

MOLLUSCA OF SOUTH AFRICA,

BY

G. B. SOWERBY, F.L.S.

Since the publication of my description of the remarkable *Neptuneopsis Gilchristi* in "Marine Investigations," 1898, several small lots of mollusca have been sent to me, as the results of more recent dredgings, for identification and description. A considerable proportion of these belong to well known species, some of which, however, having now been taken for the first time alive, are worthy of special notice, particularly the *Volutilithes abyssicola*, and the *Eburna papillaris*. In this paper, while making mention of, and some notes on the known species, I am describing six which I believe to be new to science—notably, a new *Volutilithes*, making the third recent species of the genus. Of this, unfortunately, only dead shells have as yet been procured, but, having been dredged in deep water at a somewhat greater depth than *V. abyssicola*, it is quite probable that it may still exist in a living state.

EBURNA PAPILLARIS, Sowerby (Plate II., fig 3). Tank. Cat. app. 22., Thes. Conch. vol. iii., p. 70, pl. 215, fig. 7.

One specimen only, procured by dredge at Algoa Bay. Lat., $32^{\circ} 50' S.$; long., $25^{\circ} 54' 30'' E.$ Depth, 24 fms. Bottom, sand, shells, and rock.

With regard to the shell, there is little to add to the original description, but the markings are somewhat different, consisting of transversely oblong, not rounded, spots. The periostracum is exceedingly thin and transparent, scarcely obscuring the pattern of the shell. This may possibly not be always the case in the species, as the *Eburnæ*, like other Buccinoids, present considerable variation in the character and thickness of the periostracum covering different shells of the same species; for instance, I have before me an *Eburna canaliculata* with a thick, dark brown, scabrous coat entirely hiding the pattern of the shell, and another with a light yellowish covering which is perfectly transparent, a light veil which does not in the least mar the beauty of the pattern beneath. On the other hand, *E. zeylanica* appears to have invariably a very light covering.

The specimen of *Eburna papillaris* has the body well distended, revealing its form as in life. It is beautifully marbled with red spots similar in form to those which adorn the shell. The foot is broad and high, rounded in front with a double margin, tapering posteriorly, and terminating in a curious little tail-like projection. The head is small and flat; tentacles rather short and tapering; eyes at the outer base of the tentacles on slight prominences; proboscis rather long and inflated; siphon rather short and thin.

NASSA EUSULCATA, n. sp. (Plate II. fig. 8). Shell pale straw colour tinged with light brown; spire rather long, sharply acuminate; whorls nine, the first two smooth and rounded, the rest moderately convex, longitudinally ribbed and spirally grooved; ribs rendered slightly nodulous by the intersecting sulci, and narrower than the interstices; grooves rather deep (5 on the penultimate, and about 16 on the last whorl), the one next to the suture being broader and deeper than the others, dividing the tops of the longitudinal ribs: suture slightly channelled. Last whorl rather more than half the entire length of the shell, slightly inflated, contracted at the base. Aperture moderately wide, narrowing posteriorly into a shallow canal; anterior canal short, rather wide: columella covered with a rather thin projecting callus, roughly and irregularly ribbed within; outer lip slightly crenulated; interior strongly lirate.

Length, 19; breadth, 10 millim.

Hab :—Mouth of Tugela River N. by W., distant 18 miles.

Depth, 46 fathoms. Bottom, mud.

This shell is allied to *N. livescens*, Phil., which species varies considerably in its proportions. &c., but the ribs are more distant, and the spire seems to be invariably more sharply acuminate.

NASSARIA GRACILIS, n. sp. (Plate II. fig. 10). Shell whitish, suffused with light brown, fusiform, spire acute, turreted; whorls 10, the first $1\frac{1}{2}$ rounded, smooth, the rest roundly convex, longitudinally strongly ribbed and delicately striated, spirally lirate: ribs rather thick and prominent, crossed by the spiral ridges of which (in the penultimate and antepenultimate whorls) the two middle ones are the most prominent, and, being raised in crossing the ribs, give a biangular character to the whorls: suture linear, not channelled. Last whorl about half the total length of the shell, roundly convex, constricted below the middle, and terminating at the base in a slightly reflexed rostrum of moderate length, and outside the aperture in a thick, broad varix. Aperture sub-ovate, strongly lirate within: outer edge sharp very slightly reflexed; columella covered with a thin callus, which is raised in a sharp ridge above the umbilical region; canal moderately long and reflexed.

Length, 23; breadth, 12 millim.

Hab.:—Tugela River mouth N. by W. $\frac{3}{4}$ W., distant $15\frac{1}{2}$ miles. Depth, 40 fms. Bottom, mud.

Compared with *N. acuminata*, Reeve (Triton) this shell is smaller, narrower in proportion to its length, its longitudinal ribs are more numerous, and the transverse liræ more defined and distant.

LOTORIUM RANELLOIDES, Reeve, Proc. Zool. Soc. 1844 (Triton), Conch. Icon. Triton (Plate III. fig. 10).

Hab.:—Scottsburgh Light-house, Natal N.W. by W., distant 8 miles. Depth, 92 fms. Bottom, sand and shells.

The shell is narrower, and the tubercles smaller and more numerous than in Reeve's type. Similar specimens have been received from Japan. Reeve gives—Island of Luzon, Philippines, as the locality.

LOTORIUM NASSARIFORME, n. sp. (Plate II. fig. 7). Shell fusiform, rather solid, yellowish white, interruptedly banded with brown, with a narrow white zone just below the periphery. Spire acuminate, acute, rather long; whorls $7\frac{1}{2}$, apical ones regular, the first minute, the third decussated with thin, rather distant, longitudinal and spiral liræ; the remaining whorls are rather convex, closely nodulosly ribbed, spirally striated, and furnished at irregular, distant intervals with rather prominent, slightly reflexed, granular and tubercular varices. Last whorl about half the entire length of the shell, somewhat inflated, contracted below the periphery, and terminating in a somewhat oblique, slightly recurved, rostrum. Aperture rather small, sub-oval; lip white, with the outer margin thin, slightly reflexed, and spotted with brown; inner margin thickened, with seven prominent tooth-like projections, the hinder one being the most prominent; columellar lip irregularly plicated, with a rather thin, expanded callus, and a prominent tubercle near the posterior extremity: anterior canal slightly reflexed, with a narrow opening, widening at the extremity. The entrance to the aperture of the shell on the columellar side is decussated and coloured between the decussating ridges with square brown spots.

Length, 35; breadth, 18 millim.

Hab.:—Scottsburg Light-house, Natal N.W. by W., distant 8 miles. Depth, 92 fms. Bottom, sand and shells.

This species, undoubtedly a *Lotorium*, has much the form of a *Nassaria*. Superficially, the shell has something in common with *L. ranelloides*, but it is manifestly distinct from that species, being very much more closely tubercled, and having no posterior canal.

BULLIA (BUCCINANOPS) ANNULATA, Lamk. (Plate II. fig. 4). Two specimens procured in Algoa Bay. Lat. $33^{\circ} 50'$ S., long. $25^{\circ} 54' 30''$ E. Depth, 24 fms. Bottom, sand, shells, and rock.

The shells of this species are well known and abundant at Port

Elizabeth, &c. The figure of the animal represents the specimen as received in formalin; the length and slimness of the double tail-like appendage at the posterior extremity of the foot being remarkable, and very different from other species of the genus that have been figured.

MELAPIUM LINEATUM, Lamarck (Pyrula)=*Buccinum bulbus*, Wood, Index Test. Supp. p. 12, pl. iv. fig. 8=*Melapium bulbus*, Auct. Dredged at Mossel Bay, 11-19 fms. Bottom, hard, with clean grey sand.

Mr. Edgar A. Smith, in his interesting paper on the genus *Melapium* (Ann. and Mag. of Nat. Hist., March, 1889, p. 267), has pointed out that that figured as *Pyrula lineata* by Kiener, followed by Reeve and others, is not Lamarck's species, but a much larger shell of very different character, which had been described by Schubert and Wagner as *Melapium elatum*. The true *M. lineatum* being identical with the small, compact, finely lined shell called by Wood *Buccinum bulbus*. Mr. Smith places the genus between *Rapana* and *Coralliophila*, though it differs from those genera in having no operculum. He thus describes the animal:—

Foot oval, rather high, not truncate or bimarginate in front, in length about one and a half times the width, pale beneath, bordered all round above the margin with two bright red lines about 2 millim. apart. Head small, compressed. Tentacles 5 or 6 millim. long, acutely tapering. Eyes minute at outer base of the tentacles, on slight prominences. Penis compressed 10 to 12 millim. in length, obtuse at the end. Siphon shortish, moderately acuminate. Branchiæ in two plumes, the right large, the left small. Odontophore most resembling that of *Rapana bulbosa*, consisting of a tricuspid central tooth and a single acute curved lateral. The central tooth is transversely elongate, and the cusps are nearly equal in size—short, acute, and approximated.

LATIRUS IMBRICATUS, n. sp. (Plate II. fig. 1). Shell fusiform, lightish brown, covered with a darker brown periostracum, which consists of scaly, waved lamina. Spire rather long, acute; whorls $7\frac{1}{2}$, the first (apical) smooth, papillary, the rest slightly angular in the middle, scarcely concave above, and armed with stout, somewhat distant, tubercles at the angle, everywhere closely spirally ridged; suture narrowly channelled, irregular. Last whorl armed with two rows of obtuse nodules, rather square in the middle, and terminating in a broadish rostrum. Aperture oblong, interior smooth, stained with purple; columella rather straight, smooth, without plaits; canal broad and open. The outer lip in the type is thin and simple, but the specimen is evidently not fully developed.

Length, 44; width, 20 millim.

Hab.:—Tugela River mouth N. by W., distant 18 miles. Depth, 46 fms. Bottom, mud.

Like *L. abnormis*, described by me in "Marine Shells of South Africa," the shell exhibits no columella plaits. It differs from that species in form, as well as in having two rows of tubercles on the body whorl. The "imbricated" character from which I have given this species its name consists chiefly in its periostracum, but here and there thin, shelly scales are also visible.

FUSUS SUBCONTRACTUS, n. sp. (Plate II. fig. 2). Shell rather elongately fusiform, pale yellow. Spire acutely turreted; whorls 9, angularly convex, spirally closely lirate, keeled at the angle and armed with narrow angular tubercles, passing into short, slightly raised ribs above and below; suture closed, waved; last whorl about two-thirds of the entire length of the shell, almost concavely sloping to the angle, which is very prominent, the tubercles becoming larger and more distant, and the ribs below the angle more prominent, while those above are evanescent; rostrum moderately long and tapering. Aperture subovate; interior white, smooth; outer lip rather thin, with a slight callous thickening, inflexed at the entrance to the anterior canal; columella nearly straight; canal straight, rather narrowly open.

Length, 40; width (at angle), 18 millim.

Hab.:—Cape Natal W. by N. $\frac{3}{4}$ N., distant 11 miles. Depth, 200 fms. Bottom, sand and mud. Procured by shrimp trawl.

An interesting shell, somewhat resembling an extremely angular form of *F. rostratus*, Olivi. The curious contraction and inflexion of the lip at the entrance of the canal appears to be characteristic; although only having seen a single specimen, I cannot be certain of this. It looks like a modification of the same character that is seen in *F. clausicaudatus* hinds (a South African species of which only one specimen is known), where the inflexion of the lip almost closes the canal and continues throughout its length.

ANCILLA OBTUSA, Swainson, Monog. 282, Sowerby. Thes. Conch. vol. iii. p. 62, pl. 211, figs. 15, 16 (shell). H. & A. Adams, Genera, Plate xv. fig. 7 (animal). Three specimens by dredge, Algoa Bay. Lat., $33^{\circ}50'$ S.; long., $25^{\circ}54'30''$ E. Depth, 24 fms. Bottom, sand, shells, and rock.

VOLUTILITHES ABYSSICOLA, Adams and Reeve, Zool. Samarang Moll. p. 25, pl. vii., fig. 6; Watson, Gastropoda of Challenger Exped. p. 285, pl. xv., fig. 1 (shell); M. T. Woodward, Proc. Malac. Soc. vol. iv. p. 121, pl. x. (anatomy).

Four specimens got in shrimp trawl. Lat., $34^{\circ}43'15''$ S.; long., $18^{\circ}30'$ E. Depth, 125 fathoms.

This interesting species was originally described from a very young shell, which remained unique until fully grown specimens were obtained in the Voyage of the Challenger. It was at that time the only known recent example of a genus well known and pretty abundant among the Eocene and Miocene fossils of

Europe and America. The shell of the recent species (*V. abyssicola*) differs so much from Swainson's type of the genus (*V. spinosa*, Lamk.) in its general form, cancellated structure, the thickening of the outer lip, &c., that in a paper in "Trans. of Wagner Free Institute," vol. 3, pp. 74, 75, Dr. Dall proposes to remove it from the genus *Volutilithes*, and to place it with a group of fossil species which he separates under the name *Volutocorbis*, taking for his type *V. limopsis*, Conrad. In the same paper he describes and figures (Plate VI). a new recent species of what he considers a true *Volutilithes*, under the name *V. Philippiana*, Dall. After comparing a number of fossil forms in the British Museum, I have come to the conclusion that there is not sufficient ground for the separation, and that it is unnecessary. I think it better to include under the common name *Volutilithes* all the fossil forms, both the recent species and the third species hereafter described.

The late Mr. Martin F. Woodward, whose recent death we all deplore as a great loss to science, as well as to all who had the privilege of knowing him as a friend, thus describes the soft parts:—

External characters—The head is slightly compressed dorso-ventrally, and divided anteriorly by a deep median cleft; these two anteriorly-placed head-lobes are intimately related to the opening through which the introvert is protruded; at first sight they might be thought to represent lips, but this is not the case, the true lips being situated, with the mouth, at the extremity of the introvert. Each head-lobe is deeply grooved on its outer border, and the inferior margins of these grooves meet ventrally behind the false mouth in such a manner that these false lips form a V-shaped thickening on the under side of the head. The tentacles are stout, and related to the upper margins of the grooves in the head-lobes. Behind each tentacle is a short but very stout eye-stalk, bearing a prominent eye on its distal extremity. The foot is very large, and probably capable of great expansion. There is no operculum. The siphon is long and devoid of appendices. The edge of the mantle is bordered by a single row of papillæ.

The pallial complex is in most respects like that of *Voluta ancilla* or of *Neptuneopsis*. The gill and dark-coloured osphradium being identical in structure, and the anal, genital, and excretory orifices are similar in position. The only difference, however, is a striking one, and is due to the entire absence of the characteristic hypobranchial gland, a structure present in the majority of the *Rhachiglossa*.

The Alimentary Canal—The buccal mass and radula-sac form a stout muscular mass, occupying the greater part of the introvert. As in *Voluta*, two pairs of pre-neural salivary glands are present; one large, branched and whitish pair opens into the œsophagus at its junction with the buccal mass, while the second pair is tubular and yellowish, and unites to form a fine duct,

which, as in *Voluta*, opens into the floor of the buccal mass in front of the odontophore.

The radula of *Volutilithes* exhibits three teeth in each transverse row. Of these rows there are about 110, but owing to the small size of the teeth the radula is small and delicate. The central tooth is tricuspid, the laterals unicuspid.

For further remarks upon this interesting mollusk see *Proc. Malac. Soc.* vol. iv. pp. 122-124.

Conchologically, this genus is very closely related to *Voluta*. The tricuspid rhachidian tooth is similar to that of most of the *Volutidae* (as far as known), which, however, unlike this, have no laterals. Having regard to this difference, and to certain differences in the anatomy, the propriety of retaining *Volutilithes* as a genus distinct from *Voluta* is established, and Mr. Woodward even suggests a doubt as to whether it may not be regarded as representing a family apart from the *Volutidae*.

VOLUTILITHES GILCHRISTI, n. sp. (Plate II., fig. 5). Shell oblong ovate, yellowish white, surface cancellated; spire rather shortly conical; whorls rather convex, longitudinally ribbed, and spirally lirate, separated by a deeply channelled suture, above which the top of the whorl projects in an acute crenulated ridge; last whorl about two-thirds the entire length of the shell, convex, and but slightly attenuated towards the base, with a narrowish concave depression a little below the sutural ridge; longitudinal ribs about 16, elevated at the suture, and gradually becoming obsolete towards the base; spiral liræ rather narrow, becoming stouter towards the base. Aperture narrowly oblong; columella covered with a thick callus; plicæ 6, very small and faint, the anterior one being more prominent than the rest, oblique, thin and sharp; outer lip very thick, smooth and rounded, forming on the exterior a broad, stout border to the whorl, as in the genus *Marginella*.

Length 30; breadth 15 millim.

Hab. :—Cape Natal W. by N., distant 11 miles. Depth, 200 fms.

PLEUROTOMA GILCHRISTI, n. sp. (Plate II. fig. 9). Shell elongately fusiform, posterior longer than the anterior, whitish tinged, and banded with pale yellow. Spire elongately turreted, slightly convex at the sides, acute at the apex; whorls 12, apical ones smooth, rounded, regular, the rest sloping, scarcely convex, with a double keel above, beneath which is a deepish rut, and about the middle of the whorl a stouter keel ornamented with rather close-set, gem-like tubercles, the interstices between the keels being ridged and grooved; suture of the upper whorls transversely plicate, and of the lower narrowly canaliculate. Last whorl rather convex with the tubercles, becoming longitudinally narrower, and the keel bearing them less prominent, beneath which there are several acute keels and intervening liræ; the

whorl is also sculptured with numerous obliquely-curved longitudinal plicæ; rostrum of moderate length. Aperture elongately sub-oval; sinus rather deep, and not very wide; canal open, moderately wide, and slightly curved.

Length, 32; width, 11 millim.

Hab.:—Mouth of Tugela River N. by W., distant 18 miles. Depth, 55 fms. Bottom, mud.

This shell somewhat resembles *P. gemmata*, Hinds, but it is larger and somewhat different in detail. It also seems to have affinity with the much larger Chinese species *P. Kieneri*, Doumet.

PLEUROTOMA MARMORATA, Lamarck, Anim. S. Vert. vii. p. 95. Reeve, Conch. Icon (Pleur.) fig. 21 *A.* (*var. maculata*).

The shells resemble in colour and pattern those which are pretty abundant in the China Sea, Philippines, &c., but the keel is less prominent.

Hab.:—Same as last.

TURRITELLA PUNCTICULATA, Sowerby, Proc. Zool. Soc., 1870, p. 253, Marine Shells of South Africa (Plate V. fig. 102).

Several small specimens obtained in large trawl in St. Francis Bay. Lat., $34^{\circ}2'45''$ S.; long., $25^{\circ}10'$ E. Depth, 30-34 fms.

SILICUA POLITA, Wood (= *T. Japonica*, Dünker).

Hab.:—Amatikulu River mouth N.W. by N., distant 10 miles. Depth, 24 fms. Bottom, sand and shells.

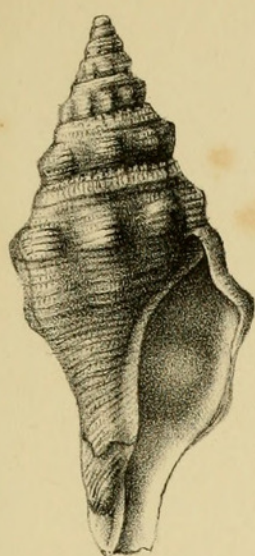
This species is very widely distributed. The Japanese and Red Sea shells can scarcely be distinguished, and though the South African specimens sent me not being fully developed, are smaller, they are in other respects similar.

ARCA (BARBATIA) LACTEA VAR. GIBBA, Krauss (Plate II. fig. 11). Sud Afric, Moll. p. 16.

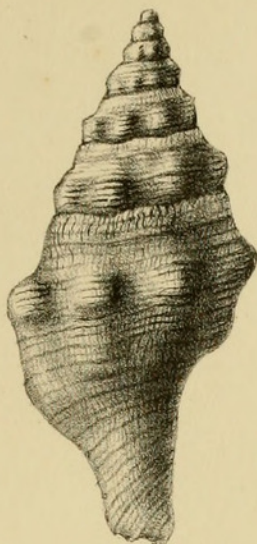
Hab.:—Durnford Point, Natal, N.E. by E., distant 9 miles. Depth, 13 fms. (dredged). Bottom, sand and shells, hard ground.

In figuring this variety, I intended to give it a specific name, relying principally upon its obesity of form and its small diamond-shaped ligament. Upon comparing, however, a large number of specimens of *A. lactea*—British, Mediterranean, and South African—I find them to vary so much in the form of the shell, as well as in the size and shape of the ligament, that I am constrained to adopt Krauss' view that this form is nothing more than a variety.

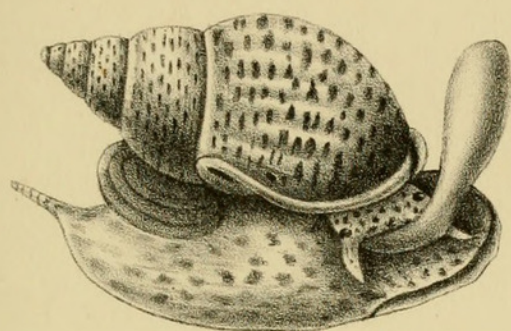
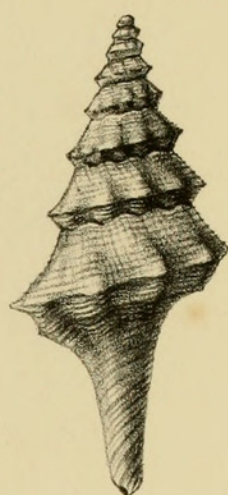
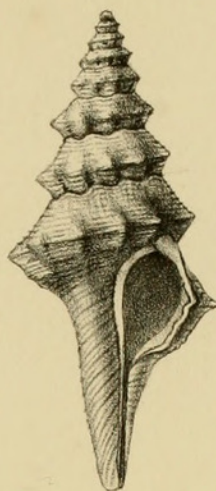
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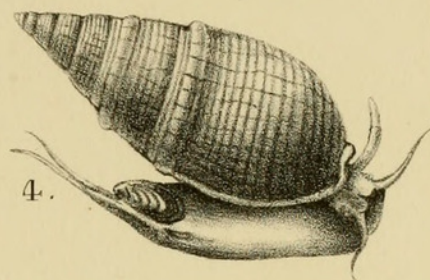
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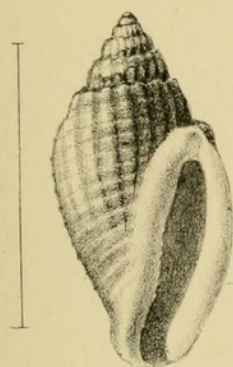
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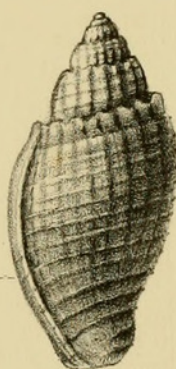
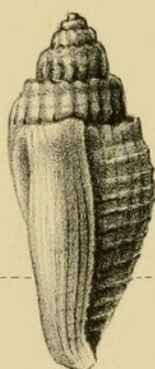
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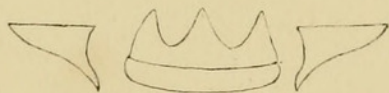
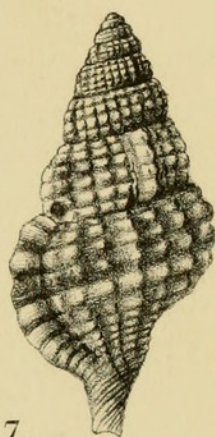
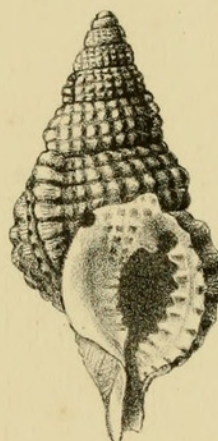
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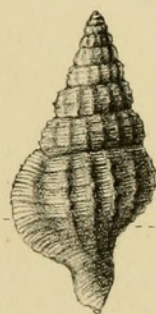
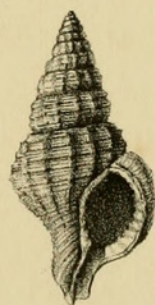
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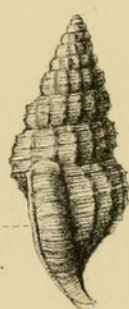
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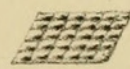
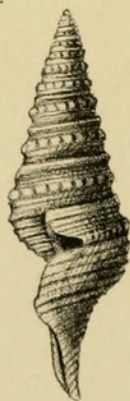
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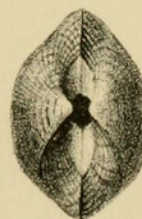
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J.Green del.et lith.

Mintern Bros. imp.

1. LATIRUS IMBRICATUS. 4. BUCCINANOPS ANNULATA. 7. LOTORIUM NASSARIFORMIS.
 2. FUSUS SUBCONTRACTUS. 5. VOLUTILITHES GILCHRISTI. 8. NASSA EUSULCATA.
 3. EBURNA PAPILLARIS. 6. „ ABYSSICOLA (RAD) 9. PLEUROTOMA GILCHRISTI.
 10. NASSARIA GRACILIS. 11. ARCA LACTEA VAR.



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