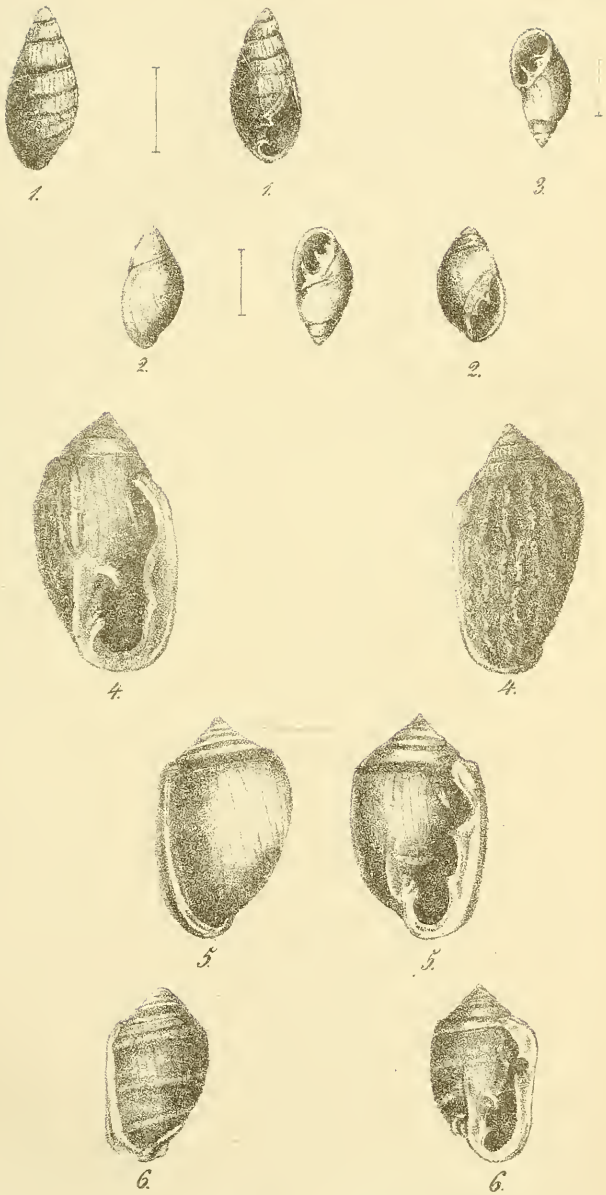
## V.—*On the Characters of the several Amphibious Volutes allied to the genus Melampus. By* William Swainson, *Esq.*, F.R.S., *&c.* [*Read 9th April,* 1854.]

Between the Phytophagous *Mollusca*, which live either upon land or in fresh water, and the marine division, which subsists upon seaweeds, there seems to intervene a remarkable group of animals of this class, which, although organized to enjoy life in both elements, can do so only by alternately changing one for the other. They are, in short, amphibious *molluscæ*, and have been placed in our arrangement next to the Linnean genus *Turbo*, because several of these latter have the same peculiarity of habit and mode of general structure. This curious group is probably represented by the old *Voluta Auris Midæ* of Linnæus, now forming the modern genus *Geovula*, or *Melampus* of Montford. In these as well as the subordinate forms of *Pedipes*, by Adamson; *Scarabus*, Montf.; and *Rhodostoma*, Sw.; the pillar, and often the outer lip, is marked by distinct plaits or folds, perfectly analogous to the *Volutidæ*. Hence they have been termed amphibious *Volutes*.

It must be confessed, however, that our knowledge of most of these animals, and even of their shells, is as ye very imperfect.

The opportunities enjoyed by Guilding and Lowe of examining the animal, and witnessing the habits of *Melampus* and *Pedipes*, completely establishes the fact that they do not belong to the *Pulmonaria* of Cuvier, and, consequently, have nothing to do with the true land shells, or *Helicidæ*. Of the other divisions I cannot find that any recent discoveries have

# PLATE VII.




1. *Gremnobates cornea.*
2. " *solida.*
3. " *parva.*
4. *Rhodostoma corrugata*
5. " *bidentata*
6. " *notata.*

been made of their animals, and I am therefore disposed to leave them much in the same series as they stand in my treatise on *Malacology*, pp. 208 and 344.

The shells I am now about to describe belong to the singular group of amphibious *Testacea* above noticed. They are all of a small size, and the inner lip, as in *Melampus*, is strongly toothed or plaited, but, unlike the shells of that division, the inner lip is not striated; and the spire, instead of being very short and obtuse, is produced and pointed, so as much to resemble the form of a *Bulimus*. Thus distinguished, I think it better to place them in a group by themselves, rather than under *Melampus*. All three are in Dr. Milligan's Museum; the two first were found by him in Oyster Cove in abundance, often above high watermark; but the third, *solida*, which has every appearance of being a marine shell, was found cast up by the water on the south-west shores of Flinder's Island, along with a small species of *Paludina*, found in brackish pools and marshes, both in Australia and Tasmania.

Judging from the shells alone this little group appears to be the intermediate between *Melampus* and *Pedipes*.

### Cremnobates.

*Animal*, amphibious. *Shell*, small, oval. *Spire*, rather pointed, as long as the aperture. *Aperture*, not contracted, *Pillar*, with strong plaits. *Inner lip*, thin, smooth inside.

*Sp.* 1. *C. cornea.* Plate VII., fig. 1.

Shell ovate, thin, light, covered with an epidermis; spire rather thickened, but not longer than the aperture; pillar with two plaits—the first large and central, the second small and basal. Inhabits Oyster Cove, near Hobart Town.

The general colour is olive brown, sometimes more or less

marked by darker transverse bands on the body whorl; the spire is much thicker in proportion than that of the next; and the whole shell is larger.

*Sp.* 2. *C. parva.* Plate VII., fig. 3.

Shell ovate, thin, light, covered with an epidermis; spire slender, pointed; pillar plaited; first close to the top of the aperture; the second more towards the base.

Inhabits with the last, but is much smaller, more slender, and the plaits proportionately much larger.

*Sp.* 3. *C. solida.* Plate VII., fig. 2.

Shell small, solid, glossy, white, tinged with pink or fulvous; body whorl large; spiral whorls small, the tip rather obtuse; pillar with three unequal plaits, the first very large. Inhabits shores of Flinder's Island.

This, from its comparative weight and substance, appears to be strictly a marine shell, and seems to connect the two preceding with *Pedipes*, from which genus the shell differs only in having no teeth on the outer lip.

As a further illustration of this intricate family, I shall now describe three species of *Rhodostoma*, a genus in which the characters of *Melampus* and some of those belonging to *Tournatella* are united. The first is very remarkable, and the two others, I believe, have been overlooked.

*Rhodostoma corrugata.* Plate VII., fig. 4.
Wrinkled Pinkmouth.

Shell oblong-ovate, somewhat coniform, body whorl with prominent waved interrupted wrinkles. Spire very short, conic, smooth, margin of the aperture orange.

Inhabits Cape York, (?) Australia.

Only one specimen in Dr. Milligan's collection.

The base of the upper lip projects, and the umbilicus is closed, but margined externally by an elevated rim. The lower plait is the thickest, and is divided almost into two by a deep groove.

### 2. *R. bidentata.*

Two-toothed Pinkmouth.

Shell ovate; body whorl ventricose; outer lip with two distinct but unequal teeth on the inner margin; basal plait, with a central groove.

Inhabits ————. (Dr. Milligan's collection.)

Shell shorter, but much thicker in general form than the last; outer surface quite smooth; colour cinnamon, fulvous, with a distinct white band on the top of the body whorl, and another adjoining the suture. Umbilicus partially closed, with a prominent marginal elevation, the intermediate space being concave, and strongly marked by the lines of growth. Outer lip very thick, but with a sharp edge, the flattened portion scarcely concave; the inner margin with a gradually curved sinus, followed by two distinct, but unequal granulated, obtuse teeth; the lower one only half the size of the upper, and both feeling rough to the touch; colour of the aperture fulvous white.

### 3. *R. notata.*

Banded Pinkmouth.

Shell ovate, body whorl, with numerous hair-like transverse striæ; lower fold of the body whorl simple; inner margin of the outer lip with a deep semicircular notch only; the flattened surface very concave.

Inhabits ————. (Dr. Milligan's collection.)

Shell smaller and less ventricose than the last; the spire proportionably longer; umbilicus closed; the marginal rim very close below the notch; the edge of the inner lip is quite smooth. Colour rufous brown, obscurely banded with whitish. Aperture rosy.

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## VI.—*On the Australian Haliotidæ or Ear-shells, with Remarks on other Species. By* William Swainson, *Esq.*, F.R.S. *and* L.S., *&c.* [*Read* 10*th May*, 1854.]

Having accidentally met with Mr. Reeve's monograph of the genus Haliotis, and observing several points which require either correction or elucidation, I have thrown together the following notes, which, as they chiefly refer to such species as I have met with in this hemisphere, will probably be considered worthy a place in the Transactions of the Society.

The geographic distribution of animals should ever form one of the first objects of study with the philosophic naturalist. On this subject I find the following introductory passage:—"It is a curious circumstance in the geographic distribution of the Haliotides, that few, if any, are to be found where Chitons abound, as if they exchanged places, to a certain extent, in the two hemispheres. There are a few species from California, but along the western coast of South America, where Chitons are most abundant, not any are found, and only one small species, the *H. pulcherrima*, at any of the islands of the Pacific. They inhabit the