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XXXV.—Notes on the Gasteropoda contained in the Gilbertson Collection, British Museum, and figured in Phillips's 'Geology of Yorkshire'

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In some places, probably where the superficial calcareous layer is thin, the pearly iridescence beneath it is observable. The oblique flexuous costæ are about nineteen in number on the penultimate, and a trifle more numerous upon the last whorl.

Yoldia vancouverensis.

Shell almost equilateral, transversely elongate-oval, acuminate posteriorly, slightly gaping at both ends, clothed with a greenish olivaceous epidermis, which is darker towards the ventral margin and varied at intervals with dark zones. Surface not very glossy, marked with concentric lines of growth and close microscopic striation and granulation. Anterior side a trifle the longer, regularly rounded at the margin, posterior more acute. Hinder dorsal slope nearly rectilinear, scarcely arcuate. Area distinct. Length 12 millims., width $22\frac{1}{2}$, diam. 6.

This species is narrower posteriorly than *Y. arctica*, Gray, which it somewhat resembles, less glossy, and is very minutely granular upon the surface, this sculpturing being only discernible under a powerful lens.

XXXV.—Notes on the *Gasteropoda* contained in the Gilbertson Collection, British Museum, and figured in Phillips's 'Geology of Yorkshire.' By R. ETHERIDGE, Jun., F.R.Ph.S.Ed.

[Continued from vol. v. p. 485.]

THE SPECIES FIGURED ON PLATE XIV.

Patella scutiformis, Phillips (p. 223, t. 14. fig. 1).

The figure is drawn from a somewhat crumpled and fragmentary specimen, which bears a considerable resemblance to the subject of the next figure, *P. sinuosa*. From this imperfection the species will not be easy of recognition in collections, as it is impossible to say what the exact outline was, whether the margin was entire or sinuous. It certainly appears to be rounder than *P. sinuosa*, more depressed and to have a smaller apex; it is, however, a question, I think, whether these forms can be retained as more than varieties of one another. Professor M'Coy appears to consider *P. scutiformis* a good species, from its depressed form and marginal apex. I would, however, observe that in the absence of the broken end

it is difficult to say what relation the apex bears to the margin in position. It is the

Patella scutiformis, Phillips, loc. cit.; M'Coy, Synop. Carb. Foss. Ireland, 1844, p. 46; Morris, Cat. Brit. Foss. 2nd ed. 1854, p. 266.

Patella sinuosa, Phillips (p. 223, t. 14. fig. 2).

This figure is an accurate representation of the fossil it represents. Phillips describes the surface as smooth; this, however, it can hardly be said to be; for there are decided irregularities, caused by the obtusely rounded concentric undulations of growth. The apex appears to have been broken, but was probably acute. It is the

Patella sinuosa, Phillips, loc. cit.; ?De Koninek, Animaux Foss. p. 326, t. 23. fig. 4, a, b; Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 266.

Patella mucronata, Phillips (p. 223, t. 14. fig. 3).

The collection contains two specimens of this species; but as both are imbedded in matrix, it is difficult to conceive how either can be the original of the figure in question. Under these circumstances I think it not improbable that the latter is meant for a restoration. Notwithstanding this, it appears to be a good species, which may be distinguished by the depressed form, orbicular outline, central acute apex, and almost plain surface as compared with the other species of the genus. It is the

Patella mucronata, Phill. loc. cit.; M'Coy, Synop. Carb. Foss. Ireland, 1844, p. 46; Morris, Cat. Brit. Foss. 2nd ed. 1854, p. 266.

Patella curvata, Phillips (p. 223, t. 14. fig. 4).

The figure of this species would, to all intents and purposes, pass for that of an *Astarte* badly drawn. No *Gasteropod* in the whole of the Gilbertson collection bears the slightest resemblance to this figure; but, on the contrary, two specimens labelled as *P. sinuosa* are beautifully preserved examples, conical, with a nearly central apex, a plain non-sinuuous basal edge, and ornamented with fine, concentric, thread-like lines of growth.

Baron de Ryckholt has figured* a shell, under the name of *Emarginula carbonifera*, which, omitting the ventral depression in the side, has the exact appearance of the specimens labelled *P. sinuosa*; only the latter are much larger. It is the

Patella curvata, Phillips, loc. cit.; Morris, Cat. Brit. Foss. 2nd ed. 1854, p. 266.

* Mém. Couronnés Acad. R. Belg. 1852, xxiv. p. 43, t. 1. figs. 19, 20.

Patella retrorsa, Phillips (p. 223, t. 14. fig. 5).

The type of this species is retained in limestone, and is in an unsatisfactory state of preservation. The undulating border, corresponding concentric striæ, segmented sides, and depressed form appear to be characteristic points of the species, although the grooves running up the flanks of the shell are rendered too definite in the figure. It is the

Patella retrorsa, Phillips, loc. cit.; Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 266.

Patella lateralis, Phillips (p. 223, t. 14. fig. 6).

Although this is stated to be in the Gilbertson collection, I have not met with the specimen.

On the Shells called Patella by Phillips.—No conclusive evidence, so far as I am aware, has been adduced to show in what relation these old Patelloid shells stand to the genus *Patella* as now understood. Of the muscular impressions we know little or nothing; and it appears to me, in consequence, that it would be better to refer them to some other genus, pending further details of their structure, rather than to definitely place them in a genus now existing, and to which they may perhaps bear no other affinity than that of outward resemblance.

Prof. James Hall has proposed* for American Lower-Silurian shells of somewhat similar aspect the name *Palæacmæa*, but which he defines as possessing an entire and non-sinuate peristome. With the exception of this one character his definition would quite accord with the shells referred by Phillips to *Patella*; and it becomes a question whether it would not be better to enlarge Hall's diagnosis, so as to include shells with both a plain and sinuated border or peristome. In this case the above species would become *Palæacmæa sinuosa*, Phill. sp., *Palæacmæa curvata*, Phill. sp., and so on.

Hall's definition is as follows:—"Conical univalve shells, having a circular, ovate, or elliptical outline, with a more or less elevated subcentral apex, either erect or slightly curving towards one extremity; peristome entire, not sinuate. Surface marked by concentric ridges of growth. Internal muscular markings unknown."

On the other hand, if this alteration of Hall's diagnosis is not permissible, these shells must remain as simple *Patellæ*

* Twenty-third Ann. Report New-York State Cab. Nat. Hist. 1873, p. 242.

until such time as their internal structure can be studied in conjunction with that of *Patella* itself.

Metoptoma pileus, Phillips (p. 224, t. 14. fig. 7).

This, the type of the genus *Metoptoma*, is a well-marked form and an almost perfect specimen. The truncated margin is concave, the apex being placed almost vertically above it. The lines of growth are close and thread-like, with stronger undulations here and there. It is the

Metoptoma pileus, Phillips, loc. cit.

Patella pileus, De Koninck, Animaux Foss. p. 328, t. 23. fig. 7, a, b.

Metoptoma pileus, Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 258.

Metoptoma imbricata, Phillips (p. 224, t. 14. fig. 8).

The form of this species closely approaches that of the last; but it may be at once distinguished by the step-like, more or less imbricating, strongly marked concentric ridges. Phillips describes it as conical; this term, however, can hardly be applied in this case, as the anterior and posterior sides are of different lengths and angles of inclination. It is the

Metoptoma imbricata, Phillips, loc. cit.

Patella imbricata, De Koninck, Animaux Foss. p. 329, t. 23 bis, fig. 4.

Metoptoma imbricata, Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 258.

Metoptoma elliptica, Phillips (p. 224, t. 14. fig. 9).

A very elegantly proportioned shell, and of which Prof. M'Coy has given a full and good description. It may be at once distinguished from both the preceding species by the proximity of the apex to the truncated posterior margin, and, in consequence, the total absence of the almost vertical posterior end. The apex is, as M'Coy states, just within the margin, scarcely terminal (as described by Phillips), and certainly not overhanging (as mentioned by De Koninck). It is the

Metoptoma elliptica, Phillips, loc. cit.

Patella elliptica, De Koninck, Animaux Fossiles, p. 330, t. 23 bis, fig. 3.

Metoptoma elliptica, Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 258.

Metoptoma oblonga, Phillips (p. 224, t. 14. fig. 10).

This species is founded on a single specimen, an internal cast, showing the muscular scars. It is quite clear the shell possessed strong concentric ridges, like *M. imbricata* and *M. sulcata*; but if the elongated form and slightly concave anterior lateral margins are constant, these will suffice to separate

it; however, I think it is desirable a series of specimens should be examined before any conclusive result can be arrived at as to the value of this species. It is the

Metoptoma oblonga, Phillips, loc. cit.

? *Patiella oblonga*, De Koninck, *Animanx Fossiles*, p. 329, t. 23. fig. 6, a, b.

Metoptoma oblonga, Morris, *Cat. Brit. Foss.* 1854, 2nd ed. p. 258.

Metoptoma sulcata, Phillips (p. 224, t. 14. fig. 11).

A small and imperfect shell. The ornament is exactly similar to that of *M. imbricata*; and, with the present material before me, I should not be inclined to do more than recognize it as a variety of the latter. It is the

Metoptoma sulcata, Phillips, loc. cit.; Morris, *Cat. Brit. Foss.* 1854, 2nd ed. p. 258.

On the Genus Metoptoma, Phillips.—This genus was described in 1836 by the late Prof. Phillips for patelliform Carboniferous shells having the posterior end (or that under the apex) truncated. It was not adopted by Prof. de Koninck in the body of his work on the Belgian fossils, but was afterwards admitted, to some extent, in the supplement to that work, in consequence of the discovery of the muscular scars on the interior surface of the shells of *M. pileus*, Phill., and *M. solaris*, De Kon.; good examples of these are now in the British-Museum collection. In the two species just mentioned Prof. de Koninck describes the scars as horseshoe-shaped, placed on the posterior side of the shell, with their dilated pyriform ends directed towards the front.

Neither De Koninck nor M'Coy mention the fact that Phillips had already figured the muscular impressions in *M. oblonga*, although he failed to make any note of their significance; not so, however, those discriminating palæontologists Messrs. Meeke and Worthen*, who draw special attention to this figure in the 'Geology of Yorkshire.'

Baron de Ryckholt † refers *Metoptoma* to the genus *Helcion*, De Montfort. This, however, simply arises from a misapprehension of the characters of the former, because the forms from the Carboniferous rocks of Belgium ascribed by De Ryckholt to *Helcion* bear no resemblance to those upon which Phillips established his *Metoptoma*, beyond all being more or less conical patelloid shells.

Prof. Hall has suggested ‡ that the *Metoptomæ* of Phillips

* Proc. Acad. Nat. Sci. Philadel. 1866, p. 266.

† Mém. Couronnés Acad. R. Belg. 1852, xxiv. p. 56.

‡ Twenty-third Ann. Report State Mus. N. York, p. 242.

are only *Chiton*-plates; but any attention to the muscular scars as figured by Phillips, or described by De Koninck, would have at once dispelled this idea.

In *Metoptoma oblonga* the muscular scars possess identically the same character as those of *M. pileus*, Phill., or *M. solaris*, De Kon., and, like them, are striated lengthways.

Now, if we compare these scars in either of the three species just mentioned with those of a recent *Patella*, we find the resemblance complete, the impressions in the latter being to all intents and purposes horseshoe-shaped, with the free ends directed towards the anterior or narrowed portion of the shell. Under these circumstances *Metoptoma* cannot be said to differ from *Patella* in more than its truncated posterior end and some other minor particulars.

The form of the muscular impressions and the utter absence of any facet-surface for rolling up, as in *Chiton*, the truncated posterior side of *Metoptoma* being in no way analogous to this, at once separate the latter from the former. In the *Chitones* the facet or overlapping surface of the valves is differently ornamented from their exposed surfaces, whilst in *Metoptoma* the posterior truncated side is ornamented in a similar manner to the rest of the surface. On the whole, *Metoptoma* may be conveniently retained for shells of the Palæozoic rocks having the general appearance of *Patella* but with the posterior end truncate.

Pileopsis? trilobus, Phillips (p. 224, t. 14.
figs. 12 & 13).

Not in the Gilbertson collection.

Pileopsis tubifer, Sowerby (Phillips, p. 224,
t. 14. fig. 14).

This, in many respects a remarkable specimen, has not been done justice to in Phillips's figure. The example preserved in the Gilbertson collection, and used by Prof. Phillips, also forms the actual type of the species, having been borrowed and figured by Mr. J. de C. Sowerby. The shell is more or less imbedded in limestone; and there are visible two rows of spine-bases, one on each side, with distinct traces of a central third one. From the margin of the shell, in a line with each of these rows, a coarse irregularly formed spine projects, enclosed to a great extent in matrix. The apex is not exposed; M'Coy says, however, it is arched, but not incurved, and that the general form of the shell is here more lengthened and narrower than in any species of this genus.

P. tubifer, which is apparently any thing but common, has

the general outline of *P. vetustus*, Sow., and well exemplifies the length to which variation proceeds in this very variable genus. It forms the British type of a condition much more common in the Palæozoic rocks of North America than in those of this country, and is allied to *Capulus dumosus*, Conrad, and *C. multispinosus*, Meek, both highly spinose species. It is the

Pileopsis tubifer, J. de C. Sow. Min. Conch. 1829, vi. p. 224, t. 607. fig. 4.

Pileopsis tubifer, Phillips, loc. cit.

Acroculia tubifer, M'Coy, Synop. Carb. Foss. Ireland, 1844, p. 45.

? *Capulus tubifer*, De Ryckholt, Mém. Couronnés Acad. Belg. 1852, xxiv. p. 34, t. 1. figs. 7, 8.

Capulus tubifer, Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 239.

Pileopsis striatus, Phillips (p. 224, t. 14. fig. 15).

The figure of this specimen is tolerably good; only the striæ are not close enough. They are also in parts alternately larger and smaller, and, from being here and there broken and disconnected, give to the ornament of the shell a somewhat granular appearance. The smaller striæ are interpolated from the margin upwards; and faint indications of concentric lines are to be found on some parts of the surface, especially on the apical region. If the surface of *P. striatus* was, when perfect, more or less cancellated, it will be the type of a group not hitherto recognized in our rocks, viz. the genus *Igoceras*, Hall. It is the

Pileopsis striatus, Phillips, loc. cit.

Capulus striatus, Morris, Cat. Brit. Foss. 2nd ed. 1854, p. 239.

Pileopsis neritoides, Phillips (p. 224, t. 14. figs. 16-18).

Figures 16 and 17 are two views of one specimen, and figs. 18 two views of another example. Fig. 17 is somewhat improved in the region of the inrolled apex. The strong lines of growth are wavy and interspersed with fine striæ. Prof. M'Coy appears to have been the only one to draw attention to the similarity existing between *P. neritoides*, Phill., and the *Conchylolithus (Helicites) auricularis*, Martin. So far as an opinion can be formed only from a figure, I must express my entire concurrence in the reference advocated by him. Some forms of this genus, more particularly those described by American authors, show a distinct transition in form towards *Naticopsis*, M'Coy: with these may be placed *P. neritoides*, Phill.; for if we compare fig. 16 with that of *Naticopsis elliptica*, on the same plate, we see the general community of

type which exists between the two, so far as outward form is concerned. It is the

- Conch. (Helicites) auricularis*, Martin, Petr. Derb. 1809, t. 40. figs. 3, 4.
Pileopsis neritoides, Phillips, loc. cit.
Capulus neritoides, De Koninck, Animaux Fossiles, p. 334; Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 239.

Pileopsis vetusta, Sow. (Phillips, p. 224, t. 14. fig. 19).

This specimen is in a bad state of preservation, but it has an obliquely placed and spirally inrolled apex after the *P. neritoides* type. Prof. de Koninck has united it with the latter, and Prof. M'Coy with Martin's *P. auricularis* along with others. These authors are doubtless correct in this; it is not the true *P. vetusta*, Sowerby.

Pileopsis angustus, Phillips (p. 224, t. 14. fig. 20).

A small, almost entirely decorticated shell with an oblique spiral apex after the type of *P. neritoides*, with which it has been united by Prof. M'Coy as a synonym of *P. auricularis*, Martin. I quite fail to see how it can be separated, except as a variety with a less sinuated and more regular shape. It is the

- Pileopsis angustus*, Phillips, loc. cit.
Acroculia angustus, M'Coy, Synop. Carb. Foss. Ireland, 1844, p. 44.
Capulus auricularis, M'Coy, Brit. Pal. Foss. 1853, fasc. iii. p. 523.
Capulus angustus, Morris, Cat. Brit. Foss. 1854, 2nd ed. p. 239.

On the Shells called Pileopsis by Phillips.—Under what name should these shells be known? The generic names *Capulus*, Montfort, *Platyceras*, Conrad, *Acroculia*, Phillips, and *Pileopsis*, Lamarck, have been used for them; and the question to which of these should they be referred turns more or less upon that of their internal structure, more particularly of the muscular system. There appears to be little question of the identity of *Capulus* and *Pileopsis* on the one hand, and of *Platyceras* and *Acroculia* on the other; whilst *Capulus* is as much anterior in date to *Pileopsis* as *Platyceras* is to *Acroculia*; we have therefore a choice between *Capulus* and *Platyceras*.

In *Capulus* the muscular impression is horseshoe-shaped, discontinued or open towards the anterior or front of the shell. This may be satisfactorily seen in *C. hungaricus* or any of the larger recent species. So far as I am aware, the form of the scar in *Platyceras*, Conrad (= *Acroculia*, Phillips), was little known until figured by Messrs. Meek and Worthen, who have shown that the scars in *P. infundibulum*, M. & W., are horseshoe-shaped, with lateral dilatations, and situated on the pos-

terior side of the shell. There does not, therefore, appear to be any thing in the structure of *Platyceras*, Conrad, which definitely separates it from *Capulus*, Montfort.

The examination of numerous specimens has convinced me that the reduction in the number of species of the British Carboniferous *Capuli* made by Profs. de Koninck* and M'Coy† is a step in the right direction.

The latter writer has asked "whether Mr. Sowerby has confounded two species of *Pileopsis*, and which of them has the best right to the specific name *vetusta*?" After a careful examination of Sowerby's specimens, the conviction is forced upon me that two distinct forms have not been described under one name, but that the specimens in the "Min. Conch. Collection" fairly represent the old and young conditions of a single species, *Capulus vetustus*. It also appears to me that Prof. de Koninck‡ has followed the right and proper course in separating the specimen called *Pileopsis vetustus* by Phillips from that of Sowerby, and uniting with the last-named the *Pileopsis trilobatus*, Phillips.

Prof. M'Coy has united with the *Conch. (Helicites) auricularis* of Martin three forms described by Phillips; and in this, so far as one can judge from Martin's figures, I agree with him.

It results from the foregoing remarks that we have in the "Gilbertson collection" four species only of *Capulus*, viz. *C. vetustus*, Sow. (= *C. trilobatus*, Phill.); *C. tubifer*, Sow. (= *C. tubifer*, Phill.); *C. striatus*, Phillips; *C. auricularis*, Martin (= *C. vetustus*, Phill. non Sow., *C. neritoides*, Phill., and *C. angustus*, Phill.).

Prof. James Hall has proposed the subdivision of the genus *Platyceras*, Conrad (= *Capulus*, Montf.), into three sections; and a fourth has been added by Messrs. Meek and Worthen. However, as the latter authors have remarked, too much reliance should not be placed on these groups, from the tendency possessed by the component forms to run into one another; nevertheless they may be found of service in a broad sense. They are:—

1. PLATYCERAS, Conrad.—Typical forms with an incurved or spiral apex; surface concentrically striated, and sometimes radiately plicate, rarely spiniferous. Type *P. tubifera*, Sow.

The British species of this section are *Capulus vetustus*,

* Animaux Foss. p. 332.

† Brit. Pal. Foss. 1853, fasc. iii. p. 523.

‡ Loc. cit.

Sow., *C. tubifer*, Sow., *C. auricularis*, Martin (= *C. neritoides*, Phill.), &c.

2. ORTHONYCHIA, Hall.—Shell arched or straight, forming an elongated cone. Type *P. subrectum*, Hall.

A single specimen occurs in the "Gilbertson collection," which is probably an example of this section.

3. IGOCERAS, Hall.—Surface cancellated. Type *P. plicatum*, Hall.

In all probability, *Capulus striatus*, Phillips, when perfect will assume this condition of ornamentation, and be the British representative of the section.

4. EXOGYROCERAS, Meek and Worthen.—Forms with a sinistral spire and an obscure columella. Type *P. reversum*, Hall.

Unknown to me as British.

Natica ampliata, Phillips (p. 224, t. 14. figs. 21 & 24).

The collection contains the originals of both the foregoing figures. The expanded outer lip, flattened inner lip, depressed and even concave spire render this a peculiar species amongst the other Carboniferous Naticiform shells. The ornamentation is equally characteristic, consisting of regular, even, flattened, filiform lines, or, as Prof. M'Coy has well described them, minute ribs, following the marginal outline of the shell. The figure of the larger example is fairly good; but a concavity which exists around the suture is hardly represented. The spiral fine striæ (mentioned by M'Coy) crossing the ribs I have not seen; but I find that, under a strong lens, the ribs themselves are traversed by fine parallel striæ.

In *N. ampliata* the apex is depressed and even somewhat concave, the inner lip broad, flat, sloping inwards, plain, and without any tubercle or callosity.

Under the name of *Nerita spirata*, Mr. J. de C. Sowerby figured two species. The larger of his two figures is the present species, *N. ampliata*, and possesses all the characters of it. The second figure given in the 'Min. Conch.' is a small individual of the variety of *Natica elliptica*, Phill., with the slightly elevated spire. The description given by Sowerby—viz., "Spire small, partly immersed, the upper part of which is flat, when old concave; aperture transversely oval"—is almost sufficient to show the identity of the two forms. Sowerby's collection contains a second specimen larger than that figured by Phillips.

Under these circumstances the name *Natica ampliata*, Phill.,

will have to be abandoned, and the shell must in future be known as *Naticopsis spirata*, Sow., sp. It is the

Nerita spirata, J. de C. Sow. Min. Conch. 1824, v. p. 93, t. 463. fig. 1 (excl. fig. 2).

Natica ampliata, Phillips, as above.

Nerita spirata, Portlock, Geol. Report, 1843, p. 420, t. 31. fig. 8.

Nerita ampliata, De Koninck, Animaux Foss. p. 485, t. 42. fig. 2, a-c.

Pleopsis ampliata, Goldfuss, Petref. Germ. iii. p. 11, t. 168. fig. 4, a, b.

Naticopsis ampliata, M'Coy, Brit. Pal. Foss. 1853, fasc. iii. p. 543.

Natica ampliata, Morris, Cat. Brit. Foss. 1854, p. 262.

Natica lirata, Phillips (p. 224, t. 14. figs. 22 & 31).

There are three specimens of this species in the Gilbertson collection, one of which certainly represents fig. 31; but whether we have the original of fig. 22 is questionable. This, which is a decided *Naticopsis* in form, will probably require separation, from the nature of the surface-ornamentation and the presence of an umbilicus; at least, one is said to exist by De Koninck, and one of our specimens decidedly appears to bear this out. It is the

Natica lirata, Phillips, as above.

Narica lirata, De Koninck, Animaux Foss. p. 476, t. 42. fig. 5, a-c.

Natica lirata, Morris, Cat. Brit. Foss. 1854, p. 263.

(Compare *Narica spinescens*, De Ryckholt, Mém. Couronnés Acad. R. Belgique, 1852, xxiv. p. 71, t. 3. figs. 1-3.)

Natica elliptica, Phillips (p. 224, t. 14. fig. 23).

The larger figure in outline appears to have been restored from a badly preserved large individual in the collection. Of the smaller figure I can find no exact representative, although there are several which might pass for it. The oblique striæ round the suture are fine, and do not much exceed in size the lines of growth over the general surface of the shell. The apex is flat or slightly projecting. The inner lip slopes inward and is flattened, with its outer edge more or less sharp; there is no trace of a tubercle or callosity. It is the

Nerita spirata, J. de C. Sow. Min. Conch. 1824, v. p. 93, t. 463. fig. 2 (excl. fig. 1).

Natica elliptica, Phillips, as above.

? *Nerita spirata*, De Koninck, Animaux Foss. p. 484, t. 42. fig. 3, d.

Natica ampliata, Morris, Cat. Brit. Foss. 1854, p. 263.

(Compare *Naticopsis Phillipsii*, M'Coy, Synop. Carb. Limest. Foss. Ireland, 1844, p. 33, t. 3. fig. 9, t. 6. fig. 4, a, b.)

Natica plicistria, Phillips (p. 225, t. 14. fig. 25).

The type of this species is a well-preserved shell. One of the most important features of this species is the flat or concave condition of the upper portions of the whorls next the suture, and which is constantly obliquely strongly striated,

the striæ dying out, immediately they pass on to the body of the shell, into mere fine striæ of growth. The inner lip is reflected and thickened, transversely obliquely ridged, and with a small callosity near the upper angle. Spire elongated. Prof. de Koninck appears to have been one of the few authors who have noticed the transverse oblique ridges on the inner lip of this species. It is the

Natica plicistria, Phillips, as above.

Natica plicistria, var. β , Portlock, Geol. Report, 1843, p. 420, t. 31. fig. 7.

Naticopsis plicistria, M'Coy, Synop. Carb. Limest. Foss. Ireland, 1844, p. 34.

Nerita plicistria (pars), De Koninck, Animaux Foss. p. 483, t. 42. fig. 3, a-c.

Naticopsis plicistria (pars), M'Coy, Brit. Pal. Foss. 1853, fasc. iii. p. 544.

Natica plicistria, Morris, Cat. Brit. Foss. 1854, p. 263.

Natica variata, Phillips (p. 224, t. 14. figs. 26 & 27).

There does not appear to be any definite type example of this species preserved in the collection. It is the

Natica variata, Phillips, as above.

? *Nerita variata*, De Koninck, Animaux Foss. p. 481, t. 32. fig. 8, a, b.

Naticopsis variata, M'Coy, Brit. Pal. Foss. 1853, fasc. iii. p. 544.

Natica elongata, Phillips (p. 225, t. 14. fig. 28).

The figure of this species is not a good one. By several authors *N. elongata* has been placed as a synonym of *N. plicistria*; but they are quite distinct: the structure of the inner lip is sufficient to prove this, irrespective of other characters. In the present species it is very much reflected and thickened, with a large, prominent, blunt tubercle or callosity placed high up; the surface of the lip is plain and without any transverse ridges. In addition to this the apex of the shell is mamillary, and the body-whorl more or less concave about the middle; the latter character varies to some extent. It is the

Natica elongata, Phillips, as above.

Natica plicistria, var. *a*, Portlock, Geol. Report, 1843, p. 420, t. 31. fig. 6.

Nerita plicistria (pars), De Koninck, Animaux Foss. p. 483, t. 42. fig. 3, a-c.

Naticopsis plicistria, M'Coy, Synop. Carb. Limest. Foss. Ireland, 1844, p. 34; (pars) M'Coy, Brit. Pal. Foss. 1853, fasc. iii. p. 543.

Natica plicistria, Morris, Cat. Brit. Foss. 1854, p. 263.

Natica tabulata, Phillips (p. 225, t. 14. fig. 29).

The only specimen in the collection is smaller than the figure given in the 'Geology of Yorkshire,' and has portions

of matrix adhering to it, which render identification difficult. Prof. de Koninck states that the surface is ornamented with fine and irregular striæ of growth, which on the keel of each whorl are bent backwards, indicating the presence of a sinus in the outer lip. The striæ are not preserved in our specimen; but the keel is well exposed, and forms quite a projecting rim along the periphery of each whorl. In all probability it is either a *Murchisonia* or *Pleurotomaria*, perhaps the former, as it cannot in any way be considered congeneric with such forms as *Natica elliptica*, *N. elongata*, &c. It is the

Natica tabulata, Phillips, as above.

Ampullacera tabulata, De Koninck, Animaux Foss. p. 488, t. 42. fig. 4, a, b.

XXXVI.—On the Antipatharia (*Milne Edwards*), with reference to *Hydradendrium spinosum*. By H. J. CARTER, F.R.S. &c.

IN a late communication from the Rev. A. M. Norman, a very significant and proper question is put to me, viz.:—"Your *Hydradendrium* (Ann. 1880, vol. v. p. 454, pl. xix. fig. 8 &c.)—have you compared this with *Antipathes*? it looks uncommonly like one." In reply, I could only state that I had not done so—and for the simple reason that, not having specially given my attention to the Anthozoa, I had always regarded *Antipathes* as allied to *Gorgonia*, and therefore in no way connected with the Hydrozoa, of which I conceived *Hydradendrium spinosum* to be one, and had named it accordingly.

But the significance and propriety of the question coming from such high authority was immediately realized when I referred to Ellis's illustrations of *Antipathes*, among which *A. ulex* appeared to me to be identical in form with *Hydradendrium spinosum*; so the idea as quickly flashed upon me that *Antipathes* itself, after all, might be a Hydroid Cœlenterate.

The next step was to compare, as Mr. Norman had suggested, the Manaar specimen with different species of *Antipathes*. But here my resources entirely failed; and I was thus thrown back upon the literature of the subject, viz. Pallas*, Ellis and Solander †, Lamouroux‡, De Blainville§, and, lastly,

* Elenchus Zoophytorum, 8vo, 1766.

† Nat. Hist. of Zoophytes, 4to, 1786.

‡ Corallina or Flexible Corallines (Engl. transl.), 8vo, 1824

§ Mannel d'Actinologie, and Atlas, 8vo, 1834.