species has the surface ornamented with concentric

* F. P. Moreno, "Le Musée de La Plata" (in 'Revista de Museo de la Plata,' vol. i., 1890), p. 18.

striae, which are more or less distinct, and frequently it exhibits more or less of wrinkling or corrugation at the upper part of the valves towards the umbones, which are always to some extent eroded. It is well known that in this genus the amount of wrinkling of the surface is very variable, and therefore cannot be regarded as a reliable specific character.

In the type figured by Krauss the shell is described as "concentric ruguloso-striata," and no special reference is made by him to corrugation near the beaks. The apices of his specimens being considerably eroded, it is probable that this feature was for the most part obliterated. The form delineated by Lea under the name of *U. Verreauxianus* appears to be precisely that of the type, and although "numerous small undulations at the tip" of the beaks are mentioned by him, no trace of them is discoverable in his figures, and therefore we may assume that they were very insignificant.

His *U. africanus*, from the same locality as *Verreauxianus*, differs from it merely in having the surface smoother, the transverse striae being finer. In form and the character of the hinge they are quite alike.

The variety named *U. natalensis* by Lea, which is the same as *U. vaalensis* of Chaper, is peculiar on account of having the upper part of the valves much more strongly wrinkled than the type or the variety *africanus*, but it agrees with them in general form and the character of the hinge.

The two obsolete lines radiating backwards from the umbones, referred to by Krauss, exist in all the varieties and specimens examined. The colour of the nacre is as variable as the form and sculpture. It is "pallide carnea" in the type, "salmonis colore tincta" in *Verreauxianus*, *africana*, and *natalensis*, and "teintée en jaune clair" in *vaalensis*, especially towards the umbones. Finally, there are specimens in the National Collection which are olive-brown beneath the beaks, almost white towards the front part of the ventral margin, and beautifully iridescent at the posterior end.

The difference in form is very considerable, even in shells belonging to the same variety; for example, two specimens of the strongly wrinkled form (*natalensis*) have the following measurements:—

	Length.	Height.	Diameter.
<i>a</i>	67	40	23
<i>b</i>	59½	29	19

From the above figures it is noticeable that specimen *a* is much broader in proportion than *b*. The outline of the two shells is quite different, but the sculpture is the same.

Specimen *a* is oval, more pointed behind than in front, having the ventral and dorsal margins about equally curved. On the other hand, example *b* is elongate, with the lower margin quite straight along the middle, and, the valves being somewhat pinched or compressed at that part, it has an almost incurved appearance.

2. *Unio Verreauxi* (Charpentier), Küster.

Unio Verreauxi, Charpentier, MSS., Küster, Conch.-Cab. p. 150, pl. xliii. fig. 6.

Hab. Soutenthal Valley, Cape of Good Hope.

I have not as yet seen a specimen sufficiently like the figure of this species to determine whether it is really distinct or not from *U. caffer*, although there is every probability that it will eventually prove to be merely a large broad form of it. It most resembles specimen *a* of the variety *natalensis* already described, but differs from it in being a little broader posteriorly and in having the hinge-line straighter and more raised at the hinder end. The fine lines mentioned by Küster as radiating from the umbones downwards are also traceable more or less in most specimens of all the varieties of *U. caffer* when regarded in certain lights.

3. *Unio kunenensis*, Mousson.

Unio kunenensis, Mousson, Journ. de Conch. 1887, p. 300, pl. xii. fig. 10.

Hab. A tributary of the Kunene or Cunune River, North Ovambo or Ovampo, South-west Africa.

This species, although found rather far north, may be classed with the South-African species in contradistinction to those found in the north, west, east, and central parts of the continent.

It is quite different from the species already discussed, having the surface for the most part ornamented with angular wrinkling or corrugation.

4. *Mutela Wahlbergi*, Krauss.

Iridina Wahlbergi, Krauss, Südafr. Moll. p. 19, pl. ii. fig. 1.

Spatha Wahlbergi, Clessin, Conch.-Cab. ed. 2 (*Anodonta* &c.), p. 187, pl. lxiii. fig. 1.

Spatha natalensis, Lea, Proc. Acad. Nat. Sci. Philad. 1864, p. 113; id. Journal, vol. vi. p. 64, pl. xx. fig. 58; Clessin, *l. c.* p. 189, pl. lxii. figs. 7, 8.

Hab. Monkey River, a branch of the Limpopo (*Krauss*); Umpingave River, Natal (*Lea*); Natal (*Brit. Mus.*).

I cannot discover any good reasons for separating Lea's *Spatha natalensis* from this species, and it is remarkable that, in his account of it, he did not refer to *Wahlbergi*. The form, sculpture, epidermis, and muscular scars are precisely the same; but the interior of *Wahlbergi* is described as whitish for the most part, but pale flesh-colour towards the middle. On the other hand, the nacre of *natalensis* is described as purple. This difference of colour, however, is not of any material importance, for it is well known to be a very variable character in Unionidæ.

II. *DEMOULIA*.

This genus was founded by Gray for the reception of *Buccinum retusum* of Lamarck and a new species from Senegal, namely *D. pulchra*. The latter, the type of which, from Gray's collection, is now in the British Museum, is identical with *D. pinguis* described by A. Adams some thirteen years later.

D. retusa and another species, *D. abbreviata*, have spiral sculpture only, and in this respect they are peculiar. But this is not sufficient to found a genus upon. If we admit differences of sculpture to be of generic importance, we could make half a dozen or more genera out of *Nassa* itself.

On the other hand, *D. pulchra*, which, in form and general aspect, agrees with the two species mentioned, differs from them in having the spiral striæ crossed by longitudinal lines, thus producing a fine reticulation. It will thus be seen that the character of spiral sulci and ridges is inconstant.

In the genus *Nassa* the form and surface-ornamentation is notably variable, and examples may be selected, e. g. *N. glans* and *N. thersites*, which are far more dissimilar in both respects than the species of *Demoulia* are from many forms of *Nassa*. *Nassa Cumingii*, for instance, has quite the shape of *Demoulia*, and really differs only in having the transverse ridges beaded instead of smooth. Moreover, *D. ringens* has very similar granular sculpture; and if we separate *D. abbreviata* and *D. retusa* on account of their having smooth transverse sculpture, then we must remove *ringens* to another group.

Gray* considered that the "velvety periostracum" afforded a character which would separate it from *Nassa*. Difference of epidermis, however, is not a generic character, for how many species of *Conus*, *Pectunculus*, and other genera

* Ann. Nat. Hist. 1838, vol. i. p. 29.

there are which are clothed with periostraca of entirely different kinds.

The animal of *Demoulia* has hitherto been unknown excepting the operculum, described by H. and A. Adams *. However, through the liberality of Mr. J. H. Ponsonby, who has lately presented to the British Museum a specimen of *D. retusa* containing the animal, I am able to give the following particulars.

The sole of the foot (in alcohol) is uniform light brown. The head and body are also light brown, irregularly speckled with black. The foot is short, squarish in front, with a double edge, rounded behind, and *apparently* without prolongations as in *Nassa*; but it is possible that, being contracted in spirit, they are not visible, or may have got broken off. The head is compressed; the tentacles are short, acuminate, with the eyes on prominences about halfway up the outer side. The siphonal fold of the mantle is darkish at the end and moderately short. The radula † is Nassoid; the lateral tooth on each side is oblique, bicuspid, the outer cusp being largest, with the acute tip curved inwards and the inner cusp more slender and also slightly incurved. The central tooth is arcuate, as broad or broader than the laterals, and armed with nine slender, acute, subequal denticles.

The figure illustrating the dentition of *Nassa variabilis* in Troschel's Gebiss d. Schneck. vol. ii. pl. viii. fig. 19, affords a very good idea of that of the present species. The laterals, however, of the *Nassa* have the inner cusp shorter and less slender and the denticles on the central tooth are more unequal in length.

The most remarkable character about *D. retusa* is the want of an operculum.

From the above remarks it will be seen that there really exist no good characters to separate *Demoulia* from *Nassa*. There is nothing in the formation of the shell which distinguishes it, and the structure of the animal is exactly the same in both, and the fact that the operculum in one species (*pulchra*) is present, and wanting in another (*retusa*), shows that it is not an essential generic character.

This genus was originally described by Gray under the name *Demoulia*, and there is no valid reason why the spelling of this word should be changed. Gray himself appears to have been the first to make an alteration, and in the 'Proceedings of the Zoological Society' for 1847, p. 140, he

* Gen. Moll. vol. i. p. 115, pl. xii. fig. 6 a.

† I have to thank my friend Mr. B. B. Woodward for kindly mounting this with his accustomed skill.

rendered it *Desmoulea*, a spelling copied by A. Adams*, Tryon†, Fischer‡, Chenu§, Kobelt||, &c. At the time, however, he gave no reason for the change, and quoted "*Desmoulea*" as if it were the original spelling.

Agassiz¶, Philippi**, Hermannsen††, and Dunker‡‡ have all hinted that this genus might have some association with the name of M. Charles Desmoulins, and Woodward, in his 'Manual' (p. 112), has rendered it "*Desmoulinsia*," regarding it as a synonym of *Nassa*. However, as Gray is somewhat notorious for the number of "nonsense names" which he has given to numerous genera, I have no doubt this is a name of that description; moreover, in the same paper he created the genus *Drillia*, which apparently is also meaningless.

Philippi, that most excellent and accurate writer, employs in his 'Handbuch der Conchyliologie,' p. 150, the original term "*Demoulia*;" and this rendering I certainly think should be maintained, a view also held by Crosse §§.

The species which have been referred to this genus are all figured in Tryon's 'Manual of Conchology,' vol. iv. pl. xviii. figs. 361-370, and in Reeve's 'Conchologia Iconica,' vol. viii., *Nassa*, pl. xxix. figs. 190-196. They are as follows:—

1. *Demoulia pulchra*, Gray.

Demoulia abbreviata, A. Ad.

Demoulia ponderosa, Reeve, = *crassa*, A. Ad.

Hab. Sierra Leone and Senegal.

The locality "Japan" for *crassa* has never been confirmed.

2. *Demoulia retusa* (Lamk.).

Hab. Cape Colony.

3. *Demoulia Tryoni*, Crosse.

Hab. — ?

This species is united by Tryon with *D. retusa*, but it appears to me very different in many respects.

* Proc. Zool. Soc. 1851, p. 113; Gen. Moll. vol. i. p. 115.

† Man. Moll. vol. iv. p. 65.

‡ Man. Conch. p. 634.

§ Man. de Conch. p. 161.

|| Illustr. Conchylienbuch. p. 46.

¶ Nomencl. Zool. Moll. p. 29.

** Handbuch Conch. p. 150.

†† Indicis gen. Malacoz. prim. vol. i. p. 377.

‡‡ Index Moll. mar. jap. p. 34.

§§ Journ. de Conch. 1871, p. 71.

4. *Demoulia abbreviata* (Gmelin).

Hab. Cape Colony.

5. *Demoulia japonica*, A. Ad.

Hab. Japan.

6. *Demoulia ringens*, A. Ad.

Hab. —?

7. *Demoulia pyramidalis*, A. Ad.

Hab. Port Elizabeth, South Africa (*Marrat and Sowerby*).

The locality "Japan" originally assigned to this species still wants confirmation.

The first five of the preceding species form a group which may be of equal value with the numerous sections or subgenera into which the genus *Nassa* has been divided, and to it the name *Demoulia* may be assigned, and the last two, being of different form, will fall into other groups.

III. *NEOTHAUMA*.

Through the energy of Capt. E. Coode Hore the British Museum has obtained two specimens of this Tanganyikan genus preserved in spirit. The animal may be thus described:—

Foot short, as broad as long, front margin double-edged, a little wider than behind, of a slaty-grey colour beneath and at the sides, also beneath the operculum when removed. Head, tentacles, neck-lappets, and front margin of the mantle of the same tint. Tentacles short, broad, horizontally compressed at the base, tip pointed and apparently not produced much beyond the eyes, situated on slight lateral prominences. Left neck-lappet moderate; right very large, folded, forming a distinct branchial siphon. The upper margin is reflexed under the right tentacle and produced under the rostrum as far as the mouth, forming as it were a third lappet. Rostrum shortish, blunt. The radula, kindly mounted and examined by my colleague Mr. B. B. Woodward, has the formula 3. 1. 3, and is of the same type as that of *Viviparus*.

From the above description it will be seen that the animal

of *Neothauma* agrees in general structure with that of *Viviparus*. The tentacles certainly are very short and compressed, but that is merely of specific value.

The genus *Neothauma* was proposed on account of the aperture being somewhat effuse anteriorly and of the broad sinus in the outer lip, and at the time it was conjectured that these characters indicated some corresponding anatomical peculiarities. The right neck-lappet certainly is rather large, and doubtless the object of the labral sinus is to accommodate this siphonal structure. Beyond this there appears to be no reason for separating this form generically from *Viviparus*.

There is a species described by Prof. E. von Martens from China—"Paludina (*Melantho*) *auriculata*"—which feebly exhibits both an anterior effusion and a lateral emargination, and some of the specimens also have a peripheral angle like *Neothauma* (*vide* Novit. Conch. vol. iv. pl. cxxxv. figs. 4-6). "*Paludina angulata*, Lea," a North-American form now placed in the genus *Tylotoma*, has the aperture prolonged at the base, but the outer lip exhibits only a very slight trace of a median sinus. After careful consideration I now regard the extreme development of a labral sinus in *Neothauma* merely as a specific character, and not of generic importance. It will therefore pass into the synonymy of the genus *Viviparus*.

XLIII.—*Sessile-eyed Crustaceans.*

By the Rev. T. R. R. STEBBING, M.A.

[Plates XV. & XVI.]

A new Species of Talorchestia.

OF this widely distributed genus no European species appears to have been hitherto noticed. The name of the genus refers to its close connexion with the genera *Talitrus* and *Orchestia*, it being in a manner compounded of both, since the males of *Talorchestia* are *Orchestiæ*, while the females are *Talitri*. The distinction of the three genera can therefore only be regarded as conventional; yet it cannot well be relinquished, on account of the large number of species that have to be dealt with. It is attended by the special inconvenience that in this group animals of which only one sex is known cannot have their genus definitely determined. Thus "*Orchestia* (*Talitrus*) *pugettensis*," Dana, and "*Talorchestia*? *africana*," Sp. Bate, are still uncertain, both having been described from females only.



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