

A New Amphipodan Genus and Species (Family Dexaminidæ) from New Zealand. By CHARLES CHILTON, M.A., D.Sc., LL.D., M.B., C.M., F.L.S., Professor of Biology, Canterbury College, New Zealand.

(PLATES 26 & 27.)

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THE Amphipod described in this paper was taken on seaweed in rock-pools at Oamaru, on the East Coast of Otago, New Zealand, in June 1908, and from its bright red colour and conspicuous appearance was at once seen to be different from any of the Amphipoda so far described from New Zealand.

On examination, it proves to agree with the characters of the family Dexaminidæ as given by the Rev. T. R. R. Stebbing in 'Das Tierreich: Amphipoda,' except in the following points:—

- (1) The second joint of the peduncle of the upper antenna is not specially long.
- (2) The inner lobe of the second maxilla is sparsely fringed with setæ along the greater part of its inner margin as well as at the extremity.

Probably neither of these points is of sufficient importance to be included in the diagnosis of the family. The second joint of the peduncle of the upper antenna varies considerably in length in different specimens of the species *Paradexamine pacifica* (G. M. Thomson) (see Chilton, 1912, p. 502); in *P. flindersi* (Stebbing) (1910, p. 603) it is slightly shorter than the first segment, and should perhaps not therefore be called long, and similarly in *Guernea coalita* (Norman) it is shorter than the first which is described as "not much longer than the second" (Stebbing, 1906, p. 522). The second character also does not hold for all species of the family. Chevreux (1913, p. 181) has pointed out that in the species named by him *Paradexamine fissicauda* the inner lobe of the second maxilla has its inner margin fringed with setæ; I found this also to be the case with specimens from the South Orkneys, collected by the "Scotia" Expedition, which I (1912, p. 502) referred to *P. pacifica* (G. M. Thomson), a species from which I consider *P. fissicauda* to be hardly distinct; in New Zealand specimens of *P. pacifica*, however, the setæ are almost confined to the extremity. In *Polycheria antarctica* (Stebbing) there are a few setæ on the inner margin of the inner plate (Stebbing, 1906, p. 520).

I have found it impossible to refer the species described below to any of the existing genera of the Dexaminidæ. According to the characters given in the "Synopsis of Genera" by Stebbing (1906, p. 514), it would have to come

near to *Paradexamine*, but it differs distinctly from that genus in the character of the mandible, which shows no dentate cutting-edge, spine-row, nor distinguishable molar, and therefore appears to be similar to the mandible of *Guerneia*, a genus distinguished from *Paradexamine* by the two-jointed palp of the first maxilla, and by other characters.

In the lower lip, again, my species resembles *Guerneia coalita* (Norman) in having the principal lobes with an acute apex and the mandibular processes obsolete. There seems to be some approach to this character in *Paradexamine*, for in describing *P. fissicauda*, Chevreux (1906, p. 90) says "Les lobes latéraux de la lèvre postérieure portent une petite dent au bord interne." This little tooth, however, seems to be rather different from the acute apex to the lobe in the species described below; in a dissection of one of the specimens of the *Paradexamine* from the South Orkneys (mentioned above), there is on one side a tooth, apparently as figured by Chevreux, it is narrow and stands out like a little tooth or process from the general outline of the lobe, and there is a smaller and shorter process situated more proximally on the inner margin; on the other side of the appendage this second process is present, but the other, nearer the apex of the lobe, is not apparent in the preparation.

I have, therefore, decided to establish for my species a new genus, which I propose to name *Syndexamine*, and which may be defined as follows:—

SYNDEXAMINE, nov. gen.

Upper antenna longer than the lower; palp of the maxillipeds four-jointed; lower lip with inner lobes well-developed, principal lobes with an acute apex; mandibular processes obsolete; mandibles with cutting-edge rounded and entire, no apparent spine-row, nor definite molar; palp of first maxilla one-jointed. In other characters, similar on the whole to *Paradexamine*.

SYNDEXAMINE CARINATA, sp. nov. (Plates 26 & 27.)

Specific description:—Peræon robust, dorsally rounded anteriorly, laterally compressed and slightly carinate in the last one or two segments. Pleon carinate, segments 1 to 3 each produced dorsally into a strong keel ending posteriorly subacutely; segment 4 with a dorsal keel on posterior part of the segment, the dorsal margin of the keel dorsally rounded in front and ending somewhat acutely behind. None of the segments of peræon or pleon produced into dorsal or lateral teeth. Head slightly longer than the first and second segments of the peræon combined; dorsal surface convex so that the anterior part is depressed; rostrum very short and blunt at apex. Pleon segment 3 with postero-lateral angle acute and slightly produced; the combined 5th and 6th segments bearing a group of three or four stout spinules at the base of the telson, and one lateral spinule more anteriorly and

in a line with the single spinule on the 4th segment. Eye of moderate size, of many facets, rounded or slightly oval. Side plates 1-4 of about equal depths, not so deep as their respective segments; the anterior lobe of the 5th side plate small; 6th and 7th side plates subquadrangular with posterior margins rounded.

Upper antenna about two-thirds as long as the body, much longer than the lower antenna; peduncle with first joint stout, bearing below numerous strong spines, second segment about two-thirds the length of the first with a group of three stout spines on lower surface about one-third the length from the base, third segment short, nearly similar to the joints of the flagellum; flagellum more than twice as long as the peduncle and of many joints. Antenna 2 with fourth joint much the longest, armed above and below with stout spinules, fifth joint less than half as long as the fourth; flagellum many-jointed, longer than peduncle. First and second gnathopods equal in size and similar in shape, carpus about as long and broad as propod; the latter ovoid with the palm oblique, straight or slightly concave, defined by one or two stout spinules. All the peræopoda with the dactyl particularly strong and bent back upon the propod, which bears three groups of stout spines, the whole forming an effective grasping organ. Third uropod reaching beyond the end of the second uropod and of the telson, its two branches broadly lanceolate, each with both margins armed with stout spinules. Telson narrowing distally, cleft for rather more than two-thirds its length, each lobe with a stout spinule at the end and two or three on the lateral margin.

Colour.—Bright red, eyes red.

Length of largest specimen (in position in which it is drawn) 9 mm.

Hab. Oamaru, on East Coast of South Island of New Zealand, four specimens; one small immature specimen from Lyttelton Harbour.

General Description.

In most of the characters this species presents a fairly close resemblance to species of *Dexamine* and *Paradexamine*, though, as seen from the generic description, it combines characters belonging to different genera. The general shape and carination of the body is not unlike that of *D. spinosa* (except that none of the segments is produced into teeth), while the carina on the fourth pleon segment is almost the same in outline as that of *D. spiniventris* (A. Costa). The integument seems particularly hard and firm. I give the following general description of the different appendages for comparison with other species.

The *upper antenna* (Plate 26. fig. 2) is about two-thirds the length of the body, and has the first joint longer and broader than the second and fringed with about a dozen stout spinules on the distal half of the lower margin; the second joint has a group of three similar spinules about one-third its length

from the base on the lower margin, and one or two small setæ placed more distally; the third joint is small and hardly differs from the first segment of the flagellum which is long, containing about 40 joints.

The *lower antenna* (fig. 3) is much shorter than the upper and has the penultimate joint of the peduncle longer than any of the others and provided with groups of spines on both upper and lower margins; the last joint of the peduncle is not much more than a third the length of the preceding one and bears only two small setæ at the distal end; the flagellum is much longer than the peduncle and contains about 25 joints.

The *upper lip* (fig. 4) is of the normal form, with its free surface regularly convex and bearing a few short setæ.

The *mandible* (fig. 5) differs very greatly from that of *Dexamine* or *Paradexamine*, but appears to be similar to that of *Guernea coalita* (Norman) as described and figured by Della Valle (1893, p. 570): there is no palp, the part corresponding to the cutting-edge is strongly chitinised but is destitute of teeth and has the margin quite entire. There is no appearance of a spine-row nor of a molar; there is a small rounded protuberance which may possibly represent the accessory plate, but this has rounded entire margins without any appearance of teeth. The right and left mandibles appear to be similar.

The *lower lip* (fig. 6) appears to be similar to that of *Guernea*, the inner lobes being fairly well developed and apparently somewhat irregularly lobed at the extremities; the principal lobes end in a small acute process which seems to be thin and delicate, the outer margins are rounded and there are no mandibular processes.

In the *first maxilla* (fig. 7) the inner lobe is small and bears two setæ, the outer lobe bears about a dozen strong spines most of which are more or less dentate; the palp consists of one joint only, fairly broad, appearing to have the same shape in both maxillæ, and fringed with setæ at the extremity and along the distal portion of the inner margin.

The *second maxilla* (fig. 8) has the inner lobe shorter and narrower than the outer, with setæ along the greater part of its inner margin, but more numerous towards the extremity.

In the *maxillipeds* (fig. 9) the inner plate is small, rectangular, ending in a few long setæ. The outer plate is large but does not reach quite to the end of the palp. Its inner margin bears numerous stout spines which become longer towards the extremity and gradually pass into the more slender setæ on the extremity and distal portion of the outer margin; the palp consists of four joints of the usual shape, the terminal one being quite small but distinct.

The *first gnathopods* (Plate 27, fig. 10) have the basal joint long and bearing numerous long setæ near its anterior margin; the carpus is fully as long as the propod, widens distally and bears three distinct tufts of stout

setæ and a few smaller ones on the posterior margin, and a group of long setæ at the antero-distal angle; the propod is slightly narrower at the base than the carpus, it narrows distally and has the palm oblique, straight, or slightly concave, defined by two stout spines, and fringed with slender setæ, on the anterior margin there are three obliquely transverse rows of setæ and along the centre of the lateral surface a long row of short setæ. The arrangement of the setæ on the propod is practically the same as that in *Paradexamine pacifica* (G. M. Thomson).

The *second gnathopod* is almost identical in size and form with the first.

The *first peræopod* (fig. 11) has the side plate convex in front and slightly concave behind, the limb is short and stout, the carpus less than half as long as the propod, the dactyl particularly strong, about two-thirds as long as the propod and bent back upon it so as to form with the three groups of spines on the propod a very efficient grasping organ.

The *second peræopod* (fig. 12) is similar but has the side plate broader and produced at the lower posterior angle into a broad rounded lobe.

The *third peræopod* (fig. 13) is considerably longer than the preceding one, its side-plate has the anterior lobe produced downwards below the posterior lobe which bears two or three small spines on its lower margin, the second joint is moderately broad, its anterior margin slightly convex and bearing six groups of short stout spines, posterior margin nearly straight and without spines; carpus shorter than the propod; the latter and the dactyl are similar to those of the preceding peræopoda.

The *fourth peræopod* (fig. 14) is similar to the third but slightly longer and has the posterior margin of the second joint slightly convex.

The *fifth peræopod* (fig. 15) is similar to the preceding, but has the second joint narrower and its posterior margin slightly concave.

The *uropoda* (figs. 16, 17, 18, 18 *a*) are similar in character to those found in other species of the Dexaminidæ, the first pair reaches a little beyond the extremity of the second and as far as the end of the third, the end of the second uropoda being on the level with the end of the telson. The proportions of the peduncles and their rami and the arrangement of the spines thereon will be best learnt from the figures; in the third uropoda (figs. 18 & 18 *a*) there is a group of stout spines at the distal end of the upper margin of the peduncle; the two rami are lanceolate and end acutely in the usual manner, and bear numerous spines on each margin.

The *telson* (fig. 19) has the normal shape, it is cleft for more than two-thirds of its length, narrows greatly towards the extremity, each lobe has a stout spine at the end and two or three similar spines at the lateral margin; in the specimen figured there are three on one side and only two on the other.

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EXPLANATION OF THE PLATES.

PLATE 26.

Syndexamine carinata, nov. gen. et sp.

- Fig. 1. Side view of whole animal, \times about 10 times.
2. Upper antenna.
 3. Lower antenna.
 4. Upper lip.
 5. Mandible.
 6. Lower lip.
 7. First maxilla.
 8. Second maxilla.
 9. Maxilliped.

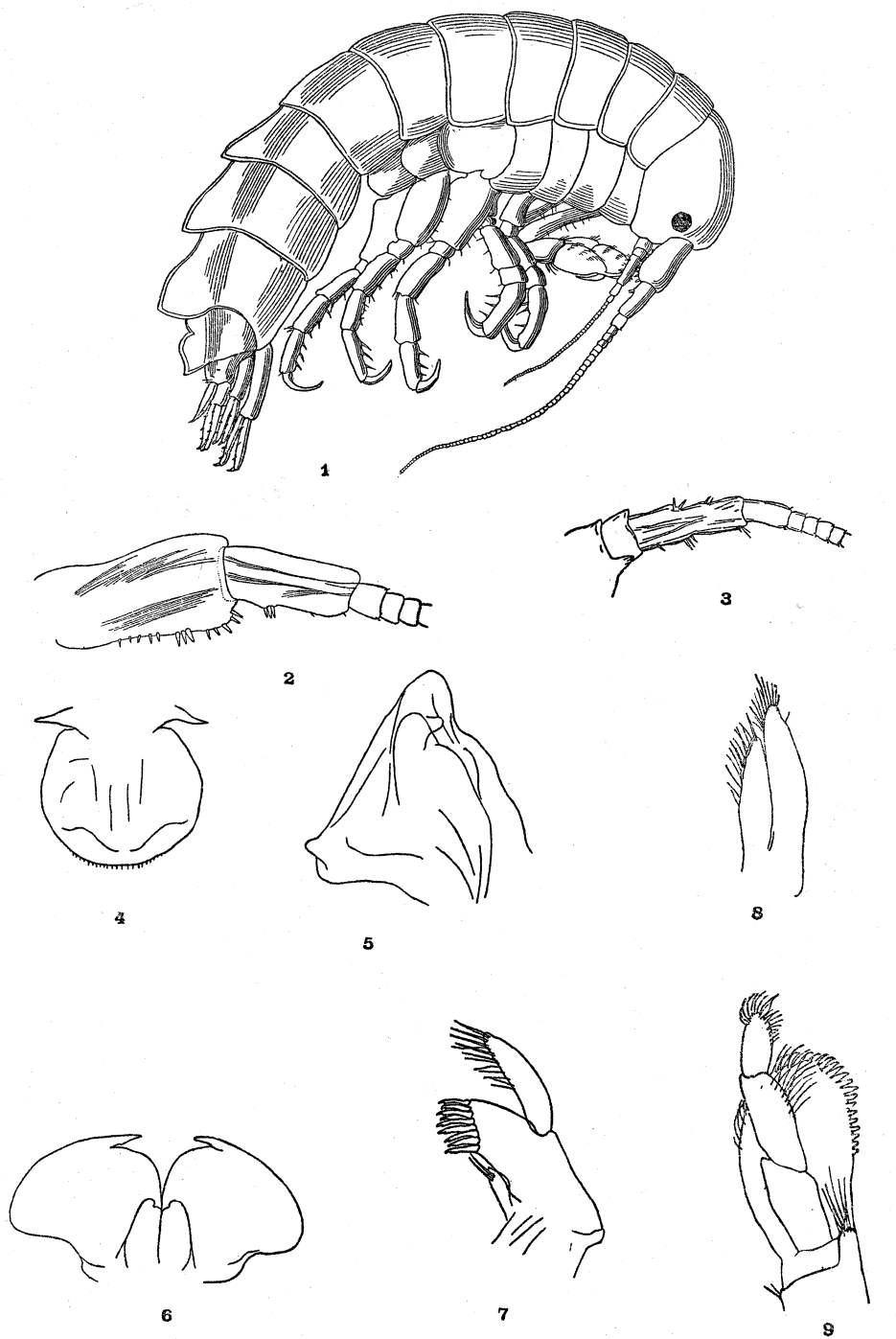
(All the mouth-parts are drawn to the same scale, the antennæ are less highly magnified.)

PLATE 27.

Syndexamine carinata, nov. gen. et sp.

- Fig. 10. First gnathopod.
11. First peræopod.
 12. Second peræopod.
 13. Third peræopod.
 14. Fourth peræopod.
 15. Fifth peræopod.
 16. First uropod.
 17. Second uropod.
 18. Third uropod. (Side view.)
 - 18 a. Third uropod. (Seen from above.)
 19. Telson.

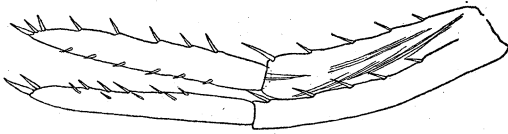
(The peræopods are all drawn to the same scale, and are less highly magnified than the first gnathopod and the uropods and telson.)



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SYNDEXAMINE CARINATA nov. gen. et. sp.

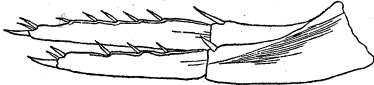
Grout sc. & imp.



16



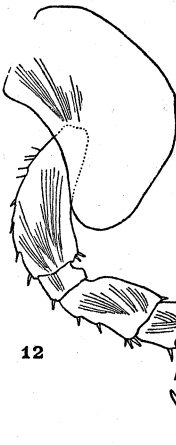
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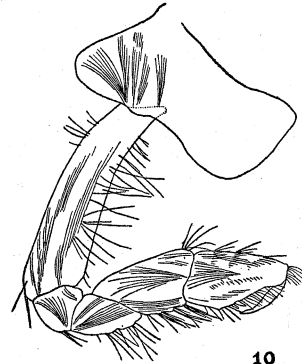
18^A



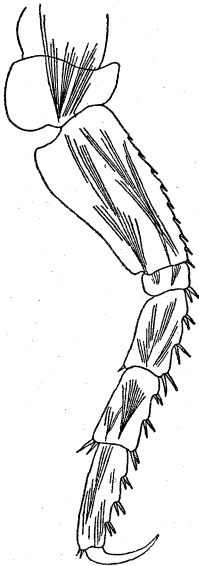
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11



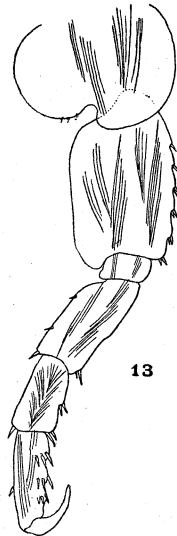
10



15



14



13



19

C. C. del.

SYNDEXAMINE CARINATA nov. gen. et. sp.

Grout sc. & imp.