

# A REVISED CENSUS OF THE TASMANIAN FLUVIATILE MOLLUSCA.

By W. L. MAY.

Plates IX.-XII.

(Read 12th July, 1920.)

On entering on a revision of the Tasmanian freshwater molluscs, the question naturally arises why should this be necessary, seeing the great amount of attention that has been given to this subject by a number of distinguished naturalists. The truth is that much overlapping has occurred in previous work, creating many synonyms, partly through ignorance, or uncertainty as to what previously described species really were, as they were usually not figured. Again, too much stress was laid on small variation in the erection of species, which variation proves to be individual, and not specific.

The earliest naturalists who touched this fauna appear to be Quoy and Gaimard, who in the Zoology of the *Astrolabe*, 1835, describe and figure *Paludina nigra* from D'Entrecasteaux Channel. Bourguenat appears next by describing in Proc. Zool. Soc., 1854, our large freshwater limpet *Ancylastrum*. Reeve, in the Conch. Icon., 1857, described *Littorina paludinella*, subsequently described by Tenison-Woods as *Ampullaria tasmanica*, and now placed in the genus *Petterdiana*. Sowerby also in the Conch. Icon. described seven species of *Physa*, mostly sent him by Legrand; several of these species cannot be maintained. His *P. vandiemenensis* is almost certainly exotic, it is a large, conspicuous form, that has never been taken again, and was probably sent by Ronald Gunn, who is known to have made similar mistakes with a number of marine shells. The figure in Conch. Icon. looks very like some of the New Zealand forms. Von Martens in 1858 described *Hydrobia tasmanica*; this species was not identified by local workers, and consequently it was twice redescribed. Hedley P.L.S. N.S.W. for 1913 published a figure of *Amnicola diemense* Frauenfeld, which appears to be the same as Von Martens' figure of *H. tasmanica*. Frauenfeld also described, in 1863, *Hydrobia gunnii*, another species not recognised by local workers, and it has been several times redescribed. Hedley op. cit. gives a figure from the probable type in the

British Museum, from which it can be easily identified. Tenison-Woods was the first to work at these forms on the spot, and had a large amount of material placed in his hands by Legrand. Considering this naturalist's reputation, and opportunities, it is extraordinary how little value can be set on his work. Of 24 species of fluviatile shells described, only about six can be maintained as distinct species, but he must receive credit for partly admitting his errors, for when dealing with *Bythinella nigra* in these proceedings for 1879, pp. 71-72, he unites with it four of his supposed species. Of his four species of *Lymnæa*, *L. tasmanica* is admitted by himself, Proc. Roy. Soc. Tas., 1878, p. 72, to be founded on the introduced *L. peregra*, and the three others are probably variants of one native species (see Petterd, Journ. Conch. ii., p. 81). His six species of *Physa* all become sunk in synonymy. Fortunately a type series of these was mounted and placed in the Tasmanian Museum, Hobart. Many of these are broken, and some quite destroyed; of the four species and two varieties that remain I have prepared figures for this paper. Of *P. tasmanica*, one perfect specimen remains on the card, it seems conspecific with *P. pyramidata* Sowerby; var. a., the single specimen seems scarcely adult, it appears to equal *P. gibbosa* Gould; var. b., of five specimens mounted, one is the same as var. a.; probably the others are the same also, but in a more adult state. *P. ciliata*, four specimens, some rather broken; two are short spired, and practically identical with the last; two are long spired, resembling the next. *P. legrandi*, one large specimen, thin, and probably not quite adult, probably is a rather stout form of *P. pyramidata*. *P. huonensis*, four specimens have been mounted, but all are destroyed; Petterd, who probably saw the types, considered it equalled *tasmanica*. *P. huonicola*—no trace of this species seen, but the description would seem to bring it under *pyramidata*. *P. tasmanicola*, eight specimens have been originally mounted, of which one remains perfect. (Another specimen remaining is *Potamopyrgus tasmanica*). I consider this species undoubtedly a juvenile of *pyramidata*.

Our author was not more fortunate in dealing with the small *Amnicola*-like species in our streams. Three of his species are synonyms of *P. nigra*, and it is difficult to see with respect to two of them, viz., *B. legrandi* and *tasmanica*, how he could see any difference from *nigra*, or from one another. The same remarks apply to two other species, which become united to *P. gunnii*. Type series of these were also presented to the Museum, and

enough remained to enable a satisfactory identification and figure to be made. Two *Pisidium* and one *Cyclas* were also described, and *Valvata tasmanica*, now placed in *Petterdiana*. A very unsatisfactory feature of this description is that it is printed on a slip attached to page 82, P. and P. Royal Society, Tas., for 1875, immediately below *Cyclas tasmanica*; this is missing from the copy in the Royal Society Library, and may be from others. It may therefore be well to reprint the English portion of the original description, which is as follows:—

“Shell minute, globosely turbinate, deeply and widely umbilicate, pale horny, spotted with a blackish epidermis, rather solid, semi-pellucid; whorls 4, rounded, faintly undulately striate, subcanaliculate at the sutures; aperture semi-lunate, sub-reflexed, posteriorly angulate; inner lip straight and thin; umbilicus margined. Operculum horny, oval and subspiral, Long. 1, Lat. 1, millimeters.”

W. F. Petterd, who is so well and favourably known for his work on the Tasmanian land shells, also gave considerable attention to the freshwater forms. He gives a very useful list of the species as then known in the Journ. Conch. ii., 1879, p. 80, with comments and some corrections. In his Contributions for a systematic catalogue of Aquatic shells in P. and P. Roy. Soc. Tas. for 1888, he dealt more thoroughly and completely with this group than any other worker; and at the same time described ten new species and several varieties, and published with the paper a large number of figures; many of these, however, especially of the smaller species, are very roughly executed, and are of little value for identification. Most of his types are now in the Launceston Museum, and I had an opportunity before they were placed there of examining them carefully, and figuring most. Of his two species of *Lymnæa*, *L. lutosa* is in my opinion only one of the common forms of *L. peregra* introduced from Europe. His *Potamopyrgus woodsi* equals *P. tasmanica* von Martens; his *Assiminia bicincta* is conspecific with *A. tasmanica*, Tenison-Woods, and his two minute species, *P. smithii*, and *P. dyeriana*, are somewhat doubtfully distinct from *P. gunnii*, of which they may be micromorphs.

Finally, R. M. Johnston, P. and P. Roy. Soc. Tas. for 1879, described *Gundlachia petterdi*, and *Ancylus woodsi*, the latter being the undeveloped form of the former, also an *Amnicola* and two *Planorbis*. Op. cit. for 1888, p. 84, appear critical observations on recent contributions to our knowledge of the Freshwater shells of Tasmania,

which are interesting, and accompanied by four plates of figures, tolerably well executed and numbered, but strangely he has omitted to provide an index to the numbers, so that identification is somewhat difficult. On page 95 of the same volume is a paper on the variability of our Tasmanian *Unio*, with a folding plate. *Op. cit.* for 1890 he published a list of the whole of the Tasmanian mollusca, and in dealing with *Physa* takes the drastic step of including all the species as synonyms of *P. nitida*, Sowerby, which is really a council of despair, although he was no doubt partly justified in so doing. He also lumps all the *Planorbis* together, which is unfortunate.

## LIST OF SPECIES.

### Family *Cycladidæ*.

*Sphærium*, Scopoli, *Intra. ad. Hist. Nat.* 1777, p. 397.

1. *macgillivrayi*, Smith, *Pro. Linn. Soc.*, 1881, p. 305, pl. 7, f. 32. Hab.—Great Lake, Waratah, Flinders Island.
2. *tasmanicum*, Ten-Woods, *Cyclas*, P. and P. Roy. Soc. Tas., 1875, p. 82. Hab. East Coast, near Swansea, type; near Hobart, also Maria Island (Petterd); differs from the last, in being less round, and with more prominent umbos. Pl. IX., f. 1.

*Pisidium*, Pfeiffer, *Land, Suggn. Moll. Deutsch*, 1875, p. 82.

3. *dulvertonensis*, Ten.-Woods, P. and P. Roy. Soc., Tasm. 1875, p. 82. Type in Tasmanian Museum, Hobart. Hab. Lake Dulverton. Pl. IX., f. 2.
4. *tasmanicum*, Ten.-Woods, P. and P. Roy. Soc., Tasm. 1875, p. 82. Types in Tasmanian Museum, Hobart. Hab. Generally distributed. Pl. IX., f. 3.

### Family *Unionidæ*.

*Diplodon*, Spix, *Test. Fluv.*

5. *australis*, Lamarck, *Unio*, *Bras.* 1827, p. 33; Var. *legrandi* Petterd, P. and P. Roy. Soc. Tasm., 1889, p. 81. Johnston, *op. cit.*, p. 95, two plates; Stimpson, *Pro. Nat. Mus., Smithsonian Inst.*, xxiii., 1900, p. 891.
6. *mortonicus*, Reeve, *Unio*, *Conch. Icon.* XVI., 1865, f. 118. Lea, *Syn.*, 1870, p. 43. Stimpson, *op. cit.* Hab. It is remarkable that the genus in Tasmania is entirely confined to rivers flowing into Bass Strait.

Family *Limnæidæ*.

*Amphipeplea*, Nilsson Hist. Moll. Succ., 1822, p. 58.

7. *huonensis*, Ten.-Woods, *Limnæa*, P. and P. Roy. Soc. Tasm., 1875, p. 71 = *hobartonensis*, Ten.-Woods, op. cit. = *launcestonensis*, Ten.-Woods, op. cit., Petterd Journ. Conch. ii., 1879, p. 81; Proc. Roy. Soc., Tasm. for 1888, p. 65, pl. 2, f. 11. Tate, Proc. Roy. Soc. Tasm., 1884, p. 214; Petterd, op. cit. gives reasons for the above synonymy; Ten.-Woods P. and P. Roy. Soc. Tas., 1878, p. 72, says *hobartonensis* = *L. peregra*. Nelson, Journ. Conch. ii., 1879, says the same.

*Limnæa*, Lamarck, Mem. Soc. Nat. Hist., 1799, p. 75.

8. *gunnii*, Petterd, P. and P. Roy. Soc. Tas., 1888, p. 66, pl. 2, f. 10. Hab. South Esk River, near Launceston. The author remarks that the animal at once separates it from the last species.
9. *subaquatilis*, Tate, var. *neglecta*, Petterd op. cit. p. 66, Pl. 2 f. 43. Hab.—In Tea Tree swamp, near Launceston.

*Bullinus*, Oken. Lehrb., 1815, p. 303.

10. *apertus*, Sowerby, *Physa*, Conch. Icon. Pl. 11, f. 88, a.b. Hab. Creeks between Hamilton and New Norfolk, Tasmania, also the vicinity of Launceston and the Great Lake. Typically, very rounded in outline, but variants bring it sensibly near the shorter forms of *pyramidata*.
11. *gibbosus*, Gould, *Physa*, Proc. Boston Nat. Hist. ii., 1847, p. 214, Sowerby, Conch. Icon, f. 27. Smith, Journ. Linn. Soc. XVI., 1881, p. 278, pl. 6, f. 3-4 ? = *nitida*, Sowerby, op. cit. pl. 12, f. 89 = *tasmanica*, var. a. Ten.-Woods, P. and P. Roy. Soc., Tas, 1875, p. 75, Pl. IX., fig. 4 = *tasmanica* var. b. Ten.-Woods, op. cit. Pl. IX., f. 5. These varieties are probably *gibbosus* in a rather juvenile state = *ciliata*, Ten.-Woods, op. cit. p. 75, of the four specimens mounted on the type card, two seem to be of this species, and two, Pl. IX., f. 6, may possibly be juvenile of the next species. Hab. widely distributed, but overlooked or attributed to other species, near Waratah, Bruny Island, etc.
12. *mamillatus*, Sowerby, *Physa*, Conch. Icon. pl. 12, f. 90. ? = *ciliata*, Ten. Woods, pars. This species is separated from *P. attenuatus*, Sowerby, from the same locality, by its remarkable mucronate apex, but intermediaries may yet be found. Hab. Lake Dulverton, near Oatlands.

13. *pyramidatus*, Sowerby, Physa, Conch. Icon, f. 62. Smith, Journ. Linn. Soc. XVI., 1881, p. 282, pl. 6, f. 17.  
 = *eburnea*, Sowerby, op. cit. f. 89.  
 = *attenuata*, Sowerby, op. cit. f. 94.  
 = *bruniensis*, Sowerby, op. cit. f. 99, juvenile.  
 = *huonensis*, Ten. Woods, Pro. Roy. Soc. Tasm. for 1875, p. 74.  
 = *legrandi*, Ten. Woods, op. cit. Pl. IX., f. 7.  
 = *tasmanica*, Ten. Woods, op. cit. Pl. IX., f. 8.  
 = *tasmanicola*, Ten. Woods, op. cit. p. 75, juvenile, Pl. IX., f. 9.  
 = ? *huonicola*, Ten. Woods, op. cit.

Johnston, P. and P. Roy. Soc. Tas., 1890, p. 145.

The common and variable form, universally distributed, differing greatly in colour, size, and length of spire. The type of *pyramidatus*, was from Flinders Island, and Smith's figure agrees fairly well with our ordinary specimens as *eburnea* and *tasmanica*; *bruniensis*, and *tasmanicola*, I consider undoubtedly juvenile, *attenuata* may possibly be a variant of *mamillatus*.

#### Family Planorbidae.

*Planorbis*, Geoffroy, Traite, Coq. 1767, p. 12.

14. *atkinsoni*, Johnston, P. and P. Roy. Soc. Tas., 1878, p. 26. Petterd, op. cit. for 1888, p. 68, pl. 2, f. 6-7. Whorls more rapidly increasing, and more strongly keeled, than the next, but closely allied. Hab. South Esk River, from Avoca to Launceston. Pl. X., f. 10.  
 15. *meridionalis*, Brazier, P.L.S. N.S.W., 1875. Petterd, P. and P. Roy. Soc. Tas., 1888, p. 67, Pl. 1, f. 4-6. Hab. Upper Ouse River, type; Great Lake. Pl. X., f. 11.  
 16. *scottiana*, Johnston, P. and P. Roy. Soc. Tas., 1878, p. 26. op. cit. for 1888, pl. 6, f. 2 a.b.c. Hab. South Esk River. Very distinct from our other species. Pl. X., f. 12.  
 17. *tasmanicus*, Ten. Woods, P. and P. Roy. Soc. Tas., 1875, p. 79. Petterd, op. cit. n. 68, pl. 2, f. 8-9. Hab. Swamps at Circular Head. Pl. X., f. 13, 14.

*Segmentina*, Flemming, Hist. Brit. Animals, 1838, p. 279.

18. *victoriae*, Smith, Journ. Linn. Soc., XVI, 1881, p. 296, pl. 7, f. 11-13. May, P. and P. Roy. Soc. Tas. 1919, p. 69. Hab. Lake Tiberias.

Family *Ancylidae*.

*Ancylus*, Geoffroy, Trait, Coq. 1767, p. 13.

19. *mariae*, Petterd, P. and P. Roy. Soc. Tas., 1900, p. 1.  
Hab. Maria Island, possibly a variant of the next.

20. *tasmanicus*, Tenison Woods, P. and P. Roy. Soc. Tas.,  
1875, p. 70. Hab. Common in streams near Hobart.  
Pl. X., f. 15-16.

*Ancylastrum*, Bourguignat, Jour. de Conch. IV., 1853, p.  
63 and 170.

21. *cumingianum*, Bourguignat, Proc. Zool. Soc., 1854, p.  
91. Hedley, Proc. Malac. Soc. 1, 1894, p. 118. Ten.  
Woods, P. and P. Roy. Soc., Tas., 1875, p. 69. Hab.  
Streams above New Norfolk, also Great Lake. Var.  
*irvinæ* Petterd, P. and P. Roy. Soc. Tas., 1887, p.  
40, pl. 44. Hab. Great Lake.

*Gundlachia*, Pfeiffer, Zeits, Malak, VII., 1849, p. 98.

22. *petterdi*, Johnston, P. and P. Roy. Soc. Tas., 1878,  
p. 23, 1884, p. 216, for 1888, figs. 2, a.b.c. Hab. In a  
pool near First Basin, Launceston = *Ancylus woodsi*,  
Johnston, op. cit., 1888, p. 25 = *G. beddomei*, Petterd,  
op. cit., 1887, p. 41, pl. 44, Journ. de Conch, IV.,  
p. 180. Johnston, op. cit. for 1888, pl. facing p. 86.  
Hedley, P.L.S., N.S.W., 1894, pp. 905-914, pl. 24,  
f. 1-15. Hab. Old quarry, Brown's River-road.  
*woodsi* is the immature form. I feel satisfied we have  
only one rather variable species.

Family *Hydrobiidae*.

*Potamopyrgus*, Stimpson, Am., Journ. Conch 1, 1865, p.  
53.

23. *brownii*, Petterd, P. and P. Roy. Soc. Tas., 1888, p.  
72, pl. 3, f. 14. Hab. Rivers on the North-East Coast.  
Pl. X., f. 17.

24. *dyeriana*, Petterd, Bithynia, Journ. Conch, 1879, p.  
86. Hab., Long Bay. Possibly a micromorph of the  
next. Pl. X., f. 18.

25. *gunnii*, Frauenfeld, Hydrobia, Verh. Zool. Bot. Gesill  
Vienna, xiii., 1863, p. 1025, and xv., 1865, p. 526,  
pl. 7, 2 figs. Hedley, P.L.S. N.S.W., 1913, p. 283,  
pl. 17, f. 51. = *A. simsoniana*, Brazier, P.L.S. N.S.W.,  
1875, p. 76. = *pontvillensis*, Ten.-Woods, P. and P.  
Roy. Soc. Tas., 1875, p. 76; pl. XI., f. 19 = *dunro-  
binensis*, Ten. Woods, op. cit. p. 77. Pl. XI., f. 20.  
Streams, lagoons, and ponds, particularly in the  
South-East. I think a study of the figures cited  
above will support the foregoing synonymy.

26. *elongatus*, Sp. Nov. Shell narrowly elongate, colour, dull brownish black on the spire, shining light brown on the body whorl, finely axially striate, whorls  $6\frac{1}{2}$ , much rounded, suture well impressed. Aperture roundly ovate, lip entire, backed by a distinct umbilical chink. Long. 3, Lat. 1 mill. Hab. Apsley River, near Bicheno, collected by E. Mawle. It is with some diffidence that I add another member to this over-described genus, but I cannot match the species with any of the others. It comes nearest to *P. gunnii*, but it is much longer, and narrower, with very rounded whorls. The habitat is a small isolated river on the middle East Coast. Pl. XI., f. 21.
27. *marginata*, Petterd, P. and P. Roy. Soc. Tas., 1888, p. 73, pl. 1, f. 9. Hab. Stream near Heazlewood River. Very distinct from all our other species. Pl. XI., f. 22.
28. *nigra*. Quoy and Gaim. Zool. Astrolabe, iii., 1835, p. 174, pl. 38, f. 9-12. Hab. D'Entrecasteaux Channel.  
 = *B. legrandiana* and *wisemanniana*, Brazier, Proc. Zool. Soc., 1871, p. 678. Pl. XI., f. 23.  
 = *B. petterdiana*, Brazier, P.L.S. N.S.W., 1, 1875, p. 19.  
 = *legrandi*, Ten. Woods, P. and P. Roy. Soc. Tas., 1875, p. 76. Pl. XI., f. 24.  
 = *unicarinata*, Ten. Woods, op. cit. Pl. XI., f. 25.  
 = *tasmanica*, Ten. Woods, op. cit. p. 77. Pl. XI., f. 26.  
 = *exigua*, Ten. Woods, op. cit. for 1878, p. 71, op. cit. 1879, p. 71-72.  
 Petterd, op. cit. for 1888, p. 69-71. Widely distributed in rivers and creeks, both North and South.
29. *smithii*, Petterd, Proc. Roy. Soc. Tasm. for 1888, p. 72, pl. 1, f. 10. Hab. Rivers of the North-West, Heazlewood, Arthur, Waratah, and Castray Rivers. Perhaps only a large form of *P. dyeriana*. Pl. XI., f. 27.
30. *tasmanica*, von Martens, Hydrobia, Weig. Arch. Nat. Sci., 1, 1858, p. 185, pl. 5, f. 12 = *A. diemense*, Frauenfeld, Verhandl. Zool. Bot. Ges. Wien, XV., 1865, p. 529, pl. X., 2 figs. Hedley, P.L.S. N.S.W., xxxviii., 1913, p. 284, pl. 17, f. 52 = *B. dulvertonensis*, Ten. Woods, P. and P. Roy. Soc. Tas., 1875, p. 77. Pl.

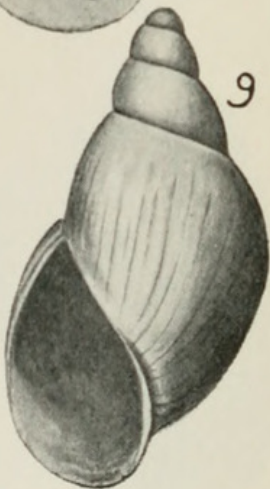
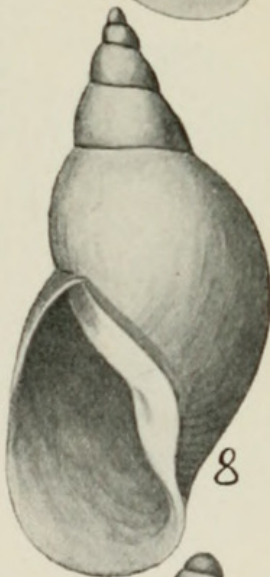
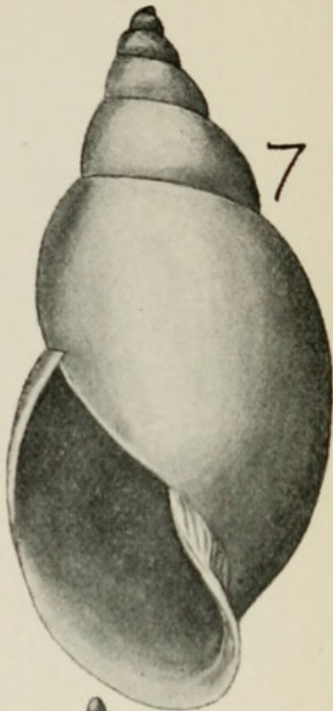
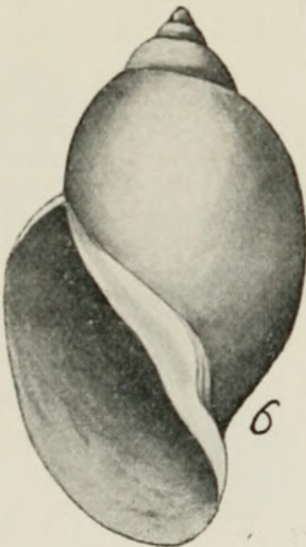
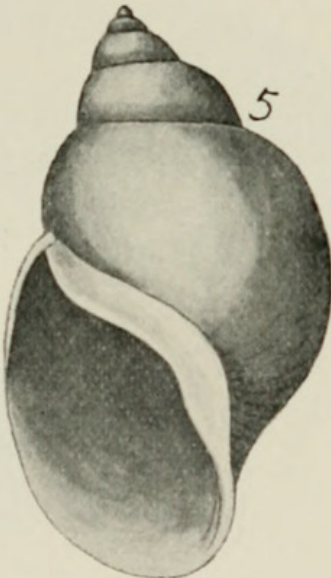
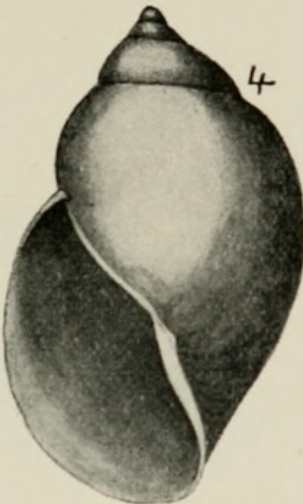
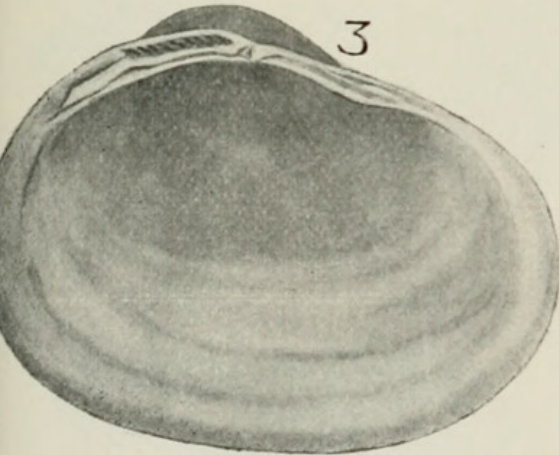
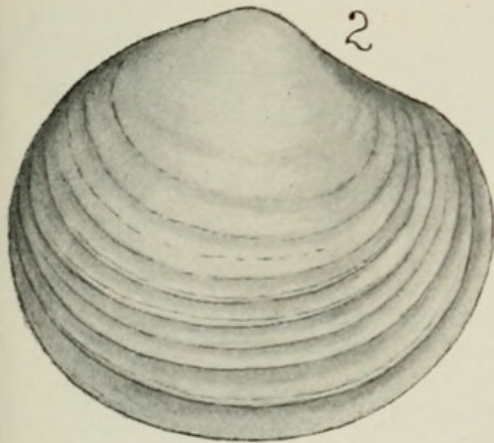
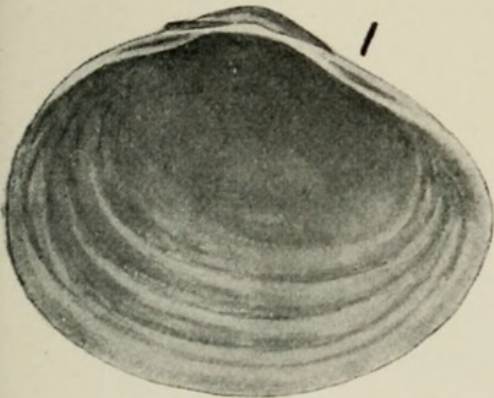
- XII., f. 28=*woodsii*. Petterd, op. cit. for 1888, p. 71, pl. 1, f. 12=*P. victoriæ*, Ten. Woods. Pl. XII., f. 29. I possess a copy of Martens' fig 12, and it completely justifies the above synonymy. Hab. principally in the Northern Rivers.
31. *turbinata*, Petterd, Hydrobia, P. and P. Roy. Soc. Tas., 1888, p. 77, pl. 2, f. 3. Hab. R. Styx, and George's River, East Coast. Pl. XII., f. 30.
- Petterdiana*, Brazier, P. and P. Roy. Soc. Tasm. for 1895, p. 105.
32. *bellii*, Petterd, Beddomeia, P. and P. Roy. Soc. Tasm. for 1888, p. 75, pl. 1, f. 7. Hab. Heazlewood, Castray and Waratah Rivers. Pl. XII., f. 31.
33. *hullii*, Petterd, Beddomeia, op. cit. p. 76, pl. 1, f. 8, Hab., with the last, doubtfully distinct from *lodderæ*. Pl. XII., f. 32.
34. *launcestonensis*, Johnston, Amnicola, P. and P. Roy. Soc., Tas., 1878, p. 24. Petterd, op. cit. p. 74, pl. 1, f. 2. Hab. South Esk River. Pl. XII., f. 33. Var. *A. tumida*, Petterd, op. cit. Hab., Great Lake, a large form.
35. *lodderæ*, Petterd, Beddomeia, op. cit., p. 75, pl. 3, f. 1. Hab., Castra and Duck Rivers, N. Coast. Pl. XII., f. 34.
36. *paludinella*, Reeve, Littorina, Conch. Icon., 1857, pl. 16, f. 84=*Ampullaria tasmanica*, Ten. Woods, Proc. Roy. Soc. Tasm. for 1876. p. 117, and 1878, p. 72. *Brazieria tasmanica*, Petterd, op. cit. p. 76, pl. 1, f. 1. Johnston, P. and P. Roy. Soc. Tas., 1879, p. 24. Hedley, P.L.S. N.S.W., xxxviii. 1913, p. 283. Hab. The Wye and other tributaries of the Waratah and the Arthur Rivers. Pl. XII., f. 35.
37. *tasmanica*, Ten. Woods, *valvata*, P. and P. Roy. Soc. Tas., 1875, p. 82 (attached). Petterd, op. cit., p. 75, pl. 1, f. 11. Hab. Small stream in Gould's Country. Pl. XII., f. 36.

## EXPLANATION OF PLATES.

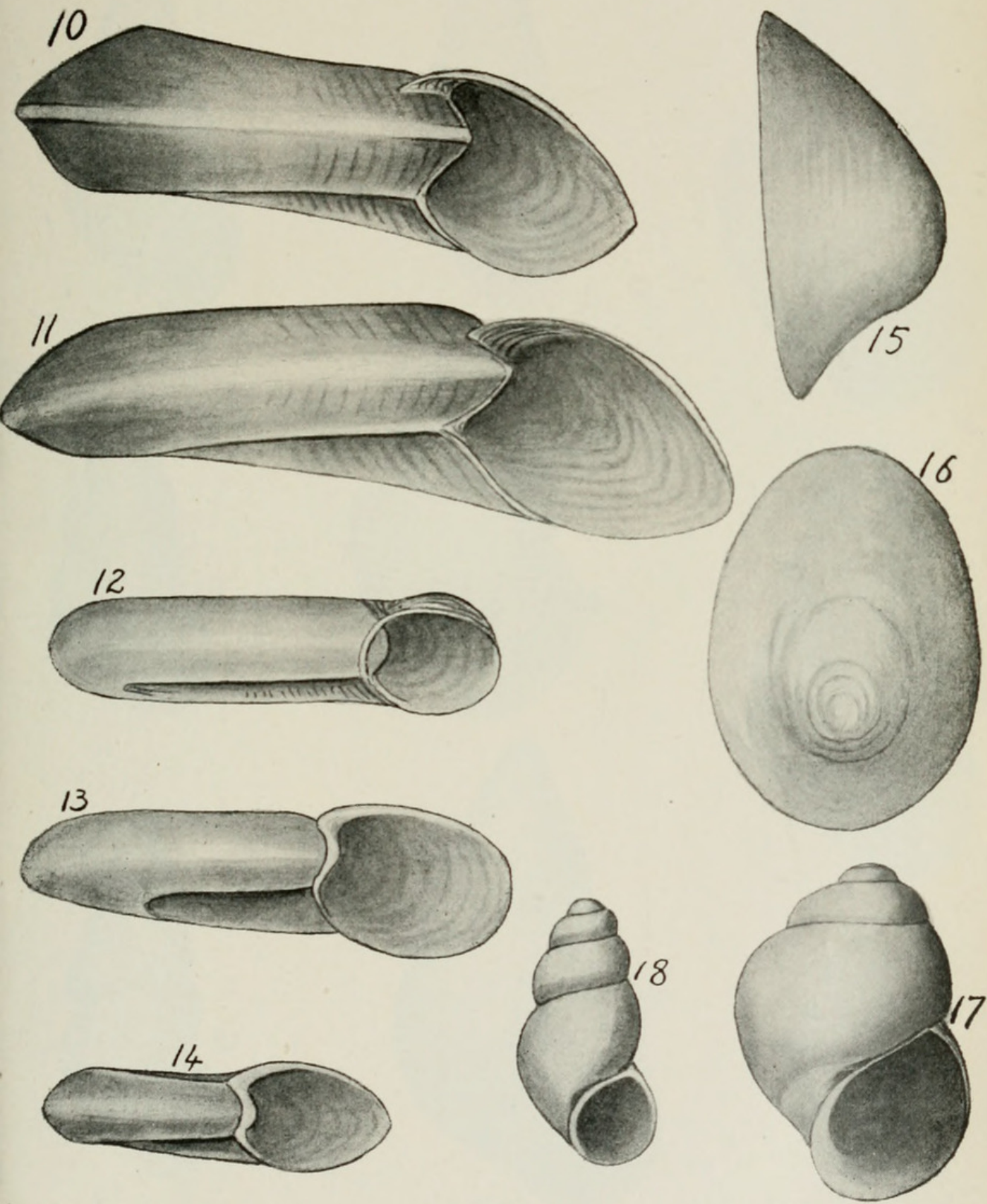
## Plates IX-XII

- Fig. 1. *Sphærium tasmanicum*, Ten. Woods (Cyclas), from Petterd's specimen.
- Fig. 2. *Pisidium dulvertonensis*, Ten. Woods, from type.
- Fig. 3. *Pisidium tasmanicum*, Ten. Woods, from one of the type series.
- Fig. 4. *Physa tasmanica*, var. A. Ten. Woods, from the type.

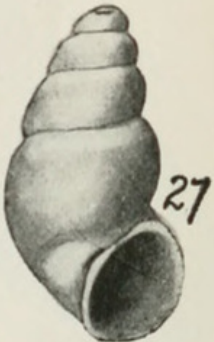
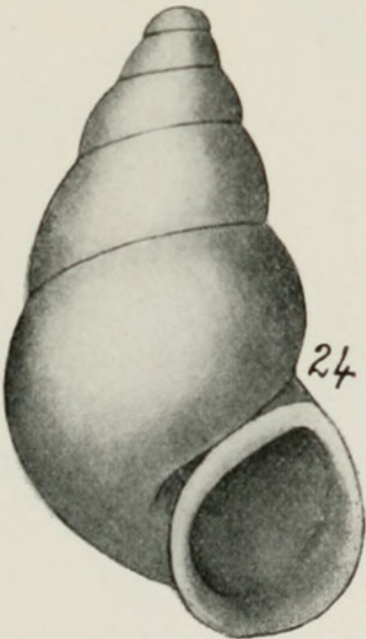
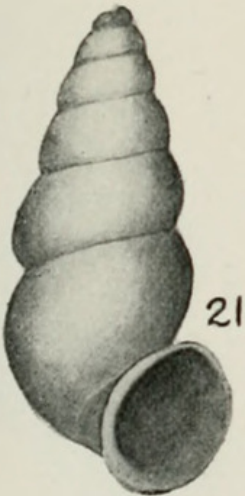
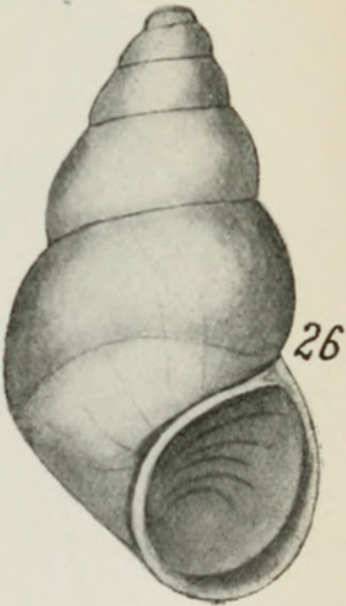
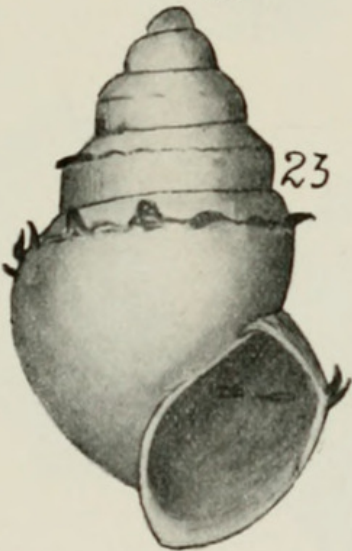
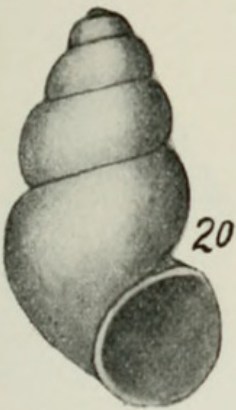
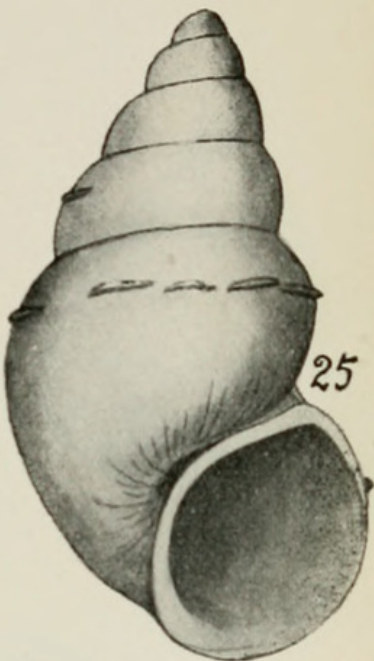
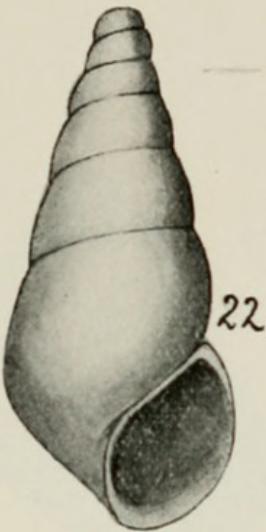
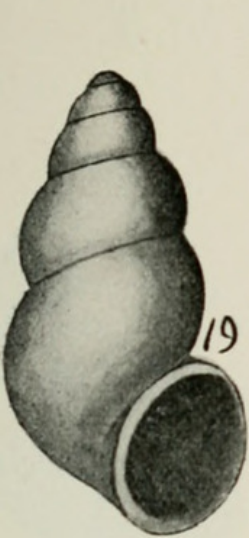
- 74 A REVISED CENSUS OF THE TASMANIAN FLUVIATILE MOLLUSCA,
- Fig. 5. *Physa tasmanica*, var. B. Ten. Woods, from one of the type series.
- Fig. 6. *Physa ciliata*, Ten. Woods, from one of the type lot.
- Fig. 7. *Physa legrandi*, Ten. Woods, from the type.
- Fig. 8. *Physa tasmanica*, Ten. Woods, from the type.
- Fig. 9. *Physa tasmanicola*, Ten. Woods, from the type.
- Fig. 10. *Planorbis atkinsoni*, Johnston, from Petterd's specimen, compared with the type series.
- Fig. 11. *Planorbis meridionalis*, Brazier, from Petterd's co-type.
- Fig. 12. *Planorbis scottiana*, Johnston, from Petterd's specimen compared with the type series.
- Fig. 13, 14. *Planorbis tasmanicus*, Ten. Woods, from specimens compared with the type series.
- Fig. 15, 16. *Ancylus tasmanicus*, Ten. Woods, from one of the type series.
- Fig. 17. *Potamopyrgus brownii*, Petterd, from one of the type series.
- Fig. 18. *Potamopyrgus dyeriana*, Petterd, from one of the type series.
- Fig. 19. *Potamopyrgus pontvillensis*, Ten. Woods (Bythinia), from one of the type series.
- Fig. 20. *Potamopyrgus dunrobinensis*, Ten. Woods (Bythinia), from one of the type series.
- Fig. 21. *Potamopyrgus elongatus*, May, from the type.
- Fig. 22. *Potamopyrgus marginata*, Petterd, from one of the type series.
- Fig. 23. *Bythinia legrandiana*, Brazier, from Petterd's specimen.
- Fig. 24. *Bythinia legrandi*, Ten. Woods, from one of the type series.
- Fig. 25. *Bythinia unicarinata*, Ten. Woods, from one of the type series.
- Fig. 26. *Bythinia tasmanica*, Ten. Woods, from one of the type series.
- Fig. 27. *Potamopyrgus smithii*, Petterd, from one of the type series.
- Fig. 28. *Bythinia dulvertonensis*, Ten. Woods, from one of the type series.
- Fig. 29. *Potamopyrgus woodsi*, Petterd, from one of the type series.



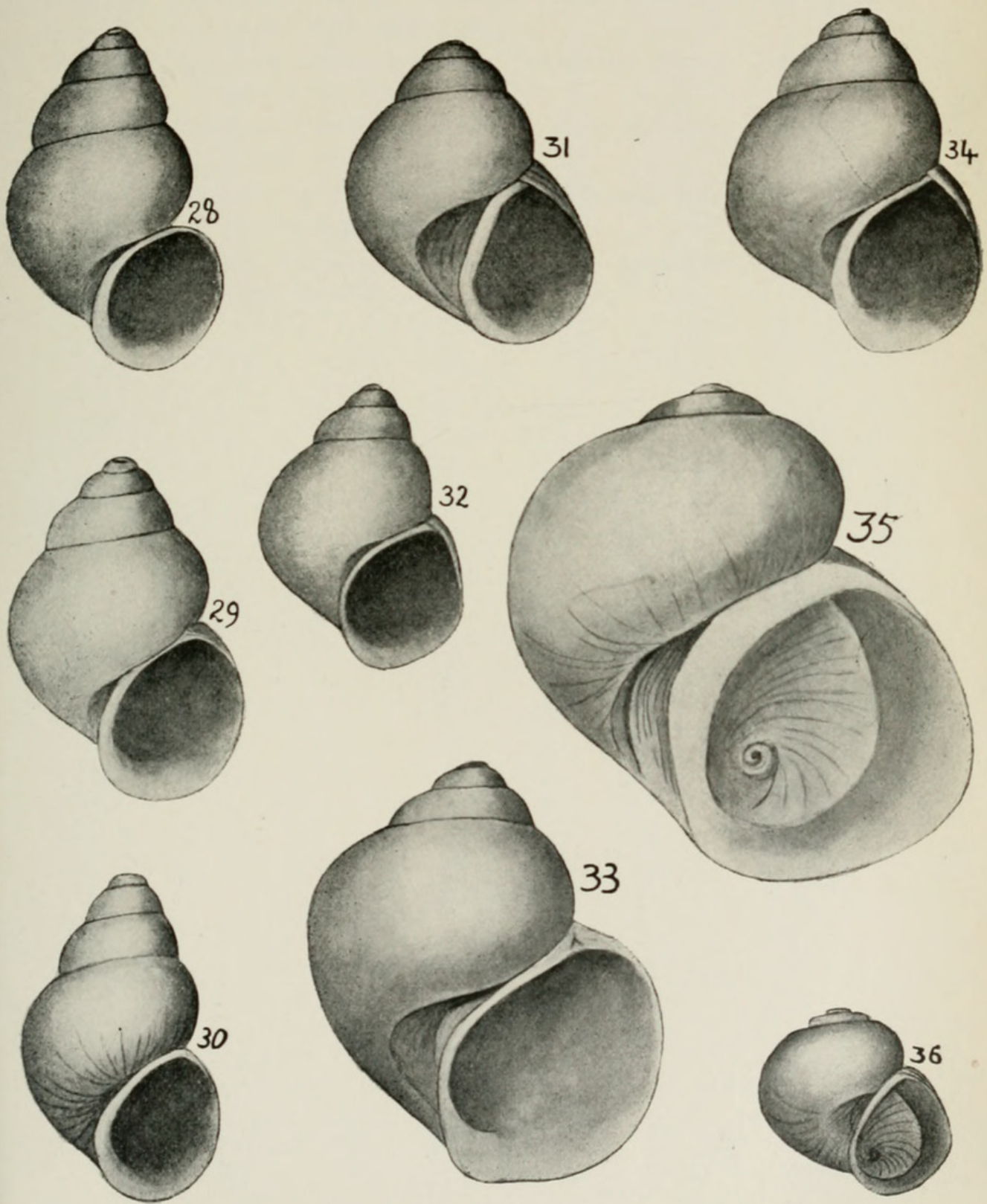














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