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THE TRUE CRABS OF THE CAPRICORN GROUP, QUEENSLAND.

(Class CRUSTACEA, Order DECAPODA BRACHYURA.)

PART 1. XANTHIDAE.

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Introduction.

The true crabs of the Capricorn Group have previously been studied by Grant and McCulloch; McNeill and Ward. The data for the following paper has been gathered during several visits made by the author to this interesting locality. The first visit was in 1926, when ten days were spent on Heron Island. During that period the fauna of the lagoon, beach and beach rock zones formed the subject for study, and as a result a small paper appeared in "The Australian Zoologist" on the Ecology of a Coral Reef. In 1927, Mr. E. F. Pollock organised a party of naturalists and holiday-makers to visit the islands of both the Capricorn and Bunker Groups during the summer breeding season of the sea birds and turtles. In the Bunker Group, Lady Musgrave, Hoskyn and Fairfax Islands were visited, and Heron, One Tree, Wilson and North West Islands in the Capricorn Group. The zones collected on were the same as on the first trip, and a little dredging was indulged in in Lady Musgrave Lagoon. In June, 1929, Mr. William Boardman, of the Australian Museum, and I spent ten days on North West Island, and had our first opportunity of examining the outer edge of the reef flat, which is only exposed at very low tides. This we found supported a fauna of New Caledonian forms.

In December, 1929, Messrs. Hayter and Embury organised a trip to North West Island and, through their kindness, I was able to obtain interesting forms by dredging for several hours each day. The new species which have been collected in this locality are being described and figured and will appear at a later date. The same gentlemen organised two other expeditions—in May, 1930, and May, 1931, on which I had the pleasure of acting as naturalist.

In spite of the fact that in a previous paper I dealt with some of the interesting ecological problems, it has been deemed advisable to briefly reiterate, as well as augment this data.

There are seven zones in all. Commencing from the land and proceeding seawards, the first is the beach above sea level. Here three species of *Ocypoda* are to be found, living in burrows and obtaining their food on the line of flotsam at the tide level.

The portion of the beach covered by the high tide supports the smallest crustacean fauna of the zones, occasional small colonies of *Mycteris* species and *Uca* species occur, though during the high tide there are several nomadic species which search for food. This steep intertidal beach meets the silt or mud-flat zone at a very clearly marked line, the surface of the mud is firm and is inhabited by the burrowing *Macophtalmus* species. Small fragments of dead coral abound and form the shelters of *Thalamita integra*. The free swimming *Achelous* species moves rapidly about in search of prey and *Calappa hepatica* occurs commonly.

Masses of living coral appear on the mud-flat at some distance from the island, these become more and more numerous until they form great

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patches between which narrow aisles of white sand wind their tortuous ways. These passages finally end at the rampart or reef-crest zone, which is a belt of dead coral extending along the reef separating the lagoon from the New Caledonian zone; the characteristic niggerheads extend along the higher part of the crest and shelter wanderers from the outer New Caledonian zone. This is the actual edge of the reef, and is only exposed at spring tides. There is a substratum of coral rock over which a carpet of living corals is spread, these corals are very flat, owing to the rush of the surf, and the few inches of water with which they are covered at the spring low tides.

This water is the overflow from the lagoon, which cascades out to the surrounding sea. In some parts of the zone the superficial layer or carpet of coral forms a perfect covering over the substratum; in others the coral rock is free of such covering and is encrusted with *Lithothamnion* which is also present on dead portions of all the coral zones. In the parts where the live corals are not so numerous the surface of the reef presents a succession of basin pools, each on a lower plane, so that the water overflows from one to the other. After leaving the Crest the sides of the pools met with are coated with algae and have occasional masses of living corals. None of the basin pools is very deep, two feet on an average; the floors of the pools are covered with white sand. There is another type of pool in the zone which occurs very near the edge of the reef, these are deeper, some are several fathoms in depth and the sides or walls are made up of masses of corals superimposed.

In collecting on this area one finds it an easy matter to prise up the superficial layer, large fragments being turned over. At the extreme edge of the reef the underlying surface or substratum presents the entrances to labyrinths down which the denizens disappear quickly. Here are to be found *Cyclax suborbicularis*, *Xanthias punctatus*, *Neoliomera insularis*, and *Carpilius maculatus*.

Where the superficial layer is on a substratum which has collected an inch or two of sand, deposited by the receding tides, *Paraxanthias notatus* is the outstanding species.

In the basin pools are, as previously remarked, masses of live coral which lie upon the sloping sides of the pool; the larger specimens of *Atergatis dilatatus* find refuge under such masses.

The Conglomerate zone assists greatly in the formation of the islands. The rocks are formed entirely of coral sand, and the whole zone is a flat layer crossed and recrossed by cracks and crevices. The fauna bears considerable resemblance to a mainland reef, *Leptodius*, *Grapsus* and *Ozius* are characteristic genera.

As is to be expected, the inhabitants of one zone overlap those of an adjoining zone, but nevertheless the general facies of, for instance the New Caledonian zone, differs markedly from that of the Lagoon zone. *Eriphia sebana* occurs both on the Rampart or Crest and the Conglomerate zone near the island, but not in the lagoon.

The crabs of the family XANTHIDAE form the greater part of the collections, under consideration, and have been dealt with, not in the usual order of classification, but rather on account of the large number of species included. It is my intention to deal with the PORTUNIDAE, GONOPLACIDAE, GRAPSIDAE, OCYPODIDAE, OXYSTOMATA and DROMIIDAE in a later paper.

Family XANTHIDAE.

Genus CARPILIUS.

Carpilius Leach, in Desmarest, Dict. Sci. Nat., Vol. 28, 1823, 228. Type: *C. maculatus* = *Cancer maculatus*, Linn. 1758. Habitat in Asia.
Carpilius Leach, Rathbun. Bull., 152, U.S. Nat. Mus., Washington, 1930, 239.

CARPILIUS MACULATUS.

Cancer maculatus Linnaeus, Syst. Nat., xii., edit. 1, pt. 2, 1767, 1042.
Carpilius maculatus (Linn.) Alcock, Journ. Asiat. Soc. Bengal (n. ser.), lxvii., 2, No. 1, 1898, 79. *Idem.* McCulloch and McNeill, Rec. Austr. Mus., xiv., 1, 1923, 54. *Idem.* McNeill, Aust. Zool., iv., pt. v., 1926, 312.

Since it has been possible to examine the New Caledonian zone it has been found that this apparently rare species is really not uncommon under the superficial layer of living coral.

Material.—One female, 64.5 mm. total carapace width. North West Island, May, 1930.

CARPILIUS CONVEXUS.

Cancer convexus Forskal, Desc. Anim., 88.
Cancer adaspersus Herbst Krabben, I., ii., 244, pl. xxi., fig. 1, 1790.
Cancer marmarinus Herbst Krabben, III., iv., 7, pl. lx., fig. 1, 1804.
Carpilius convexus Ruppell, 24 Krabben roth., Meeres, 1830, 13, pl. iii., fig. 2 and pl. vi., fig. 6.
Carpilius convexus Alcock, Journ. Asiat. Soc. Bengal., lxvii., 2, 1898, 80.

This is the largest species inhabiting the masses of corals in the outer lagoon zone. each crab is usually found in compartments formed by the stems of corals.

Material.—One male, measuring 17 mm.* Lady Musgrave Island, November, 1927. Two females, 20 mm. and 21 mm. Heron Island, September, 1926. One female, 41 mm. Hoskyn Island, November, 1927. One female, 79 mm. Heron Island, November, 1927.

Genus CARPILODES.

Carpilodes Dana, Amer. Journ. Sci. (2), vol. xii., 1851, 126. Monotypic type *C. tristis* (specific name not given until 1852).
Carpilodes Dana, Rathbun. Bull., 152, U.S. Nat. Mus., Washington, 1930, 241.

CARPILODES SERRATIPES.

Carpilodes serratipes Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 1925, 29, 1, 19, pl. 1, fig. 15. Holothuria bank, N.W. Australia.

This small species is interesting on account of not having been collected since Odhner's record; also it has not appeared before on the eastern Australian coast line. During the short visit to the British Museum, London, the author had the pleasure of handling the type of the species and was able to compare the Queensland specimen with it.

The dorsal surface of the carapace of fresh specimen is white; legs and sternal surfaces purple.

Material.—One female, 8 mm. Dredged in 8-10 fathoms off North West Island, May, 1930.

* Note.—In this paper the measurement given is that of the total width of the carapace.

CARPILODES TRISTIS.

Carpilodes tristis Dana, U.S. Explor. Exped., xiii., Crust. 1., 1852, 193, Atlas, 1855, pl. 9, fig. 7a-d., Paumotu Arch.? *Idem.* Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 29, I., 1925, 12, pl. 1 fig. 1.

This *Carpilodes* inhabits the under surfaces of coral masses in the lagoon zone.

Material.—Two females, 14 and 23 mm. Fairfax Island, November, 1927. Two males, 11 and 10 mm. Heron Island, November, 1927.

CARPILODES BELLUS.

Actaeodes bellus Dana, U.S. Explor. Exped., xiii., Crust. I., 1852, 196. Atlas, 1855, pl. ii., fig. 2. Samoa, Wakes Island and Paumotus.

Carpilodes vaillantianus A. Milne Edwards. Nouv. Arch. Mus. Hist. Nat. Paris, i., 1865, 231, pl. xi., figs. 3, 3a, 3b. Red Sea. "Isles Maurice et Bourbon," Samoa.

Carpilodes bellus Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 1925, 29, 1, 16, pl. 1, fig. 9. Africa, Indian Ocean. East Indies with East Australia, Mid-Pacific and Hawaiian Islands.

This species, *vide* Odhner, has a very wide distribution throughout the Indo-Pacific and African Coast, but has not been previously recorded from the southern end of the Barrier Reef.

Material.—Two males, 8 and 9 mm.; two females, 9 mm. Heron Island, November, 1927.

CARPILODES CINCTIMANUS.

Carpilius cinctimanus Adams and White, H.M.S. Samarang, Crust. II., 1849, 37, pl. vii., fig. 5. Philippines.

Carpilodes cinctimanus Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 29, 1, 1925, 14. Gulf of Aden to Tahiti.

This is the commonest species of the genus occurring on the Capricorn reefs; it inhabits the outer New Caledonian zone, where it shelters under the living coral. It wanders up on to the crest of the reef, but is by no means common under the niggerheads.

The variation in colour seems to be associated with the growth of the individual, the smallest in the present series, a male 11 mm. in carapace width, has a white carapace and pink legs. The larger forms show the gradual spreading of the red colouring from the gastric towards the branchial areas; in the largest of the series the white entirely disappears and the red deepens; the distal parts of the ambulatory legs are white, the tip of the dactyl brown. Fingers of the chelipeds brown with light tips. The broad dark band on the manus is only developed in the male from Hoskyn Island.

Material.—One female, 35 mm.; one male, 10 mm. Heron Island, November, 1927. One male, 22 mm. Hoskyn Island, November, 1927.

CARPILODES MONTICULOSUS.

Carpilodes monticulosus A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, ix., 1873, 181, pl. v., fig. 1. New Caledonia. *Idem.* Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 29, I., 1925, 21, pl. 1, fig. 18. Africa (Natal) to Paumotus.

This species occurs under coral on the New Caledonian zone. It is a prettily marked species, the carapace is white with a few scattered splashes

of pink, the legs are pink, fingers of the chelipeds are pale brown with white tips.

Material.—One female, 9.5 mm. January, 1930, North West Island.

CARPILODES RUGATUS.

Carpilodes rugatus Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, I., 1865, 230, pl. xii., figs. 3, 3a, 3b. Indian Ocean; Coast of China.

Carpilodes rugatus (Milne Edwards) Odhner, K. Vet. O. Vitterh. Samh. Handlingar, 29, 1, 1925, 20, pl. 1., fig. 16. Daedalus shoal, Red Sea to Honolulu, Hawaii.

The species inhabits the caverns in the New Caledonian zone.

Carapace and legs uniform dark plum, varying through a series, some specimens being slightly lighter than others. Dactyles of the ambulatory legs tipped with white. In the lighter individuals the fingers of the hand are red at the base with tips white; in the darker forms the red is replaced by brown and the tips are white.

Material.—Two males, 13 and 15.5 mm. Four females, from 10 mm. to 15 mm. Collected in May, 1930.

GENUS NEOLIOMERA.

Neoliomera Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, No. 1, 1925, 25. Type, *N. insularis* (Adams & White), Philippines.

NEOLIOMERA INSULARIS.

Atergatis insularis Adams and White, Zool. Samarang, iv., Crust. II., 1849, 38, pl. viii., fig. 2. Philippines.

Neoliomera insularis (White) Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, I., 1925, 32, pl. ii., fig. 14. New Guinea, Santa Cruz. Samboanga, Mindanao, Bonin Islands, Port Lloyd.

Atergatis Montrouzieri A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 186, pl. v., fig. 5. New Caledonia.

The species is apparently rare on the Australian reefs. The present series was obtained on the New Caledonian zone, where it inhabited the under surfaces of the superficial layer of living coral.

All four specimens are uniform light red, the smaller males are paler than the large female.

Material.—Three males, 7, 11, and 15 mm. North West Island, June, 1929. One female, 40 mm. North West Island, June, 1929 (retained in Ward Coll.).

GENUS ATERGATIS.

Atergatis de Haan, in Siebold Fauna Japon., Crust., 1833, 17. Type, *A. integerrimus* de Haan, Japan.

Atergatis de Haan, Alcock Journ. Asiat. Soc. Bengal, lxii., pt. 11, No. 1, 1898, 94.

ATERGATIS OCYROE.

Cancer ocyroe Herbst, Naturg. d. Krabben u. Krebse, III., 2, 1801, 20, pl. liv., fig. 2. East Indies.

Atergatis ocyroe (Herbst) McNeill and Ward, Rec. Aust. Mus. Sydney, xvii., 9, 1930, 382. New South Wales.

This is an abundant species on the coral reefs and on the mainland rocky reefs. It is a form not directly associated with living coral.

Material.—One female, 46 mm.; one male, 36 mm. Heron Island, September, 1926. Two males, 42 and 53 mm. Lady Musgrave Island, November, 1927. One female, 24 mm. Hoskyn Island, November, 1927.

ATERGATIS DILATATUS.

Atergatis dilatatus de Haan, Siebolds Fauna Japon., Crust., 1835, 46, pl. xiv., fig. 2. Japan. *Idem.* A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, I., 1865, 238, and Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 183, pl. v., fig. 6. New Caledonia. *Idem.* Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 96. Ceylon; Andamans.

The coloration of this species makes it one of the most beautiful of the reef forms. The carapace is orange yellow in the central portions; white on the margins. The limbs are violet and the fingers of the chelae dark brown. The colours are more brilliant in small, becoming faded in old individuals.

Material.—Four males, 35, 36, 67, and 72 mm.; one female, 50 mm. North West Island, June, 1929.

Genus PLATYPODIA.

Platypodia Bell, Trans. Zool. Soc. London, Vol. 1, 1835, 336. Type, *P. granulosa* (Ruppell). Red Sea.

Platypodia Bell, Rathbun Bull., 152, U.S. Nat. Mus. Washington, 1930, 246.

PLATYPODIA ANAGLYPTA.

Atergatis anaglyptus Heller, Abhandl. zool.-bot. Ges. Wien., 1861, 6, and S.B. Akad. Wien., xliii., 1861, 312, pl. ii., figs. 11, 12. Red Sea.

Lophactaea anaglypta (Heller) A. Milne Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 3, 102. Galle, in Persian Gulf.

The species occurs under nigger heads and in the crannies between living and dead corals.

Material.—Three females, 32, 33 and 32mm. Heron Island, September, 1926. One male, 13 mm.; one female, 14 mm. Fairfax Island, November, 1927.

PLATYPODIA FISSA.

Lophactaea fissa Henderson, Trans. Linn. Soc. London (2), Zool., v., 10, 1893, 355, pl. xxxvi., figs. 8-8a. Tuticorin.

Platypodia fissa (Henderson) Edmondson, Bernice Bishop Mus. Bull., 5. Honolulu, 1923, 13. Palmyra Island.

The first specimens collected of this species were found in masses of living *Tubipora musica* in the outer Lagoon zone, but later others have been obtained under the layer of living corals on the New Caledonian zone.

Material.—Two females, 15 and 25 mm.; one male, 27 mm. North West Island, December, 1929.

PLATYPODIA SEMIGRANOSA.

Atergatis semigranosus Heller, Sitzungsber. Kais. Akad. Wiss. Wien., Bd., 43, 1861, 313. Red Sea.

Lophactaea semigranosa (Heller) de Man, Abh. Senckenb. naturf. Ges., xxv., 1903, 582, pl. xxi., fig. 19. Batjan. and synonymy.

Material.—One male, 10 mm. North West Island, December, 1929.

PLATYPODIA GRANULOSA.

Xantho granulosis Ruppell, 24 Krabben roth. Meeres, 1830, 24, pl. v., fig. 3. Red Sea.

Lophactaea granulosa (Ruppell) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 101. Australia and Samoa.

Material.—Eight males, from 13 to 41 mm.; five females, 14, 15, 19 and 36 mm. Heron Island, September, 1926. Four females, 16 to 40 mm. Heron Island, September, 1926. One male, 18 mm. North West Island, November, 1927. One male, 30 mm. Fairfax Island, November, 1927.

Genus ZOZYMUS.

Zozymus Leach (Dict. Sci. Nat., xii., 75, Miers), and in Desmarest Consid. Gen. Crust., 1825, 105. (Footnote). *Z. aeneus* (Linn.) (In India, Linn.).
Zozymus Leach, Alcock, Journ. Asiat. Soc. Bengal, lxvii., pt. II., No. 1, 1898, 103.

ZOZYMUS AENEUS.

Zozymus aeneus (Linn.) Alcock, Journ. Asiat. Soc. Bengal, lxvii., pt. ii., No. 1, 1898, 104. Andamans and Laccadives.

The species is abundant on the reef at One Tree Island, where it occurs under the masses of dead corals, nigger heads, which are numerous on the reef crest. On the other reefs it is not so numerous.

An interesting association is to be observed in the appearance of the Rhizocephalid genus *Thomsonia* upon the sternal surface and walking legs of certain individuals.

Materials.—Nine males, from 33 to 85 mm.; six females, 49 to 76 mm. One Tree Island, November, 1927. One male, 25 mm. North West Island, November, 1927. One male, 25 mm. Hoskyn Island, November, 1927. Two females, 47 and 42 mm. Heron Island, September, 1926.

Genus LOPHOZOZYMUS.

Lophozozymus A. Milne Edwards, Ann. Sci. Nat. Zool. (4), xx., 1863, 276.
Type, *Lophozozymus incisus* (H. Milne Edwards), Australasia.

LOPHOZOZYMUS PICTOR.

Cancer pictor Fabricius, Entom. Syst. Suppl., 1798, 335.

Lophozozymus pictor Rathbun, Archiv. fur. zool. Bd., 16, 23, 1924, 15. Singapore and Malay Arch. to Japan, and N.W., N.E. and Central Australia; Fiji and Samoa.

Lophozozymus octodentatus Ward, Aust. Zoologist, Vol. v., Pt. iii., 1928, pl. xxix. Capricorn Group, Queensland.

This species is more numerous on the mainland reefs than on the Capricorns.

EUXANTHUS.

Euxanthus Dana, Sillimans Amer. Journ. Sci. and Art. (2), xii., 1851, 125; Proc. Ac. Nat. Sci. Philad., 1852, 75; and U.S. Explor. Exped., xiii., Crust., pt. 1, 1852, 173. Type, *Euxanthus sculptilis* Dana. Fiji or Tongatabu.

EUXANTHUS MELISSA.

Cancer melissa Herbst, Krabben., III., ii., 1801, 7, pl. li., fig. 1. Habitat unknown.

Euxanthus melissa (Herbst) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., i., 1898, 110. Andamans; Mergui and Ceylon.

The species occurs under living coral on the New Caledonian zone; occasional specimens are obtained in the Lagoon zone under the live corals.

Material.—Three females, from 41 to 66 mm. North West Island, December, 1929, January, 1930.

Genus XANTHO.

Xantho Leach, Malac. Pod. Britt., 1815, pl. xi., and text. and Trans. Linn. Soc. London, xi., 1815, 320. Devon, England. Type = *Cancer floridus* Montagu, Trans. Linn. Soc., ix., 85, pl. ii., fig. 1.

XANTHO DEMANI.

Xantho subacutus (Stimpson) de Mau, Abh. Senckenb. Nat. Ges., Frankfurt, Bd., 25, 1902, 595.

Xantho demani Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, 1924, 1.

The species occurs on the New Caledonian zone under the layer of living coral.

Material.—Four males, 10 to 24 mm.; one female, 20 mm. North West Island, May, 1930.

Genus LEPTODIUS.

Leptodius A. Milne Edwards, Ann. Sci. Nat. (4), xx., 1863, 284. Type, *L. exaratus* (Milne Edwards), Cotes de L'Inde = *Chlorodius exaratus*.

Leptodius A. Milne Edwards, Rathbun. Bull., 152, U.S. Nat. Mus. Washington, 1930, 296.

LEPTODIUS SANGUINEUS.

Chlorodius sanguineus H. Milne Edwards, Hist. Nat. Crust., 1834, I., 402. Ile-de-France.

Xantho (Leptodius) sanguineus (H. Edwards) A. Milne Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxxvii., II., 1, 1898, 3, 1, 119. Andamans and Laccadives, Nicobars, Ceylon and Persian Gulf.

The species occurs commonly under the slabs of conglomerate beach rock on sand; each individual hollows a small compartment in the sand. This is one of the forms which feigns death after the stone under which it is hiding has been removed.

Material.—Six males, from 11 to 28 mm.; six females, 12 to 28 mm. Heron Island, 1926.

LEPTODIUS NUDIPES.

Chlorodius nudipes Dana, Proc. Acad. Nat. Sci. Philadelphia, 1852, 79, and U.S. Explor. Crust., I., 1852, 209, Atlas, 1855, pl. xi., figs. 12a-c. Mangsi Islands.

Xantho (Leptodius) nudipes (Dana), A. Milne Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxxvii., II., 3, 1, 1898, 121. Andamans and Mergui.

The species occurs under the slabs of dead coral in the Lagoon zone.

Material.—One male, 12 mm. (specimen compared with specimens in Paris Museum). North West Island, July, 1929.

Genus CYCLOXANTHOPS.

Cycloxanthops Rathbun. Bull., 152, U.S. Nat. Mus. Washington, 1930, 289. Type, *C. sexdecimdentatus* (Milne Edwards and Lucas). Mexico?

CYCLOXANTHOPS CAVATA.

Cycloxanthops cavata Rathbun, Mem. Mus. Camp. Zool. Cambridge, xxxv., 2, 1907, 41, pl. v., fig. 8. Paumotu.

This is one of the interesting species of the New Caledonian zone, where it occurs under the layer of coral in situations where an amount of sand has been caught, the crabs burying themselves when the protecting coral

is lifted. The colour is usually white, some have the carapace and legs speckled with dark brown, two of the females have a red blotch on the carapace just behind the front.

A specimen of the original series in the National Museum, Washington, was examined, and the Australian series compared with it.

Material.—Four males, 5-7 mm. North West Island, June, 1929. Six females, 5-9 mm. North West Island, December, 1929.

Genus ETISUS.

Etisus H. Milne Edwards, Hist. Nat. Crust., I., 1834, 410. Type, *E. dentatus* (Herbst) = *Cancer dentatus* Herbst.

Etisodes Dana, sub-genus of *Etisus*.

Etisodes Dana, Sillimans Amer. Journ. Sci. and Arts (2), xii., 126 (foot-note); Proc. Acad. Nat. Sci. Philad., 1852, 77; and U.S. Explor. Exped., xiii., I., 1852, 185, 184. Type, *E. frontalis* Dana. Sooloo Sea.

Etisus (*Etisodes*) Klunzinger, Nova Acta der Leop. = Carol. Akad., Bd., 99. Halle, 1913, 234. Odhner, K. Vet. O. Vitterh. = Samh. Handlingar, Bd., 29, No. 1, 1924, 83.

ETISUS LAEVIMANUS.

Etisus laevimanus Randall, Journ. Acad. Nat. Sci. Philad., 1839, 115. *Idem.* Alcock, Journ. Asiat. Soc. Bengal, lxvii., ii., i., 1898, 131. Persian Gulf; Karachi; Bombay; Laccadives; Andamans; Singapore. *Idem.* Klunzinger, Nova. Acta. Abh. du Kaiserl. Leop.-Carol. Deutschen. Alsdademie der Naturforschen, Bd., 1c., No. 2, 1913, 237, pl. vi., figs. 13a-b. Red Sea. *Idem.* Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, No. 1, 1925, 83.

Material.—Two males, 47 and 55 mm.; four females, from 36 to 52 mm. Heron Island, 1926. One male. North West Island, 1926.

ETISUS (ETISODES) ANAGLYPTUS.

Etisus anaglyptus H. Milne Edwards, Hist. Nat. Crust., 1834, 411. Australia. *Cancer anaglyptus* H. M. Edwards, in Cuvier, Regne Anim. Crust., 1836, pt. xi., fig. 4.

Etisodes anaglyptus Lanchester, Proc. Zool. Soc., 1900, 739, pl. xlv., fig. 5. Samoa; Australia; Philippines; Timor; Flores; Pulan Setang; Singapore; Persian Gulf. *Idem.* de Man, Abh. Senckenb. Ges., xxv., iii., 1902, 605.

Etisus (*Etisodes*) *anaglyptus* Odhner, K. Vet. O. Vitterh. Samh. Handlingar.

Material.—One female, 45 mm. Heron Island.

ETISUS (ETISODES) ELECTRA.

Cancer electra Herbst, Krabben., iii., ii., 1801, 34 and 36, pl. li., fig. 6, and pl. liv., fig. 3.

Etisodes electra Alcock, Journ. Asiat. Soc. Bengal, lxvii., pt. ii., No. 1, 1898.

Etisodes electra (Herbst) Calman, Trans. Linn. Soc. London (2), Zool., viii., I., 1900, 7.

Etisus (*Etisodes*) *electra* Odhner, K. Vet. O. Vitterh. Samh. Handlingar., Bd., 29, No. 1, 1925, 83.

The species is common under blocks of coral in the lagoon.

Material.—One female, 19 mm. North West Island. Two females, 11, 16 mm. Heron Island. Two females, 14, 16 mm. Lady Musgrave Island. Nine females, 13 to 17 mm.; five males, 14 to 17 mm. Heron Island, 1926.

GENUS ACTAEA.

Actaea de Haan, in Siebold, Fauna Japon. Crust., 1833, 4 and 18. Type, *A. savignii* (Milne Edwards). = *Cancer savignii* Milne Edwards, 1834. Red Sea and the Indian Ocean. = *Cancer granulatus* Audouin, 1825, not *C. granulatus* Linn., 1758, America.

Actaea de Haan, Rathbun. Bull., 152, U.S. Nat. Mus. Washington, 1930, 250.

ACTAEA ACIES.

Actaea acies Rathbun, Trans. Linn. Soc. London (2), Zool., xiv., II., 1911, 219, pl. xvi., figs. 8-9. Saya de Malta; Salomon, Egmont Lagoon.

The species occurs in holes in the living masses of *Tubipora musica* in the lagoon zone.

Material.—Two females, 17 and 18 mm. Heron Island, September, 1926.

ACTAEA BANARIAS.

Actaea banarias Rathbun, Trans. Linn. Soc. London (2), Zool., xiv., II., 1911, 223, pl. 18, figs. 7 and 8. Salmon, Egmont Reef lagoon.

The species is common in the passages and crannies of the living *Tubipora musica* in the lagoon zone.

Material.—Two males, 9-10 mm.; 11 females, from 9-12 mm. North West Island, November, 1927. One female, 10 mm.; one male, 10 mm. Heron Island, November, 1927. One male, 7 mm. Heron Island, September, 1926.

ACTAEA CAVIPES.

Actaeodes cavipes Dana, Proc. Acad. Nat. Sci. Philad., 1852, 78, and U.S. Explor. Exped., xiii., Crust. I., 1852, 199. Atlas, 1855, pl. xi., figs. 5a-b. Fiji, Samoa.

Actaea cellulosa Dana, U.S. Explor. Exped., xiii., Crust. I., 1852, 164. Atlas, 1855, pl. viii., fig. 2. Tutuila, Samoa.

Actaea schmardae Heller, Beitr. z. Crust. Fauna d. Rothen. Meeres, in S.B. Akad. Wien., Bd., 43, I., 1861, 318, pl. 1., fig. 13. Red Sea.

Glyptocanthus cymbifer Rathbun, Proc. Zool. Soc. London, 1914, 658, pl. 1., 11, figs. 6, 7. Monte Bello Islands.

The species inhabits the deep crannies in dead or partly dead corals in the lagoon zone.

Material.—Two females, 13-15 mm.; one male, 10 mm. Lady Musgrave Island, November, 1927. One female, 15 mm.; one male, 13 mm. Heron Island, November, 1927. Four females, 10 to 13 mm.; two males, 9 and 11 mm. Heron Island, September, 1926.

ACTAEA CONSOBRINA.

Actaea consobrina A. Milne Edwards, Journ. Mus. Godeffroy, Heft. 4, Hamburg, 1873, 79. Upolu, Samoa.

Actaea suffuscula Rathbun, Trans. Linn. Soc. London (2), Zool., xiv., II., 1911, 220, pl. 17, figs. 10 and 11. Salmon; Cotivy.

Actaea consobrina A. Milne Edwards, Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, 1, 1924, 67, pl. iv., fig. 14. Bonin-Marshall, Gilbert, Ellice, Samoa, Marquesas Islands.

Rathbun, loc. cit., remarks the light brown of the fingers extending over the palm; this occurs in both males in the present series; the female, however, has only the fingers brown.

Material.—Two males, 6-9 mm.; one female, 8 mm. North West Island, May, 1930.

ACTAEA POLYACANTHA.

Chlorodius polyacantha Heller, S.B. math. naturw. Cl. Akad. Wiss. Wien., xliii., I., 1861, 339, pl. iii., fig. 21. Red Sea.

Actaea polyacantha (Heller) Rathbun, Trans. Linn. Soc. London, xlv., II., 1911, 222. Coetivy.

The species occurs under the living coral on the New Caledonian zone.

Material.—Two males, 7.5 mm.; two females, 7.5 mm. and 11.5 mm. North West Island, December, 1929.

ACTAEA RUFOPUNCTATA.

Xantho rufopunctatus Milne Edwards, Hist. Nat. Crust. I., 1834, 389. Ile de France.

Actaea nodosa Stimpson, Ann. Lyc. Nat. Hist. New York, 1860, vii., II., 203 (fide Odhner).

Actaea garetti Rathbun, Bull. U.S. Fish. Comm., 1903, III., 852, pl. ix., fig. 8. Hawaiian Islands, Kingsmill Islands, Society Islands, Mauritius (fide Odhner).

Actaea rufopunctata (Milne Edwards), Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, I., 1925, 60. Red Sea; Gulf of Aden; East Coast of Africa; Mombasa; Tamatave; Madagascar; Mauritius; Singapore; East Celebes; Timor; Moluccas; New Guinea; Marshall Island; Gilbert Islands; Fiji Islands; Samoa; Tahiti (fide Odhner).

This is one of the rarer species of the New Caledonian zone, where it is found under the superficial layer of living coral.

Material.—One male, 11 mm. North West Island, December, 1929. One male and one female, 12 mm. and 21 mm. Heron Island, September, 1926.

ACTAEA SPECIOSA.

Actaeodes speciosus Dana, U.S. Explor. Exped. Crust. I., 1852, 198, pl. xi., fig. 4. Samoa.

Actaea speciosa (Dana) Ortmann, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 143. Persian Gulf, Ceylon and Andamans.

The single specimen, a female measuring 3 mm. total carapace width, was collected from the cavity in the base of a small mass of live coral on the New Caledonian zone. June, 1929.

ACTAEA TOMENTOSA.

Zozymus tomentosus H. Milne Edwards, Hist. Nat. Crust. I., 1834, 385. Indian Ocean and in Couvier Regne Anim. Crust., 1836, pl. xi., bis., fig. 2.

Actaea tomentosa Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 140. *Idem.* Rathbun, Mem. Mus. Comp. Zool. Harvard. Coll., xxxv., 42. Nicobars, Andamans, Palk Str. and Laccadives, Mauritius, Australia and South Seas.

This is a very common reef species, and one which has a wide range in the Indo-Pacific, and occurs upon the east Australian coast as far south as Port Jackson, N.S.W.

Material.—Two males, 13 and 14 mm.; one female, 20 mm. Lady Musgrave Island, November, 1927. Three males, 15 to 34 mm.; two females, 20 and 24 mm. Heron Island, September, 1926.

GENUS PARAXANTHIAS.

Paraxanthias Odhner, K. Vet. O. Vitterh. = Samh. Handlingar, Bd., 29, No. 1, 1925, 85. Type, *P. notatus* (Dana). Paumotu and Sandwich Islands.

PARAXANTHIAS NOTATUS.

Xanthodes notatus Dana, U.S. Explor. Exped. Crust., xiii, I., 1852, 18, 8, fig. 12, 1855. Paumotu and Sandwich Islands.

Paraxanthias notatus Odhner, K. Vet. O. Vitterh. Samh. Handlingar, Bd., 29, I., 1925, 85.

Material.—One female, 19 mm. North West Island, November, 1927. One male, 17 mm. Lady Musgrave Island, November, 1927. Three males, 15, 16, 18 mm. One Tree Island, November, 1927. Two females, both 15 mm. One Tree Island, November, 1927. Six males, from 14 to 20 mm.; one female, 19 mm. Heron Island, September, 1926.

PARAXANTHIAS PACHYDACTYLUS.

Xanthodes pachydactylus A. Milne Edwards, Ann. de la Soc. Entomol. France, vii., 1867, 268, and Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 201, pl. vi., fig. 4. New Caledonia.

Paraxanthias pachydactylus A. M. Edwards, Odhner, K. Vet. O. Vitterh. = Samh. Handlingar, Bd., 29, No. 1, 1924, 84.

Material.—Five males, from 8 mm. to 15.5 mm.; one female, 15 mm. North West Island, December, 1929, January, 1930.

GENUS XANTHIAS.

Xanthias Rathbun, Bull. 152, U.S. Nat. Mus. Washington, 1930, 464. Type, *Xanthias lamarckii* (Milne Edwards, 1834). Ile de France = *Xantho granosomanus* Dana, 1852.

XANTHIAS PUNCTATUS.

Xantho punctatus H. Milne Edwards, Hist. Nat. Crust. I., 1834, 396. Mauritius. *Idem.* A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 199, pl. vii., fig. 6. New Caledonia.

Lioxantho punctatus (Milne Edwards) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1888, 91. Ceylon, Mauritius and Samoa.

Xanthias punctatus (Milne Edwards), Odhner, K. Vet. O. Vitterh. Samh. Hand. Bd., 29, 1, 84, 1924.

Odhner, loc. cit., gives a very interesting note on the species of the genus *Xanthias* and *Lioxanthus*, and in the present study I have followed his example.

The species is not uncommon under the superficial layers of live corals on the New Caledonian zone.

The coloration is very beautiful and characteristic, specimens examined in continental museums display similar markings.

The posterior regions of the carapace are dotted with red brown; the mid-gastric area is clouded with brown; the hepatic and anterior branchial regions are also clouded with brown.

Material.—Four males, 11, 16, 26, 31 mm.; three females, 16, 34, 36 mm. North West Island, January, 1930.

XANTHIAS LAMARCKII.

Xantho lamarckii Milne Edwards, Hist. Nat. Crust. I., 1834, 391. Ile de France.

Xanthodes lamarckii Milne Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1888, 157. Andamans; Madras Coast and Ceylon.

The species occurs under nigger heads, but is most abundant on the New Caledonian zone, where individuals are found sheltering under the layer of living corals.

Material.—One female, 11 mm.; three males, 17 to 22 mm. Heron Island, November, 1927. Two females, 20 and 22 mm. One Tree Island, November, 1927. Two females, 14 and 16 mm.; one male, 18 mm. North West Island, November, 1927. One male, 17 mm. Lady Musgrave Island, November, 1927. One male, 17 mm.; one female, 16 mm. Hoskyn Island, November, 1927. One female, 20 mm. Heron Island, September, 1926.

NEOXANTHIAS *gen. nov.*

Type, *Neoxanthias impressus* (Lamarck) = *Xantho impressus* (Lamarck) Milne Edwards, Alcock. Ile de France.

NEOXANTHIAS IMPRESSUS.

Cancer impressus Lamarck, Hist. Nat. Anim. Sans. Vert., v., 1818, 272. Isle de France.

Xantho impressus (Lamarck) H. Milne Edwards, Hist. Nat. Crust., I., 1834, 393. Isle de France. *Idem.* Alcock, Journ. Asiat. Soc. Bengal, lxvii., 11, 1, 1898, 115. Mergui; Andamans; Mauritius.

The type species, *Xantho floridus* of European seas, has been examined and compared with specimens of *Neoxanthias impressus*, and found to differ markedly in the dimensions of the carapace, in the shape of the chelipeds and the shape of the merus of the external maxillipeds. *Xantho floridus* approaches *Leptodius* rather than *Neoxanthias*, which in turn resembles *Xanthias* in the chelae, being equal in size, but differs from the type species *Xanthias lamarcki* in having the first lobe of the antero-lateral margins produced beyond the orbit, and in having the carapace deeply areolate. The male copulatory appendages resemble those of *Xanthias*, but are less hooked at the tips.

Eudora de Haan, 1834? is preoccupied by *Eudora* Peron and Lesueur, Ann. Mus. Hist. Nat. Paris, xiv. (83), 1810, 326. Med.

The species is one of the rarities of the Queensland reefs and inhabits the New Caledonian zone, where it shelters under the layer of living coral.

Material.—One female, 57 mm. North West Island, December, 1929, January, 1930.

GENUS CHLORODIELLA.

Chlorodiella Rathbun, Proc. Biol. Soc. Washington, Vol. 11, 1897, 157, and Bull. 52, U.S. Nat. Mus. Washington, 1930, 462. Type, *C. niger* (Forsk.) = *Chlorodius* Milne Edwards, Hist. Nat. Crust., Vol. 1, 1834, 399 and 401, *C. niger* (Forsk.). Red Sea.

CHLORODIELLA NIGRA.

Cancer niger Forskal, Descr. Anim., 1775, 89.

Chlorodius niger (Forsk.) Ruppell, A. M. Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 3, pt. 1, 1898, 160. Andamans, Nicobars, Mergui, and Merkran Coast and Indo-Pacific.

Chlorodiella niger (Forsk.) Rathbun, Bull. U.S. Fish. Comm., 1903, III., 857. Hawaiian Islands.

Material.—Six males, 13 to 28 mm.; 19 females, 9 to 23 mm. Heron Island, 1926. One male, 17 mm. Hoskyn Island. One male, 20 mm. Heron Island. Two males, 13 and 14 mm. One Tree Island. One female, 11 mm. North West Island. Three females, 10 to 12 mm.; six males, 8 to 23 mm. Fairfax Island.

The coloration of this species is uniform dark brown in the adult, but the immature have the carapace mottled with a greenish light brown. As

evidenced by the large series in the collection, this is the common *Xanthid* on the Capricorn reefs, being found in the crannies between the branches of the living and dead corals.

CHLORODIELLA BARBATA.

Chlorodius barbatus Borradaile, Proc. Zool. Soc. London, 1900, 587, pl. xli., fig. 4. Rotuma.

The emphasis placed by the artist on the grooves of the carapace in Borradaile's figure is misleading, for, upon examining specimens from Saloman in the British Museum, Sealark Expedition, and, comparing them with the figure quoted, the grooves prove to be faintly marked, as stated by Borradaile in the text of the quoted paper.

The species occurs commonly amongst *Halimeda* weed, which grows thickly on dead branching coral in the lagoon.

Material.—One male, 9 mm. North West Island, December, 1929.

Genus PHYMODIUS.

Phymodius A. Milne Edwards, Ann. Sci. Nat. (4), xx., 1863, 283. Type, *P. ungulatus* H. M. Edwards. Australasia.

Phymodius A. Milne Edwards, Rathbun, Bull., 152, U.S. Nat. Mus. Washington, 1930, 249.

PHYMODIUS SCULPTUS.

Chlorodius sculptus A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, ix., 1873, 217, pl. viii., fig. 4. New Caledonia.

Phymodius sculptus (A. Milne Edwards) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1898, 164. Andamans, Mergui; Ceylon. *Idem.* Grant and McCulloch, Proc. Linn. Soc. N.S.W., xxxi., 1906, 13. Masthead Island, Capricorn Group.

Material.—One male, 18 mm. One Tree Island, November, 1929.

PHYMODIUS UNGULATUS.

Chlorodius ungulatus H. M. Edwards, Hist. Nat. Crust. I., 1834, 400, pl. 16, figs. 6-8. Australasia.

Phymodius ungulatus (Milne Edwards) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., No. 1, 1898, 162. Andamans, Ceylon.

Phymodius ungulatus (Milne Edwards) Rathbun, Mem. Mus. Comp. Zool. Harvard., xxxv., 2, 1907, 46, pl. iii., and iv., No. Mohican Reef; Tahiti; Paumotus; Society Islands; Tongatabu; Ellice Islands; Tari Tari Island; and Carolines. *Idem.* de Man, Abh. Senckenb. Ges., xxv., III., 1902, 618. Ternate.

Material.—Six females, from 18 to 35 mm.; 11 males, from 15 to 35 mm. Heron Island, September, 1926. One male, 33 mm.; two females, 21-31 mm. Hoskyn Island, November, 1927. Two males, 12-25 mm.; five females, 16-17 mm.—One Tree Island, November, 1927. Five males, 12 to 31 mm.; one female, 16 mm. Lady Musgrave Island. One male, 18 mm. North West Island.

Genus CHLORODOPSIS.

Chlorodopsis A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 227.

Chlorodopsis Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., No. 1, 1898, 165. Type, *Chlorodopsis melanochirus* A. Milne Edwards. New Caledonia.

CHLORODOPSIS SCABRICULA.

Chlorodopsis scabricula (Dana) Rathbun, Bull. U.S. Fish. Comm., 1908

(1906), III., 859. Hawaiian Islands; and Mem. Mus. Comp. Zool. Harvard, xxxv., II., 1907, 50, pl. I., fig. 3, pl. ix., fig. 5. Tahiti.

The species occurs amongst living corals, New Caledonian zone.

Material.—Three males, 7, 7 and 7.5 mm. North West Island, December, 1929.

CHLORODOPSIS MELANOCHIRUS.

Chlorodopsis melanochirus A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 228, pl. viii., fig. 5. New Caledonia.

Chlorodopsis melanochira A. Milne Edwards, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1898, 168. Andamans.

The species occurs on the under surfaces of nigger heads and masses of corals in the basin pools on the outer reef crest zone.

Material.—Two males, 8 and 11 mm. North West Island, June, 1929.

CHLORODOPSIS SPINIPES.

Pilodius spinipes Heller, S.B. Ak. Wiss., xliii., 340, pl. iii., fig. 22 (1861). Red Sea.

Chlorodopsis spinipes Calman, Trans. Linn. Soc. London (2), Zool., 1900, 12. Murray Island; Red Sea to New Caledonia.

Material.—Three males, 10.5 mm. to 11.5 mm. North West Island, December, 1929.

CHLORODOPSIS MELANODACTYLUS.

Chlorodopsis melanodactylus Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, ix., 1873, 229, pl. viii., fig. 7. New Caledonia.

Chlorodopsis melanodactyla Lenz, Abh. Senckenb. Ges., xxvii., 1905, 355. Zanzibar. *Idem.* de Man, Abh. Senckenb. Ges., xxv., 1902, 624. Ternate.

The species is common in the *Lithothamnion* covered dead coral portion of the New Caledonian zone.

Material.—Four males, 12, 13, 14 and 14.5 mm.; two females, 10 and 13 mm. North West Island, December, 1929.

CHLORODOPSIS AREOLATUS.

Chlorodius areolatus H. Milne Edwards, Hist. Nat. Crust. I., 400. New Holland.

Chlorodopsis areolatus Alcock, Journ. Asiat. Soc. Bengal, lxviii., II., 1898, 166. Andamans, Nicobars, Ceylon, Mauritius and South Seas.

Genus CYMO.

Cancer (Cymo) de Haan, in Siebold Fauna Japon., 1834?, 22.

Cymo de Haan, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., No. 1, 1898, 172.

Type, *Cymo andreossyi* (Audouin) Egypt.

CYMO ANDREOSSYI.

Cymo andreossyi Stimpson, Smithsonian. Insti. Washington Misc. Coll., 49, 1907, 60. Bonin Islands. *Idem.* Grant and McCulloch, Proc. Linn. Soc. Sydney, xxxii., 152. Masthead Island, Capricorn Group.

The species is found in the branches of the living "Staghorn" coral in the lagoon and New Caledonian zones.

Material.—Four females, from 13 to 15 mm.; two males, 12 and 12 mm. Heron Island, September, 1926. One female, 13 mm. Hoskyn Island, November, 1927. One female, 15 mm. Lady Musgrave Island, November, 1927.

Genus PSEUDOZIUS.

Pseudozius Dana, Sillimans Amer. Journ. Sci. and Art (2), xii., 1851, 127;

Proc. Acad. Nat. Sci. Philad., 1852, 81; and U.S. Explor. Exped., xiii., Crust. I., 1852, 232.

Pseudozius Dana, Klunzinger, Nova. Acta. Abh. d. Kaiserl. Leop.-Carol. Deutsch. Akad. Natur., Bd. IC., nr. 2, 1913, 283. Type, *Pseudozius cays-trus* (Adams and White) "Maria Orientalia" = *P. planus* Dana, Waterland Island, Raraka Island, Paumotu Arch. and Wakes Island, North Pacific.

PSEUDOZIUS DISPAR.

Pseudozius dispar Dana, U.S. Explor. Exped., xiii., Crust. I., 1852, 235, pl. xiii., fig. 9. Sooloo Sea. *Idem.* Calman, Trans. Linn. Soc. (2), Zool., viii., I., 1900, 14, and syn., Murray Island, Torres Strait, New Caledonia, Sooloo Sea.

In certain parts of the lagoon zone there are dead masses of coral covered by a thick growth of algae, which entirely fills the spaces between the coral branches, and it is amongst this weed that *Pseudozius dispar* is found.

Material.—One female, 11 mm. Hoskyn Island, November, 1927. One female, 8 mm. Lady Musgrave Island, November, 1927. Two females, 8 and 11 mm. North West Island, November, 1927. Six females, from 7 to 9 mm.; three males, 7 to 9 mm. Heron Island, September, 1926. One male, 11 mm. Lady Musgrave Island, November, 1927.

GENUS PILUMNUS.

Pilumnus Leach, Trans. Linn. Soc. London, II., 1815, 309 and 321. Type, *P. hirtellus*. European?

Pilumnus Leach, Rathbun, Bull., 152, U.S. Nat. Mus. Washington, 1930, 481.

PILUMNUS SLUITERI.

Pilumnus sluiteri de Man, in Weber's Zool. Ergebn. Niederl. Ost.-Ind., II., 1892, 283, pl. 1., fig. 2. East Indies. *Idem.* Alcock, Journ. Asiat. Soc. Bengal, lxvii., II, 1, 1898, 194. Andamans and Samoa.

Occurs under living coral on the New Caledonian zone.

Material.—One female, 33 mm. North West Island.

PILUMNUS TERRAE-REGINAE.

Pilumnus terrae-reginae Haswell, Proc. Linn. Soc. N.S.W., vi., 1882, 752. Port Molle, Queensland. *Idem.* Grant and McCulloch, Proc. Linn. Soc. N.S.W., xxxi., 1906, 15, pl. 1., figs. 1-1a. Port Curtis, Queensland, Masthead Island, Capricorn Group.

This is one of the few mainland species which ranges out to the coral reef.

Material.—One male, 9 mm. Heron Island. Three females, 8-11 mm. North West Island.

PILUMNUS SPINICARPUS.

Pilumnus spinicarpus Grant and McCulloch, Proc. Linn. Soc. N.S.W., 1906, I, 15, pl. 1., figs. 2-2a. Masthead Island.

This is without a doubt the commonest species of *Pilumnus* in the locality. It occurs under the nigger heads, and in the deep crannies of the masses of coral in the lagoon zone.

Material.—One female, 15 mm. Lady Musgrave Island. Four females, from 11 to 17 mm.; one male, 14 mm. Heron Island. One female. Hoskyn Island. Five females, 11 to 16 mm.; five males, 9 to 15 mm. Heron Island, 1926.

PILUMNUS CAERULESCENS.

Pilumnus caerulescens A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 242, pl. ix., fig. 3. New Caledonia. *Idem.* McNeill. Aust. Zoologist, iv., 5, 1926, 315. North West Island, Capricorn Group. The species occurs on the New Caledonian zone under the living coral. Material.—Three males, from 9 to 10 mm.; three females, 9 to 10 mm. North West Island. One male, 9 mm. Heron Island, 1926.

PILUMNUS ACTUMNOIDES.

Pilumnus actumnoides A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 247, pl. x., fig. 3. New Caledonia.

The occurrence of this species is of great interest owing to the fact that it has not been previously noted on our coast; also that, apart from the original description, it has not been recognised outside the type locality.

It is very common in circumscribed areas on the New Caledonian zone, where it is found under the living corals, and was particularly numerous during the mid-winter trip in 1929. I was unable to find either types or specimens in the Paris Museum.

Material.—Two males, 14 and 17 mm.; one female, 13 mm. North West Island, May, 1930.

Genus ACTUMNUS.

Actumnus Dana, Sillimans Amer. Journ. Sci. and Arts (2), xii., 1851, 128; U.S. Explor. Exped., xiii., Crust. I., 1852, 243. Type, *A. tomentosus* Dana. Tahiti or Upolu, Samoa.

ACTUMNUS PUGILATOR.

Actumnus pugilator A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat. Paris, ix., 1873, 195, pl. vii., figs. 1-1a. New Caledonia. *Idem.* Rathbun, Biol. Results F.I.S. Endeavour, v., 3, 1923, 126, pl. xxvii., figs. 3-4. Pine Peak, Queensland; Platypus Bay, Queensland.

The species occurs on the shelly bank outside the reef at North West Island 20 fathoms deep.

Material.—One female, 15 mm. North West Island, December, 1929.

ACTUMNUS INTEGERRIMUS.

Actaeodes ? integerrimus Dana, U.S. Explor. Exped., xiii., Crust. I., 1852, 201. Atlas, 1855, pl. xi., fig. 7. Sandwich Islands.

Actumnus integerrimus Rathbun, Mem. Mus. Comp. Zool., xxxv., 2, 1907, 56, pl. 1., fig. 12. Tahiti, Paumotus (outer reef).

The species occurs in considerable numbers in the small holes in the *Lithothamnia* on the New Caledonian zone. The Australian examples have been compared with the photographed individual in the National Museum, Washington.

Material.—Four females, 6 mm.; one male, 5 mm. North West Island, May, 1930.

Genus ERIPHIA.

Eriphia Latreille, Nouv. Dict. Hist. Nat., xx., 1817, 404.

Eriphia Latreille, Rathbun, Bull., 152, U.S. Nat. Mus. Washington, 1930, 545.

Type, *E. spinifrons* (Herbst) = *Cancer spinifrons* Herbst. Adriatic.

ERIPHIA SEBANA.

Cancer sebanus Shaw, in Shaw and Nodder, Nat. Misc., xv., 1803, pl., 591.

Eriphia sebana (Shaw) McNeill and Ward, Rec. Aust. Mus. Sydney, xvii., 9, 1930, 381. New South Wales.

Material.—Two females, 15 and 19 mm.; one male, 21 mm. Heron Island, September, 1926.

Genus TRAPEZIA.

Trapezia Latreille, Encyc. Method, xx., 1825, 695.

Trapezia Latreille, Rathbun, Bull., 152, U.S. Nat. Mus. Washington, 1930, 556. Type, *T. dentifrons* Latreille, 1825. = *T. cymodoce* (Herbst, 1801). East Indies.

TRAPEZIA FERRUGINEA VAR., AREOLATA.

Trapezia areolata Dana, Proc. Acad. Nat. Sci. Philadelphia, 1852, 83, and U.S. Explor. Exped., xiii., Crust. I., 1852, 259. Atlas, 1855, pl. xv., figs. 8a-b, 9. Sooloo Sea; Tahiti.

Trapezia ferruginea areolata Dana, Ortmann, Zool. Jahrb. Syst., x., 1897, 203-206. Ceylon; Nicobars; Java; Celebes; Sulu Sea; Liu Kiu Islands; Pelew Islands; New Guinea; New Caledonia; Fiji; Samoa Islands and Tahiti, Amboina.

Trapezia ferruginea var. *areolata* Dana, Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 221. Andamans; Nicobars; Ceylon and Mergui Arch.

As noted elsewhere, this species is associated with certain living corals in the lagoon zone, and the net work of fine lines on its body and limbs harmonise with the environment.

Material.—One male, 11 mm. North West Island, November, 1927. One male, 11 mm.; two females, 11 and 15 mm. Heron Island, September, 1926. One male, 13 mm. North West Island, May, 1930.

TRAPEZIA DIGITALIS.

Trapezia digitalis Latreille, Ency. Method. Hist. Nat. Entom., x., 1825, 696. Red Sea.

Trapezia digitalis Latreille, Rathbun, Bull., 152, U.S. Nat. Mus., 1930, 559. Lower California, Mexico to Panama, Red Sea to Indo-Pacific region.

The carapace in this species is creamy white in colour and the limbs are brown.

Material.—Three males, from 7 to 10 mm. Heron Island, September, 1926. One female, 10 mm. Hoskyn Island, November, 1927. One male, 11 mm. Heron Island, September, 1926.

TRAPEZIA CYMODOCE.

Cancer cymodoce Herbst, Krabben. III., ii., 1801, 22, li., fig. 5. East Indies.

Trapezia cymodoce (Herbst) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 219, and synonymy. Andamans; Nicobars, Mergui; Palk Straits and the Mekran Coast; Indo-Pacific.

This is the commonest species of the genus in the locality where it inhabits the living coral masses.

Material.—Eight females, from 10 to 20 mm.; six males, 8 to 20 mm. Heron Island, September, 1926. Two males, 10 and 13 mm.; two females, 13 and 18 mm. One Tree Island, November, 1927. One female, 14 mm.; one male, 14 mm. Lady Musgrave Island, November, 1927. One male, 13 mm. Heron Island, September, 1926. One male, juv., 11 mm. Hoskyn Island, September, 1927.

Genus TETRALIA.

Tetralia Dana, Sillimans Americ. Journ. Sci. and Art (2), xii., 1851, 128; Proc. Acad. Nat. Sci. Philad., 1852, 83; and U.S. Explor. Exped., xiii., Crust. I., 1852, 261. Type, *T. nigrifrons* Dana. Paumotus. = *T. glaberrima* (Herbst) fide Alcock.

TETRALIA GLABERRIMA.

Cancer glaberrima Herbst, Krabben., I., viii., 1790, 262, pl. xx., fig. 115. Locality unknown.

Tetralia glaberrima (Herbst) Dana, U.S. Explor. Exped. Crust. I., 1852, 263. Atlas, 1855, pl. xvi., fig. 3. Paumotus; Tahiti and Tongatabu.

Tetralia glaberrima (Herbst) Alcock, Journ. Asiat. Soc. Bengal, lxvii., II., 1, 1898, 223. Mergui; Ceylon; Maldives and Mekran Coast.

Tetralia is found inhabiting the finer branching corals of the lagoon zone. The male is usually ivory white on the carapace, the limbs pale yellow, faintly tinged with pink. The frontal, anterolateral, and posterolateral margins are jet black. The female has the carapace and limbs pale pink, frontal, anterolateral and posterolateral margins as in the male.

Material.—Two males, 6-9 mm.; one female, 8 mm. North West Island, May, 1930. One male, 9 mm.; one female, 14 mm. Heron Island, September, 1926.

BARRIER REEF EXPEDITION—CUMBERLAND AND
WHITSUNDAY ISLANDS.

An expedition of nature lovers, under the direction of Mr. E. F. Pollock, F.R.G.S., is to leave Sydney on the 19th December next, for Mackay, Queensland, where boats will be joined for the purpose of visiting several islands of the Cumberland and Whitsunday groups, between Mackay and Bowen. The expedition will be away a month, and Mr. Pollock, whose address is at Carrington Avenue, Strathfield, will be pleased to forward a syllabus to anyone who is interested.

Mr. Pollock, who was formerly the Honorary Secretary of the Royal Zoological Society, has organised similar expeditions, to attractive spots, every year since 1925.
