

44. *Urtica linearifolia* (Hook. f.) Cockayne.

North Island: Ruahine-Cook Botanical District—Makurerua Swamp, where drained, climbing over shrubs. L. C.

45. *Veronica amplexicaulis* J. B. Armstg.

South Island: Eastern Botanical District—Mount Peel, subalpine. H. H. Allan!

Previously I have only known this species from the cultivated plants in the Christchurch Botanical Gardens, which were probably cuttings from the original plant. Also, in the *Manual* Armstrong's original habitat, "Upper Rangitata," is the only one given. Mr. Allan's specimens have not yet bloomed in my garden, but they seem to match exactly the not-readily-mistaken vegetative form of *V. amplexicaulis*, of which I have also a cultivated example.

46. *Veronica Haastii* Hook. f. var. *macrocalyx* (J. B. Armstg.) Cheesem.

South Island: Western Botanical District—Browning's Pass neighbour-hood. J. E. Holloway!

I am inclined to think it would be better to treat this variety as a species. If not, then *V. epacridea* should also be united to *V. Haastii*. The plant in question has so far been recorded only from Mount Rolleston, the vicinity of the Waimakariri glaciers, the Rangitata Valley, and the above locality.

ART. XVIII.—A Note on the Young Stages of *Astraea heliotropium* (Martyn).

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IN his "A Commentary on Suter's *Manual of the New Zealand Mollusca*"* Iredale makes the following statement on page 444: "My disposition of the species ranked by Suter in the families Liotiidae, Vitrinellidae, and Cyclostrematidae are as follows: "Transfer *Liotia serrata* Suter, 1908, and *Liotia solitaria* Suter, 1908, to the genus *Angaria* Bolten, 1798, in the family Trochidae," &c.; and on page 439 of the same volume, speaking of the genus *Angaria* Bolten, he says, "This genus has not yet been recorded from New Zealand, though I have recorded two species at the Kermadec Islands. . . . The two species, *Liotia serrata* Suter, 1908, and *Liotia solitaria* Suter, 1908, are probably both juveniles of this genus: the latter certainly is, whilst the species Suter compared it with—viz., *L. stellaris* Ad. & Rve.—is also a juvenile *Angaria*, as is shown here in the British Museum, the type being so placed when it was described."

I have a number of specimens dredged by Captain Bollons from various localities which show very clearly that Iredale was mistaken in transferring

* *Trans. N.Z. Inst.*, vol. 47, p. 417-508, 1915.

Liotia solitaria Suter to the Trochidae, as it is undoubtedly a juvenile Turbinidae, belonging to the genus *Astraea* Bolten, 1798—it being, in fact, the juvenile of *Astraea heliotropium* (Martyn).

In the *Manual of the New Zealand Mollusca*, 1914, Suter records *Astraea heliotropium* (Martyn) as occurring from the Bay of Islands to Stewart Island—that is, practically all round the New Zealand coast. It has been obtained alive in Wellington Harbour, and is plentiful at Kapiti Island. From a dredging off Cuvier Island in 38 fathoms I obtained two specimens, of which Mr. Suter says, “No doubt the embryonic shells of *Astraea heliotropium* (Martyn). Identical with my unfortunate *Liotia solitaria*.” From near the Hen and Chicken Islands, in the Hauraki Gulf, in about 30 fathoms, a minute specimen, of 0.5 mm., without spines, was obtained, which Mr. Hedley said was the embryo of an *Astraea*, and it is identical with the protoconchs of the Cuvier Island specimens. Then, from off Channel Island, in Hauraki Gulf, 26 fathoms, five specimens were obtained, measuring 1.5 mm., 2 mm., 2.5 mm., 3 mm., and 4 mm. diameter—all specifically identical with the Cuvier Island specimens. On the last spine of the largest specimen the adult sculpture of *Astraea heliotropium* is just beginning to show. Unfortunately, it is rather damaged and water-worn.

A dredging off Chetwode Island, Cook Strait, 55 fathoms, gave two young *Astraea heliotropium* (Martyn), of 18 mm. and 19 mm. diameter, so far developed as to be quite unmistakable; and two smaller ones, of 5 mm. and 3.5 mm., the larger of which is much broken, though enough remains to identify it with the larger ones, while it at the same time shows most clearly its specific identity with the smallest, which is specifically identical with the northern specimens. The smallest (3.5 mm.) has only three whorls, and a wide umbilicus, within which all the whorls are clearly visible. The upper surface is very slightly concave, the whorls coiled almost in one plane; colour white, the interior of the lip slightly nacreous. The largest specimen has the protoconch sufficiently distinct to establish the specific identity of the smallest.

Mr. J. C. Andersen collected three young specimens of *Astraea heliotropium* (Martyn) on the beach of Kapiti Island—good examples, 30 mm., 34 mm., and 40 mm. In all three the protoconch is unusually clean, and under a powerful pocket-lens the embryonic shell is clearly visible; while the largest one is particularly useful as exhibiting the gradual development of the spines, the change from the depressed discoidal spire of the juvenile to the somewhat raised spire of the adult, and the gradual increase of the at-first nodulous spiral ribs, which when the shell reaches a diameter of about 25 mm. change to close sharp growth lamellae on the spirals. These three specimens are in the reference collection in the Dominion Museum, Wellington.

From dredgings in Dusky Sound I have a series of seven, of which four are quite minute and the other three are unmistakable young *Astraea heliotropium* (Martyn), 20 mm., 19 mm., and 13 mm. diameter, with clean spires which show the embryos very well. This is perhaps the best locality for this species.

If all these specimens were mixed together it would be an absolute impossibility to be sure of the locality of any single specimen. Specimens illustrating this change from juvenile to adult have been placed in the Dominion Museum.