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CRUSTACEA.

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Plate LVIII.*

THE collection of Crustacea is not a particularly large one, and the species collected belong mainly to the crabs, larger shrimps, etc., to which attention was naturally mainly directed. Very few of the smaller forms were obtained, the collection containing only a very few isopods and amphipods that were gathered incidentally along with the larger forms. The list contains 43 species divided among the groups of Crustacea as follows:—Decapoda 28, Stomatopoda 2, Amphipoda 4, Isopoda 5, Cirripedia 2, Parasitic Copepoda 2. All the specimens have been referred to species already described, but one species has only very recently been described, and another is new to the New Zealand fauna, while a new name is proposed for one preoccupied. The collection is nevertheless an interesting one in several respects, more particularly because it contains several forms gathered originally by the “Challenger” or by earlier collectors and not since recognised; these include one or two forms that had long been put down on the list of New Zealand Crustacea but whose right to remain on the list had been much doubted. It will be noticed that quite a large number of species belong to the *Paguridæ*, some of them being species that have not been collected since they were first described by Filhol or Henderson.

From the accounts given below it will be seen that there are one or two interesting examples of commensalism connected with some of the species. Thus *Paramithrax longipes* seems to be almost invariably accompanied by specimens of *Balanus decorus* growing on its carapace, the cirripedes being in some cases so large and numerous that they exceed in size the body of the crab itself. (See plate lvii.).

* For explanation of plate see p. 312.

Eupagurus stewarti seems rather peculiar in the "house" that it occupies. The abdomen of the hermit crab is straight, and in some cases it inhabits tubes formed of a *Millepora*; in other cases the hermit crab lives in a massive calcareous Polyzoon which is very much larger than the crab, so much so that it seems doubtful if the crab can drag its large solid dwelling-place about with it. (See fig. 1). In each case the crab inhabits a cylindrical cavity in the *Millepora* or Polyzoon, and it is not quite clear how this cavity has been formed. Professor Benham, to whom I am indebted for assistance in identifying the *Millepora* and Polyzoon, suggests that they may be pieces that have grown around a circular branch of seaweed and that the crab occupies the cavity formed by the subsequent decay of the seaweed. It is already known from Dr. Alcock's investigations in Indian seas that the houses in which hermit crabs live are made of a great variety of substances, and that in some cases, as in *Paguristes typica*, we have a case of intimate commensalism, a sea-anemone of the genus *Mamillifera* settling on the hinder part of the young hermit-crab's tail and the two animals growing up together in such a way that the spreading zoophytes form a blanket which the hermit crab can either draw completely forward over its head or throw half-back as it pleases.¹

For assistance in supplying information or specimens for comparison I have to thank Mr. A. Hamilton of the Dominion Museum, Professor W. B. Benham of the Otago Museum, Mr. H. Suter, Mr. G. M. Thomson, Mr. T. Anderton, and the authorities of the Portobello Fish Hatchery. To Mr. Edgar R. Waite, Curator of the Canterbury Museum, I am indebted for the opportunity of examining the specimens, and thanks are due to him for making the collection under most unfavourable conditions during the cruise, when his main energies had to be devoted to the fishes and other groups more directly of economical importance.

I have not attempted to give the full synonymy of the species but have given only such references as seemed necessary in each case.

(1) Alcock.—*Journ. Asiatic Soc. Bengal*, 68, 1899, p. 111, and Cat. Indian Decapod Crustacea, Part 2, Anomura, 1905, p. 7.

LIST OF SPECIES.

BRACHYURA.

1. *Paramithrax peronii* Milne-Edwards.
2. *Paramithrax longipes* G. M. Thomson.
3. *Paramithrax latreillei* Miers.
4. *Acanthophrys filholi* A. Milne-Edwards.
5. *Prionorhynchus edwardsii* Jacquinet et Lucas.
6. *Cancer novæ-zealandiæ* (Jacquinet et Lucas).
7. *Nectocarcinus antarcticus* (Jacquinet et Lucas).
8. *Ovalipes bipustulatus* (Milne-Edwards).
9. *Ommatocarcinus macgillivrayi* White.
10. *Halicarcinus planatus* var. *tridentatus* (Jacquinet et Lucas).
11. *Halicarcinus huttoni* Filhol.
12. *Elamena producta* T. W. Kirk.
13. *Pinnotheres novæ-zealandiæ* Filhol.
14. *Ebalia lævis* (Bell).

ANOMURA.

15. *Petrocheles spinosus* Miers.
16. *Eupagurus rubricatus* Henderson.
17. *Eupagurus thomsoni* Filhol.
18. *Eupagurus stewarti* Filhol.
19. *Eupagurus noræ* nom. nov. (= *E. edwardsi* Filhol).
20. *Paguristes barbatus* (Heller).
21. *Aniculus aniculus* (Fabricius).
22. *Munida gregaria* (Fabricius).
23. *Galathea pusilla* Henderson.

MACRURA.

24. *Jasus edwardsii* (Hutton).
25. *Ibacus alticrenatus* Spence Bate.
26. *Leander affinis* (Milne-Edwards).
27. *Nauticaris marionis* Spence Bate.
28. *Pontophilus australis* (G. M. Thomson).

STOMATOPODA.

29. *Lysiosquilla spinosa* (Wood-Mason).
30. *Squilla armata* Milne-Edwards.

AMPHIPODA.

- 31. *Ampelisca chiltoni* Stebbing.
- 32. *Leptamphopus novæ-zealandiæ* (G. M. Thomson).
- 33. *Paradexamine pacifica* (G. M. Thomson).
- 34. *Phronima novæ-zealandiæ* Powell.

ISOPODA.

- 35. *Paridotea ungulata* (Pallas).
- 36. *Meinertia imbricata* (Fabricius).
- 37. *Livoneca raynaudii* Milne Edwards.
- 38. *Exosphæroma chilensis* (Dana).
- 39. *Cilicæa caniculata* (G. M. Thomson).

CIRRIPIEDIA.

- 40. *Balanus decorus* Darwin.
- 41. *Scapellum spinosum* Annandale.

COPEPODA PARASITICA.

- 42. *Lernæa lotellæ* G. M. Thomson.
- 43. *Chondracanthus lotellæ* G. M. Thomson.

BRACHYURA.

PARAMITHRAX PERONII Milne-Edwards.

Paramithrax peronii M-Edw., Hist. Nat. Crust., i., 1834, p. 324.

Miers, Cat. N.Z. Crust., 1876, p. 5.

Lenz, Zool. Jahrb. xiv., heft 5, 1901, p. 454.

Chilton, Trans. N.Z. Inst. xxxviii, 1906, p. 265.

Fulton and Grant, Proc. Roy. Soc. Victoria, xix., part 1, 1906, p. 16.

One male specimen from Station 44, and one male and one female from Station 74. The female, though only 18mm. in length of carapace, bears eggs and agrees well with the characters of larger specimens, except that the spines on the carapace are sharper; in large specimens they become more like tubercles. The species is common around the New Zealand coasts at moderate depths, and the surface of the carapace is always more or less covered with sponges, seaweed, etc.

It extends to Australia, and Milne-Edwards gives the Indian Ocean as the locality from which his specimens came.

PARAMITHRAX LONGIPES G. M. Thomson.

Plate LVII.

Paramithrax longipes G. M. Thomson, Ann. and Mag. Nat. Hist., ser. 7, vol. x., 1902, p. 361.

Numerous specimens of this species were taken at Stations 4, 5, 7, 17, 23, and 26. They agree well with the description given by Mr. G. M. Thomson, except that in most cases the carapace is more spiny than is shown in his figure. Dimensions of largest male, length of carapace 80mm., breadth 60mm.; propod of cheliped, 60mm.

Nearly all the specimens have the carapace overgrown and sometimes almost completely covered with sponges, compound ascidians, *Serpulæ*, *Spirorbis*, and particularly with *Balanus decorus*. On one small female specimen there were nine or ten specimens of *Balanus decorus*, the whole of them together being larger than the body of the crab; another, a male, bore five specimens of this species on its back, and numerous other examples bore one or more large specimens of *Balanus decorus*. It thus appears that there must be some special association between the crab and this species of cirripede. (See Pl. lvii., figs. 1, 2, 3).

From Station 30 I have one mutilated male specimen measuring 30mm. from the tip of the rostral spines to the posterior end of the carapace, which already has the characteristic external maxillipeds, and undoubtedly belongs to this species; the spines on it are however very much more prominent and acute than those described and figured by Mr. Thomson—his figure appears to have been taken from an old specimen in which the spines have become reduced to tubercles. In the immature specimen the four spines in the branchial region are particularly sharp and prominent, the two posterior ones being the largest, the posterior margin of the carapace is produced in the median line into a prominent spine of about the same size and there is a well-marked row of four spines anterior to this in the median line; the rostral spines project almost horizontally while in the larger specimens they are somewhat depressed towards their extremities.

PARAMITHRAX LATREILLEI Miers.

Paramithrax latreillei Miers, Cat. N.Z. Crust., 1876, p. 6.

P. barbicornis Miers, *ib.* p. 6 (not of Latreille).

Hutton, Index Faunæ N.Z., 1904, p. 247.

P. cristatus Filhol, Mission de l'île Campbell, 1885, p. 358, pl. xli., fig. 11.

Lenz, Zool. Jahrb., xiv., heft 5, 1901, p. 454.

Numerous specimens of this species were taken in set nets at the Chatham Islands, whence specimens have previously been sent to me by Miss Shand; these agree well with the descriptions given by Miers and by Filhol. Miers at first referred the species to *P. barbicornis* (Latreille) an Australian species, but at the same time suggested the name *P. latreillei* should the species prove to be distinct from the Australian one. Filhol stated that it was quite different from *P. barbicornis* (Latreille) and gave a fresh description of it under the name *P. cristatus*. He also gave a description of the true *P. barbicornis* (Latreille), which he considered to be so different as to form a distinct genus, and he therefore suggested for it the name *Lobophrys barbicornis*, under which Milne-Edwards had inscribed it in the Catalogue of the Paris Museum.

Filhol gives the length of the carapace as 41mm. and the breadth 30mm. Some of the specimens obtained by the "Nora Niven" are considerably larger than this, one large male having the length of carapace 60mm. and breadth 42mm. The chelipeds become disproportionately large in these large males, this specimen having the propod 42mm. long and 18mm. broad.

ACANTHOPHRYS FILHOLI A. Milne-Edwards.

Acanthophrys filholi A. M.-Edw., Bull. Soc. Phil., 1876, and Ann. Sci. Nat. (6) iv., 1876, art. 9, p. 4.

Filhol, Mission de l'Ile Campbell, 1885, p. 365, pl. xxxix., fig. 1, and pl. xl., fig. 8.

One female specimen from Station 17, one female from Station 26, and another from Station 44. The chelipeds in the female show the same crests on the carpus and are generally similar to those of the male, but are of much smaller size. All the specimens have the carapace thickly covered with sponges, compound ascidians, *Serpulæ*, etc.

I have a specimen in my collection from New Brighton, given to me by Mr. H. Suter. Filhol's specimens were from the oyster beds near Stewart Island.

PRIONORHYNCHUS EDWARDSII Jacquinet et Lucas.

Prionorhynchus edwardsii Jacq. et Luc., Voy. au Pôle Sud. Zool. iii., Crust., 1853, p. 8., pl. i., fig. 1.

Filhol, Mission de l'Ile Campbell, 1885, p. 367, pl. xlii., figs 1 to 4.

Rathbun, Proc. U.S. Nat. Mus. xv., 1892, p. 243.

Hodgson, "Southern Cross" Crustacea, 1902, p. 230.

Chilton, Subant. Is. N.Z., 1909, p. 608.

The specimens appear to agree pretty closely with the description given by Filhol. The dimensions of the largest individuals examined are:—

Male—Length of carapace, 175mm.
 Breadth „ „ 150mm.
 Propod of chelipeds, length 150mm.
 breadth 45mm.

Female—Length of carapace, 115mm.
 Breadth of carapace, 100mm.
 Propod of chelipeds, length 65mm.
 breadth 18mm.

Filhol (p. 370) gives the length of the female as 102mm. and the breadth 114mm., thus making the breadth greater than the length; it is probable, however, that his figures have been accidentally reversed.

The back of the carapace of many of the specimens was overgrown with a serpulid (probably *Pomatoceros strigiceps*) and with a mollusc (*Anomia* sp.), various polyzoa, etc.

Numerous specimens of this species were taken at Stations 5, 15, 17, 20, 47 and 48.

The species is common at the Auckland and Campbell Islands, and at moderate depths off the south of New Zealand. According to the settlers it has only been seen once at Stewart Island; about three years ago specimens were first taken there in shallow water, and soon after they are said to have come ashore in thousands, walking about on the beaches.

CANCER NOVAE-ZEALANDIAE, (Jacquinot et Lucas).

Platycarcinus novae-zealandiae Jacq. et Luc., Voy. au Pôle Sud., iii., Crust., 1853, p. 34, pl. iii, fig. 6.

Cancer novae-zealandiae Lenz., Zool. Jahrb. xiv., 1901, p. 459.

Chilton, Subant. Is. N.Z., 1909, p. 608.

One immature male specimen from Station 12, six miles north-west of the Nuggets. The species is very common on New Zealand coasts.

NECTOCARCINUS ANTARCTICUS (Jacquinot et Lucas).

Portunus antarcticus Jacq. et Luc., Voy. au Pôle Sud., iii., Crust., 1853, p. 51.

Nectocarcinus antarcticus A. M.-Edw., Archiv. Mus. Hist. Nat. x., 1861, p. 407.

Miers, Cat. N.Z. Crust., 1876, p. 30.

Hodgson, "Southern Cross" Crustacea, 1902, p. 229.

Chilton, Subant. Is. N.Z., 1909, p. 608.

This species was taken at Stations 2, 5, 12, 23, 26 and 30, and at the Chatham Islands. It is known also from the Auckland Islands, and is probably common at moderate depths around the

southern parts of New Zealand and the islands south of New Zealand. The specimens agree well with the description given in Miers' Catalogue.

OVALIPES BIPUSTULATUS (Milne-Edwards).

Anisopus trimaculata De Haan, Fauna Japon. Crust., dec. i., 1833, p. 13.

Platyonychus bipustulatus M.-Edw., Hist. Nat. Crust., i., 1834, p. 437, pl. xvii., fig. 7-10.

Miers, Cat. N.Z. Crust., 1876, p. 32, and P.Z.S. 1881, p. 68.

Ovalipes bipustulatus Rathbun, Proc. U.S. Nat. Mus. xxi., No. 7, 1898, p. 597, and xxxviii., 1910, p. 577.

O. trimaculatus Stebbing, South African Crustacea, part ii., 1902, p. 13 (with discussion of synonymy).

Doflein, Wiss. Ergebn. Deutschen Tiefsee Exped. (1898-9), 1904, p. 92, pl. xxxii., fig. 6.

Numerous specimens of this species were taken during the expedition; one male from Station 5, and many others, male and female, from the Stations near the Chatham Islands, while, according to Mr. Waite, enormous bags were taken in Petre and Hanson Bays. (Introduction, p. 53). They agree well with the description given in Miers' Catalogue.

The dimensions of the largest specimen are;—Length of carapace 85mm., breadth of carapace 105mm.

The species is widely distributed, being found in Australia, and also on the coast of Chili, Cape of Good Hope, and generally throughout the Indo-Pacific region.

OMMATOCARCINUS MACGILLIVRAYI White.

Ommatocarcinus macgillivrayi White, Append. in Stanley, Voy. "Rattlesnake," ii., 1852, p. 393, pl. v., fig. 1.

M.-Edw, Ann. Sci. Nat., ser. 3, Zool. xviii., 1852, p. 163.

Miers, Chall. Rep., xvii., Brachyura, 1886, p. 247.

Stebbing, History Recent Crustacea, 1893, p. 92.

O. huttoni Filhol, Mission de l'Ile Campbell, 1885, p. 384, pl. xliii., figs. 1 and 2.

One small female specimen from Station 29; length of carapace 17mm., greatest breadth 35mm. This specimen agrees closely with the description given by Filhol.

In describing his specimen Filhol discusses the question as to whether it may be the female of *O. macgillivrayi* White, from Australia, but on account of various differences which he points out comes to the conclusion that this can hardly be the case. During the "Challenger" expedition one young male and two small egg-bearing females were taken in New Zealand seas, and these Miers referred to *O. macgillivrayi*. He pointed out,

however, that in all these specimens the chelipeds were of moderate length and not greatly elongated as in the large Australian males, the types of the species, in the British Museum; and he suggests that the differences may perhaps be found to be of specific importance. At the time he wrote he was evidently unacquainted with Filhol's description of *O. huttoni*.

Through the kindness of the authorities of the Portobello Fish Hatchery I have been able to examine two other female specimens and one male. In the latter the chelipeds are greatly elongated as in the Australian specimens referred to by Miers, and there can, therefore, I think, be little doubt that our New Zealand species is really the same as the one found in Australian seas.

In this male specimen the total width of the carapace to the tips of the lateral spines is 42mm., and the eye stalk reaches almost to the end of the spines, the chelipeds are greatly elongated, the merus being 35mm. long and the total length of the propod to the end of the fixed finger 47mm., the carpus is quite short, only 7mm. long; the merus has the under surface somewhat flattened, but otherwise is nearly cylindrical, and of approximately the same width throughout. It bears no spines, even the one on the middle of the posterior margin being quite absent, but along the lower inner angle there is a series of fairly well-marked granules, and other granules are present along the upper surface, while the other surfaces are smoother, being only minutely granulated. The propod is granulated in the same way, the granulations being most evident along the upper surface. It is rounded in section at the proximal end but widens considerably to the bases of the fingers where it is a good deal compressed. The dactyl is granular on its upper edge; its inner edge, like that of the fixed finger, bears a number of rounded teeth of various sizes.

HALICARCINUS PLANATUS var. TRIDENTATUS (Jacquinot et Lucas).

Hymenosoma tridentatum Jacq. et Luc., Voy. au Pôle Sud., iii., 1853, p. 60, pl. v., fig. 27.

H. tridentatus Filhol, Mission de l'Ile Campbell, 1885, p. 396.

H. planatus, var. *tridentatus* Chilton, Subant. Is. N.Z., 1909, p. 609.

An immature specimen from the Chatham Islands appears to belong to this common species. There is also a large male specimen from Station 6, off Stewart Island.

As explained under the reference last quoted, I look upon this form as a variety of the widely distributed sub-antarctic species *H. planatus* (Fabr.).

HALICARCINUS HUTTONI Filhol.

Halicarcinus huttoni Filhol, Mission de l'Ile Campbell, 1885, p. 398, pl. xlvii., fig. 1.

Lenz, Zool. Jahrb, xiv., 1901, p. 469.

Two males and four females from Station 75, all small; a female bearing eggs having the carapace 6mm. broad and its length a trifle less.

These specimens I refer with very little hesitation to Filhol's species. Lenz considers this only a young form of *H. planatus* var. *tridentatus* (Jacq. et Luc.) but some of my specimens are adult females with eggs, and they can be readily distinguished from even young forms of var. *tridentatus* Jacq. et Luc. They differ in shape of the carapace which is only slightly broader than long and narrows a little towards the front, and in having the three teeth of the front more nearly on a level with the surface of the carapace though the margin of the carapace is continued across the base of the front as a somewhat indistinct line; the teeth themselves are much longer and more slender than in var. *tridentatus*; they are hairy towards the end and some hairs are also present on the surface of the carapace, while the legs are much more abundantly furnished with hairs than in var. *tridentatus*. In the males that I have been able to examine the chelipeds are much smaller and have the hands less swollen than in var. *tridentatus* and the ischium bears at its distal end three fairly prominent teeth, one on the upper margin and one at each side.

In the size, greater hairiness, and in the very long and slender dactyls of the ambulatory legs my specimens seem to closely resemble those from Jervis Bay which are referred by Mr. Stebbing to *H. ovatus* Stimpson. This and other points in connection with the N.Z. *Hymenosomidae* must however stand over for solution at some future time.

ELAMENA PRODUCTA T. W. Kirk.

Elamena producta T. W. Kirk, Trans. N.Z. Inst., xi., 1878, p. 395.

Filhol, Mission de l'Ile Campbell, 1885, p. 404, pl. l., figs. 1 and 2.

Lenz, Zool. Jahrb. xiv., heft 5, 1901, p. 469.

E. kirki Filhol, loc. cit., 1885, p. 405, pl. xlvii., figs. 5-9.

Two specimens, both females with eggs, from Stewart Island. *E. kirki* Filhol, as described and figured, differs a little in the shape of the carapace but is I think too near to be considered a separate species. *E. producta* appears to be a variable species, as Lenz has already pointed out.

PINNOTHERES NOVAE-ZEALANDIAE Filhol.

Pinnotheres novæ-zealandiæ Filhol, Mission de l'Ile Campbell, 1885, p. 395, pl. xlvi., figs. 1 to 6.

Lenz, Zool. Jahrb. xiv., 1901, p. 467, pl. xxxii., figs 11 to 14.

One female, Station 5, three females, Station 44, one female, Station 20; specimens of a *Pinnotheres* were also seen at Stations 31, 36, 37, 41. Mr. Waite writes (Introduction, p. 52) "Almost every adult *Pinna* taken had its crustacean commensal *Pinnotheres*."

The specimens from Stations 5, 44 and 20, which I have been able to examine, seem undoubtedly to belong to this species. They agree generally with Filhol's description, but, as Lenz has pointed out, his figures are not exact in all points. The specimens also agree with the better description given by Lenz and with his figures. I have also similar specimens dredged by Captain Bollons in Manukau Harbour and another dredged by him off Cuvier Island in 32 fathoms which evidently belong to the same species. All these specimens are of somewhat large size, the largest having the carapace 13mm. long and 14mm. wide; they are thus rather larger than the specimens examined by Lenz and about the same size as the female specimens examined by Filhol.

Lenz's specimens were taken in the shells of *Mytilus* at French Pass; he describes two specimens taken from the same locality and also from *Mytilus* shells as a separate species *P. schauinslandi* which appears to differ from *P. novæ-zealandiæ* chiefly in the shape of the carapace and especially in having the front and the eyes visible in dorsal view. I am very doubtful if the characters given by Lenz are sufficient for the establishment of a separate species; the shape of the carapace varies somewhat in the different specimens that I have examined, being in some more rounded than in others; the front is not visible from above in the female specimens though Filhol shows it in his figure of the female as well as in the male. If we could assume that Lenz's specimens of *P. schauinslandi* were males I would have no hesitation in looking upon them as males of *P. novæ-zealandiæ*, but although Lenz does not state the sex of these specimens we cannot assume that if they were males he would have overlooked the possibility of their belonging to the same species as the females from the same locality that he was referring to *P. novæ-zealandiæ*. The other characters ascribed by Lenz to *P. schauinslandi* in connection with the shape of the chelæ and of the external maxillipeds do not appear to me to be of specific importance; the line of hairs on the upper inner margin of the carpus is present in all my specimens which, as I have said, owing to the shape of the carapace, etc., must belong

to *P. novæ-zealandiæ*. However, the species in this genus are distinguished by such minute points that I do not feel prepared to unite *P. schauinslandi* definitely with *P. novæ-zealandiæ* without comparison of authentic specimens of both species.

Except for their larger size I can find little or nothing in the specimens described above to distinguish them from the smaller specimens found in mussel shells between tide marks at Dunedin, Lyttelton, etc., which on the authority of Heller and Miers I have hitherto referred to *P. pisum* Linn. These specimens appear to agree closely with the description of *P. pisum* given by Bell²; in them the eyes are pigmented while in the larger specimens dredged at varying depths the eyes (in the spirit specimens) seem to be always without pigment, but I can find no other difference of any importance and the general shape of the carapace, chelæ, external maxillipeds, etc., seems to be closely the same in all the specimens.

EBALIA LAEVIS (Bell).

Phlyxia lævis Bell, Trans. Linn. Soc. xxi., 1855, p. 305, pl. xxxiv., fig. 3.

Miers, Cat. N.Z. Crust., 1876, p. 56.

Ebalia lævis Chilton, Trans. N.Z. Inst., xxxviii., 1906, p. 266.

One very small specimen from the Chatham Islands appears to belong to this species but it is too immature for certain determination. The species is common in New Zealand seas.

ANOMURA.

PETROCHELES SPINOSUS Miers.

Petrocheles spinosus Miers, Ann. Mag. Nat. Hist. (4), xvii., 1876, p. 222, and Cat. N.Z. Crust., 1876, p. 61, pl. i., fig. 5.

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1898, p. 192.

Two specimens from Station 12 and two (females with eggs) from Station 44, all more or less imperfect.

This species, as Mr. G. M. Thomson points out, occurs in many parts of New Zealand, though it is not very often met with and no addition has been made to the description given in 1876 by Miers, which was drawn up from a single much injured specimen in the British Museum.

The following description may be therefore useful:—

(2) Bell, British Stalk-eyed Crustacea, 1853, p. 121.

Carapace triangular, broader behind, depressed or slightly convex, almost entirely covered with minute short hairs; lateral margins slightly arched and bearing a series of about ten small spines varying somewhat in size; front prominent, triangular, slightly concave above, lateral margins with three or four spines, extremity rounded, also bearing a few small spines. Chelipeds elongated, somewhat pubescent, granulous above, merus with four or five prominent sharp spines on the upper inner margin; propod with a series of sharp spines and a row of hairs on the outer margin extending to the tip of the fixed finger and two rows of granules on the upper surface, inner margin also granular; dactyl with a row of granules on the upper surface, under surface hairy; fingers not quite meeting at the base when closed. Ambulatory legs with the meral joints compressed, upper margin with sharp spines and hairs.

Length of carapace 8mm, greatest breadth 8mm.

EUPAGURUS RUBRICATUS Henderson.

Eupagurus rubricatus Henderson, Chall. Rep. Anomura, 1888, p. 69, pl. vii., fig. 4.

G. M. Thomson, Trans. N.Z. Inst. xxxi., 1898, p. 180.

Alcock, Cat. Indian Decap. Crust. part ii., Anomura, 1905, p. 176.

E. intermedius Lenz, Zool. Jahrb. xiv., heft. 5, 1901, p. 446 pl. xxxii., figs. 8-10.

The collection contained numerous specimens of this species from Stations 2, 5, 20, 22, and 89. They agree well with Henderson's description which was drawn up from a single imperfect specimen taken by the Challenger Expedition, even the red markings he mentions on the legs are still evident in most of the specimens. The dactyls of the second and third legs are convex on the outer side while the inner surface forms a shallow groove extending along the whole length of the dactyl. The specimens are all much larger than Henderson's type specimen, thus one of them has the following dimensions:—Length of carapace 31mm., length of cheliped 68mm., length 3rd right leg 35mm., length of eye stalk 12mm., while another with the carapace 33mm. long has the chelipeds and 3rd right leg still longer and the chelipeds particularly broad.

E. intermedius Lenz from French Pass is, I think, undoubtedly the same as this species.

EUPAGURUS THOMSONI Filhol.

Eupagurus thomsoni Filhol, Mission de l'Ile Campbell, p. 423, 1885, pl. li., fig. 6.

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1898, p. 183.

Alcock, Cat. Indian Decap. Crust., part ii., 1905, p. 176.

One specimen from Station 5 and three from Station 17, in shells of a *Turritella*.

These agree well with Filhol's short description and with his figure, though the carpus of the right cheliped is hardly so spiny on its outer surface; the peculiar compressed shape of the propod of the left chela with the crests on it is very characteristic.

EUPAGURUS STEWARTI Filhol.

Eupagurus stewarti Filhol, Mission de l'Ile Campbell, 1885, p. 418, pl. li., fig. 3.

G. M. Thomson, Trans. N.Z. Inst. xxxi., 1898, p. 180.

Alcock, Cat. Indian Decap. Crust., part ii., 1905, p. 176.

I refer to this species a few small specimens from Stations 2, 5, and 12; one from Station 79 found in a small *Dentalium* shell seems to belong here, but is too immature for certain identification. This species seems not to be particular as to its "house,"

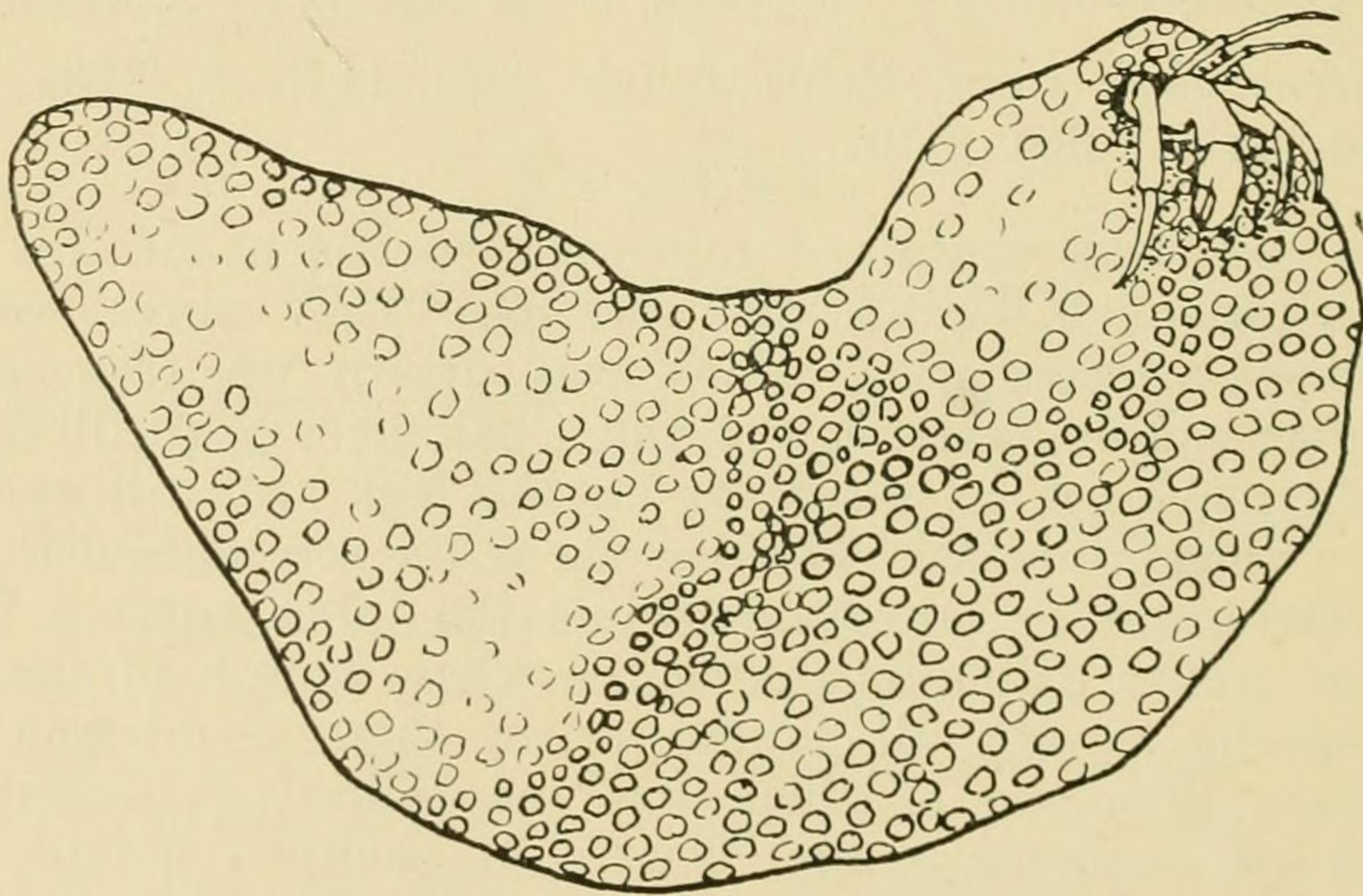


Fig 1. *Eupagurus stewarti* in calcareous polyzoon.

one or two are in small *Turritella* shells, several in small masses of a calcareous Polyzoon, and two in tubes formed by a *Millepora*; most of the specimens have the abdomen straight.

I have a small specimen from the Snares that I think also belongs to this species, but unfortunately both chelipeds are wanting.

I was at first inclined to look upon these specimens as young forms of *E. cookii*, in which the characteristic shape of the right chela with its denticulated marginal crest had not been fully developed; the specimen from Station 5 is however large enough to show this if it were going to be developed, and I have little doubt that it is correctly referred to *E. stewarti*; in it there is a slight crest along the outer edge of the propod and a little along the base, but the outer surface of the propod does not show the two ridges present in *E. cookii* and the outer margin is straight and not produced into a thin convex plate as in that species. Another specimen, though smaller, is a female bearing eggs, and the chelipeds show no further approach to the characters of *E. cookii* than do those of the other specimens.

EUPAGURUS NORÆ *nom. nov.*

Eupagurus edwardsii Filhol, Mission de l'Ile Campbell, 1885, p. 412, pl. lii., figs. 1 and 2, (name preoccupied).

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1898, p. 182, pl. xx, figs. 6 and 7.

Chilton, Trans. N.Z. Inst., xxxviii, 1906, p. 266.

E. "edwardsii" Alcock, Cat. Indian Decap. Crust., part ii., 1905, p. 176.

One from Station 17, with carapace 18mm. long. One from Station 23, a female with eggs, carapace 20mm. long. Others from Stations 5 and 29, smaller than the above.

These specimens agree well with the descriptions given by Filhol and Thomson.

Alcock has pointed out that the specific name is preoccupied in this genus by *E. edwardsii* Dana, and I have therefore named the species *noræ* from the first name of the trawler "Nora Niven," by which the specimens now under consideration were obtained.

PAGURISTES BARBATUS (Heller).

Clibanarius barbatus Heller, Voy. Novara. Crust, 1865, p. 90, pl. vii., fig. 5.

Miers, Cat. N.Z. Crust., 1876, p. 67.

Filhol, Mission de l'Ile Campbell, 1885, p. 425.

G. M. Thomson, Trans. N.Z. Inst. xxxi., 1898, p. 172.

Henderson, Chall. Rep. Anomura, 1888, p. 78.

Alcock, Cat. Indian Decap. Crust. part ii., 1905, p. 160.

Paguristes subpilosus Henderson, Chall. Rep. Anomura, 1888, p. 77, pl. viii. fig. 2.

G. M. Thomson, *loc. cit.*, 1898, p. 187.

Alcock, *loc. cit.*, 1905, p. 156.

One specimen from Station 5 and one from Station 26, the latter in a *Voluta* shell. These specimens agree closely with Heller's description, and I have no doubt belong to the species described by him. They also agree equally closely with the description given by Henderson for *P. subpilosus*, and the two species must be combined. Henderson himself had pointed out the resemblance between the two, but had not combined them as Heller described the dactyls of the ambulatory legs as scarcely shorter than the corresponding propods; as a matter of fact in the specimens before me they are, as Henderson describes them, half as long again as the propods.

ANICULUS ANICULUS (Fabricius).

Pagurus aniculus Fabr. Ent. Syst. ii., 1793, p. 468, and Suppl. 1798, p. 411.

Aniculus typicus Miers, Cat. N.Z. Crust., 1876, p. 64.

Hutton, N.Z. Journ. Sci., i., 1882, p. 264.

Filhol, Mission de l'Ile Campbell, 1885, p. 424.

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1898, p. 184.

A. aniculus Alcock, Cat. Indian Decap. Crust., part ii, Anomura, 1905, p. 94, pl. vii., fig. 6.

A. R. McCulloch, Rec. Aust. Mus. vii., 1908, p. 59.

Full synonymy of this widely distributed species will be found in Alcock's report quoted above.

One fine specimen of this species, with carapace 55mm. long in the median line, was obtained at Station 5, *i.e.*, 50 miles east of Stewart Island. This species was put down by Heller as being found at Auckland during the "Novara" Expedition. No subsequent specimens however had been obtained, and in 1882 Hutton, in the work quoted above, placed it in a list of species which he thought should be struck out of the New Zealand fauna as they had been inserted only on Heller's authority, and were all large and conspicuous forms known mainly from warmer seas. It is interesting therefore to find this species turning up so far south as Stewart Island. The single specimen must I think undoubtedly be referred to this species, and on the whole it agrees well with Alcock's description. I have been able to compare it with a specimen in the Canterbury Museum from "Polynesia," and though it differs from this and from Alcock's description in the points mentioned below, I do not think these are sufficient for specific distinction.

The specimen is a large male with carapace 55mm. long, and therefore considerably larger than the form described by Alcock, the carapace of which was only 40mm. in length, and very much larger than the specimen in the Canterbury Muuseum. The branchial region of the carapace is quite soft and membranous and the rostrum is much less prominent, the front being merely produced a little in the middle so as to be slightly convex. The ophthalmic scales have two well marked spines at the tip and the left one has two other spines well marked and one smaller one on the outer margin, while the right one has only two on the outer margin, both less distinct than the two terminal ones. The second pair of legs is only slightly longer than the chelipeds and the third pair is somewhat longer than the second; in both the dactyl is considerably longer than the propod.

The specimen in the Canterbury Museum from "Polynesia" undoubtedly belongs to this species as described by Alcock, and differs from the Nora Niven specimen in having the rostrum much better marked and acute, the eye stalks rather more slender, the dactyls of the legs shorter and the curved lines of setae extending more continuously across the joints of the legs, while in the Nora Niven specimen they are more broken, the specimen also is somewhat more hairy on the chelipeds and legs and the anterior part of the carapace. It is however only about one-third the size of the Nora Niven specimen, and the differences are perhaps due to age.

MUNIDA GREGARIA (Fabricius).

Galathea gregaria Fabr., Ent. Syst. ii., 1793, p. 473.

G. subrugosa White, List. Crust. Brit. Mus., 1847, p. 66.

Munida subrugosa Miers, Zool. Erebus and Terror, Crust, 1874, p. 3, pl. iii., fig. 2.

Hutton, Trans. N.Z. Inst., xi., 1879, p. 340.

Henderson, Chall. Rep. Anomura, 1888, p. 124.

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1899, p. 194.

Hodgson, Southern Cross Crust., 1902, p. 232.

Chilton, Trans. N.Z. Inst., xxxvii., 1905, p. 230, and Subant. Is. N.Z., 1909, p. 612.

A. M.-Edw., Mission du Cap Horn, vi., 1891, p. F. 36, pl. ii., fig. 2.

Grimothea gregaria, Henderson, *loc. cit.*, 1888, p. 124.

G. novæ-zealandiæ Filhol, Mission de l'Ile Campbell, 1885, p. 426.

Munida gregaria Miers, P.Z.S., 1881, p. 73.

A. M.-Edw., *l.c.*, p. F. 32, pl. ii., fig. 1.

Numerous specimens of this species were taken at Stations 5, 7, 14, 21, and 26. From Station 7 there was a large number of specimens of varying sizes up to 54mm. in length. Though these were presumably brought up by the trawl in the usual way, I think from the character of them that they were not actually living on the sea bottom, for they were all perfectly clean and free from mud, and in all of them the external maxillipeds have the elongated foliaceous character that is associated with the pelagic form known as *Grimothea gregaria*. A considerable number of these specimens from Station 7 are mature, some of them being females bearing eggs. The following table gives the measurement of 8 of these specimens and also of 5 other specimens from Station 26, 3 being females bearing eggs. From the measurements given it will be seen that while there is considerable variety in the proportionate length of the external maxillipeds these appendages are considerably shorter in the specimens from Station 26 than in those from Station 7, although both lots contained mature females. The length of the body is measured from the tip of the rostrum to the extremity of the telson.

	Body.	Chelipeds.	External Maxilliped.
	mm.	mm.	mm.
STATION 7.			
1. Female, with eggs ...	35	35	18
2. " " " ...	38	36	18
3. " " " ...	39	35	18
4. " " " ...	40	40	20
5. Male 	33	33	15
6. " 	45	45	20
7. " 	50	58	23
8. " 	54	—	24
STATION 26.			
9. Female, with eggs ...	40	42	15
10. " " " ...	45	—	17
11. " " " ...	47	—	18
12. Male 	50	—	18
13. " 	51	60	19

From the details given above it is seen that there are two forms differing in the length and character of the external maxillipeds, but that each form may grow to approximately the same size and become sexually mature; it would be therefore most natural to conclude that we have to deal with two distinct species; however, as I have pointed out elsewhere, the general resemblance between the two forms is so great and the length of the external maxillipeds is subject to so much variation that I think we really have only one species of which the pelagic form (*Grimothea*) is primarily an immature stage but under certain conditions may remain in this stage and grow to be as large as the ordinary adult stage (*Munida*) and may even become sexually mature. It is at any rate the fact that where one of these forms is found the other is also to be met with not far away.

I have given above only a few measurements, but from them and from the examination of others not included in the table I think it is clear the external maxillipeds decrease in length in proportion to the body in the larger forms while the chelipeds tend to become somewhat longer in proportion to the length of the body.

GALATHEA PUSILLA Henderson.

Galathea pusilla Henderson, Chall. Rep. Anomura, xxvii., 1888, p. 121, pl. xii., fig. 1.

G. M. Thomson, Trans. N.Z. Inst., xxxi., 1899, p. 193, pl. xxi., fig. 7.

Grant and McCulloch, Proc. Linn. Soc. N.S.W., 1906, p. 49, pl., iv., figs. 5, 5a.

One imperfect specimen from Station 30.

The species appears to be common round the New Zealand coasts at moderate depths; it is also found off the coast of Australia, and Grant and McCulloch in the reference last quoted give a description of the adult male which had previously been undescribed.

MACRURA.

JASUS EDWARDSII (Hutton).

Palinurus edwardsii Hutton, Trans. N.Z. Inst. vii., 1875, p. 279.
Miers, Cat. N.Z. Crust., 1876, p. 75.

P. lalandii Miers, *loc. cit.*, 1876, p. 74.

Jasus edwardsii T. J. Parker, Trans. N.Z. Inst. xvi., 1884, p. 297, and xix., 1887, p. 150.

J. lalandii (part), Ortmann, Zool. Jahrb. vi., 1891, p. 16.

This species was taken at many of the Stations, being extremely common at Stations 73, 74, 75. Mr. Waite informs me that the Crayfish was trawled in immense numbers at the Chatham Islands, both in Petre and Hansen Bays; the greater proportion were returned to the water, but eleven large sacks were filled and given to the Maori and Moriori inhabitants of the islands. It is remarkable that all the specimens taken proved to be males; I observed the same thing myself during a recent visit to Dusky Sound, in December, 1908, where many specimens were taken in shallow water and all proved to be males. On the other hand, fully half the specimens obtained in July and August from the shops for dissection in the Biological Laboratory are females.

This species is closely allied to *J. lalandii* Milne-Edwards from the Cape of Good Hope. Parker considered *J. edwardsii* a separate species distinguished mainly by a different pattern of the sculpturing on the abdominal segments; at the same time he pointed out that the differences were slight and that specimens from other localities might necessitate the merging of the two forms. Ortmann subsequently combined both *J. paulensis* (Heller) from St. Paul in the Indian Ocean, and *J. edwardsii* (Hutton) with *J. lalandii* (M-Edw.) (see Stebbing, South African Crustacea, part ii., p. 38). I have not been able to consult Ortmann's paper, and in the meantime leave the species under Hutton's name as a matter of convenience for New Zealand workers. As regards questions of distribution, it is immaterial whether we consider it a separate species or a variety of *J. lalandii*.

IBACUS ALTICRENATUS Spence Bate.

Ibaccus alticrenatus Spence Bate, Chall. Rep. Macrura, xxiv., 1888, p. 23, pl. ix., fig. 2.

Several specimens from Stations 83 and 89, and one from the stomach of a *Zeus* at Station 30; another from Chatham Islands. It was also taken by the Challenger in New Zealand seas, and a variety has been taken off the coast of Australia.

These specimens agree minutely with the description given by Spence Bate. The late Mr. F. E. Grant³ described a variety of this species under the varietal name *septemdentatus* from specimens dredged off Port Jackson in which the distal margin of the antennae bore seven teeth. The number of teeth on this margin is however subject to variation; in one of Mr. Grant's specimens there were six teeth on one side and seven on the other. In most of my specimens there are six teeth with a

(3) Grant, Proc. Linn., Soc. N.S.W., 1905, p. 322, pl. xi., fig. 1.

small secondary tooth on the inner side of the innermost one; one male specimen has six on the right side and seven on the left side, and another has eight on the right and seven on the left side. When there are only six teeth they are somewhat "distantly separated," as described by Spence Bate; when the teeth are more numerous they are naturally less separated at the base.

Spence Bate has pointed out that this species in general aspect agrees with *Ibacus incisus* (Péron) (= *J. peronii* Leach), and might almost be considered a variety of that species; the differences, however, that he points out appear to be constant, and it is perhaps as well to consider it a separate species. *I. incisus* is found on the Australian coast, and I have specimens from Port Phillip which clearly show the differences pointed out by Spence Bate. This writer also notes that the species approximates in appearance somewhat to *Thenus orientalis*, and appears to be a form nearly allied to that genus.

In all cases in the report on the Challenger Macrura, Spence Bate spells the generic name *Ibaccus*, though, as Stebbing⁴ has pointed out, he has given no reason for so doing.

LEANDER AFFINIS (Milne-Edwards).

Palæmon affinis M-Edw., Hist. Nat. Crust. ii., 1837, p. 391.

G. M. Thomson, Trans. Linn. Soc. (2), viii., 1903, p. 450.

Filhol, Mission de l'Ile Campbell, 1885, p. 433.

Lenz, Zool. Jahrb. xiv., heft. 5, 1901, p. 435.

One damaged specimen from Station 89 seems to belong to this species.

Several specimens from the Chatham Islands. This is a very common species in New Zealand seas and is circumaustral in distribution.

NAUTICARIS MARIONIS Spence Bate.

Nauticaris marionis Spence Bate, Chall. Rep. Macrura, 1888, p. 603, pl. cviii.

Chilton, Subant. Is. N.Z., 1909, p. 614.

Two females with eggs and one immature specimen from Station 30.

The species is widely distributed in southern seas.

(4) Stebbing, History of Recent Crustacea, 1893, p. 194.

PONTOPHILUS AUSTRALIS (G. M. Thomson).

Crangon australis G. M. Thomson, Trans. N.Z. Inst. xi., 1879, p. 231.

Pontophilus australis G. M. Thomson, Trans. Linn. Soc. (2), viii., 1903, p. 434.

Several damaged specimens from Station 1 and one from Station 2.

STOMATOPODA.

LYSIOSQUILLA SPINOSA (Wood-Mason).

Coronis spinosa Wood-Mason, Proc. Asiatic Soc. Bengal, 1875, p. 232.

Lysiosquilla spinosa Miers, Ann. Mag. Nat. Hist., (5) v., 1880, p. 12, pl. i., figs. 10-12, and p. 125.

Chilton, Trans. N.Z. Inst., xxviii., 1891, p. 62, pl. x. and xliii, 1911, p. 138, fig. 4.

One imperfect specimen from Station 5; the posterior end of the abdomen is wanting but the whole dorsal surface is quite smooth and the parts that can be examined agree well with this species which is widely distributed in New Zealand seas, and has also been recorded from the Andamans.

SQUILLA ARMATA Milne-Edwards.

Squilla armata M.-Edw., Hist. Nat. Crust., ii., 1837, p. 521.

Gay, Hist. de Chile, Zool. iii., Crust., 1849, p. 223.

Miers, Ann. Mag. Nat. Hist. ser. 5, v., 1880, p. 25.

A. M.-Edw., Mission du Cap Horn, 1891, p. F. 53.

Chilton, Trans. N.Z. Inst. xxiii., 1891, p. 60, and xliii, 1911, p. 135, figs. 1 and 2.

Stebbing, South African Crustacea, part ii., 1901, p. 45.

Bigelow, Proc. U.S. Nat. Mus. xvii., 1895, p. 515.

Several specimens from Station 85, found in the stomach of a *Dasybatus brevicaudatus*. These specimens are all of approximately the same size, the largest being about 84mm. in length. They agree on the whole well with the description of *S. armata* given by Miers, and evidently belong to the same species as two large specimens of *S. armata* in the Dominion Museum, with which I have been able to compare them through the kindness of Mr. A. Hamilton. They differ from these specimens only in having the median tubercles on the 4th, 5th and 6th abdominal segments obsolete and in the various carinae being rather less prominent. In nearly all of them there are two or three small teeth on the posterior margin of the fifth

abdominal segment between the sub-median and the lateral carinæ. The number of teeth on the posterior margin of the terminal segment between the sub-median and the lateral spines evidently varies with the age of the specimen; in most of the Nora Niven specimens there are eleven or twelve of these teeth though in some cases only ten, while in the larger specimens in the Dominion Museum the teeth are fewer, there being only eight; in the largest specimens the teeth are rather rounded and not pointed.

A. Milne-Edwards has given a fuller description of *Squilla armata* in the Mission du Cap Horn, and my specimens agree well with his description. He is inclined to unite with it *S. gracilipes* Miers⁵ which is described as having ten teeth on the dactyls of the raptorial limbs. The number of these teeth is, as he points out, sometimes subject to very considerable variation in the same species as I have also noted in the case of *Lysiosquilla spinosa*. *Squilla gracilipes* however also differs according to Miers' description in having about 26 denticles between the sub-median marginal spines and about 18 on each side between these and the first lateral spines; the number of teeth between the sub-median and lateral spines doubtless varies, as I have already mentioned, according to age, but in all the adult specimens of *S. armata* that I have examined the margin between the sub-median spines is smooth except for the median fissure. It seems hardly likely therefore that *Squilla gracilipes* can belong to this species.

In general appearance and in the character of the posterior margin of the terminal segment *S. armata* shows considerable resemblance to *S. lata* Brooks from the Arafura Sea, and like that species it shows curved lines on the telson on each side of the median carina; it has, however, a well marked spine on the basal joint of the uropoda, and the teeth on the inner margin of the outer prolongation of the uropods are represented by faint serrations only instead of by sharp teeth increasing in length distally as in *S. lata*: that species has only seven teeth on the posterior margin between the sub-median and the lateral spines and the dactyl of the raptorial limb bears only six teeth.

I had written the paragraph above before I noticed that *Squilla armata* had been fully redescribed by Bigelow from specimens obtained off the coast of Patagonia, and that he had also pointed out the similarity of the posterior margin of the telson to that of *S. lata*.

(5) Miers, Survey of H.M.S. "Alert," P.Z.S., 1881, p. 75, pl. vii., fig. 8.

AMPHIPODA.

AMPELISCA CHILTONI Stebbing.

Ampelisca chiltoni Stebbing, Chall. Rep. xxix., 1888, p. 1042, pl. ciii, and Das Tierreich Amphip., 1906, p. 102.

Chilton, Trans. N.Z. Inst. xxxviii., 1906, p. 267.

One specimen from Station 20. This species is found all round the New Zealand coasts at moderate depths.

LEPTAMPHOPUS NOVAE ZEALANDIAE (G. M. Thomson).

Pherusa novæ-zealandiæ G. M. Thomson, Trans. N.Z. Inst., xi., 1879, p. 239, pl. x.c., fig. 2.

Leptamphopus novæ-zealandiæ Stebbing, Das Tierreich Amphip., 1906, pp. 294, 727.

Chilton, Subant. Is. N.Z., 1909, p. 621.

Two specimens from Station 2.

The species is widely distributed in Antarctic and Subantarctic seas.

PARADEXAMINE PACIFICA (G. M. Thomson).

Dexamine pacifica G. M. Thomson, Trans. N.Z. Inst., xi., 1879, p. 238, pl. x. B., fig. 4.

Paradexamine pacifica Stebbing, Das Tierreich Amphip., 1906, p. 518.

Chilton, Subant. Is. N.Z., 1909, p. 632.

One specimen from Station 2.

This species is common in New Zealand seas, and is closely allied to *P. fissicauda* Chevreux collected by the French Antarctic Expedition, 1903-5, at Booth Wandel Island and Port Charcot.

PHRONIMA NOVAE-ZEALANDIAE Powell.

Phronima novæ-zealandiæ Powell, Trans. N.Z. Inst., vii., 1875, p. 294.

Stebbing, Chall. Rep. xxix., 1888, p. 1356.

Hutton, Index Faunæ N.Z., 1904, p. 256.

Two specimens were obtained at Stewart Island during the Expedition, both in their "Phronima-houses," one being accompanied by a large number of young, about 2mm. in length.

Specimens of this species are frequently washed up on New Zealand beaches. The Challenger specimen which Stebbing refers to this species was taken in the Southern Ocean lat. 50 1' S., long. 123 4' E., and was reported to come from a depth of

1800 fathoms, though considering the general habits of the species it is very doubtful if it actually came from this depth.

P. novæ-zealandiæ is very similar in structure, habits, etc., to *P. sedentaria* (Forskäl) of the Northern Hemisphere, and may, as Stebbing suggests, prove to be identical with that species.

ISOPODA.

PARIDOTEA UNGULATA (Pallas).

Oniscus unguatus, Pallas, Spic. Zool. Fasc. ix., 1772, p. 62, pl. iv., fig. 11.

Idotea unguata Miers, Journ. Linn. Soc., Zool., xvi., 1881, p. 52.

Paridotea unguata Stebbing, South African Crust., part i., 1900, p. 53, and part ii., 1902, p. 56.

Chilton, Subant. Is. N.Z. 1906, p. 660.

Several specimens of both sexes from Stewart Island. The species is a common one in southern seas.

MEINERTIA IMBRICATA (Fabricius).

Oniscus imbricatus Fabr., Mantissa Insectorum v., 1, 1787, p. 241.

Ceratothoa banksii Miers, Cat. N.Z. Crust., 1876, p. 105.

Meinertia imbricata Stebbing, South African Crustacea, part i., 1900, p. 58.

Hutton, Index Faunæ N.Z., 1904, p. 262.

Full synonymy is given by Stebbing in the reference quoted above.

One adult specimen and several young of various stages were obtained during the Expedition on *Trachurus picturatus*. The species is known from the Indian Ocean, Java, Cape Colony, and New Zealand.

LIVONECA RAYNAUDII Milne-Edwards.

Livoneca raynaudii M.-Edw., Hist. Nat. Crust. iii., 1840, p. 262. Schiödte and Meinert, Naturhist. Tidsskr. (3), xiv., 1884, p. 367, pl. xv., figs 9-13.

Whitelegge, Mem. Aust. Mus. iv., 1901, part iii., p. 236.

Thielemann, Abhand. K. Bayer. Akad. d. Wissensch. ii. Suppl. Bd., 3 Abhand., 1910, p. 42.

L. novæ-zealandiæ Miers, Ann. and Mag. Nat. Hist. (4) xvii., p. 227, and Cat. N.X. Crust., 1876, p. 106, pl. iii., fig. 2.

Chilton, Subant. Is. N.Z., 1909, p. 651.

Several specimens taken on fish at Station 6,⁶ off Stewart Island. The species is a common parasite on several species of fish in New Zealand seas, and is widely distributed in southern seas. Thielemann records it from Yokohama also.

Though I had previously hesitated, I now think that our New Zealand species should be referred to *L. raynaudii* Milne-Edwards from the Cape of Good Hope, as has already been done by Mr. Whitelegge. Schiödte and Meinert give *L. novæ-zealandiæ* as a doubtful synonym of *L. raynaudii*; they examined Milne-Edwards' type specimen and included with it specimens from New Zealand and Australia. Dr. W. T. Calman of the British Museum, who has kindly looked into the question for me, informs me that the only South African specimen of the genus in the Museum is one from "Simons Bays," identified (apparently by Miers) as *L. novæ-zealandiæ*; further, Dr. Calman has compared Miers' type specimens of *L. novæ-zealandiæ* with Schiödte and Meinert's figures without detecting any obvious differences.

EXOSPHAEROMA CHILENSIS (Dana).

Sphæroma chilensis Dana, U.S. Explor. Exped. Crust, 1853, p. 777, pl. lii., fig. 3a-c.

Sphæroma chilense Hansen, Q. Jour. Micro. Sci. xlix., 1905, p. 116.

There are three specimens from the Chatham Islands which I think undoubtedly belong to this species. Dana described the species as follows:—

"Body smooth. Abdomen with two obsolete prominences above, caudal segment short, very broadly rounded behind. Caudal stylets reaching just to line of extremity of abdomen; inner lamella arcuate on outer side, sub-acute at apex; outer, straight lanceolate, round at apex."⁷

The specimens agree well with the brief description given by Dana, except that I should be inclined to describe the posterior end of the pleon as truncate with rounded angles rather than "very broadly rounded." This, however, is a character that appears to vary according to the size, the posterior extremity being distinctly truncate in larger specimens while in smaller ones it could quite well be described as very broadly rounded.

Though this species has not been previously recorded from New Zealand it is widely distributed on the New Zealand coasts, and I have for some time had in my collection specimens from

(6) The only fishes taken at Station 6 were:—*Physiculus bachus*, *Thyrsites atun*, *Clupea neopilchardus*, and *Pelotretis flavilatus*. ED.

(7) I am indebted to Mr. Robert Hall, Curator of the Tasmanian Museum, for a copy of this description; the text of Dana's report is not available in Christchurch.

Auckland, Lyttelton, and Chatham Islands. Some of those gathered at Auckland (for which I am indebted to Mr. H. Suter) had already been labelled *Sphæroma chilensis* by him.

The first three joints of the palp of the maxillipeds are produced into lobes on the inner side just as in *Exosphæroma gigas*, and the species must therefore be transferred to that genus. I postpone a more detailed description of the species.

On some of the specimens were found individuals of the species *Iais pubescens* (Dana) which is so common as a semi-parasite on *E. gigas*.

CILICAEA CANICULATA (G. M. Thomson).

Næsa caniculata G. M. Thomson, Trans. N.Z. Inst., xi., p. 234 pl. x. A, fig. 7-7a.

G. M. Thomson and Chilton, Trans. N.Z. Inst., xviii., 1879, p. 153.

Cilicæa canaliculata Hansen, Q. Jour. Micro. Sci. xlix., 1905, p. 123.

One male and eight females (or immature males) from Molyneaux Bay. 20-46 fathoms.

CIRRIPIEDIA.

BALANUS DECORUS Darwin.

Plate LVII.

Balanus decorus Darwin, Monog. Cirripedia, Balanidæ, 1854, p. 212, pl. ii., figs. 6a, 6b.

Hutton, Trans. N.Z. Inst., xi., 1879, p. 328.

Chilton, "Subant. Is. N.Z.," 1909, p. 670.

Numerous specimens of various sizes were found on the carapaces of nearly all the specimens of *Paramithrax longipes* Thomson, with which it seems to be specially associated (see *ante* p. 289). Other specimens were found on a *Voluta* shell inhabited by the hermit crab *Eupagurus rubricatus* Henderson. The species is common in New Zealand seas, and is also found in Australia.

SCALPELLUM SPINOSUM Annandale.

Scalpellum (Smilium) spinosum Annandale, Trans. N.Z. Inst. xliii., 1911, p. 164, with figs. 1-4.

Several specimens from Station 5 forming a fine series growing together in tufts.

I had described this species as new, but I find that it is the same as one recently described by Mr. Annandale in a paper read before the Otago Institute, on the 5th July, 1910, the MS.

of which I have had an opportunity of consulting. My specimens agree very closely with his description, and indeed the specific diagnosis I had drawn up contains almost precisely the same points as those mentioned in his. Mr. Annandale had only one specimen from Nelson for examination, from the examination of the series at my disposal I had noted that the minute blunted calcareous spines on the peduncle vary considerably, in some specimens being distinct only towards the base, but in others equally well marked towards the distal end.

Mr. Annandale says that the species closely resembles *S. kampeni* Annandale, which occurs off the east coast of Sumatra at Singapore and in the Gulf of Siam.

COPEPODA PARASITICA.

LERNAEA LOTELLAE G. M. Thomson.

Lernæa lotellæ G. M. Thomson, Trans. N.Z. Inst., xxii., 1890 p. 369.

Hutton, Index Faunæ N.Z., 1904, p. 274.

Two specimens from *Physiculus bachus* Station 75.

CHONDRACANTHUS LOTELLAE G. M. Thomson.

Chondracanthus lotellæ G. M. Thomson, Trans, N.Z. Inst., xxii, 1890, p. 372.

Hutton, Index Faunæ N.Z., 1904, p. 274.

A few specimens labelled "Gill cavity, Red Cod (*Physiculus bachus*).". They are referred to by Mr. Waite in the "Introduction" (p. 52), as having been taken in Blueskin Bay, Otago.

EXPLANATION OF PLATE LVIII.

- Fig. 1. Dorsal view of female specimen of *Paramithrax longipes* showing carapace covered with *Balanus decorus*.
- Fig. 2. Dorsal view of male specimen of *Paramithrax longipes* with carapace bearing *Balanus decorus*, *Serpulae*, &c.
- Fig. 3. Side view of specimen shown in fig. 1, on larger scale.

NOTE.—The references to T.N.Z.I., vol. xliii., have been obtained from paged proofs, the volume not being issued at the date of publication of this work.—ED.

