

ART. XIV.—*The First-discovered New Zealand Gundlachia.*

By HENRY SUTER.

[Read before the Wellington Philosophical Society, 7th September, 1904.]

Gundlachia neozelanica, n. sp.

Ancylus, sp., Suter, Journ. de Conch., vol. xl., pp. 248–250 (1892). *Ancylus tasmanicus*, Suter, P.L.S. N.S.W. (2), vol. vii., p. 624 (1893), (not of T.-Woods). *Gundlachia*, sp., Suter, Trans. N.Z. Inst., vol. xxvi., p. 122, pl. xiv., figs. 1–5 (1894); *Gundlachia*, sp., Suter, P.L.S. N.S.W. (2), vol. viii., p. 486 (1894); *Gundlachia*, sp., Hedley, l.c., pp. 505, 507, 511, pl. xxiv., figs. 12–15; *Gundlachia*, sp., Suter, Journ. de Conch., vol. xli., p. 229 (1894).

Shell depressed-conoidal, oval-oblong, thin, subtransparent, horn-colour, with a blackish-green coating; apex a little inclined to the right, situated at the posterior sixth of the length, flatly convex anteriorly; concentric lines of growth at regular intervals. Interior light-brown, shining; aperture elongated-oval, slightly broadened anteriorly. Length, 3 mm.; breadth, 2 mm.; height, $\frac{3}{4}$ mm.

Hab. River Avon, near Christchurch.

Type in my collection.

With regard to the dentition I have to rectify a mistake in the figure: the rhachidian tooth is bicuspid, not tricuspid.

The formation of a septum has been described and figured by Hedley (l.c.) from specimens I sent him.

I always hesitated giving this species a name, as I hoped fully developed specimens might turn up. This, however, has not been the case, and, as a second species has been discovered, it is incumbent to name the first-discovered form.

ART. XV.—*Revision of the New Zealand Species of the Genus Potamopyrgus, with Description of a New Species.*

By HENRY SUTER.

Communicated by A. Hamilton.

[Read before the Wellington Philosophical Society, 7th September, 1904.]

A REVISION of the New Zealand *Hydrobiinæ* was published by Captain F. W. Hutton in 1882,* reducing the already described

*Trans. N.Z. Inst., vol. xiv., pp. 143–146, pl. i., figs. A–H.

species to three, and adding a new species (*P. pupoides*). Hutton says: "The absence of books prevents me feeling certain that all the synonyms I have given are correct." With regard to books we are not much better off than we were twenty-two years ago, and, besides this, there is the very great inconvenience for us that the types of all the species, Hutton's species excluded, are in foreign museums. It was many years back, when material in my collection was fast accumulating, that I found Hutton's restriction to a total of only four species unsatisfactory. I am fully aware of the great variability of fresh-water mollusks, also of the fact that many species of *Potamopyrgus* are polymorphic, and therefore one and the same species may have been described under different names. There is a spinous angulate form, then an angulate spinous form, and thirdly an acuminate ecarinate one. Of the New Zealand species only two are polymorphic.

I tried to get as much information as I possibly could about those species of which I did not possess sufficient knowledge, and I have to thank especially Dr. W. H. Dall, Hon. Curator of Mollusks, U.S. National Museum, Washington; also Dr. H. Fischer, of Paris; Dr. R. Sturany and Dr. Oberwimmer, K.K. Hofmuseum, Vienna, for the great readiness with which they acceded to my request. The revision now undertaken is to a large extent based on the information thus obtained, and I hope it may prove useful to students of conchology.

The species of *Potamopyrgus* described from New Zealand up to now number eleven (omitting *croseii*, Frfld., *ciliata*, Gould, and *gracilis*, Gould, for reasons shown later on), and they were formerly classed under five genera: *Melania*, *Amnicola*, *Paludestrina*, *Hydrobia*, and *Bythinella*. These eleven species I now reduce to five, with three subspecies.

Genus POTAMOPYRGUS, Stimpson (1865); Stimpson, Amer. Journ. of Conchology, vol. i. (1865), p. 53; Smithon, Miscell. Coll., No. 201 (1865), pp. 49, 50.

Type: *Melania corolla*, Gould, Proc. Bort. Soc. Nat. Hist., vol. ii. (1874), p. 223.

Synonym: *Pyrgophorus*, Ancey, Bull. Soc. Mal. France, vol. v. (1888), pp. 188, 192.

Stimpson's diagnosis of the genus is reproduced by Hutton in Trans. N.Z. Inst., vol. xiv., p. 143, with some additional remarks on the dentition.

Pilsbry says, "*Potamopyrgus* is a genus of great antiquity, extending at least as far back as the early Eocene. It now comprises all of the fresh-water rissoids of New Zealand, a majority of those of Australia, with species in West Africa and

tropical America."* Tasmania has forms very nearly allied to ours. The genus is, as far as I am aware, not known in the fossil state from New Zealand.

Potamopyrgus corolla, Gould, sp.

Melania corolla, Gould, Proc. Bost. Soc. Nat. Hist., vol. ii. (1847), p. 223. *Melania corolla*, Reeve, Conch. Sc. (Melania), fig. 366. *Ammacola corolla*, Gould, U.S. Expl. Exp., vol. xii. (1852), p. 129, pl. ix., figs. 149 a-c. *Paludestrina cumingiana*, P. Fischer, Journ. de Conch., vol. viii. (1860), p. 208, pl. iv., fig. 7. *Potamopyrgus corolla*, Stimpson, Smithon. Miscell. Coll. No. 201 (1865), pp. 49, 50. *Hydrobia crossei*, Frauenfeld, Verh. Zool. Bot. Gesell. Wien, vol. xiv. (1865), p. 595. (?) *Hydrobia ciliata*, Frauenfeld, l.c., p. 1025. *Bythinella corolla*, Tenison-Woods, P.L.S. N.S.W., vol. iii. (1879), p. 135, pl. xiii., figs. 2, 3, 5. *Hydrobia corolla*, v. Martens, Crit. List N.Z. Moll. (1873), p. 14. *Hydrobia corolla*, Hutton, Manual N.Z. Moll. (1880), p. 83. *Potamopyrgus cumingiana*, Hutton, Trans. N.Z. Inst., vol. xiv. (1882), p. 144, pl. i., figs. A, F. *Potamopyrgus cumingiana*, Hedley and Suter, P.L.S. N.S.W. (2), vol. vii. (1893), p. 619. *Potamopyrgus cumingiana*, Suter, Journ. de Conch., vol. xh. (1893), p. 222.

Dr. Sturany, of Vienna, kindly informed me (*in lit.*) that Frauenfeld proposed the specific name *crossei* solely in case the name of Fischer, *Paludestrina cumingiana*, should be accepted, as there exists a *Paludestrina cumingi*, d'Orb., of earlier date.

Regarding the species *Hydrobia ciliata*, Gould, I am indebted to Dr. W. H. Dall, of Washington, for the following (*in lit.*): "Described as from Liberia with other shells from the missionary Dr. Perkins, but appears very similar to Hutton's figure in Trans. N.Z. Inst., vol. xiv., pl. i., fig. B 1. It seems as if some mistake had occurred, and this shell should really have come from New Zealand, but it is difficult to see how, as Gould was a very careful man." Dr. P. Fischer no doubt admitted this species to be of African origin, for he says, "Nous connaissons deux autres espèces de la Nouvelle-Zélande, une des Antilles, une de l'Afrique; toutes sont caractérisées par la série d'épines qui ornent le dernier tour de spire."† Pilsbry also, as already stated, gives West Africa as the habitat of *Potamopyrgus*, and is most likely alluding to the above species.

Dr. W. H. Dall (*in lit.* 20, xi., 97) also kindly sent me the following information respecting the type of the genus: "*Melania*

* Proc. Acad. N. Sci., Philadelphia, 1891, p. 327.

† Journ. de Conch., vol. viii. (1860), p. 209.

corolla, Gould (1847), is not *corolla* of Hutton, but the shell figured by Reeve as *corolla*. It is the largest, with spare long spines. The locality may have been erroneous. The whorls are rounded, cf. Hutton, Trans. N.Z. Inst., vol. xiv., pl. i., fig. A 1." Considering this statement, we must conclude that the synonyms given by Hutton in his Manual, p. 83, are mostly correct, but that in his revision he took the wrong species for *corolla*—viz., *Amnicola badia*, Gould. He says (*l.c.*, p. 143) that *P. cumingiiana*, Fischer, which is held by v. Martens to be the same species as *P. corolla*, Gould, does not occur on Banks Peninsula, and that its dentition does not correspond with the description given by Dr. Stimpson. Now, Dr. Dall admits that the locality given by Gould may have been erroneous, and this appears now to be quite certain. I examined the dentition in typical specimens of *P. corolla* from the Ruamahanga River, Wairarapa, and I cannot say that it does not agree with Stimpson's description. The rhachidian and the lateral teeth correspond with his diagnosis, but the marginal teeth have a number of larger denticles, their number agreeing with Stimpson's statement, but there are a number of minute denticles besides which I am unable to count with a magnifying-power of 720. The number of denticles on the marginal teeth is variable, and can hardly be used for specific distinction.

The diagnosis of the species is as follows: Shell horn-colour, sometimes covered with a black coating, ventricose, thin, subpellucid; $6\frac{1}{2}$ rounded whorls, the last three spinous, the others smooth and sometimes of a darker colour, the last swollen, subcarinated at the encircling series of spines. Spines long, rather distant, curved, directed upwards. Aperture ovate, peristome continuous, thickened. There may be only rudimentary spines, or they may be absent altogether, leaving only a carina, or, finally, all the whorls may be smooth and convex, without a trace of a carina or spines. Length, 6.5 mm.; breadth, 4.5 mm. Ratio of B : L = 1 : 1.44.

This species is distinguished by its globosely ventricose form, the absence of spines on the first $3\frac{1}{2}$ whorls, the great number of spines on the last whorl (17 to 20), their length, curvature, and direction towards the apex.

My collection contains specimens from fourteen localities:—

(1.) Typical form with long spines is represented from Lakes Takapuna and Kanieri. Those from the latter locality have shorter spines. Most of the specimens are of horn-colour, sometimes with the first few whorls darker, and a few have a dark-brown coating.

(2.) Specimens with rudimentary spines occur in the creeks at Henderson and Swanson; in the creek at Hastwell's and

Ruamahanga River in the Forty-mile Bush; at Petone, near Wellington; Parua Bay, near Whangarei; and on the Chatham Islands. The majority of these specimens have a thick, black coating, and the continuous peristome much thickened.

(3.) With only a thread-like carina on the whorls there are specimens from Hastwell's and the Chatham Islands.

(4.) Shells with the whorls smooth, rounded, mostly coated with black and callous peristome, were found in creeks at Northcote, Hastwell's, Parua Bay, Kawau Island, the Waikato, and Chatham Islands.

(5.) Dwarf forms with spines, horn-colour, and six whorls, were collected in Lake Takapuna ($3\frac{1}{2} \times 4\frac{1}{2}$ mm.), and near Greymouth (4×6 mm.).

Type in the U.S. Nat. Mus., Washington.

Potamopyrgus corolla, Gould, subsp. *salleana*, P. Fischer, subsp. *Paludestrina salleana*, P. Fischer, Journ. de Conch, vol. viii. (1860), pp. 208, 209, pl. iv., fig. 6.

Shell horn-colour, conical, thin; whorls 7 to $7\frac{1}{2}$, flatly convex, the last four spinous, the others smooth, the last whorl with a chordate carina below the row of spines. The setæ are short, black, directed upwards. Aperture ovate, margins continuous, but little callous. Length, 6 mm.; breadth, $3\frac{1}{2}$ mm. Ratio of B : L = 1 : 1.7.

This subspecies differs from *corolla* in being more slender, less ventricose, in having spines on the last four whorls and a chordate carina below the row of spines; the last whorl is also less voluminous in proportion.

Although I have examined many hundreds of specimens I have not yet seen one with a chordate carina below the row of setæ, but some specimens from the Great Barrier Island and from Nelson are distinctly angled below the periphery, and I take this quite peculiar character mentioned by Fischer as of quite exceptional occurrence.

The distribution of this subspecies extends over a large area. In my collection there are specimens from Lake Takapuna, Western Springs (Auckland), Lake St. John, Onehunga Springs, Great Barrier Island, Maketu (Hunua Range), Waipoua River (near Masterton), Petone (near Wellington), Pelorus River, Nelson, and Collingwood.

All specimens are yellowish-brown, thinner than *corolla*, mostly without spines, and some are larger than the type. Length, 8 mm.; breadth, $4\frac{1}{2}$ mm. The Nelson specimens are from brackish water.

Type in the collection of the Journal de Conchyliologie, Paris.

Potamopyrgus antipodum, Gray, sp. (em.).

Amnicola antipodanum, Gray, in Dieffenbach's "New Zealand," vol. ii. (1843), p. 241. *Hydrobia antipodum*, v. Martens, Crit. List N.Z. Moll. (1873), p. 14. *Hydrobia antipodum*, E. A. Smith, Voy. "Erebus" and "Terror," Zool., vol. ii. (1875), p. 3, pl. i., fig. 19, above. *Bythinella antipoda*, Hutton, Manual N.Z. Moll. (1880), p. 81. *Potamopyrgus antipodum*, Hutton, Trans. N.Z. Inst., vol. xiv. (1882), p. 145, pl. i., figs. C, G (except upper right figure). *Potamopyrgus antipodum*, Hedley and Suter, P.L.S. N.S.W. (2), vol. vii. (1893), p. 619. *Potamopyrgus antipodum*, Suter, Journ. de Conch., vol. xli. (1893), p. 221.

The statement made by v. Martens (*l.c.*, p. 141) that "some specimens are bristly" is not correct. This species has never been found with spines or a carina.

The diagnosis of the species may be found in Hutton's Manual, and in Trans. N.Z. Inst., vol. xiv.

P. antipodum is just as variable as most species of the genus, especially in size; but the conical form, flatly convex whorls, and little-impressed suture are fairly constant characters.

I have specimens from twelve localities, ranging from Auckland to Southland. Specimens from Owaka (Clutha) are very small and ventricose, with five whorls only, and measuring $4\frac{1}{2} \times 2\frac{3}{4}$ mm. Another dwarf form was collected by Mr. R. Murdoch, of Wanganui, on the Waimate Plains.

The great majority of the specimens are covered with a black coating. It is remarkable that *P. antipodum* is very often met with in brackish water, and almost without an exception such specimens have the tip of the shell eroded. In some places I saw this species living on *Ulva* plants. I have specimens from brackish water from seven different localities.

Type in the British Museum.

Potamopyrgus antipodum, Gray, subsp. zelandiæ, Gray, subsp. *Amnicola* (?) *zelandiæ*, Gray, in Dieffenbach's "New Zealand," vol. ii. (1843), p. 241. *Hydrobia zelandiæ*, v. Martens, Crit. List. N.Z. Moll. (1873), p. 15. *Hydrobia zelandiæ*, E. A. Smith, Voy. "Erebus" and "Terror," Zool., vol. ii. (1875), p. 3, pl. i., fig. 19, below. *Bythinella zelandiæ*, Hutton, Manual N.Z. Moll. (1880), p. 81.

This subspecies is fairly well represented by the upper right figure on pl. i., fig. C, in Trans. N.Z. Inst., vol. xiv. It is distinguished from the species by its somewhat smaller size and more tapering form. Dimensions of type are: Length, 5 mm.; breadth, $2\frac{1}{2}$ mm. It is much rarer than *antipodum*, but also shows a good amount of variation.

My collection contains specimens from Nelson, three localities near Wellington, Wanganui, Hastwell's, and Riverhead (near Auckland), the latter being from brackish water, and small.

Type in the British Museum.

Potamopyrgus badia, Gould, sp.

Ammicola badia, Gould, Proc. Bost. Soc. Nat. Hist., vol. iii. (1848), p. 75; U.S. Expl. Exp., vol. xii. (1852), p. 126, fig. 150. *Hydrobia fischeri*, Dunker, Mal. Blätter, vol. viii. (1862), p. 152. *Hydrobia reevei*, Frauenfeld, Verh. Zool. Bot. Gesell. Wien, vol. xiii., p. 1024. *Hydrobia fischeri, badia, reevei*, v. Martens, Crit. List. N.Z. Moll., pp. 14, 15. *Bythinella fischeri, badia, reevei*, Hutton, Manual N.Z. Moll. (1880), p. 82. *Potamopyrgus corolla*, Hutton, Trans. N.Z. Inst., vol. xiv. (1882), p. 145, pl. i., figs. B, F (not of Gould). *Potamopyrgus corolla*, Hedley and Suter, P.L.S. N.S.W. (2), vol. viii. (1893), p. 619 (not of Gould). *Potamopyrgus corolla*, Suter, Journ. de Conch., vol. xli. (1893), p. 619 (not of Gould).

The type of this species is not spiny, the whorls moderately convex, shouldered above, and the dimensions given are: Length, $\frac{1}{5}$ in. = 5 mm.; breadth, $\frac{1}{12}$ in. = 2 mm.; ratio of B:L = 1:2.5.

This is the species that since 1882 was erroneously called *corolla* by New Zealand conchologists. I have specimens from the River Avon which perfectly agree with the description and measurement given by Gould. Some are spinous, some shouldered and without spines, and others have smooth, flatly rounded whorls. These typical specimens are, according to my experience, very rare, and it is curious that this form, instead of the very common one, should have been collected. The common form has the following dimensions—length, 5 mm.; breadth, $2\frac{1}{2}$ –3 mm.—having thus a somewhat greater angle of the spine. Both forms were found living together in the River Avon.

I know this species from the South Island only, and the finest specimens I found in the Rivers Avon and Heathcote, near Christchurch. Specimens from Akaroa have smooth, rounded whorls; a globose form, also smooth, and measuring $4\frac{1}{2} \times 3$ mm., comes from Kowai Bush. Similar smooth forms are in my collection from Mount Somers, Bealey, Birch Hill (Tasman Valley), and Opawa, near Albury, the latter agreeing with *H. fischeri*. From the Leith, Dunedin, smooth and spinous forms are mixed, but the former are more abundant. I mentioned the occurrence of a large form of *P. cumingiiana* from Lake Te Anau in these Transactions (vol. xxvi., p. 121), measuring 8×4 mm. Careful

examination and comparison have now convinced me that it is really a very large form of *P. badia*.

Considering the great variability of *Potamopyrgus* I refrain from establishing any new species or subspecies unless for very good reasons, and merely mention the localities where forms differing considerably from the type have been found. Temperature, chemical composition, movement and size of the water-area, and food available have a great influence on the growth of fresh-water shells, and it is difficult to find the same form of a species in more than two or three localities. Taking into consideration the polymorphism of some species, and the great variability, we can congratulate ourselves on having not more synonyms to record.

Type in the U.S. Nat. Museum, Washington.

Potamopyrgus egenus, Gould, sp.

Amnicola egena, Gould, Proc. Bost. Soc. Nat. Hist., vol. iii. (1848), p. 75. *Amnicola gracilis*, Gould, U.S. Expl. Exp., vol. xii. (1852), p. 127, figs. 151 *a*, *b*. *Hydrobia egena*, v. Martens, Crit. List. N.Z. Moll. (1873), p. 15. *Bythinella egena*, Hutton, Manual N.Z. Moll. (1880), p. 82.

I am indebted to Dr. W. H. Dall for the following information (*in lit.*): "The shell first described by Gould as *Amnicola egena* is imperfect. It was inadvertently called *gracilis* in the final report. It appears to be identical with specimens called *gracilis* in the collection, except that the type is brown and the others greenish." Gould's diagnosis is copied in Hutton's Manual, and the type was found on Banks Peninsula.

This is undoubtedly a good species, but it seems to be rather rare. I have it in my collection from three localities only: Two specimens from Kaiwarra River, near Wellington; one from Nelson; and fourteen from Little River, Banks Peninsula. The graceful elongated shape, the convex whorls, and the last whorl amounting to half the length of the shell, distinguish it at once from the other species. No carinated or spinous forms are known. The dimensions given by Gould are: Length, 5 mm.; breadth, $2\frac{1}{2}$ mm.; with five whorls. The dimensions of the Little River specimens, with five whorls, are 4×2 mm.; those of the Kaiwarra specimens, $4 \times 1\frac{3}{4}$ mm. with six whorls, and $5 \times 2\frac{1}{4}$ mm. with seven whorls; while the Nelson specimen measures $5\frac{1}{2} \times 2\frac{1}{2}$ mm., and has six whorls. Thus my specimens must have slightly shorter whorls and a somewhat narrower spire than the type. In all specimens the last whorl is a trifle longer than half the axis of the shell.

Type in the U.S. Nat. Museum, Washington.

Potamopyrgus spelæus, Frauenfeld, sp.

Hydrobia spelæa, Frauenfeld, Verh. Zool. Bot. Gesell. Wien, vol. xiii. (1862), p. 1022; vol. xv., p. 526, pl. viii. *Hydrobia spelæa*, v. Martens, Crit. List. N.Z. Moll. (1873), p. 15. *Bythinella spelæa*, Hutton, Manual N.Z. Moll. (1880), p. 82.

This species was found together with *P. reevei* in moa-bone caves. A translation of the diagnosis is given by Hutton, but the dimensions are not quite those of Frauenfeld; the type is 3 mm. long by 1.6 mm. in breadth. This minute species is nearly allied to *pupoides*, Hutton, which, however, is mostly, but not always, smaller, and constantly of pupoid form.

The specimens in my collection I take to be almost typical were collected by Mr. A. Hamilton, now Director of the Colonial Museum, in the salt springs at Te Mahia, Hawke's Bay, and they show the same dimensions as the type specimen. A rather large form comes from the tidal part of the Wanganui River, and its dimensions vary from $3 \times 1\frac{3}{4}$ mm. to $3\frac{1}{2} \times 2$ mm. Very small specimens occur at Nelson, the largest measuring $2\frac{1}{2} \times 1\frac{1}{2}$ mm., the smallest 2×1 mm. The latter is the usual size of *P. pupoides*, but the Nelson examples are distinguished by much more convex whorls, deeper suture in consequence, and a more conoidal spire. Forms with ventricose body-whorl were collected by Mr. Chadwick on the upper Wanganui River, and in a cold mineral pool at Rotorua by Lady Frances Brown, a most enthusiastic collector. What I consider to be the same species are examples collected by Mr. Charles Cooper, of Auckland, in hot-spring water at Te Aroha. These specimens are very variable in shape, some approaching the type and measuring $3 \times 1\frac{1}{2}$ mm., others with a more inflated body-whorl show $\frac{1}{2}$ mm. greater breadth; they all have only four whorls. This is the only instance known to me of a mollusc living in hot water in New Zealand, while it is well known that *Neritina* and *Biithynia* have been found in France living in water from 68° to 122° Fahr.

Type in the K.K. Hofmuseum, Vienna.

Potamopyrgus spelæus, Frfld., subsp. *pupoides*, Hutton.

Potamopyrgus pupoides, Hutton, Trans. N.Z. Inst., vol. xiv. (1882), p. 146, pl. i., figs. D-H. *Potamopyrgus pupoides*, Hedley and Suter, P.L.S. N.S.W. (2), vol. vii. (1893), p. 620. *Potamopyrgus pupoides*, Suter, Journ. de Conch., vol. xli. (1893), p. 222.

I have typical specimens from brackish water in the Heathcote Estuary, near Christchurch, and they are so nearly allied to Frauenfeld's *spelæus* that I find it advisable to give *P. pupoides* only subspecific rank. It is distinguished from the species


by its cylindrical form, the much flatter whorls, and the less impressed suture. I have also specimens from Parua Bay, near Whangarei, and from the Onehunga Springs. Those from the latter locality are variable, some corresponding with the type, while others have more convex whorls, and approach the very small form of *spelæus* from Nelson.

Type in the Canterbury Museum, Christchurch.

Potamopyrgus subterraneus, n. sp.

Shell minute, subcylindrical, fragile, opaque-white, smooth. Spire pupoid; apex blunt; whorls 5, rather convex, the body-whorl more than half the axis; suture well impressed; mouth oval, oblique, peristome continuous; outer lip membranaceous, the specimen being apparently not quite full-grown; inner lip slightly callous, subvertical. Operculum not seen. Length, $2\frac{3}{4}$ mm.; breadth, $1\frac{1}{4}$ mm.

Hab. The only specimen was obtained by Mr. W. W. Smith, of Ashburton, by pumping water from a well 48 ft. deep.

I  It was alive when caught, but upon reaching me the animal was already decomposed. Mr. Smith very kindly presented the specimen to me in February, 1892. I did not describe it then because I hoped to get some specimens with the animal in sufficiently good condition for study. No other specimens, however, turned up. The species is exceedingly fragile, and distinguished, like *pupoides*, by its subcylindrical form. The nearest allies are *egenus* and *spelæus*, but it differs considerably from both. It most likely has been derived from the latter species.

Type in my collection.

ART. XVI.—*Revision of the New Zealand Species of the Genus Isidora, with Description of a New Subspecies.*

By HENRY SUTER.

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[Read before the Wellington Philosophical Society, September 7th, 1904.]

THE first short list of species we find in von Marten's "Critical List" (1873), p. 15, consisting of three species: *Physa variabilis*, Gray; *P. tabulata*, Gould; and *Limnæa* (?) *wilsoni*, Tryon (a sinistral shell). The next list, in Hutton's Manual, is more extensive, comprising ten species: *Physa wilsoni*, Tryon; *P. antipodea*, Sow.; *P. gibbosa*, Gould; *P. guyonensis*,