

*Some New Zealand Amphipoda: No. 5.**

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Tetradæion crassum (Chilton). (Figs. 1 to 20.)

Cyproïdia? *crassa* Chilton, 1883, *Trans. N.Z. Inst.*, vol. 15, p. 80, pl. 3, fig. 1. *Tetradæion* sp. *typ.* Stebbing, 1899, *Ann. Mag. Nat. Hist.*, ser. 7, vol. 4, p. 207. *Tetradæion crassum* Stebbing, 1906, "*Das Tierreich*" *Amphipoda*, p. 157.

The original description of this species, drawn up in 1883, was based on two specimens only, the smaller of which, probably immature, was dissected. Since then numerous other specimens have been obtained from Lyttelton and other localities, and a fuller description is desirable, since the original account, though accurate enough as far as it goes, was defective in that it contained no reference to the mouth-parts and an important character—viz., the reduced condition of the fifth peraeopod—was overlooked.

The species was provisionally placed under the genus *Cyproïdia* Haswell, though it was pointed out at the time that it differed very considerably in the character of the side-plates. In this respect the species approaches closely to *Stegocephalus* and allied genera, but descriptions and figures of these were not available in New Zealand at the time. In 1899 Stebbing established the genus *Tetradæion* for the species, and gave the following diagnosis based on the original description:—

"Body short and stout, pleon shorter than peraeon. Head small, rostrum obsolete. Side-plates 1 to 4 together forming a continuous shield, the confronted margins of the contiguous side-plates neatly fitting, fourth much broader than first to third combined, fifth much broader than deep, fitting hind emargination of fourth, sixth and seventh concealed. Eyes well developed. Antennae 1 and 2 small. Antenna 1 the stouter, without accessory flagellum. Antenna 2, penultimate joint of peduncle shorter than antepenultimate. Mouth-parts unknown. Gnathopods 1 and 2 equal, similar, imperfectly subchelate, fourth and fifth joints slightly produced. Peraeopods 1-5 slender, character of second joint unknown, but expansion rendered needless by the great extent of side-plate 4. Uropod 1, rami shorter than peduncle, subequal. Uropod 2 reaching as far back as uropod 1, rami a little unequal. Uropod 3 not reaching so far back as the other pairs, stouter, rami decidedly unequal. Telson entire, oval, short."

To this must be added a note on the mouth-parts, which prove to be very similar to those of *Phippsia gibbosa* (Sars), and to the fact that the

* Previous numbers of this series have appeared in *Trans. N.Z. Inst.* as follows: No. 1, vol. 52, p. 1; No. 2, vol. 53, p. 220; No. 3, vol. 54, p. 240; No. 4, vol. 55, p. 269.

fifth peraeopod is small, entirely concealed by the greatly expanded side-plate of the fourth segment and consists of a small oval plate representing the basis followed by a minute joint which is all that remains of the rest of the limb.

The following amended diagnosis of the genus may therefore be given:—

Tetradeion Stebbing, 1899.

Body short and stout, smooth, head small. Side-plates 1-4 together forming a continuous shield, the contiguous margins neatly fitting, fourth larger than first to third combined, fifth small, fitting into emargination of the fourth, sixth and seventh obsolete. Antennae 1 and 2 small. Mouth-parts similar to those of *Phippsia*. Gnathopoda 1 and 2 similar, not subchelate, merus and carpus slightly produced, propod small. Peraeopoda 1 to 4 slender, basal joints not expanded, 5 greatly reduced, consisting of a small plate representing the basal joint. Uropoda short. Telson oval, short, entire.

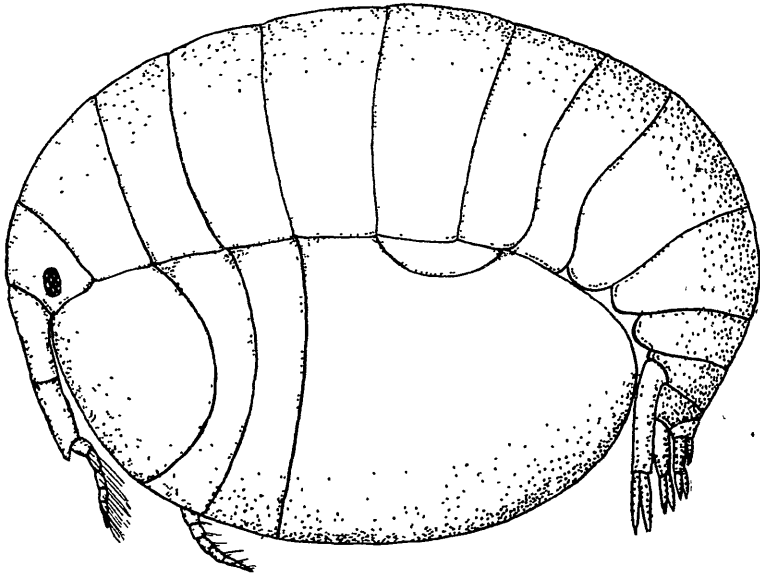


FIG. 1.—*Tetradeion crassum* Chilton: side view of whole animal.

The typical species, and at present the only one known, is *Tetradeion crassum* (Chilton) (see references above), the diagnosis of which is included in that of the genus.

Colour dark slate, sometimes with lighter patches on some parts of the body.

Length of body, in coiled position, about 3 mm.; greatest breadth, 2 mm.; depth, 1.5 mm.

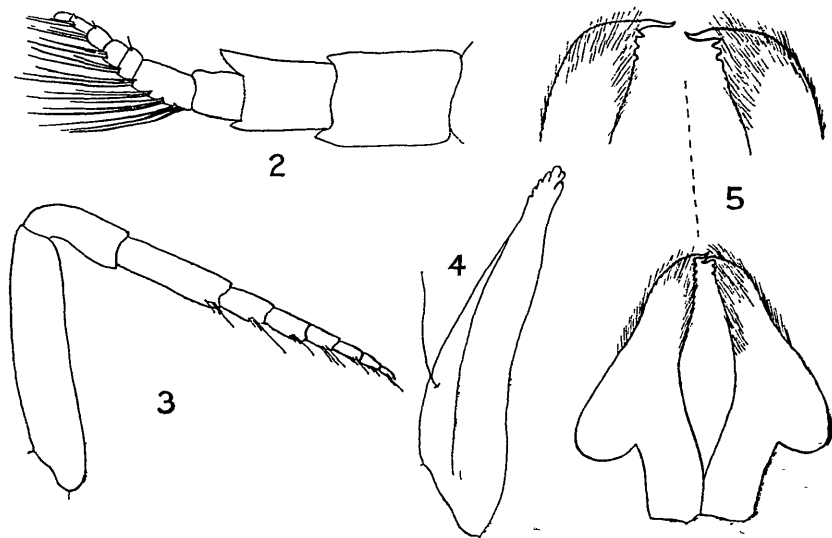
Localities: Lyttelton Harbour, Oamaru, and Hawke's Bay.

Remarks.—From the detailed description given below it will be seen that this species presents many similarities in the general shape of the

body, the mouth-parts, and other appendages to *Phippsia gibbosa*, but in that species the fourth and fifth peraeopoda are not covered by the fourth side-plate, and the fifth peraeopod, though smaller than the fourth, has all the joints perfect.

It is evident that the genus *Tetradieion* must be placed in the family Stegocephalidae, coming close to *Phippsia* Stebbing (= *Aspidopleurus* Sars). It represents a further development along the same line, but has the fourth side-plate still more largely developed and concealing the sixth and seventh, and in consequence peraeopod 5 is very greatly reduced.

Detailed Description.—Body smooth, broad, and greatly swollen, side-plates of the first four segments much deeper than their respective segments and strongly convex, so that the appendages of the head and peraeon and the whole of the pleon can be concealed from view when the animal is coiled up—the outline of the whole body then being ellipsoid. (Fig. 1.)



Tetradieion crassum Chilton.

FIG. 2.—First antenna.
FIG. 3.—Second antenna.
FIG. 4.—Mandible.

FIG. 5.—Lower lip, with extremity more highly magnified.

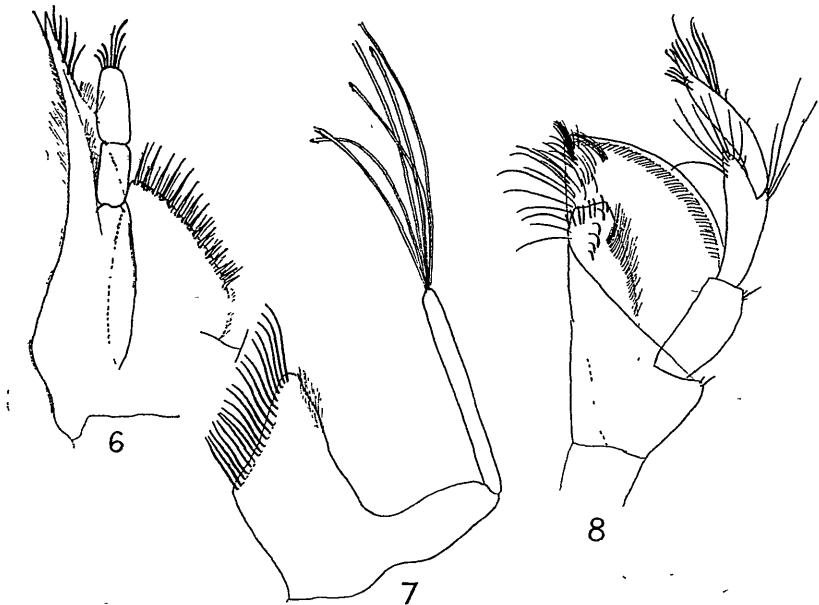
First side-plate subtriangular in outline, its posterior margin very convex; second strongly curved, narrow, only about one-fifth as wide as deep; third similar but less curved; fourth enormously expanded, forming a large convex shield with anterior margin nearly straight and the rounded posterior margin extending as far as the hinder end of third pleon segment; fifth side-plate small, forming a small plate fitting into an emargination on upper margin of fourth; sixth and seventh not developed, the whole of the corresponding appendages being covered by fourth side-plate. Head shorter than first peraeon segment; segments of peraeon subequal in length; first segment of pleon longer than second, third much shorter than second, lower margins of all three convex

and only slightly produced; fourth, fifth, and sixth pleon segments very small. (Fig. 1.)

Eyes of moderate size, rounded, black.

First antenna short and rather broad; first joint of peduncle not much longer than broad, second about three-fourths as long as first and about two-thirds as broad, produced at upper anterior angle into a subacute tooth or lobe, third joint small, about half as long as second; flagellum about two-thirds the length of peduncle, about six-jointed; first joint nearly as long as the next three and probably formed by coalescence of third or fourth joints; all joints of flagellum bearing tufts of long hairs on posterior or inner margins. (Fig. 2.)

Second antenna slender and longer than first, sharply bent backwards at end of first visible joint, which probably represents the third peduncular joint and is longer than the next two together, penultimate joint curved at base, about three-fourths as long as last joint of peduncle; flagellum six-jointed, about as long as last two joints of peduncle. (Fig. 3.)



Tetradeion crassum Chilton.

FIG. 6.—First maxilla; outer lobe
seen in profile.

FIG. 7.—Second maxilla.
FIG. 8.—Maxilliped.

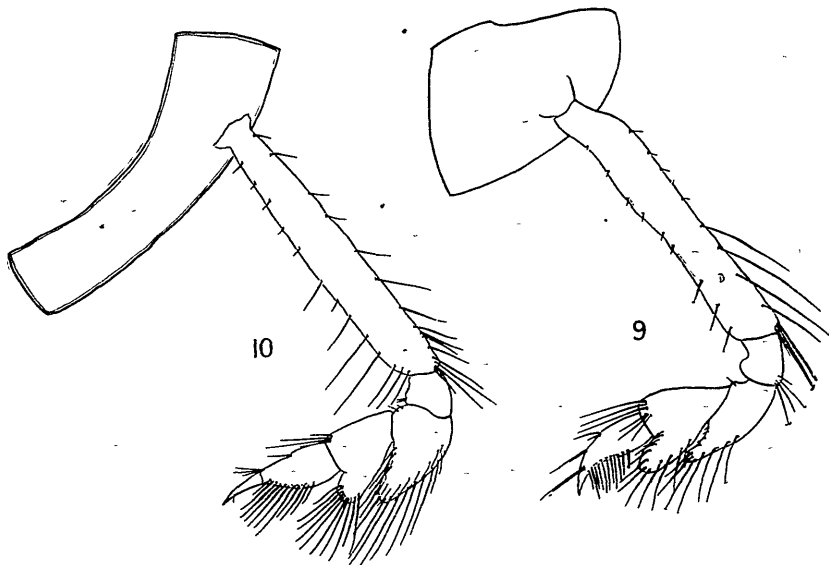
The mouth-parts prove to be very similar to those of *Phippsia gibbosa* and in both genera have probably been modified in correlation with the enormous development of the side-plates and the habits of the animal arising in connection therewith.

Mandible slender, elongated, nearly straight, cutting-edge formed of about six or seven short teeth; inner cutting-edge, spine row, molar tubercle, and palp entirely absent unless a long seta on the outer surface represents the palp. (Fig. 4.)

Lower lip slender, without inner lobes, outer lobes covered with numerous fine hairs, narrowing towards the extremity, which is produced on inner side into three or four teeth, the end one of which is much longer than the others. (Fig. 5.)

In the first maxilla the palp consists of two subequal oblong joints, the terminal one bearing a tuft of six or seven setules; outer lobe not well seen and represented in side view in fig. 6, but apparently ending as usual in several stout setules and bearing fine hairs along margins; inner lobe very large, inner margin convex and fringed with a row of about fifteen to twenty setules with fine hairs between them. (Fig. 6.)

The second maxilla with inner lobe broad, obliquely truncate at extremity, which bears about twenty long setules and a tuft of fine hairs on outer margin near distal end; outer lobe very slender and apparently jointed to a process extending outwards from base of inner lobe; it is free from setae except at the extremity, which bears six very long setules, the ends of which appear to be hooked or barbed. This outer lobe probably forms a brush for sweeping food-particles from the maxillipeds and other mouth-parts towards the mandibles. (Fig. 7.)

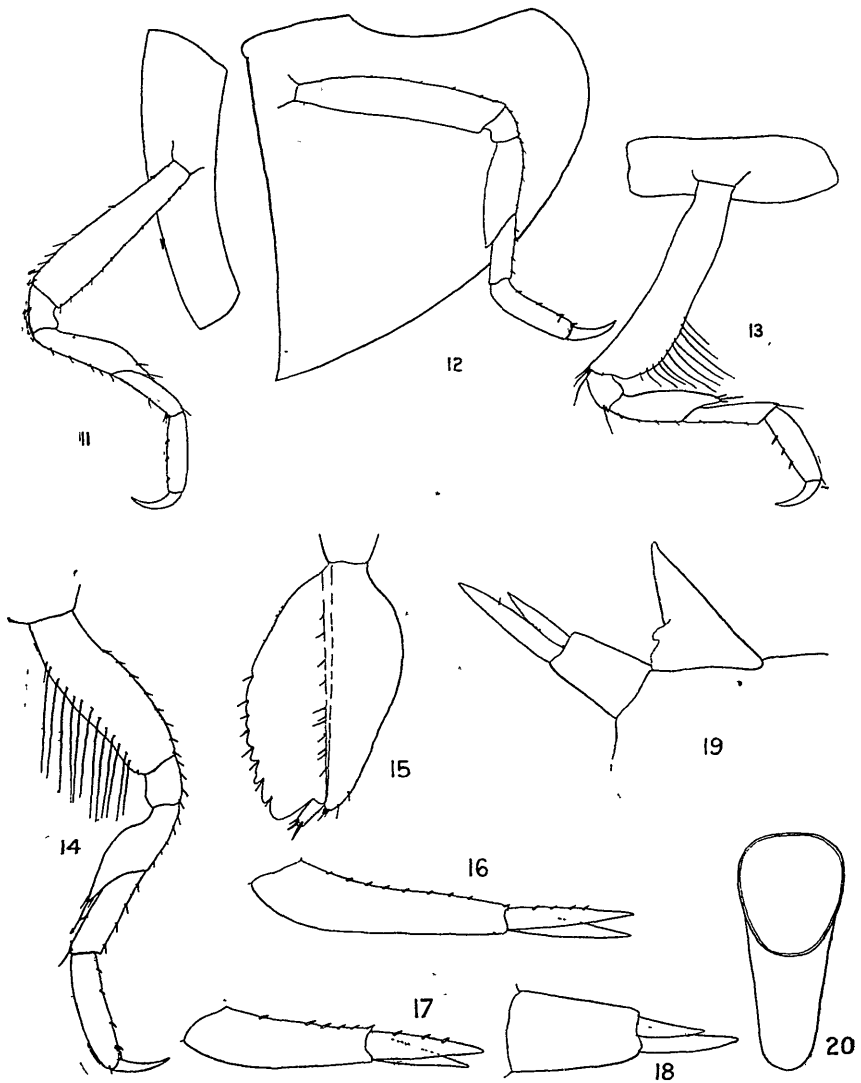


Tetradion crassum Chilton.

FIG. 9.—First gnathopod.

FIG. 10.—Second gnathopod.

Maxillipeds with palp small and lobes very large; inner lobe narrow oblong, end truncate and bearing several stout setules and hooks, distal half of outer margin with thick fringe of long fine hairs; outer lobe very broad, nearly semicircular in shape, its outer margin very convex, apparently turned inwards and fringed with a row of fine hairs, inner margin straight, surface near inner distal angle bearing several stout curved setules; palp formed of three subequal joints, the second produced on inner side into an oval lobe fringed with long setules and bearing a tuft at outer distal angle,



Tetradieion crassum Chilton.

- FIG. 11.—First pereopod.
 FIG. 12.—Second pereopod.
 FIG. 13.—Third pereopod.
 FIG. 14.—Fourth pereopod.
 FIG. 15.—Fifth pereopod.
 FIG. 16.—First uropod.

- FIG. 17.—Second uropod.
 FIG. 18.—Third uropod.
 FIG. 19.—Telson and third uropod,
 seen from the side.
 FIG. 20.—Telson detached from the
 body and seen from below.

terminal joint narrow, curved, its extremity acute and probably representing the minute dactyl almost fused to the end of the propod. (Fig. 8.)

First gnathopod with basal joint very long and narrow, much longer than rest of limb, its margins with a few short setules and some long ones towards postero-distal angle, merus produced into a narrow lobe fringed with setules, carpus about as long as merus and with a similar but broader lobe, terminal joint probably representing fused propod and dactyl, curved towards the acute apex, inner margin with a row of setules, outer margin with three setules or small tufts. (Fig. 9.)

Second gnathopod similar to first but with lobe of merus broader and dactyl distinct from propod. (Fig. 10.)

First peraeopod normal, its basal joint much shorter than rest of limb; merus longer than either carpus or propod, its antero-distal angle produced into a small subacute lobe; carpus and propod subequal, dactyl strong, curved, nearly half as long as propod; setules on different joints few and short. (Fig. 11.)

Second peraeopod similar to first. (Fig. 12.)

Third peraeopod with basal joint elongated, narrow, its posterior margin bearing a row of long hairs towards distal end, remaining joints similar to those of preceding peraeopoda. (Fig. 13.)

Fourth peraeopod similar to third but with basal joint shorter and broader and bearing a row of long hairs extending along nearly the whole of posterior margin. (Fig. 14.)

Fifth peraeopod greatly reduced and forming a suboval plate which probably represents the basal joint; posterior margin of this plate irregularly serrate towards distal end, surface bearing a row of short setules running longitudinally down middle of joint; at end of the plate is a short oblong joint with two or three setules at apex. (Fig. 15.)

First uropod has basal joint greatly elongated, about twice as long as rami, which are equal in length and lanceolate in shape; a row of short setules on upper margin of basal joint and on outer ramus. (Fig. 16.)

Second uropod similar but shorter, basal joint being one and a half times as long as outer ramus which is a little longer than inner. (Fig. 17.)

Third uropod with basal joint stout and longer than outer ramus, inner ramus about two-thirds as long as outer, whole uropod almost or quite free from setules. (Fig. 18.)

The telson as seen in side view is triangular and projects dorsally; when detached and viewed from below the area of attachment appears oval in outline, narrowing posteriorly, and the projecting portion as a plate narrowing somewhat to the broadly rounded extremity. (Figs. 19 and 20.)