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No. 22. ORNITHOLOGY. No. 23. ENTOMOLOGY.

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No. 24.

Journal de Conchyliologie, April, 1877.

Crosse.—Catalogue des Mollusques qui vivent dans le détroit de Behring, et dans les parties voisines de l'Ocean Arctique (Catalogue of the Mollusca of Behring's Straits and the neighbouring parts of the Arctic Ocean), pp. 101—128.

118 species are enumerated; they are, as is natural, of an Arctic character.

Baudon. — Monographie des *Succinées* françaises (Monograph of the French *Succinea*—continued), pp. 128—198.

The author gives full descriptions, accompanied by 5 coloured plates of figures, of all the species and varieties of Succinea inhabiting France, going, we think, much too minutely into detail for a paper in a journal of general circulation. With reference to our notice of the first part (Q. J. C., p. 228) we must no wacknowledge that we think that the difference between S. Pfeifferi and S. elegans has been proved. S. acrambleia, however, which turns out to be Mabille's species, is merely S. Pfeifferi (compare figs. 4 and 5 of Plate 7). S. parvula is a var. of S. putris. S. Baudoni certainly differs from S. arenaria; it is very like the var. parvula of S. putris. Much space is wasted by long lists of references to local catalogues, etc.

FISCHER.—Note sur la sinistrorsité des coquilles des jeunes *Planorbes* (Note on the sinistral volution of *Planorbis* shells), pp. 198—200.

From an examination of embryonal shells of *P. corneus*, the author considers the shell of *Planorbis* is sinistral. With praiseworthy candour he mentions the fact of all the spiral shells of *P. complanatus* found at Magnée being dextral. May not the true solution of the question be that some species, or perhaps even as in *Amphidromus*, some individuals are dextral and others sinistral?

Fischer.—Note sur le genre Mörchia A. Adams, etc. (Note on the g. Mörchia), pp. 200—203.

Dr. Fischer adds two new species, M. Morleti (Plate 4 fig. 1) and biplicata to the one hitherto known, M. obvoluta, A. Adams. The new species are from China. He considers that the name Mörchia should be preserved for the group in question, as Mayer's Mörchia is 3 months posterior, and that the group is a distinct genus and not a subgenus of Cyclostrema.

Folin.—Note relative au genre *Parastrophia* (Note respecting the g. *Parastrophia*), pp. 203—207.

The Marquis de Folin considers that the genera Cæcum, Meioceras, Strebloceras, and Parastrophia are clearly separated by the form and position of the nucleus. That of Parastrophia is much smaller than those of the other genera, and looking at the shell in front appears bent backwards, whilst in Cæcum and Meioceras it inclines to the front, and in Strebloceras turns to the side.

Mörch.—Description d'une nouvelle espèce du genre Fastigiella, Reeve (A new Fastigiella), pp. 207—209.

F. Poulsenii from Eleuthera, Bahamas.

Mörch.—Observations sur l'Ancylus Gussoni, Costa, et le nouveau sous-genre Allerya (Ancylus Gussoni and the new s. g. Allerya), pp. 209—211.

Dr. Jeffreys considers the A. Gussoni to be the same as Tectura virginea Müller, but Dr. Mörch thinks they belong to different genera. In Costa's species the apex is posterior (not anterior as in Tectura). The muscular impression is very narrow, horse-shoe shaped, and terminates in front on each side by a round impression.

The author proposes a new subgenus of *Piliscus* for this shell, to which he gives the name of *Allerya*, and he describes a second species of the subgenus—*Piliscus* (*Allerya*) Krebsi, Mörch, from St. Thomas, W. I., and Barbadoes.

FISCHER.—Sur une anomalie de l'animal de l'*Helix nemoralis* (An anomaly of the animal of *H. nemoralis*), pp. 211—212.

An adult H, nemoralis was found provided with a small fleshy column, about r centimetre = 2/5ths of an inch long, capable of contraction and extension, truncate at the extremity, and situated towards the root of the tail and a little behind the shell. When the animal was crawling, the appendage was almost vertical.

Morelet.—Addition à la Faune de l'île Maurice (Addition to the Mauritius Fauna), pp. 212—217.

These are all subfossil shells, viz., Cyclostoma articulatum, Gray (living in the Island of Rodriguez); C. unicolor, Pfeiffer, habitat hitherto unknown; C. Lienardi n. sp., (Plate 4 fig. 2); C. cincinnum, Sowb., locality previously unknown, perhaps not yet extinct; Melampus corticinus n. sp.

Morelet.—Coquilles nouvelles de Madagascar (New shells from Madagascar), pp. 217—219.

Helix funebris (near H. Sganziniana, Cr. and F.); H. cerina; Cyclostoma Crosscanum; C. chromium; Megalomastoma litturatum.

Under the head of correspondence and news we gather the following:—

1.—Vitrina Ruivensis, Couthouy, of Madeira is quite distinct from V. Lamarckii, Fér, of Teneriffe.

2.—Two more varieties of Succinea oblonga are named and described!! Quousque tandem!

3.—Pedicularia sicula has been found near the Hyères Islands (Var, Provence).

4.—The Van Lennep collection sold for £1,600.



Journal de Conchyliologie, July, 1877.

HEROUARD.—Sur les courants de nutrition des *Brachiopodes* (The nutritive currents of the *Brachiopoda*), pp. 229—241.

The author has discovered that the form and direction of these currents are different in the various genera of Brachiopoda.

MORELET.—Révision des Mollusques terrestres et fluviatiles du Portugal. (Revision of the land and fresh-water Mollusca of Portugal), pp. 242—261.

A very interesting article, supplementary to the author's work on the same subject. M. Morelet now considers the Arion Lusitanicus to be a good species, but rejects all the other fanciful species of Arion proposed by Mabille in the Revue Zoologique. H. crystallina, var. major, Mor. = H. pseudohydatina, Bourg.; H. candidula of the former work is a small var. of H. caperata, Mont.; H. ponentina, Mor. = H. revelata, Fér. (a thick shelled var.); H. codia, Bourg. is nothing but H. caperata; H. vermiculata Müll. M. Morelet rather doubts that this has been found in Portugal; Pupa secale, Drap., has not, as yet, been found in Portugal, and the name should be erased from the list and replaced by P. Lusitanica Rossm; Ferussacia Vescoi, Bourg. = F. folliculus; Planorbis corneus, L., an error, should be P. Metidjensis, Forbes; Hydrobia acuta Drap., most impudently per-

sists in living in Portugal, "malgré les dents" of the Revue Zoologique; Hydrobia gibba, Drap., is guilty of similar impertinence; Unio Wolwichi and U. tristis should be struck out of the list, the former being exotic (probably Australian), and the latter a young U. margaritifer. 34 species are added to the Portuguese list; the most interesting are Limax Lusitanus and Bocagei, Silva, Helix ciliata, Venetz, H. circumsessa, Shuttl. (previously only found in the Canaries), Pupa substriata, Jeffr., Clausilia Moniziana, Lowe, Cyclas Lusitanica, n. sp. The fauna of Portugal now includes 151 extramarine Mollusca. The peculiar species are rather few, but the fauna is of interest as showing which species extend to the extreme west of the European continent.

Pettard.—Notice sur les Coquilles terrestres de Tasmanie (The land shells of Tasmania), pp. 261—263.

A short but interesting note. Tasmania is much richer in proportion than Australia in land shells. 2 species of Bulimus, 3 of Succinea, 2 of Truncatella, 3 of Vitrina, and 122 of Helix are already known. Only 3 species (H. Alexandra, Mortii and Sydneyensis) are common to Australia, and from their habitats—gardens, cellars, sewers, etc.—have probably been introduced either into Australia or Tasmania. In Tasmania itself the species are very localised, only two being common to the North and South. Hence further discoveries may be confidently anticipated.

FISCHER.--Note sur les dents intérieures de la coquille de l'*Helix polygyrata*, Born. (The internal teeth of *H. polygyrata*), pp. 263—267.

Adult shells have a row of 5 teeth (two parietal and three palatal), inside the last whorl at 40 to 80 millimetres from the aperture, and, sometimes, 40 to 50 millimetres beyond, traces of a second row. Young shells bear traces of three rows, the

oldest (in the seventh whorl) scarcely perceptible, the intermediate well marked, and the most recent rather indistinct, but clearer than the first row. It is evident that the older rows are gradually absorbed.

Mörch.—Notice supplementaire sur les *Fuseaux* Arctiques (Supplementary note on the Arctic *Fusi*), pp. 267—271.

The epidermis of *Buccinum* and *Fusus* is very variable, and not to be relied on for specific characters. Looking from above a *Siphonorbis* has the appearance of a *Planorbis*, a *Sipho* of a bladder. *Fusus Islandicus*, Lovèn = F. Berniciensis; F. Islandicus, Gould = F. Stimpsoni, Mörch = F. curtus Jeff.; F. despectus, Linn.; the form found fossil at Uddevalla must be considered the type. F. breviculus, Desh., comes from Kamtschatka.

Crosse and Fischer.—Diagnoses Molluscorum novorum, Guatemalæ et reipublicæ Mexicanæ incolarum (New Guatemalan and Mexican Mollusca), pp. 271—273.

Spiraxis Blandi, Vera Cruz; S. Guatemalensis; Subulina Sargi, Coban; Opeas gladiolus, Guatemala; Cacilianella Veracruzensis; Succinea Pueblensis.

Souverbie.—Note complémentaire sur le Scalenostoma apiculatum, p. 274.

A slight correction.

Paulucci.—Note sur l'identité du *Conus spirogloxus*, Deshayes, avec le *C. generalis*, Linné. (The identity of *C. spirogloxus* and *generalis*.)

C. spirogloxus was described and figured in the "Conchyliologie de l'île de la Réunion." From an extensive suite of specimens in her collection the Marchesa Paulucci has ascertained that it is only the young of generalis.

Under Correspondence and News we find (1) a short note, by Dr. Jeffreys, showing that he had already corrected the mistake about *Ancylus Gussoni;* (2) that Mr. G. Nevill will shortly publish a work on the Mollusca collected by the late Dr. Stoliczka in Central Asia, and (3) that M. Crosse has been named Officer of Public Instruction, a well-deserved honour, of which all our readers will be glad to hear.

C. P. G.

Rossmassler's Iconographie,

Fortgesetz von Dr. W. Kobelt.

Vol. V. (Vol. II. of continuation) Parts 1 to 3.

These new parts contain much of great interest. We have :---

- r.—The subgenus *Levantina*—a fine group of Helices from Syria, Mesopotamia, etc. Two plates of these are given.
- 2.—The Italian species of *Iberus—Helix muralis*, serpentina, etc. Dr. Kobelt judiciously reduces the number of species in this puzzling group (2 plates).
- 3.—Various species of *Fruticicola*. The right hand fig. (1194) represents a very beautiful banded *H. fruticum*, and fig. 1197 the magnificent *H. inchoata*; (fig. 1201) is the true *H. cantiana*, though a very small specimen, but we have our doubts as to the Belgian example (fig. 1202.) None of the Kentish specimens have a banded periphery. (4 plates).
 - 4.—Several species of Limnæa (3 plates).
- 5.—Leucochroa (1 plate). From Mr. Binney's researches we regard Leucochroa as a subgenus of Helix near Eremophila.
- 6.—Xerop'iila (2 plates) including some large forms of H. variabilis (figs. 1295—1300).

7.—Glandina and Parmacella (I plate.) The animal of G. algira is figured (1316.) We are inclined to think that there is more than one European species of Glandina. The figures of G. algira are too green.

1.—Buliminus (1 plate) including the enormous B. labrosus.

Our readers will see how rich and varied a conchological banquet is spread before them in this treble part.

C. P. G.

SUGGESTIONS FOR FINDING THE SMALLER LAND SHELLS.

◇•○◇

By HENRY LAVER, F.L.S.

I have adopted for some time, very successfully, the following plan of taking the smaller snails, and, believing that it might be useful to others, I beg to forward it to you for publication in the Journal. My procedure is to take a bag to those parts of the wood most likely to abound in snail life, and to collect the dead leaves, grass, and other rubbish until my bag is full. This I carry home and sift through a common cinder-sieve; the broken rubbish that passes through I then sift again over a cloth—an empty sack will do very well—in a brisk wind, in fact I winnow the light rubbish away, and then search over the remaining débris in a good light, and by this means have found many snails I did not think occurred in this district at all. The advantage of winnowing is that you have a very small quantity of rubbish to search, and I believe but few of the snails have been lost, in addition to which this form of snail-hunting will occupy but little time in the wood—an important matter to many, myself included -and I can, therefore, recommend it, and should any of your readers adopt it, perhaps they will give us their experience.

HELIX LAMELLATA, JEFFREYS. By Richard Rimmer.

When on a visit in Kirkcudbrightshire last August, I found this species plentifully upon fallen and decayed leaves of the holly in woods.

Dr. Gwyn Jeffreys has already described the animal at p. 158, vol. 4 of "British Conchology," but a few additional particulars respecting it may perhaps be of interest to your readers, the more so as several of the specimens I collected are still alive, and afford me daily opportunities of observing their habits.

A large proportion of the specimens found in the abovenamed locality were subject to erosion of the epidermis, especially near the apex.

ANIMAL.—Head and body yellowish-white; back, slaty-grey, with a yellowish-white line running down the middle; tentacles, upper pair clavate and long for the size of the animal, of a dark bluish colour, bulbs inky black, globular; lower pair much lighter in colour, tips whitish; foot whitish, rather narrow, tapering to a fine but slightly obtuse point behind.

The animal is very timid, and shrinks from exposure to sunshine, or even ordinary daylight. When crawling its movement is unusually rapid for a snail, and it carries its shell in an upright position, swaying it from side to side as it advances, reminding one of the waddling of a duck.

When desirous of observing it under the microscope I found that the only way to induce it to leave its shell was to place it on a damp leaf, and allow a strong ray of sunlight to rest upon it, when it would soon emerge and start off in quest of shelter.

I have, as yet, been unable to detect this little creature in the act of feeding, which is, probably, for the most part performed at night. That its food principally censists of decayed holly leaves is most likely, as among them it usually seeks its home. It is possible, however, that it may sometimes change its diet, for several of my specimens frequently leave their moist holly leaves and nestle among the roots of a piece of Jungermannia platy-phylla, which I have given them. I do not think my pretty little friend is carnivorous, at all events, though he has been supplied with tempting morsels of flesh of various kinds, both cooked and raw, he seems to avoid them, and I can discover no signs, even with the microscope, of his having committed any ravages upon them.

HELIX PISANA, MULLER.

~○**◇**○

By RICHARD RIMMER.

In the 12th number of "The Quarterly Journal of Conchology" there is an interesting communication by Mr. Sheriff Tye, respecting *H. Pisana*, upon which I will venture to offer a few remarks.

In the summer of 1876 he observed this species in Vazon Bay, Guernsey, and not having met with any record of its existence in that island, very naturally concluded that he was the first to discover the fact of its being there. During the summer of 1873, however, I found it close to Vale Castle, near St. Sampsons. In making this statement I trust it will be distinctly understood that I have no intention or desire whatever to deprive a brother naturalist of the satisfaction which a new find is calculated to afford, my sole object being, if possible, to arrive at the truth, which, to my thinking, is of much more moment than any priority of claim to discovery.

Upon finding this species in a locality where, like Mr. Sheriff Tye, I believed it had hitherto been unobserved, I was on the point of recording the fact, but, after a little deliberation, I resolved not to do so, as I felt convinced that it was not indigenous to, but had been introduced, and that very recently, into Guernsey.

To this conclusion I was led (1) because all the specimens I found were adults—not a single individual with a mouth unfinished was to be seen, after several days of diligent searching, and (2) their habitat was so circumscribed, and their number so small—not exceeding, probably, a few hundreds—that I was driven to the conclusion that they could not possibly have existed there for any great length of time. The position of the spot, too, was remarkable, inasmuch as it had a north-eastern aspect.

In "British Conchology," vol. i, p. 208, Dr. Gwyn Jeffreys observes that "the limited range of this species in Great Britain is remarkable," and adds that two attempts he made to colonize it on the sand hills near Swansea proved altogether unsuccessful. Now, in the autumn of 1874, being in that neighbourhood, I visited the spot for the express purpose of discovering, if possible, some trace at least of Dr. Gwyn Jeffreys' industry, and, to my astonishment, and to his also-for I immediately informed him of the fact—I found the shell in countless numbers, of all ages, the variety alba having apparently the superiority as to numbers. From these facts we may infer that *Pisana* is, under favourable circumstances, capable of colonization, that the immigrants, from some cause (the sudden change, perhaps, injuriously affecting their delicate constitution) do not long survive, but leave behind them a progeny which, being born there, take more kindly to the place. This may, in some measure, explain how it was that Mr. S. Tye found all the young specimens in Vazon Bay feeding in the open, while the old ones (which were probably sickly) had gone for shelter to the brick wall.

The colony I discovered at St. Sampson's has, in all likelihood, perished, together with its offspring (if it had any), in consequence of the inappropriate aspect selected by its founder, who, if I am not greatly in error, discovered his mistake, and afterwards repeated his experiment in Vazon Bay with better success. I can hardly think this species existed in 1873 in Vazon Bay, or, indeed, anywhere else in Guernsey except near St. Sampson's, as I made a very close and diligent search over the whole island, for which I had ample opportunity during a residence there of several months, my whole time being devoted to that object; nor is it at all likely that this very conspicuous species could have been overlooked by so observant a naturalist as the late Dr. Lukis, had it been in Guernsey in his day.

I may add that, though I cannot actually recall the circumstance to mind, it is very likely I showed some of the St. Sampson's shells to Mr. W. Randall, whom I frequently met in my rambles.



LIST OF LAND SHELLS COLLECTED ON FITZROY ISLAND; WITH NOTES ON THEIR GEOGRAPHICAL RANGE.

By John Brazier, C.M.Z.S.,

Member of the Royal and Linnean Societies of New South Wales, Corresponding Member of the Royal Society of Tasmania.

Fitzroy is a small granitic island on the North-East Coast of Australia, near Cape Grafton, and about one mile off the mainland; it is nearly two miles long North-East and South-West, and two-thirds of a mile broad; it rises to a peak 860 feet above the level of the sea, and is well wooded right to its summit. Among the most luxuriant tropical growths, which are of great frequency, the familiar Eucalypti rear their not always graceless stems. One's progress is very much impeded in the valleys by prodigious climbers with stems 200 to 300 yards long (Calamus Australis).

In June, 1848, when the island was visited by my friend Mr. John Macgillivray, in H.M.S. Rattlesnake, he only records two species *Bulimus Tuckeri* and *Pupina Thomsoni*.

When I visited the island in December, 1871, with the Australian Eclipse Expedition, I obtained at or near the watering place on the west side of the island 7 species of Helix, I Helicarion, 2 of Pupa, I Diplommatina, I Leptopoma, 2 of Bulimus (including Tuckeri), I Ditropis, I Georissa (these two are forms quite new to Australia), and I Truncatella. I now add 3 species of Melampus, I of Pythia and I of Cassidula, which I collected in one day, during my second visit on June 6th, 1875, though only on the island for a few hours. I also obtained another species of Helix, making, with the Land and Amphibious species, the total of 24. They are as follows:—

 Helix Macgillivrayi, Forbes, Voyage of H.M.S. Rattlesnake, vol. ii, p. 377, plate 3, fig. 1.

Found on the trunks and limbs of trees in the valleys, at an elevation of 456 feet above sea level.

The type specimens were found by Mr. Macgillivray on the Frankland Islands, some three miles south of Fitzroy. Only a few months back my friend Mr. C. E. Beddome obtained specimens on the mainland, 28 miles inland from Cardwell, Rockingham Bay, at an altitude of 3,500 feet.

2. Helix Franklandiensis, Forbes, Voyage of H.M.S. Rattlesnake, vol. ii., p. 372, plate ii, fig. 2 a.b.

Found under decayed wood at the roots of trees in the valleys, at 300 feet.

Also collected by Mr. Macgillivray, at the Frankland Islands. Cardwell, Rockingham Bay, in the bushes under leaves (Mr. C. E. Beddome).

3. Helix Aridorum, Cox, Proc. Zool. Society, 1867, p. 924.

Found on the flat near the watering place, under coral and decayed wood.

This is the same species found by Mr. Macgillivray at the Frankland Islands and quoted by the late Professor Forbes as Helix similaris, Fér. I have seen some of the original specimens from the Franklands, and have compared them with what I collected at Fitzroy, under the lens. They are all finely granulated, characters not to be found in Helix similaris, Fér. Helix aridorum is also found at the Clarence River, New South Wales, Brisbane and Burnett River, Oueensland. The only locality in any part of Australia where H. similaris, Fér., is found is in Guilfoyle's Nursery Double Bay and Elizabeth Bay, near Sydney, New South Wales. They were introduced with plants from the Mauritius. After rain I have found them in vast numbers, crawling on the trunks of fruit trees and on the ground under Samphire and Dianthus. It is quite improbable that Helix similaris has ever been carried on floating timber to Australia.

4. Helix Elleryi, *Brazier*, Proc. Zool. Society, 1874, p. 668, plate lxxxiii, figs. 3–4.

Found under decayed leaves, near the watering place.

A small, conical, very thin, pale brown shell, having the periphery sharply keeled and spirally striated.

It is also found on the Barnard Islands No. III, North East Australia, under drift coral, thrown up, one time or another, during some terrific gale. 5. Helix Russelli, *Brazier*, Proc. Zool. Society, 1874, p. 668, plate 13–14.

Found near the watering place, under leaves at the roots of trees.

A small, turbinately globose, thin, shining, horny, brown shell, with elevated spire.

On my way to New Guinea, in 1875, I found it on Barnard Islands No. III; Home Islands, off Cape Grenville, North-East Australia; Cape York, North Australia; Bet and Darnley Islands, Torres Straits; Cardwell, Rockingham Bay (Mr. C. E. Beddome).

6. Helix turriculata, Cox, Proc. Zool. Soc., 1867, p. 724.

Found with Helix Elleryi and Russelli.

It does not differ from the type specimens from Port Curtis.

Also Barnard Islands No. III.

7. Helix pampina, Cox, Monog. Aust. Land Shells, 1868, p. 3, plate xix, fig. 9.

Found on the leaves and trunks of trees, at an elevation of 456 feet above sea level. I include this as I obtained it during my second visit of a few hours, in 1875, to the island, on my way to New Guinea.

I also obtained specimens at the Great Palm and Barnard Islands No. III, North-East Australia; Albany Island and Cape York, North Australia. The typical specimen in my collection was obtained at Wide Bay, Queensland, Bowen, Port Denison (Mr. A. Simson).

- 8. Helix rustica, Pfr., Zeitschr. f. Malak., 1852, p. 112.
 - = H. inconspicua, Forbes.
 - = H. impexa, Reeve.

Found under decayed wood and leaves, at the roots of trees, near the watering place.

9. Bulimus Tuckeri, Pfr., Proc. Zool. Society, 1846, p. 30. = B. Walli, Cox.

Found in crevices of coral, at the roots of trees.

Also on Barnard and Home Islands, North-East Australia; Albany Island and Cape York, North Australia; Sue, Warrior, Bet, Long, Dungeness, and Cocoanut Islands, Torres Straits. These last localities I visited in 1875. Sunday, Lizard, and Sir Charles Hardy's Islands (Macgillivray). All these islands are inside the great Australian coral barrier.

10. Bulimus pacificus, Pfr., Mon. Helic. Viv., 1859, Vol. iii, p. 414.

= Pupa pacifica, Pfr., Proc. Zool. Society, 1846, p. 31.

Found with B. Tuckeri, and at the whole of the above islands.

11. Helicarion Brazieri, Cox, Proc. Zool. Society, 1873, p. 151.

Found at an altitude of 456 feet above sea level, crawling on the trunks of trees and on large granite boulders, in the dark and thickly wooded virgin forest.

12. Vertigo Macdonnelli, *Brazier*, Proc. Zool. Society, 1874, p. 669, pl. lxxxiii, figs. 22-23.

Found under leaves and at the roots of trees,

Also No. 8 Island, Claremont Group, off Cape Sidmouth, Barnard Islands No. III, North-East Australia; Cape York, North Australia.

13. Vertigo Scotti, *Brazier*, Proc. Zool. Society, 1874, p. 669, pl. lxxxiii, figs. 24—26.

Only one specimen found at the watering place, under a bit of wood.

14. Diplommatina Gowllandi, *Brazier*, Proc. Zool. Society, 1874, p. 670, pl. lxxxiii, figs. 19—21.

Found at the roots of trees, crawling upon the grass during a heavy rain. On my second visit to the island, in 1875, I only obtained 3 specimens, no rain having fallen for some months. Everything appeared to have been burnt up with the warm weather.

15. Cyclophorus (Ditropis) Whitei, *Brazier*, Proc. Zool. Society, 1874, p. 669, pl. lxxxiii, figs. 5—7.

Found under wood near the watering place.

Barnard Islands No. III, North-East Australia; found under coral at the edge of the brushes.

- 16. Leptopoma vitreum, Lesson, Voy. de la Coq., p. 346, pl. 13, fig. 6.
 - = Dermatocera vitrea, H. & A. Adams.

Found on the leaves and trunks of trees and small bushes, at the altitude of 456 feet.

Also found at the whole of the Solomon Islands, New Britain and New Ireland. They are brought off by the natives in small-sized baskets, three or four quarts in each. The Rev. George Brown, on his return from New Britain and New Ireland, brought with him to Sydney some bushels of them. Dunk, Frankland, and Green Islands, North-East Australia (Macgillivray).

17. Pupina Thomsoni, Forbes, Voy. H.M.S. Rattlesnake, App., p. 381, pl., iii, fig. 2.

Found at the roots of trees in shaded places. Living specimens are only to be procured during rain; in the dry season one has to scrape and dig in the loose coral that forms the high flat before one can get perfect and dead specimens.

18. Georissa multilirata, *Brazier*, Proc. Zool. Society, 1874, p. 670, pl. lxxxiii, figs. 8—10.

Found crawling on the roots of grass during a heavy rain.

19. Truncatella teres, Pfr., Proc. Zool. Society, 1856, p. 336.

Found under wood at the watering place, and near the coral sand beach, under drift timber and weeds.

Also found on Barrow Island and Cape Grenville, North-East Australia.

20. Melampus pulchellus, Petit, Proc. Zool. Society, 1842, p. 202.

= Auricula pulchella, Petit.

One specimen found up the valley at the watering place.

21. Me!ampus trifasciatus, Kuster, Auricula, p. 38, pl. v, figs. 15—17.

One specimen found at the watering place.

22. Melampus parvulus, Nuttall in Pfr. Mon. Auricula, 1856, p. 24.

One specimen found at the watering place.

The aperture is lighter in colour than in the specimens from Oahu, Sandwich Islands.

23. Pythia Argenvillei, Pfr., Zeitschr. f. Malak., 1853, p. 191.

Found in vast numbers in shaded places up the valley, near the watering place, under decayed wood and leaves.

- 24. Cassidula angulifera, *Petit*, (Auricula), in Revue Zool., 1841, p. 101.
 - = Auricula subrepta, Homb et Jaq.
 - = Auricula angulata, Forbes.
 - = Melampus anguliferus, Chenu.
 - = Rhodostoma bidentata, Swainson, Proc. Royal Soc. Tasmania, 1854, vol. iii, p. 45, pl. vii, fig. 4.

One specimen found near the brackish water.

I have also found it on the mainland at Cardwell, Cape Sidmouth, North-East Australia; Mud Bay, Cape York, North Australia; and Katow, South New Guinea.

It was described by Swainson as *Rhodostoma bidentata*, and appears to have been overlooked by authors.

TEN DAYS' DREDGING AT OBAN.

By the Rev. A. M. Norman, M.A.

A line of railway has been now opened to Dalmally, and Oban has thus been brought within very easy reach of the tourist visiting Scotland. This deservedly favourite place, on the western coast, is likely each year to become more frequented. It has struck me, therefore, that a list of the Mollusca which, during a very short visit, were observed in the land-locked waters close to Oban, might not be without interest to your readers.

In August last I went to Oban for the purpose of examining the fauna of the Bay more minutely than I had previously had opportunity of doing when merely staying there for a night or so in years gone by, on my way to dredging grounds further to the north.

It is necessary that I should mention that during my recent visit my attention was chiefly directed to the Polyzoa, Crustacea, Hydrozoa and Sponges.* The Mollusca were regarded by me as of secondary moment, as I was not likely to find, in such a locality, anything that was new to me; and, although the larger species which could be seen with the unassisted eye in the sieves while at sea were carefully picked out, the finer sand and mud were not saved for home examination. Had my aim been merely the procuring of shells, the following list would no doubt have been considerably extended as regards the smaller species (*Rissoa*, *Odostomia*, &c.); although the locality does not seem so favourable for minute as it is for the larger Mollusca.

The boat employed was a small row-boat with two oars. The depth dredged never exceeded 16–20 fathoms; and the area examined was purposely very restricted. It only embraced Oban Bay, lying to the north of a line drawn from Oban to Kerrera, and thence to the "Maiden Isle," and perhaps three-quarters of a mile round the point on which Dunolly Castle stands. Kerrera Sound to the south of Oban, Loch Linnhe outside of the Island of Kerrera, and Loch Etive were left wholly unexplored.

Taking these circumstances into consideration, the conchologist who casts his eye down the following list will be in a position to understand—first, that the Molluscan fauna of the Bay

^{*} I hope before long to publish elsewhere some notes with respect to the animals of these classes which were procured. Many species new to our fauna or to science were obtained.

of Oban is very rich; secondly, that interest attaches to the Oban fauna, as, indeed, to that of the Hebrides generally, on account of the intermixture of northern and southern forms.

Terebratula caput-serpentis, (Lin.) Crania anomala, (Müller). Anomia ephippium, Lin. striata, Lovén. Ostrea edulis, Lin. Pecten pusio, (Lin.) " opercularis, (Lin.) ,, tigrinus, (Müll.) " striatus, (Müll.) " niveus, Macgil. similis, Laskey. maximus, (Lin.) Lima elliptica, Jeff. Loscombii, Sow. ", hians, (Gmelin). Mytilus edulis, Lin. modiolus, Lin. phaseolinus, (Phil.) Modiolaria marmorata, (Forbes). discors, (Lin.) nigra, (Gray). Nucula nucleus, (Lin.) Leda minuta, (Müll.) Pectunculus glycimeris, (Lin.) Arca tetragona, Poli. Lucina spinifera, (Mont.) borealis, (Lin.) Axinus flexuosus, (Mont.) Cardium edule, Lin. fasciatum, Mont. nodosum, Turton. Cyprina Islandica, (Lin.) Astarte sulcata, (Da Costa). elliptica, (Brown). Circe minima, (Mont.) Venus lincta, Pulteney. fasciata, (Da Costa). casina, Lin. ,,

ovata, Penn.

"

Venus gallina, Lin. Tapes virgineus, (Lin.) pullastra, (Mont.) Lucinopsis undata, (Penn.) Tellina crassa, Penn. fabula, Gronov. Psammobia tellinella, Lamk. Ferröensis, (Chemn.) Mactra elliptica, Brown. Syndesmia nitida, (Miill.) alba, (Wood.) Scrobicularia piperata, (Lin.) Solen pellucidus, Penn. ,, ensis, Lin. Pandora obtusa, Leach. Lyonsia Norvegica, (Chemn). Cochlodesma prætenue, (Pult.) Thracia villosiuscula, (Macgil.) Corbula gibba, (Olivi.) Mya truncata, Lin. Sphænia Binghami, (Turton). Saxicava rugosa, (Lin.) var. arctica, (Lin.) Dentalium entalis, *Lin*. Chiton fascicularis, *Lin*. cinereus, Lin. marginatus, Penn. ,, ruber, Lin. lævis, Penn. marmoreus, Fab. Patella vulgata, Lin. Helcion pellucidum, (Lin.) Tectura testudinalis, (Müll.) virginea, (Müll.) Pilidium fulvum, (Müll.) Emarginula fissura, (Lin.) Fissurella Græca, (Lin.) Trochus Grænlandicus, Chemn. magus, Lin. 22 tumidus, Mont. ,, cinerarius, Lin. ,, umbilicatus, Mont.

Montacuti, W. Wood.

zizyphinus, *Lin*.

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Trochus millegranus, Phil.
Lacuna divaricata, (Fabr.)
Littorina obtusata, (Lin.)
         rudis, (Maton.)
            ,, var. tenebrosa, (Mont.)
         littorea, (Lin.)
Rissoa parva, (Da Costa).
        inconspicua, Alder.
        membranacea, (Adams).
        striata, (Adams).
Hydrobia ulvæ, (Penn.)
Turritella terebra, (Lin.)
Odostomia conoidea, (Brocchi).
            unidentata, Mont.
Velutina lævigata, Penn.
Trichotropis borealis, Brod. & Sow.
Aporrhais pes-pelicani, (Lin.)
Purpura lapillus, (Lin.)
Buccinum undatum, Lin.
Murex erinaceus, Lin.
Trophon Barvicensis, (Johnst.)
         truncatus, (Ström.)
Fusus antiquus, (Lin.)
Nassa incrassata, (Ström).
Defrancia linearis, (Mont.)
Pleurotoma striolata, Phil.
           septangularis, (Mont.)
           rura, (Mont.)
          .turricula, (Mont.)
Cypræa Europæa; Mont.
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Only a very few Nudibranchiata were observed, and those were common species.

The following Mollusca, though not obtained during my last visit, are also to be found in the neighbourhood of Oban. Many of them have been previously dredged by myself in Loch Linnhe, and the rest have been recorded on reliable authority—found by Jeffreys, Barlee, Bedford, &c.:—

Pecten Testæ, Birona; Nucula sulcata, Brown, and N. nitida, G. B. Sow; Kellia suborbicularis, (Mont.); Lepton squa-

mosum, (Mont.); Isocardia cor, (Lin.); Neæra cuspidata, (Olivi); Chiton Hanleyi, Bean; Propilidium alcyloide, (Forbes); Emarginula crassa, G. Sow.; Cyclostrema nitens, (Phil.), and C. serpuloides, (Mont.); Trochus helicinus, Fab.; Phasianella pulla, (Lin.); Rissoa reticulata, (Mont.), R. violacea. Desm., R. vitrea, (Mont.), and R. semistriata, (Mont.); Odostomia Lukisi, Jeff., O. umbilicaris, (Malm.), O. insculpta, (Mont.), and O. decussata, (Mont.); Chemnitzia fulvocincta, (Thompson); Eulimella affinis, F. & H.; Natica Montagui, Forbes; Cerithiopsis tubercularis, (Mont.); Pleurotoma attenuata (Mont.), and P. brachystoma, Phil. Of course the list is capable of considerable extension as regards the commoner forms.



DESCRIPTIONS OF NEW SPECIES OF LAND SHELLS FROM THE EAST COAST OF AFRICA.

By John W. Taylor.

I have pleasure in resuming the description and publication of the various and interesting species collected by Mr. Gibbons in East Africa.

Buliminus Gibbonsi (Pl. III., fig. 1).

SHELL broadly ovato-conical, thin, glistening, hardly semi-transparent, of a light horn color, strongly and very regularly striate in the line of growth; epidermis distinct, moderate; whorls 6½-7 broad, ventricose; the body-whorl very large; the apex blunt; suture distinct; aperture ovate; outer lip thin, simple; inner lip reflected partly over the umbilicus; anterior end of mouth rounded; umbilicus large and deep.

Length 0.625, breadth 0.375.

"Hab. Mozambique.

Two specimens only of this fine species were obtained on the mainland, Mozambique. One of the specimens, found beneath a stone, was evidently only recently dead.

Buliminus costatus, Gibbons, MS. (Pl. III., fig 2).

SHELL slender, elongately-conical, thin, of a light opaque brownish color, with distinct, transverse, and slightly oblique ribs; the whorls are lighter colored than the rest of the shell; epidermis thin; whorls 6-6½ tumid, flattened, and inflected towards suture, producing a somewhat turrite aspect, gradually increasing in size, the last whorl forming about one-third the length of the shell; suture broad and deep; mouth narrow, ovato-elliptical, somewhat contracted and pointed in front; outer lip thin and direct, long and gently curved; inner lip short and straight; columella slightly twisted; aperture white within and strengthened by a slight internal thickening; umbilicus obsolete.

Length 0.156, breadth 0.062.

Hab. Zanzibar.

Only two dead specimens of this pretty species were found, among dead leaves under trees at Zanzibar.

Opeas delicata, Gibbons, MS. (Pl. III., fig. 3).

Animal yellowish.

SHELL conico-turrite, elongate, very thin, semi-transparent, glossy, of a pearly gray color, clouded and rather opaque in places, finely but very distinctly striulate transversely, the striulæ rather curved, with the convexity towards the aperture; epidermis very thin; whorls 7–8, rather tumid, rapidly enlarging, especially after the 4th or 5th whorl, the last being much the largest and most tumid; apex rather obtuse; suture deep and distinct; mouth rather narrow, ovate, somewhat oblong, lips almost parallel, outer thin and sinuous, inner very slightly reflected behind anterior end of aperture, rounded; umbilicus narrow but rather deep.

Length 0.275, breadth 0.093.

Hab. Zanzibar.

Rather diffused around Zanzibar, but not common; usually under stones. A number were found by Mr. Gibbons in the interstices of a small piece of coral, lying on the ground under a tree; a few yards away great quantities of dead and old shells were lying among the grass, near some bushes.

In March this species contains 3 or 4 large calcareous shelled eggs.

Buliminus cinereus, Gibbons, MS. (Pl. III., fig. 5).

SHELL conical. tapering, rather thin, of a light brown color, faintly striulate transversely; epidermis thin and distinct; whorls 7½, convex, inflected towards suture, gradually enlarging to last, which is rounded and one-third the length of the shell, spire produced, tapering; apex rather acute; suture deep and very distinct; mouth ovato-trigonal, slightly pointed in front, subangulate behind; peristome thin and direct; inner lip slightly reflected; umbilicus distinct, moderately deep.

Length 0.25, breadth 0.105.

Hab. Zanzibar.

One dead specimen of this species was found at Zanzibar.

Subulina intermedia, Gibbons, MS. (Pl. III., fig. 4).

Animal with body less than one-half the length of the shell, narrow and high, dorsum rounded; tail sloping and abruptly pointed; color a pearly white; upper tentacles very short and also white, tipped with faint brownish; lower almost obsolete.

SHELL clongated, very slender, conico-cylindrical, very thin, glossy semi-transparent, of a glassy straw color, very finely striolate in the line of growth; *epidermis* very thin; *whorls* 8–8½, very oblique, convex, gradually tapering to apex, which is obtuse and abrupt; the last whorl is but little larger than the penultimate; *suture* very oblique, deep; *mouth* broadly ovate; *outer lip* thin

and curved; columella truncate, with a thin and somewhat indistinct layer of callus; umbilicus obsolete.

Length 0.375, breadth 0.076.

Hab. Zanzibar.

Rather numerous at Zanzibar, but in one place only, viz., under a bush in or on the light mould.

The animal crawls very slowly and by jerks, dragging the shell after it; the position of the shell would appear to be a matter of little moment to the animal; sometimes it is pulled along sideways, and on one occasion Mr. Gibbons observed a specimen actually pushing its shell before it. The tail is usually slightly curved upwards.

REMARKS ON THE GEOGRAPHICAL DISTRIBUTION OF THE TERRESTRIAL MOLLUSCA.

By C. P. GLOYNE.

I. Introductory.—We have been induced to put together the following remarks on the geographical distribution of the terrestrial mollusca by the consideration that no general survey of the subject has been published in England of a later date than that in Woodward's "Manual of Recent and Fossil Shells," of which the first edition was published nearly a quarter of a century ago, and the second in 1866. The account of the subject in the first edition was very good for the time, that in the second was partially, but only partially, revised, and the third edition was a mere reprint of the second.

Of late years the discoveries of new species in regions little known in Woodward's time have been very numerous, and, besides this, the general classification of the terrestrial mollusca has been completely altered, so that, for example, the West Indies, to which 27 species of Achatina are attributed by Woodward, are not now considered to possess one; not on account of errors in localities, but because all the species are referred to other genera—the genus Achatina being now restricted to the large phytophagous African species, e.g., A. fulica. The additions that have been made to our knowledge of the particular regions will be stated more particularly under each. It may, however, be well to say generally that whilst the additions to the faunas of Europe, North Africa, and Asia Minor, of Tropical Africa, of Philippines, of the United States, and, to a less extent, of South America, have, though considerable, not been such as to materially modify general conclusions, the contrary is the case with regard to India, many of the Polynesian Islands (including New Caledonia), Australia, and Mexico.

We adopt, generally, the great divisions of Dr. Sclater, subdividing them into regions of smaller extent, and we would make the general remark that whilst on continents a vast extent of land is sometimes comprised in a single region, very small islands must often be separately treated.

With regard to the boundaries of regions there is one misconception as to which we must warn our readers, that of thinking that they are sharply defined. This is only true with regard to some islands, and even with them there are often cases in which the fauna has in some way overstepped a narrow strait and spread to the neighbouring mainland, as in the case of Florida, which has received a large immigration of West Indian species. On continents a sharp boundary is very rare, and the rule is for one fauna gradually to give way to another, as there are seldom natural obstacles forming perfect barriers; even in the case of the Tropical African Province, perhaps the best defined of any, Abyssinia is a sort of border land in which such purely African groups as Limicolaria and Pella are found together with

Euparypha, Patula and a whole series of Pupa of European facies. In short, these boundaries are not like those made by treaty, whether at Vienna or Frankfort, but what they lose in definiteness they gain in permanency, for whereas the political map of Europe fifty years ago would now be pretty antiquated, and that of a century back useless, it would require many centuries, or rather hundreds of centuries, before there was any perceptible change in the conchological map of the same region.

The following are the Provinces defined by Dr. Sclater, and now generally admitted.

- 1, THE PALÆARCTIC PROVINCE; 2, THE ETHIOPIAN PROVINCE; 3, THE PALÆOTROPICAL PROVINCE; 4, THE AUSTRALASIAN PROVINCE; 5, THE NEARCTIC PROVINCE; 6, THE NEOTROPICAL PROVINCE.
- II. The Palæarctic Province.—We include under this Province, with reference to the Mollusca, all Europe, Africa north of the Sahara, the Atlantic Islands (the Azores, the Madeira Archipelago, the Canaries and Cape de Verdes), Asia north of the line of deserts, and, also, Arctic America, but we exclude Japan contrary to Mr. Wallace's views in his excellent work on the Geographical Distribution of Animals—as the genera Cyclophoris. Alyeaus, Pupina and Helicina are undoubtedly tropical, and the Japanese Clausilia are related to the tropical forms of Burmah. Siam, etc., and not to the European species. With regard to Arctic America we would refer to a very interesting article by Mr. Binney, "Catalogue of the Terrestrial Air-breathing Mollusks of North America," in the Bulletin of the Museum of Comparative Zoology, in which he gives a list of 33 species of the "Northern Region," of which 13 are also found in Europe. It is our opinion. from the similarity of the Siberian to the European fauna, that these species spread to America by way of Asia, across the narrow Behring's Straits rather than by Iceland and Greenland, and the

discovery of a species of *Clausilia* in Alaska (formerly Russian America) seems to confirm this view. A very complete catalogue of the species of this province (except the Atlantic Islands) is Dr. Kobelt's "Catalog der im Europæischen Faunengebiet lebenden Binnenconchylien," and Rossmaessler's Iconographie with Kobelt's continuation, will, when complete, give figures and descriptions of all the species of land and freshwater shells mentioned in the Catalogue.

There is no want of works on particular districts, this having been naturally the best explored province of all, especially in its northern parts.

For lists of the species found in the Atlantic Islands the following authors should be consulted: Morelet for the Azores, Paiva for Madeira, etc., Mousson for the Canaries, and Dohrn's papers for the Cape de Verdes.

We sub-divide this province as follows:-

- 1. NORTHERN REGION.
- 2. MEDITERRANEAN REGION.
 - A. Austro-Turkish Division.
 - B. Italian Division.
 - C. Hispano-Algerian Division.
- 3. ATLANTIC REGION.
 - A. Azores.
 - B. Madeiran Archipelago.
 - C. Canaries.
 - D. Cape de Verdes.
- 1. THE NORTHERN REGION.—This region, which we consider as embracing the whole of Europe to the north of the Mediterranean basin, Siberia, and Arctic America, and, probably, from the list of species found near Kieff, published by M. Jelski in the

Journal de Conchyliologie for 1873, also the northern shores of the Black Sea, is poor in comparison with most of the others. The characteristic group is Fruticicola, the subgenus of Helix, including rufescens, hispida, etc., and the small subgenera of Helix, Acanthinula and Vallonia are also marked features. The other subgenera of Helix are poorly represented. Xerophila and Euparypha are found in the littoral districts, as is also the subgenus Cochlicella represented by H. acuta, Müller, the shell called Bulimus acutus by Jeffreys and Pfeiffer. (It may here be remarked that the Jamaican H. acuta, Lam. must change its name if Cochlicella acuta is to be finally considered as a Helix, we have seen acutissima used in Paetel's catalogue, but as that name was given to a very distinct variety, we prefer H. Lamarckii, Fér, for the species, the other H. Lamarckii being now universally included in Nanina). The genus Hyalina is pretty largely represented in this region. Pupa and Vertigo are also abundant, Buliminus has only a very few species, Clausilia seems to die out to the north and west from its centre of dispersion in the Balkan Peninsula, and throughout the greater portion of the region Cyclostomus elegans and one or two species of Acme form the sole representatives of the operculate Pulmonifera.

This region includes the greater part of Dr. Fischer's Western Region which he makes to extend all along the coast of the Atlantic from Ireland to Portugal, We can hardly agree with this division. It is based upon the occurrence of certain peculiar species. These, however, are mostly limited to peculiar localities, whilst those species such as *Helix pisana* and *variabilis* which are truly distinctive of the coast, as opposed to the inland, fauna are also found throughout all the coasts of the Mediterranean. The truth appears to be that these species are common to the coast of the whole province (except in the Arctic Regions), and, therefore, unless a littoral region is to be formed, embracing the whole extent of land within a league or two of the sea, hardly an advisable

plan, they cannot be considered as defining any particular geographical region, but are merely species limited to a particular station in the same way as rock or marsh-loving species.

In Amooria, according to Schrenck, 17 out of 25 species are European, showing the immense diffusion of this poor fauna.

Two districts on the southern boundaries of this region deserve special mention—the Pyrenees and the Alps. The Pyrenees possess many peculiar species, amongst which may be mentioned Helix constricta, carascalensis and Rangiana, Pupa pyrenæaria, polyodon, Partioti and ringens (indeed the subgenus Torquilla is largely Pyrenæan) and Clausilia Pauli. Pomatias is also abundant, and of many wide-spreading species there are special varieties. The Alps, forming as they do the dividing line between the Northern and Mediterranean regions, naturally partake of the fauna of both, but the more numerous and characteristic species are Mediterranean.

II. THE MEDITERRANEAN REGION:—This is the richest part of the Palæarctic Province, and may be considered to include not only the basin of the Mediterranean itself, but that of the Black Sea, except, probably, the northern shores and the whole of Asia to the south of Siberia, and the west of the Indian Province, except Arabia.

Though there are many features in common, we consider that there are certain types characteristic of the different divisions, not by their exclusive limitation but by their great development. We refer to *Clausilia* and *Buliminus* in the East, and *Macularia* and *Iberus* in the West, and we therefore divide the region as follows:

- A, the Austro-Turkish Division, comprising the basin of the Danube, the Balkan Peninsula, Asia Minor and the Caucasus;
- B, the Italian Division, including, in addition to Italy proper, the Italian Tyrol, and the Swiss Canton of Ticino; and
- C, the Hispano-Algerian Division, forming the western and southern part of the region.



1. BULIMINUS GIBBONSI. 2. B. COSTATUS.
3. OPEAS DELICATA. 4. BULIMINUS CINEREUS.
5. SUBULINA INTERMEDIA.



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The October Number of the AMERICAN NATURALIST opens with an interesting sketch on "The Surface Geology of Eastern Massachusetts" by W. O. Crosby; "Pseudis, the Paradoxical Frog," by S. W. Garman, follows, with an illustration. Edwin A. Barber, in his paper "On the Ancient and Modern Pueblo Tribes of the Pacific Slope of the United States," endeavours to answer the enigmatical question, "Who were the architects of the ancient and extensive prehistoric stone structures which abound in New Mexico, Arizona and other portions of the Southwest?" S. W. Williston discusses, con amore, "The American Antelope;" John A. Ryder touches closely upon the Darwinian Philosophy in his "Laws of Digital Reduction and David S. Jordan closes the list of long papers, with a very complete article "On the Distribution of Fresh-water Fishes." The recent publications relating to Natural History are fully and carefully reviewed by the editors; fourteen pages are devoted to new discoveries and advances made in the various sciences of Botany, Zoology, Microscopy, etc., the whole closing with Scientific News and Proceedings of Societies.

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Taylor Brothers, St. Ann's Street, Leeds.

Continued from No. 12.

					6.15.0		
						s.	d.
Helix Tryonii,						1	0
,,	Kelletti,				•••	I	0
,,	" var.					1	0
,,	Bridgesii,					Ι	3
,,	exarata,					1	3
,,	Stearnsiana,					1	3
"	Ayresiana,			•••		1	0
,,	Idahoensis,					2	0
,,	asteriscus, Morse	2				1	0
,,	Breweri, Newc.					1	o
,,	Carpenteriana, A	Bld.				0	9
,,	conspecta, Bld.					1	0
,,	Californiensis, L	ea.				I	3
,,	Gabbii, Newc.					1	0
,,	Lansingii, Bld.			•••		1	6
,,	alternata, Say,					0	3
,,	fuliginosus, Griff	F.				1	0
,,	inornatus, Say.					1	0
,,	arboreus, Say.					0	6
Succi	nea rusticana,					0	9
Binne	eia notabilis, Coop	ber.				1	6
Hem	phillia glandulosa	a, Binn	ey & E	3ld.		I	0
Macr	ocylis Vancouver	ensis, Z	ea.			1	3
,	, Voyana, Ne	wc.				1	0
Pupa	armifera, Say.					0	4
,,	pellucida, Pfr.				•••	0	4
Gonic	obasis occata, Lea	7.			•••	0	9

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