

ON A COLLECTION OF HERMITCRABS FROM THE INDIAN WATERS

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ABSTRACT

Twenty seven species of Hermitcrabs belonging to eight genera : *Paguropsis*, *Paguristes*, *Clibanarius*, *Dardanus*, *Diogenes*, *Trizopagurus*, *Calcinus* and *Triglopagurus* collected from shallow waters and deepsea along the Indian Coast are presented with remarks on their distinctive characters, colour patterns and distribution.

INTRODUCTION

THE PRESENT knowledge of the taxonomy of the Hermitcrabs of the Indian waters is mainly due to the pioneering work started during the last decade of the nineteenth century by veteran carcinologists like Henderson (1888, 1893) and Alcock (1905 a, 1905 b). Henderson has described the hermitcrabs collected by 'Challenger' (1888). He has reported them from the east coast (1893) and Chilka Lake (1915). Alcock (1905 a & b) has given the descriptive catalogue of the Hermit-crabs from the deeper areas. Southwell (1906) reported the Hermitcrabs from the Gulf of Mannar. Sundara Raj (1927) has dealt with the pagurids of the Krusadai Island. Reddi (1935) has described hermitcrabs from Porto Novo on the southeast coast of India, while Kamalaveni (1950) gave an account of the collections of the Indian Museum.

During the present investigations exhaustive collections were made from the shallow littoral areas in the Palk Bay and the Gulf of Mannar. Besides, samples were collected from the trawl catches along the Indian peninsula from Pulicat Lake on the east coast, around Cape Comerin to Mangalore on the west coast. In addition to this, collections

were made from the deepsea areas, especially off Cochin and Mandapam. Samples were also obtained from the Laccadive Archipelago and the Andaman and Nicobar Islands. Most of the material was obtained from depths upto 30 m although some deepsea forms were collected from depths ranging from 200 to 400 m. Carapace length was taken as the linear measurement.

I am thankful to Dr. S. Jones, former Director, Central Marine Fisheries Research Institute for his encouragements and guidance during the course of these studies.

SECTION : ANOMURA

Family: Diogenidae

Paguropsis typica Henderson

Paguropsis typica Henderson 1888, p. 99, pl. 10, fig. 4 ; Alcock 1905b, pp. 28-29, pl. 2 ; Estampador 1937 p. 507 ; Thompson 1945, p. 414 ; Kamalaveni 1950, p. 77.

Chlaenopagurus andersoni, Alcock 1901, p. 229 (Synonymy).

Material : 4 specimens. Off Quilon, Arabian Sea (12-2-1968). 4 males, 31 to 37 mm. Collected from deepsea trawler catch. Depth : 350 m.

of chela meet closely throughout length leaving no space in between. Second and third legs with thick setae on lower margin of ischium, merus, both upper and lower margin of carpus, propodus and dactylus, last segment having longer and thickly set setae. Propodus with squamiform markings on inner aspect, to a lesser extent on second leg. In female specimen, a flashy foliaceous lobe in fourth abdominal segment, overlapping three legs in front forming a brood pouch.

Colour: Chelipeds and legs purple with bright red cross band near inner distal border of merus. General body colour creamy white to grey.

Distribution: East coast of India, East Indies and Singapore.

The species is reported for the first time from the Gulf of Mannar and Palk Bay.

Paguristes incomitatus Alcock (FIG. 1 f-h)

Paguristes incomitatus Alcock 1905 b, pp. 39-40, pl. 3, fig. 4; Southwell 1906 p. 216; Thompson 1943, p. 415.

Material: 11 specimens. Mandapam, Gulf of Mannar (25-8-1967): 3 males, 4 to 6.5 mm; 1 female, 6 mm; Rameswaram (28-8-1968): 2 males, 6.3, 6.8 mm; 1 female, 5.6 mm; Mandapam, Palk Bay (25-4-1967): 2 males, 6.7, 7.8 mm. 1 berried female, 5.2 mm collected from shallow waters. Depth: 1-2 m.

Description: Carapace anterior to cervical groove with tufts of setae. Rostrum bluntly pointed, only as prominent as antennal angles, hardly reaching base of ophthalmic scales. Ophthalmic peduncles slender, shorter than front border of carapace and antennular peduncles. Antennal peduncles shorter than eyestalks; antennal acicles not reaching middle of last antennular segments. Antennal flagellum very short, less than half length of carapace.

Chelipeds subequal, matted setae masking the sculpture. Upper surface of hand and

wrist with prominent spines in rows. Finger when closed with a gap at base, tips corneous, second and third legs with tufts of setae along margins of all segments. Sides of merus and carpus naked; outer distal segment with setae on inner surface. Claws dark and sharply pointed, anterior end of carpus and propodus of second leg spinose. Eggs relatively large.

Colour: Dirty cream, in life. Eyestalks, antennules and antennal flagella violet in colour, fading on prolonged storage in preservative.

Distribution: Gulf of Aden, west coast of India, Maldives and Ceylon.

Clibanarius clibanarius (Herbst) (Pl. I F)
(FIG. 2, p-r)

Cancer clibanarius Herbst, 1971, p. 20, pl. 23 fig. 1.

Pagurus clibanarius Latreille, 1803, p. 167; Milne

Edwards, 1836, p. 276; 1837, p. 227; 1848, p. 62

Clibanarius clibanarius Hilgendorf, 1878, p. 820;

Henderson, 1893, p. 423; Rathbun, 1900, p. 306; Alcock, 1905 b, p. 43; Estampador, p. 501; Yap-Chiongco, 1938, p. 190; Barnard, 1950, p. 433.

Material: 12 specimens. Cuddalore (9-11-1968): 4 males, 19.25 to 36.0 mm; 2 females, 19.5 and 21 mm; Kakinada (8-4-1969): 4 males, 22 to 33 mm; 2 females, 31.2, 36 mm. Collected from trawl catches. Depth: 25 m.

Description: Carapace longer than broad, its greatest breadth 0.8 its length along the middle. Rostrum small, just reaching base of ophthalmic scales, a little projecting beyond antennal angles of carapace. Ophthalmic peduncles slender, as long as anterior border

of carapace and antennal peduncle. Antennular peduncle surpassing eyestalk by less than half of last segment of antennular peduncle, all along beset with tufts of long yellow bristles. Free end of ophthalmic scales spinose. Antennal acicle with spines and setae. Flagellum longer than carapace.

Chelipeds equal, much more massive than other legs, merus with some tubercles on its outer surface, inner margin toothed and upper surface of carpus and chela spinous. Inner surface of palm with tubercles. Fingers spooned, tips black and corneous. Tufts of bristles arising from bases of spines. Second and third legs longer than chelae, without tubercles on superior surface, beset with long bristles, more so on dactylus. Carpus of second leg with five or six spinules on upper border. Specimens agree with Alcock's description in most of the details.

Colour : Reddish brown with yellow longitudinal lines on eye-stalks, second and third legs. Branchial region of carapace with yellow lines and dots.

Distribution : Southeast coast of Africa, Bay of Bengal and Philippines.

***Clibanarius infraspinatus* Hilgendorf (Pl. I B)**

Clibanarius infraspinatus Hilgendorf 1869, p. 97; Sundara Raj 1927, p. 130; Fize and Serene 1955, pp. 77-83, fig. 10A, B. C. (Synonymy).

Material : 5 specimens. Athankarai Estuary (28-7-1969) : 1 female, 26.0 mm; Point Calimere (25-9-1968) : 1 male, 31 mm; Kundugal (15-9-1969) : 1 male, 31 mm; Rameswaram (19-2-1968) : 1 male, 18.5 mm, 1 female, 23.5 mm; Collected from shallow waters. Depth : 1-2 m.

Description : Carapace longer than broad, its breadth 0.78 of length, with tufts of long bristles. Rostrum more prominent than antennal angles, almost reaching base of ophthalmic scale, anterior angles with two spines.

Eyestalks long, but shorter than anterior breadth of carapace and antennal peduncle. Antennular peduncles longer than ophthalmic peduncles and antennal peduncles. Antennal acicle elongated and reaching beyond base of last joint of antennal peduncle and with six teeth on inner side in addition to terminal one. Antennular scale bearing four spinules distally. Antennal flagellum longer than carapace.

Chelipeds of same size, merus with a strong tooth at near end of lower inner border and with granules on outer surface as *Cl. clibanarius*. Distal superior margin of merus serrated. Carpus with three strong spines in a row on upper inner margin and a scattered few on rest of upper surface. Propodus bearing well developed spines on inner margin with scattered, less sharp spine and tubercles on upper and outer surface. Tips of fingers spooned, corneous and black. Teeth bearing long bristles at their bases. Second and third legs longer than chelipeds. Dactylus longer than propodus, second leg bear a row of five or six spinules on inner, upper margin of carpus. Propodi and dactyli with long tufts of bristles. Outer surface of propodus of third left leg flatter in *Cl. clibanarius*.

Clibanarius infraspinatus was found to occupy shells of the gastropods *Tonna dolium*, *Turbo* spp. which have very wide mouths.

Colour : In live specimens carapace cream coloured in anterior region, becoming brown posteriorly. Appendages with ground colour of dark ash having orange-yellow longitudinal stripes bordered by red or chocolate lines, on second and third legs only. Dactylus yellow with three red longitudinal lines. Claws dark, with more tips of dactylus. Chelipeds also ash coloured with light coloured spines on carpus and chela. Tips of fingers black; lower inner surface of legs light yellowish or cream. Abdomen dark on dorsal side.

Distribution : Red Sea, east coast of India, Mergui, Singapore, Philippines, Viet Nam, Taiwan, Borneo and Australia.

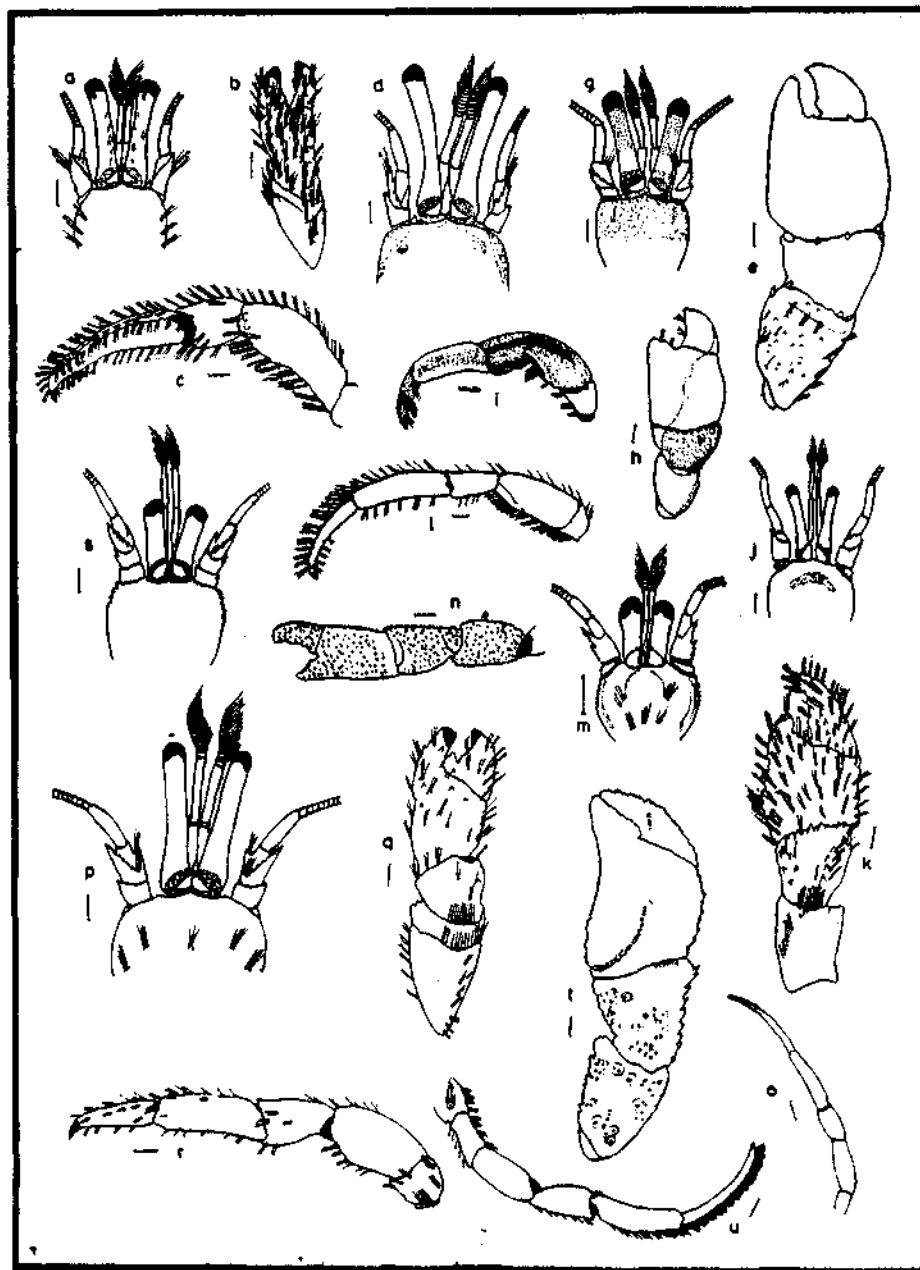


FIG. 2. a-c. *Clibanarius corallinus*: a. cephalic region and appendages; b. large chela; c. 3rd leg; d-e. *Calcinus gaimardi*: d. cephalic region and appendages; e. large chela; g-i. *C. herbsti*: g. cephalic region and appendages; k. large chela; i. 3rd leg; i-l. *Troglopagurus mannarensis*: f. cephalic region and appendages; k. large chela; l. 3rd leg; m-o. *Diogenes avarus*: m. cephalic region and appendages; n. large chela; o. 3rd leg; p-r. *Clibanarius arethusa*: p. cephalic region and appendages; q. large chela; r. 3rd leg; s-u. *Diogenes costatus*: s. cephalic region and appendages; t. large chela and u. 3rd leg.

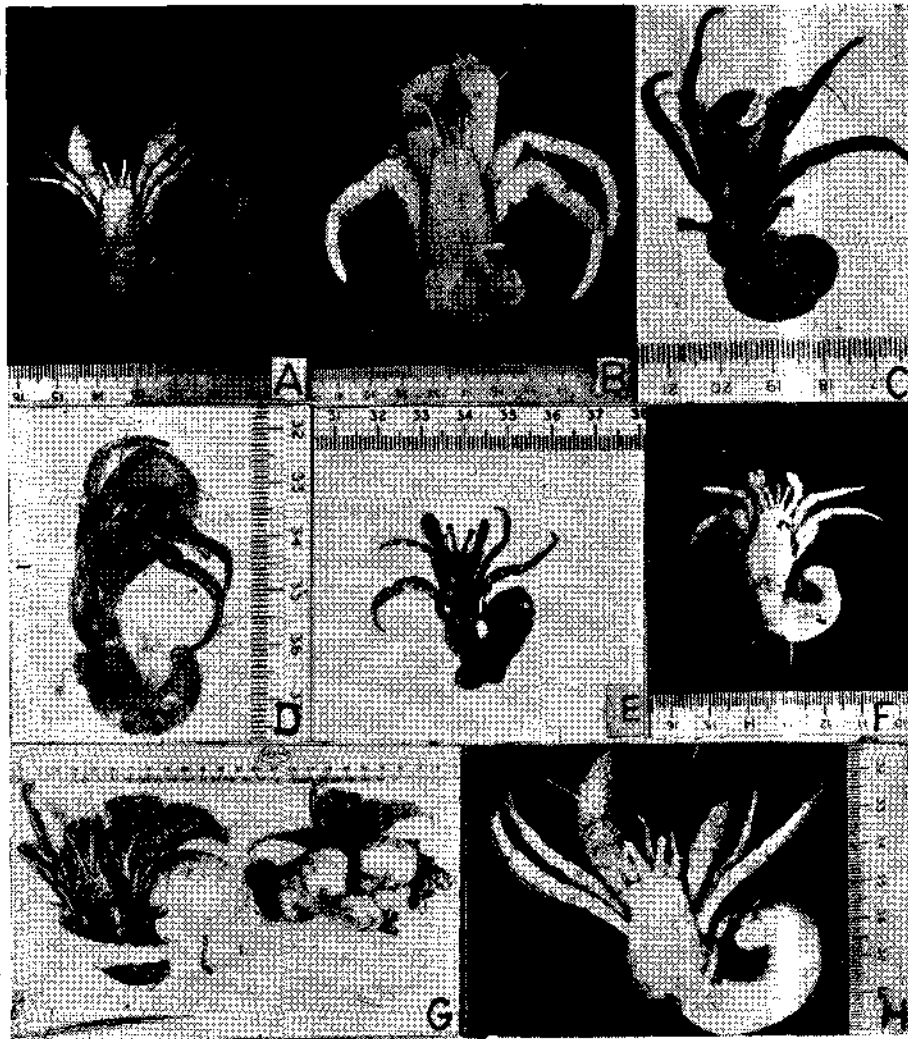


PLATE I. A. *Paguristes longirostris*; B. *Clibanarius infraspinatus*; C. *Cl. padavensis*; D. *Cl. longitarsus*; E. *Cl. striolatus*; F. *Cl. clibanarius*, G. *Cl. arethusa* and H. *Dardanus setifer*.

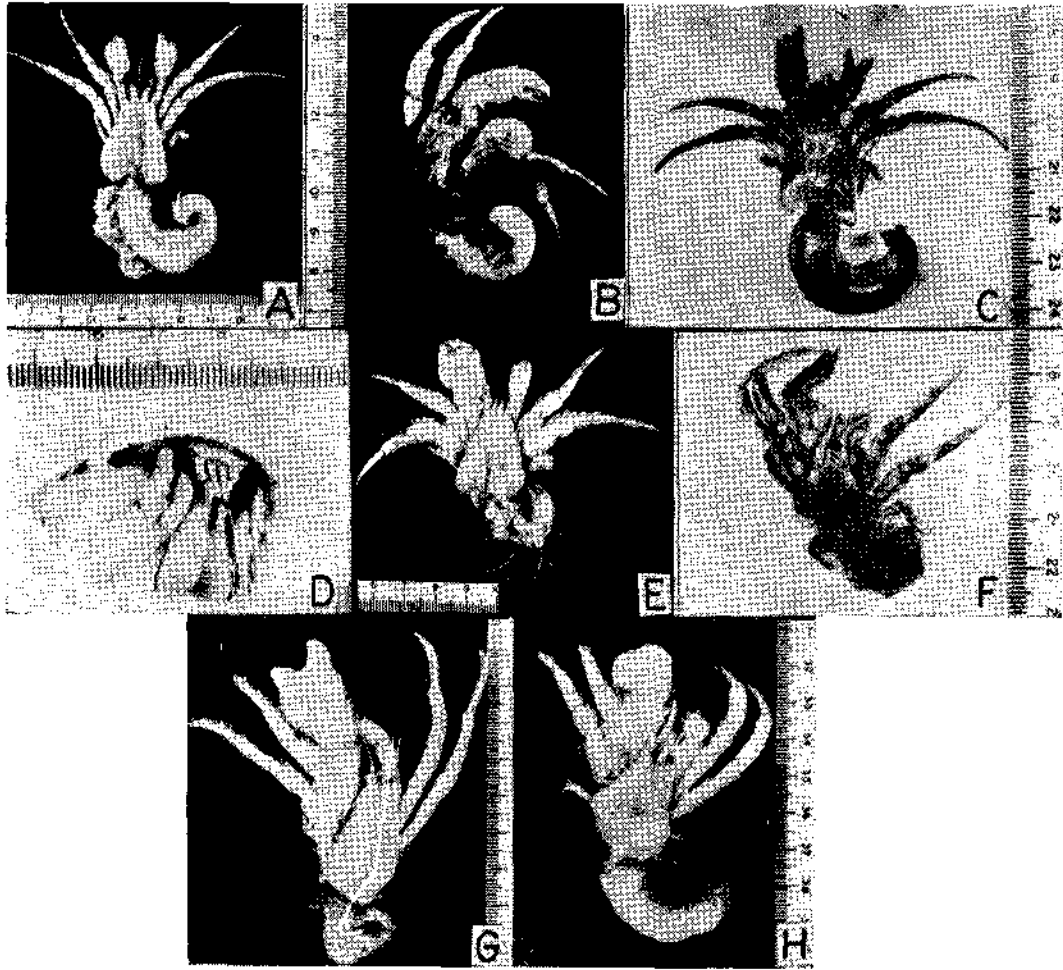


PLATE II. A. *D. deformis*; B. *D. hessi*; C. *D. megistis*; D. *Trizopagurus kremfi*, E. *Diogenes custos*; F. *D. miles*; G. *D. diogenes* and H. *D. merguensis*.

***Clibanarius padavensis* de Man**

(FIG. 1 o-q, Pl. I C)

Clibanarius padavensis de Man 1888, p. 242, pl. 16, fig. 1; Alcock 1905b, pp. 44-46, pl. 4, fig. 2; Southwell 1906, p. 215; Henderson 1915, p. 25; Kemp 1915, p. 250; Sundara Raj 1927, p. 130; Panikkar and Aiyar 1937, p. 296; Gravely 1941, p. 77; Buitendijk, 1947, p. 280; Barnard 1950, p. 433.

Material: Several specimens. Athankarai Estuary: 5 to 26 mm, in females (many with egg masses) and from 4.8 to 26.55 mm in males. Collected from shallow waters of estuary on various dates during 1967 and 1968. Depth: 1-2 m.

Inhabited shells of *Turritella attenuata*, *Thais bufo*, *Natica didyma*, *Murex tarpa*, *Babylonia spirata*, *Hemifusus* spp., and *Oliva* spp.

Description: Carapace longer than broad. Rostrum well formed, reaching base of ophthalmic scales and beyond level of antennal angles of carapace. Eyestalks longer than anterior border of carapace, almost as long as antennular peduncle. Cornea about one-eighth of eyestalk. Ophthalmic scales situated close to one another, with spinose outer margin. Antennal acicle with serrated margins, almost reaching base of terminal joint of antennal peduncle. Flagellum twice as long as carapace.

Chelipeds of equal size, one-third as long as carapace. Two spinules at distal and lower aspect of merus, lower inner margin being serrulate. Carpus with a strong spine on dorsal inner aspect distally. Fingers with dorsal spine in rows. Setae long and sparsely uniform.

Percentage occurrence of berried females collected during various months indicate that peak breeding season is in February after northwest monsoon.

Inhabits shells of wide mouthed gastropods such as *Trochus* spp., *Tibia curta*, *Bursa spiralis*, *Xanachus spirum*, *Turritella acutangula* and *Strombus* sp.

Colour: In live specimens colour yellowish with straight red longitudinal lines in two or three rows on second to fifth legs. Eyestalk with one dorsal red band and another on its inner aspect. Chelipeds with less distinct and interrupted bands of same colour. Carapace yellow. Antennular and antennal peduncles with red bands, flagella yellow.

Distribution: East coast of India, Gulf of Mannar, Sri Lanka and Mergui Archipelago.

***Clibanarius longitarsus* (de Haan)**

(FIG. 1 i-k, Pl. I D)

Pagurus longitarsus de Haan 1950, p. 211, pl. 50, fig. 3.

Clibanarius longitarsis Dana 1852, p. 464; Fize and Serene 1955, pp. 83-90, fig. 11, A, B, C, pl. 3, 1, 7, 10, 13 (Synonymy).

Clibanarius longitarsus de Man 1902, p. 741; Sundara Raj 1927, p. 130; Sewell and Anandale 1928 p. 695; Reddi 1935, p. 562; Gravely 1941, p. 77; Lewinsohn 1969, 18-19.

Material: Several specimens. Neendakarai Estuary, Quilon (23-12-1967): 2 males, carapace length 16, 22 mm; 2 females, 15, 24 mm; Pulli Island, Gulf of Mannar (22-2-1968): 7 specimens 11-21 mm; Kundugal (14-2-1967): 35 males, 8-18.5 mm; 42 females, 8.5-17 mm; Krusadai Island (20-2-1967): 2 males, 14, 17 mm; 2 females, 12, 13 mm; Rameswaram (26-8-1968): 15 males, 9.5-25.0 mm; 5 females, 12-25.5 mm. Depth: upto 1 m.

Description: Carapace well developed, reaching level of base of ophthalmic scale. Eyestalks without colour bands, as long as antennular peduncle, equal to anterior breadth of carapace. Ophthalmic scale small, with pointed tips. Antennal acicles reaching a

little short of last segment of antennal peduncle, with serrated inner margins.

Cheliped equal, with spooned fingers ending in dark corneous tips; uniformly provided with long setae. Palm and wrist with dark tipped spines in one or two rows on fingers and irregularly arranged on palm. Merus with a spinule on outer distal aspect, carpus with a well developed spine dorsally towards distal end internally. Dactylus of third leg longer than propodus. Ambulatory legs with a blue band bordered with red.

Colour: Bluish green body with characteristic blue and red band on ambulatory legs.

Distribution: Red Sea, east coast of Africa, Indian Ocean, east coast of India, Nicobar, Singapore, Viet Nam, China and Japan.

Clibanarius striolatus Dana (Pl. I E)

Clibanarius striolatus Dana 1852, p. 463; 1855, pl. 29, fig. 3a, C; Fize and Serene 1955, p. 97-105 fig. 13, A, B, C; pl. 3, 4 (Synonymy); Lewinsohn 1969 pp. 19-20.

Material: 4 specimens. Minicoy Island (20-5-1970): 2 males, 16.5, 17.74 mm; 2 females, 13.5, 14 mm (Berried). Collected from shallow waters. Depth: 1-2 m.

Description: Rostrum short, not reaching base of ophthalmic scales. Antennule shorter than length of eye; eyestalks equal to anterior breadth of carapace. Antennular flagellum 1.6 times length of carapace. Antennal acicle reaching only to base of last joint of antennular peduncle. Eye without longitudinal brown bands. Red stripes on legs.

Colour: In fresh specimens carapace red with brown and white patches, anteriomedian portion with a brown blotch. Antennular and antennal peduncles violet in colour. Chelipeds with white spines having dark tips. Legs with reddish brown cross bars interspersed with white spots. Claws of legs dark

in colour. Tergal plates on abdomen with white and reddish brown spots. Setae also reddish brown with white tips.

Distribution: Red Sea, Arabian Sea, Seychelles, South Africa, Sri Lanka, Mergui Archipelago, Penang, Nicobar, Philippines, Viet Nam, China, Japan and Pacific Ocean.

Clibanarius arethusa de Man

(FIG. 2 p-r, Pl. I G)

Clibanarius arethusa de Man 1888, p. 252; Henderson 1893, p. 424; Alcock 1905 b, pl. 48, p. 4, fig. 3; Sundara Raj 1927, p. 131; Reddi 1935, p. 562; Fize and Serene 1955, pp. 114-116, fig. 16, A, B, Bl, C (Synonymy).

Material: Kilakkarai (30-6-1969): 1 male, 14.25 mm; Vedalai (24-6-1967): 1 male, 24.5 mm; 1 berried female, 21 mm; Krusadai Island (12-10-1967): 1 male, 16.8 mm; female, 18.75 mm; Thonithurai (21-8-1967) 1 male, 20.75 mm; Kundugal (14-2-1967): 1 female, 17 mm; Mandapam (4-8-1967) 2 males, 14, 10 mm; Kacha Tivu (15-3-1967): 1 female, 18.75 mm; Lawson's Bay, Waltair (28-10-1967): 3 males, 11 to 13.5 mm; 3 females, 11.5 to 12.75 mm; Collected from shallow intertidal zone. Depth: 1-2 m.

Inhabits shells of *Trochus* spp., *Murex virgineus* and *Turbo* spp.

Description: Eyestalks shorter than antennular peduncles; ophthalmic scale narrow, pointed at tip and close together. Numerous tufts of setae on gastric region and behind cervical groove. Antennal acicle reaching about one-third last antennal segment. A few conical spinules with blunt tips on hand and wrist. Dactylus of third pair of legs of same length as propodus. Propodite with flattened outer surface; but devoid of superior external carina.

Colour: In life carapace white or light grey; eyestalks, antennules, antennae, cheli-

pedes and legs deep orange red with black tipped fingers of chelipeds and dactyli.

Distribution : East coast of India, Burma, Mergui Archipelago, Viet Nam.

***Clibanarius corallinus* (Mile Edwards)**
(FIG. 2 a-c)

Pagurus corallinus Milne Edwards 1843, p. 63.
Clibanarius corallinus Dana 1852, 468; Fize and Serene 1955, pp. 132-138, fig. 20, A, B, B1, C (Synonymy).

Material : Aberdeen Bay, Andaman Island (25-1-1975) : 1 male, 11 m. Collected from littoral zone. Depth : 1-3 m.

Description : Carapace much elongated, 1.9 times as long as broad ; rostrum pointed, reaching base of ophthalmic scales, more prominent than antennal angles. Ophthalmic peduncles long, 1.25 times as long as anterior border of carapace. Ophthalmic scale broad at bases and narrow distally bearing 1-3 spinules at the tips. Antennular peduncles shorter than eyestalk and a little longer than antennal peduncles. Antennal acicle elongated, reaching beyond the base of last antennal segment, flagella shorter than carapace in length.

Chela subequal, merus almost oval and flat on outer side, with two spinules on lower outer side, distally. Carpus, propodus and dactylus bearing pointed spines with dark tips and tufts of bristles at their bases, on superior surfaces. Fingers with similar spines on upper lateral aspect also. Lower surface of fingers having tubercles with and without tufts of bristles. Long stiff bristles on upper surface of chela, carpus and merus. Dactyli of third legs shorter than propodi ; second and third legs longer than cheliped, second extending beyond tip of third leg. Propodus of third leg flat with thick and coarse bristles, claws sharp and black.

Colour : Reddish brown with dark brown bristles. Eyestalks and antennal flagella yellowish in preserved specimens.

Distribution : Andaman and Nicobar Islands, Malay Archipelago, East coast of India, Philippines, Australia and Pacific Ocean.

***Clibanarius zebra* Dana (FIG. 1 r-t)**

Clibanarius zebra Dana 1852, p. 465 ; Stimpson 1858, p. 255 ; Borradaile 1898, p. 463 ; Nobili 1907, p. 367 ; Alcock 1905b, p. 159 ; Edmondson 1933, p. 226 ; 1946, p. 265 ; Buitendijk 1937, p. 264 ; Reddy 1966, pp. 545-546.

Material : Krusadai Island (12-10-1969) : 3 females, 5.75 to 8.5 mm (one berried). Depth : 1-2 mm.

Description : Carapace longer than broad ; rostrum pointed reaching almost base of ophthalmic scales. Antennal angles of carapace not prominent. Eyestalks a little longer than anterior border of carapace, antennular and antennal peduncles. Ophthalmic scales broader at base with sharp teeth on distal end, innermost on either side being largest. Antennal acicle elongated, reaching beyond base of last segment of antennal peduncle and bearing teeth on either side. Antennal flagellum longer than carapace.

Chelipeds subequal, merus with a few tubercles on outer surface ; carpus, propodus and dactylus with sharp teeth and tubercles on upper surface. Finger tips spooned, corneous and black, with uniformly arranged long setae. Second and third legs longer than chelipeds, ending sharp black claws, carpus with strong spine on upper far end and with setae on sides.

Colour : Chelae and legs yellow. Second and third legs with longitudinal reddish brown bands, an upper and a lower band, on carpus and propodus, single band near ventral side on merus and dactylus.

Distribution: West coast of India, East Indies and Pacific Ocean. This is the first record of this species from the east coast of India.

***Clibanarius merguensis* (de Man) (FIG. 1 1-n)**

Clibanarius aequabilis var. *merguensis* de Man 1888, p. 247; Lanchester 1902, p. 365, Alcock 1905b, p. 47, pl. 4, fig. 5; Southwell 1906, p. 215; Balss 1916, p. 9; Buitendijk 1937, p. 265.

Clibanarius merguensis Forest 1953, p. 438, 445, fig. 7; Fize and Serene 1955, pp. 145-150 fig. 22, A, B, C; Dechance 1964, p. 32.

Material: 28 specimens, Pamban (25-4-1967): 4 males, 22-24 mm; 2 females 19.5-21.00 mm; Krusadai Island (22-2-1968): 5 males, 9-14 mm; 8 females, 6-7 (3 berried); Mandapam, Palk Bay (10-6-1969): 8 juvenile specimens; Kacha Tivu (15-3-1969): 1 berries female, 6.5 mm. Collected from near low water level. Depth: 1-2 m.

Description: Length of carapace, in mid-dorsal line 1.27 times of greatest width. Rostrum surpassing antennal angles unlike Alcock's material, reaching beyond base of ophthalmic scales. Eyestalks as long as anterior border of carapace; slightly longer than antennular peduncle. Ophthalmic scales broad, approximated and with spinous anterior ends.

Chelipeds subequal, as long as carapace. Inner edge of merus serrate. Distal-most segment of chelipeds with strong conical spines interspersed with long setae, with a gap near basal portion of fingers. Second and third legs reaching beyond chelipeds by length of dactylus and one-third propodus; smooth with less densely arranged setae. Outer surface of left propodus remarkably flattened with upper margin well defined; dactyli of both legs compressed.

Colour: Fresh specimens with carapace and legs grey, tips of propodite of second and

third legs being lighter in shade. Dactyli pale with longitudinal band of same colour as rest of body.

The specimen from Kacha Tivu was grey with white patches, even after preserving in alco-glycero-formol for four years while those from Krusadai Island turned yellow to orange in colour on prolonged preservation in same preservative.

Distribution: Red Sea, Western Indian Ocean, Gulf of Mannar, Sri Lanka, Mergui Archipelago, Malaysia, East Indies and Viet Nam.

This is the first report of species from Kacha Tivu, Palk Bay.

***Dardanus megistos* (Herbst) (Pl. II E)**

Cancer megistos Herbst 1804, p. 28, pl. 2, fig. 1.

Pagurus megistos Fize and Serene 1955, pp. 160-166, pl. 44, fig. 24, A.B.C. (Synonymy).

Pagurus punctulatus Livier 1811, p. 641; Milne Edwards 1936, p. 222; 1849, p. 61; Alcock 1905b, pp. 81-82, pl. 8, fig. 1; Sundara Raj 1927, p. 131; Reddi 1935, p. 661; Lewinsohn 1969, p. 36.

Material: 10 specimens. Kavarathy Island (21-1-1968): 1 male, 13.8 mm. 1 female, 14 mm; Minicoy Island (15-2-1970): 1 female, 30.3 mm; Kilakkarai (27-4-1967): 1 male, 21.75 mm; Pudumadam, Gulf of Mannar (7-12-1969); 1 male 37 mm; Hare Island (27-4-1968): 1 female, 18.0 mm; Corbyn's Cove, Port Blair (9-5-1968): 1 male, 19.9 mm; 1 female, 32 mm; Nancowry Island, Nicobar (12-5-1969): 1 female, 25.5 mm. Collected from the littoral zone and trawl catches. Depth: 2-10 m.

Description: Carapace elongated, 1.3 times as long as broad, with tufts of bristles near anterolateral margin. Rostrum not well defined, antennal angle prominent and bluntly pointed. Eyestalks moderately elongated, equal in length to antennular peduncle and anterior border of carapace, its length 4.8

times cornea. Ophthalmic scales well developed, serrated, narrower at tips and bearing 3 spinules. Antennal acicles straight, pointed, reaching beyond base of last antennal segment, with two spinules on inner margin. Two stout, white spines situated posterior to base of acicles.

Chelipeds dissimilar, left one vastly larger and massive; second and third legs with thickly beset tufts of red bristles on last three joints, especially on outer surfaces. Second and third legs of right side longer, reaching beyond chelipeds. Merus of left cheliped with large backwardly directed tooth at inner side, proximally, two spinules at distal outer end and anterior margin; carpus with four strong spines on upper inner border with additional spines on superior surface. Propodus and dactylus with stout and thick black-tipped spines on upper surface.

D. megistos is largest Indian species common in the Gulf of Mannar exhibiting preference to light gastropod shells of *Tona dolium* which are quite common in the locality. One male specimen measuring 37.0 mm in carapace length was kept alive in the aquarium for over nine months on a diet of clam meat.

Colour : Live specimens blood-red in colour with white spots scattered all over carapace, legs and abdominal terga. Setae also reddish while spines may be white, brown or red.

Distribution : Red Sea, Laccadive Archipelago, western Indian Ocean, Sri Lanka, east coast of India, Mergui Archipelago, Andaman and Nicobar Islands, East Indies, Philippines, Viet Nam, Taiwan, China, Australia and Pacific Ocean.

***Dardanus setifer* (Milne Edwards) (Pl. I H)**

Pagurus setifer Milne Edwards 1836; p. 274; 1837 p. 225; Southwell 1906, p. 214; Terao 1913, p. 379; Sundera Raj 1927, p. 131; Fize and Serene 1955, pp. 181-189, fig. 27. A, B, 28. A, B, C., Pl. 5, (Synonymy).

Material : 7 specimens. Kilakkarai (21-12-1967): 1 male, 32.5 mm; Pudumadam 15-1-1969); 1 female, 26 mm; Mandapam, Palk Bay (12-5-1967); 1 male, 30 mm; Kakinada (8-4-1968): 2 males, 16, 8 mm; 2 females, 8.6, 10 mm. collected from trawl catches, Depth : 8-12 m.

Description : Eystalks as long as anterior boarder of carapace, slightly longer than antennal peduncle. Antennular peduncles longer than eystalks and antennal peduncles. Ophthalmic scales wide apart. Antennal acicle extending beyond base of last segment of antennal peduncle. On distal half of antennal flagella, anteriolateral angles of joints produced. Left cheliped massive with tubercles and black-tipped thorn-like spines. A longitudinal ridge along lower margin of left chela and a row of strong spines along inner upper margin. Strong spine on inner upper boarder also present. Spines on cheliped surrounded by wreaths of stiff, short, setae around bases. Last two segments of third left leg broadened and have rows of transverse spinose carinae, either side of carina being tessellated by a series of deep and regular transverse grooves.

Colour : Fresh specimens brightly coloured. Chelipeds bright brickred while second and third legs having cross bands of same colour. Setae dark red with light tips. Antennules and antennae, eystalks and other parts of body yellowish.

Distribution : South Africa, Malabar Coast, Gulf of Mannar, Sri Lanka, east coast of India, Bay of Bengal, Gulf of Martaban, Viet Nam and Hong Kong.

***Dardanus hessi* (Miers) (Pl. II B)**

Pagurus hessi Miers 1884, p. 185, 264; Sundera Raj 1927, p. 131; Reddi 1935, p. 562; Thompson 1943, p. 416. Fize and Serene 1955, pp. 214-220, fig. 34. A, B, C, pl. 4. (Synonymy).

Pagurus simillmanus Henderson 1888, p. 59, pl. 6, fig. 6; Eastampador 1937, p. 503.

Material: 17 specimens. Mandapam, Gulf of Mannar (11-11-1969): 1 berried female, 23 mm; Kakinada (8-4-1968): 8 males, 10.3 to 30 mm; 8 females, 15 to 25.6 mm (6 berried). Collected from trawl catches. Depth: 10-25 m.

Inhabits shells of *Tona dolium*, *Bursa* sp.

Description: Carapace elongate, its breadth across branchial region about two-third its length. Eyestalks much broadened distally. Cornea reniform. Antennular peduncle longer than antennal peduncle. Antennal peduncle almost as long as anterior boarder of carapace. Ophthalmic acicles wide apart. Antennal acicle extend well beyond base of last segment of antennular peduncle.

Cheliped equal and similar, fingers moving in oblique plane. Finger tips corneous and dark. Merus with a few spines on inner distal end. Carapace and palm having a row of strong spines on inner upper margins with more rows outer to this. Setae long and uniformly distributed on chela and carpus; merus bearing setae only on margins. Carpi, propodi and dacyli of second and third legs with spines on anterolateral surface.

Colour: Carapace and legs whitish except fingers and distal part of palm of chela bright brickred in colour.

Distribution: Gulf of Oman, east coast of India, Gulf of Martaban, Malaya Peninsula, Viet Nam, Celebes and Arafura Sea.

***Dardanus deformis* (Milne Edwards)**
(Pl. II A)

Pagurus deformis Milne Edwards 1836, p. 272; Fize and Serene 1955, pp. 199-207, fig. 31, A, B, C, fig. 33, E, F., pl. 6.

Dardanus deformis Dechance 1964, p. 33; Lewinsohn 1969, p. 32.

Material: 8 specimens. Andaman and Nicobar Islands (14-5-1969): 4 males, 19-28.

4 mm; 4 females, 18-22 mm (2 berried). Collected from trawl catches. Depth: 6-12 m.

Description: Carapace depressed, setose only on margins. Eyestalks short and broadened distally; shorter than antennal peduncle, extending about middle of last segment of antennular peduncle. Antennal acicles reach well beyond base of terminal joint. Ophthalmic scales roughly triangular and placed wide apart.

Left cheliped vastly larger. Chela longer than broad. Merus with blunt spines on outer margin and a sharp spine on distal inner aspect. Carpus with many spines towards inner upper surface, outer lower aspect smooth. Palm with a row of strong spines on inner upper surface with a few more outer rows of smaller and less defined spines. Lower margin of chela with a row of tubercles. Dactylus with an upstanding crenulated crest along inner edge of upper surface of dactylus. Upper outer surface of propodus and dactylus raised into finely crenulated overhanging crest. Outer surface of dactylus concave. Male specimens have openings corresponding to female genital pores on base of third pair of legs.

Colour: Preserved specimens biscuit yellow with reddish tinge on legs, eyestalks and carapace.

Distribution: Red Sea, western Indian Ocean, South Africa, Maldives and Laccadives, Gulf of Mannar, Mergui Archipelago, Andamans, Philippines, East Indies, Japan Australia and Pacific Ocean.

***Dardanus asper* (de Haan)**

Pagurus asper de Haan 1849, p. 208; Alcock 1905b, pp. 90-91, pl. 9, fig. 5 (Synonymy); Southwell 1906, pp. 214-215; Stimpson 1907, p. 204; Terao 1913, p. 376; Eastampador 1937, p. 502; Yap-Chiongeo 1938, p. 197; Thompson 1943, p. 146; Edmondson 1946, p.263; Barnard 1950, p. 430.

Pagurus haani Laurie 1926, p. 158.

Dardanus asper Edmondson 1926, p. 24; Dechance 1964, p. 33.

Dardanus haani Rathbun 1903, p. 34; Buitendijk 1937, p. 275.

Material: 1 specimen. Off Mandapam, Gulf of Mannar (26-8-1969): 1 male, 15.2 mm. Collected from deep-sea trawl catches. Depth: 200 m.

Descriptions: Closely resembling *D. deformis*, but differing from it in absence of carina on upper outer border of propodus and presence of only a longitudinal row of spines and granules on upper inner side of palm and a few granules in a row near distal end of palm on outer lower aspect. Rest of palm smooth. Carpus having a few pointed spines on inner upper surface with a few more on superior surface. Outer lower part of carpus devoid of spines and granules. Merus bearing sharp spine on superior inner surface. Outer surface of carpus of third leg smooth, without crest. A longitudinal concavity on outer side of dactylus of third leg. No trace of hermaphroditism as in *D. deformis*.

Colour: Carapace and legs yellowish pink with brighter marks on anterior part of carapace, segments of legs, eyestalks and antennal and antennular peduncles. Setae golden yellow.

Distribution: Gulf of Aden, western India Ocean, Maldives, Gulf of Mannar, Sri Lanka, Andamans, East Indies, Philippines, Japan and Pacific Ocean.

Diogenes diogenes (Herbst) (Pl. II G)

Cancer diogene Herbst 1791, p. 17, pl. 12, fig. 5. *Diogenes diogenes* Henderson 1893, p. 412; Alcock 1905b, pp. 62-63, pl. 15, fig. 3; Southwell 1906 p. 214; Sundara Raj 1927, p. 132; Boone 1935 p. 26; Reddi 1935, p. 561; Kamalveni 1950, p. 31.

Material: Several specimens. Mangalore (19-1-1968) 12 males, 11-22 mm; 6 berried females, 10-18 mm; Calicut (24-1-1968) 43

males, 10-26 mm; 6 females, 11-24 mm; Azhicode (4-4-1967); 6 males, 11-23.5 mm; 6 females, 12.6-14.4 mm; Point Calimere (25-9-1968); 1 male, 16.5 mm; Nagapatinam (20-3-1967); 7 males, 14.5-26 mm; 1 female, 18.2 mm; Cuddalore (9-19-1968); 1 male, 27.8 mm; Kakinada (8-4-1968); 12 males, 14.9-21.6 mm; 1 female, 15 mm; Collected from shrimp trawl catches. Depth: 10-20 m.

Occupies shells of *Rapana bulbosa*, *Natica spirata*, *Harpa conoidalis*, *Tona dolium*, *Babylonia spirata*, *Ficus ficus*, *Bursa* spp., *Trochus* spp., *Phalium areola*, *Turritella* spp., *Murex tarpa* and other gastropod shells with wide openings.

Description: Carapace with granular tubercles on anterior border; anterior portion of carapace provided with many spinules and serrated setose ridges. Posterior portion of carapace with vesicular granules. Rostrum long, nearly one-third eyestalk and bear spines on sides of distal half. Eyestalks long, about three-fifth anterior border of carapace. Ophthalmic scales large, with spinulose edge. Antennular peduncle longer than antennal peduncle; antennal acicle with outer long fork reaching almost to base of last antennular segment, inner one extending only upto the middle of penultimate segment. Antennal flagellum 1.7 times as long as carapace.

Chelipeds bear claw-shaped spines on outer surface of palm. Similar spines present on outer legs also. Left larger cheliped nearly twice length of carapace; chela as long as carapace; merus and palm of equal lengths; carpus longer than broad; palm broader than long. Superior margin of merus, propodus and dactylus with strong spines in rows. Setae restricted to margin on large chela, small chela being more hirsute. Second and third legs having spinulose anterior margins. Propodus with longitudinal rows of spines on superior aspects and with only one row of spines on upper surface

of dactylus. Dactyli 1.5 times as long as propodi.

Colour: Body and legs yellowish brown in fresh condition with pale ventral surface. Setae also yellowish brown in colour.

Distribution: Arabian Sea, Sri Lanka Gulf of Mannar and east coast of India.

This is the first report from southwest coast of India.

Diogene miles (Herbst) (Pl. II F)

Cancer miles Herbst 1791, p. 19, pl. 22, fig. 7.

Diogenes miles Henderson 1893, p. 413; 1915, p. 28; Nobili 1903; p. 13; Alcock 1905b, pp. 67-68, pl. 5, fig. 5 (Synonymy); Southwell 1906, p. 240; Stebbing 1920; p. 354; Sundera Raj 1927, p. 133; Makarov 1938, p. 157; Gravely 1941, p. 77; Kamalaveni 1950, pp. 80-81.

Material: Several specimens. Mandapam (5-9-1967): 15 juvenile specimens, 5.8-8.6 mm; Pamban (25-4-67): 1 male, 8.2 mm; Thonithurai (2-8-1967): 4 males, 6.2-7.1 mm; Rameswaram (5-9-1967): 11 juveniles, 5.8-8.5 mm; Irumeni (31-5-1967): several specimens, 7.5-15 mm; Cuddalore (9-11-1968): 1 male, 10.5 mm. Collected from shallow areas. Depth: 1-2 m.

Inhabits shells of *Olivia gibbosa*, *Strombus* spp., *Natica didyma*, *Nassa* spp., *Drupa* spp. and other narrow mouthed gastropods.

Description: Carapace broader than long, highly depressed. A number of tufts of setae and granules, present posterior to cervical groove. Rostral appendages longer than ophthalmic scales and with spinulose edge. Ophthalmic peduncle reaching to middle of third antennular joint. Antennal peduncle slightly longer than antennular peduncle. Antennal acicle hardly bifurcate, its outer limb falls short of base of last antennal segment. Left cheliped vastly larger than right. Chela turning inwards even when in fully

extended condition. Merus directing inwards, chela being flexed towards inner side. Dactylus about half length of propodus, including fixed finger. Propodus with rows of large spines on outer margin, these pointed spines curving forwards. Similar stout pointed spines present on inner margin also. Dactylus also bearing similar stout spines in three definite rows, separated by longitudinal grooves. Upper surface of chela granular. Setae being arranged in tufts on either side of cutting edges. Carpus, merus and ischium with granular upper surface with well defined spines and setae on inner margin. Second and third legs bearing spines and scattered granules on all segments except dactylus with well marked longitudinal grooves and corresponding ridges with rows of setae and granules in between. Abdomen having a fleshy process arising ventral to first and second pleopods on left side, probably for holding inside shell.

Colour: Light spots present on cephalic region and chelipeds. Last two legs have red bands on proximal two-thirds of propodi. General body colour varies from cream to ash or even light blue or violet.

Distribution: South Africa, Sri Lanka, Palk Bay, east coast of India, Mergui Archipelago, Malaya and Australia.

Diogenes merguensis de man (Pl. II H)

Diogenes merguensis de Man 1888, p. 228, pl. 15, fig. 4, 5, 6; Henderson 1893, p. 413; Alcock 1905b, pp. 63-64, pl. 15, fig. 2 (Synonymy); Southwell 1906, p. 214.

Material: 18 specimens. Tuticorin (6-8-1967): 1 male, 14.5 mm; Mandapam, Gulf of Mannar (2-12-1969): 1 male, 19 mm; 1 female, 25.4 mm; Pudumadam (7-1-1969): 1 male, 20.2 mm; 1 female, 24.8 mm; Pamban, Gulf of Mannar (12-11-1969): 4 males, 19-22.5 mm; 5 females, 17.6-24.5 mm; Mandapam, Palk Bay (3-5-1967): 1 male; 25.1 mm; Athankarai (13-7-1967): 1 male,

27 mm ; Thirupalakudi (10-8-1968) : 1 female, 17.3 mm ; Gopalapatnam (17-8-1969) : 1 female, 19 mm. Collected from trawl catches. Depth : 6-12 m.

Description : Carapace similar to that of *D. diogenes*. Eystalks short, less than anterior border of carapace, extending upto base of last antennular segments. Inner fork of antennal acicle reaching base of last antennal joint, while outer one extending almost to middle of terminal segment of antennal peduncle. Antennal flagellum longer than carapace, unlike material described by Alcock (1905 b) and setose. Chelipeds and second and third legs have spinose margins although outer surface has sharp conical tubercles and not spines, each tubercle being provided with a wreath of short stiff radiating setae. Merus of left chela as long as broad. Palm broader than long, fingers with double rows of spines on outer margins. Second and third legs have granular surface on outer side of meri while on third leg ischium has blunt tubercles with radiating setae. Propodi with upper row of spine and granules on outer aspect. Dactyli devoid of granules, but with an upper row of small spinules and longitudinal grooves and ridges, with long setae on inner surface.

Colour : In live specimens carapace greysish in cephalic region, brown in branchial region. Rostrum and antennal scale brown ; eystalks with one inner and two outer longitudinal stripes of dark grey colour. Antennal peduncles and flagella with grey spots ; propodi and dactyli of legs orange, with light shades near joints. Meri and carpi ash grey ; fourth and fifth legs brown ; pleopods orange as also uropods. Abdomen white. Telson paler in shade with grey dorsal shield. Legs bear long shining setae.

These hermit crabs which prefer light shells with wide mouth are in the habit of remaining burried in the bottom sand or mud during day time.

Diogenes custos (Fabricius) (Pl. II E)

Pagurus custos Fabricius 17798, p. 412 ; Olivier 1811 p. 644 ; Milne Edwards 1836, p. 284 ; 1837, p. 236 ; 1848, p. 64.

Diogenes custos Henderson 1893, p. 414 ; Nibili 1903, p. 15 ; Alcock 1905b, pp. 64-65, pl. 6, fig. 1 (Synonymy) ; Stimpson 1907, p. 201 ; Sundara Raj 1927, p. 133 ; Reddi 1935, p. 561 ; Gravely 1941, p. 77.

Material : 24 specimens. Durgavalasai ; Palk Bay (6-2-1968) : 4 males, 11-15.9 mm, Nagapatnam (20-5-1969) : 2 females, 12.5 (berried) 13 mm ; 7 males, 12-16 mm ; Cuddalore (9-11-1968) : 13 males, 13.1-20.9 mm ; 2 females, 15.2-23.6 mm. Collected from commercial shrimp trawlers. Depth : 2-15 m.

Inhabits shells of *Natica* spp. and *Murex rapax*.

Description : Eystalks shorter, only less than two-thirds anterior breadth of carapace. Rostrum long, about half eystalk. Antennal and antennular peduncles of equal length. Antennal acicle with well defined fork reaching middle of penultimate segment of antennal peduncle. Outer fork extending beyond base of antennal segment. The flagellum little longer than carapace. Carapace with single row of round granules along anterior margin and transverse rows of similar granules with setae arising from their bases in cephalic region.

Chelipeds and exposed surface of other legs finely and copiously granulated although borders of segments of chelipeds as well as second and third legs spinose or spinulose. Distribution of setae also restricted to margins. Spines arranged in two or three definite rows along inner superior margins of merus, carpus, propodus and dactylus of chela. Strong spines arranged in a single row along superior margin of second and third segments of second and third legs. Granules disposed in two rows on upper border of propodus, on sides these granules being in transverse rows. Dactyli have fewer granules ; but with longitudinal

grooves and ridges. Long setae only on inner margin of dactyli.

Colour: Uniformly yellowish brown. Chelae, second and third legs, eyestalks antennules, antennae, cephalic region of carapace and setae of same colour. Ventral surface of a lighter shade. Abdomen and other appendages cream coloured.

Distribution: Gulf of Mannar, Palk Bay, east coast of India, Mergui Archipelago and Andamans.

Diogenes avarus Heller (FIG. 2, m-o)

Diogenes avarus Heller 1865, p. 83; de Man 1888, p. 236; Henderson 1893, p. 17; 1915, p. 28; Alcock 1905b, pp. 68-69, pl. 6, fig. 6, (Synonymy); Grant and McCulloch 1907, p. 35; Kemp 1915, p. 251; 1918, p. 254; Sundera Raj 1972, p. 133; Panicker and Aiyar 1937, p. 296; Estampador 1937, p. 504; Yap-Chiongo 1938, p. 203; Gravely 1941, p. 77; Lewinsohn 1969, pp. 37-42.

Material: Several specimens. Kundugal (12-567): several specimens 4.1-7 mm (3 berried females); Krusadai Island (12-10-1969): 15 specimens, 3.1-5.2 mm; Athankarai (28-3-1968): several specimens, 2.8-5.3 mm. Collected from shallow waters. Depth: 1-2 m.

Inhabits shells of *Cerithium* spp., *Turrebralia* spp. and *Pyrene zebra*.

Description: Carapace moderately elongated, with anterolateral margins finely serrated. Rostrum slender, not reaching tip of ophthalmic scales. Ophthalmic scales large with teeth on anterolateral margin. Eyestalks stout, reaching middle of last antennal joint and beyond third segment of antennular peduncle. Antennal flagellum shorter than carapace and less setose. Antennal acicle straight with spines on inner aspect and almost reaching base last antennal joint. Chelipeds unequal, left being vastly longer, about two and half times length of carapace, closely

granulose, more finely on hand. Carpus longer than palm and merus. Palm longer than broad with teeth on inner border along outer longitudinal carina. Teeth present on inner margin of merus, carpus and dactylus. Dactylus less than half length of palm.

Colour: General body colour grey or pale yellow with orange or yellow spots scattered on legs and carapace.

Distribution: Red Sea, Gulf of Mannar, Palk Bay, east coast of India, Mergui Archipelago, Malay Peninsula, Nicobar, Philippines and Australia.

Diogenes costatus Henderson (FIG. 2 s-u)

Diogenes costatus Henderson 1893, p. 418, pl. 39; fig. 7, 8; Alcock 1905b, pp. 70-71, pl. 6, fig. 7, Southwell 1906, p. 214; Stebbin 1908, p. 24; 1910, p. 355; 1920, p. 21; Laurie, 1926, p. 156; Sundera Raj 1927, p. 135; Barnard 1947, p. 376; 1950, p. 443; Lewinsohn 1969, pp. 42-45.

Material: 1 specimen. Off Mandapam, Palk Bay (22-4-1971): 1 male, 13 mm in shell of *Murex tarpa*. Collected from trawl catch. Depth: 10 m.

Description: Carapace moderately elongate, rostrum in form of a slender spine, shorter than ophthalmic scales. Antennal peduncle longer than antennular peduncle; antennal acicle a simple spine, strongly spinose along inner edge, reaching base of terminal joint of peduncle. Eyestalk about four-fifth of anterior breadth of carapace, surpass base of terminal antennal joint; but hardly reaching last antennular segment. Left cheliped vastly larger than right. Merus shorter than carpus which is slightly shorter than palm. Palm longer than broad. Merus with teeth on outer margin whereas inner boarder of carpus is serrated. Propodus and dactylus having strong serrations on inner surface. Outer surface of palm nearly smooth. An oblique ridge starting from outer upper surface o

base of chela and extending to middle towards distal end.

Colour: Cephalic region with brown marks; chelipeds and legs with similar bands across segments. Ground colour of body and proximal three segments of second and third legs whitish. Propodi and dactyli brown with long brown setae. Antennular flagella yellowish. Other appendages white.

Distribution: South Africa, western Indian Ocean, Gulf of Mannar and east coast of India.

Trizopagurus kremfi Forest (Pl. II D)

Cancer strigatus Herbst 1804, p. 25, pl. 61, fig. 3.

Pagurus strigatus Olivier 1811, p. 647; Hilgendorf 1878, p. 820, Pl. 2, fig. 8; Ortman 1892, p. 285; Borradaile 1900, p. 425; Nobili 1903, p. 15.

Aniculus strigatus Henderson 1893, p. 422; Alcock 1905c, p. 97, pl. 7, fig. 4; Southwell 1906 p. 215; Edmondson 1926, p. 24; 1933 p. 226; 1946 p. 263; Laurie 1926, p. 159; Thompson 1943, p. 417; Barnard 1950, p. 431.

Trizopagurus strigatus Lewinsohn 1969, pp. 52-54.

Trizopagurus kremfi Forest 1952, p. 32.

Material: 3 specimens. Off Cochin (14-7-1967): 3 males, 11.2-16.6 mm in shells of *Phalium areola*. Collected from deepsea trawlers. Depth: 200 m.

Description: Thin flat carapace broader than long, devoid of setae, with almost straight anterior margin. Eyestalk nearly 1.3 anterior border of carapace. Eyestalks as long as antennular peduncle and longer than antennal peduncles, unlike Alcock's material. Ophthalmic scales separated with pointed anterior tips. Antennal acicle simple and spinose, extending only upto one-third length of last antennal segment, flagellum 1.4 times carapace length.

Chelipeds similar, left slightly longer than right. Fingers open and close almost

horizontally. Margin of scutes or rings without spines; but with setae. Merus longer than broad, carpus broader than long. Short tufts of bristles on fingers, coarser than other species. Dactyli of second and third legs hirsute on both upper and lower margins, other segments with setae on ventral surface also. Sternal plates exceedingly broad as a result of much flattened body to suit shells like *Phalium* and *Conus* with result, bases of external maxillipeds almost as separated as in Paguridae.

Colour: In preserved specimens ground colour is cream with reddish margins on scutes.

Distribution: Red Sea, South Arabian Coast, western Indian Ocean, South Africa, Gulf of Mannar, Sri Lanka, Andamans and Pacific Ocean.

Calcinus herbsti de Man (FIG. 2 g-i)

Calcinus herbstii de Man 1888, p. 437.

Calcinus herbsti Fize and Serene 1955, pp. 41-49; fig. 6, A, B, C; pl. 2, 1-4 (Synonymy).

Material: 17 specimens. Mandapam (4-8-1967): 1 male, 7 mm; 1 female, 7.8 mm; Kundugal (18-9-1969): 1 male, 7.8 mm; 1 female, 7.3 mm; Andaman Island (20-8-1969): 1 male, 13.3 mm; 3 female, 6.8-8.3 mm (2 berried); Minicoy Island (10-4-1969): 5 males 6.8-8.5 mm; 2 females, 6, 10 mm, Kavarathy Island (22-12-1965): 2 males, 10.5, 11 mm. Collected from shallow waters. Depth: 1-2 m.

Description: Eyestalks a little longer than anterior border of carapace, longer than antennal peduncle and antennular peduncles. Antennal peduncles longer than antennal acicles. Ophthalmic scales stout with pointed tips. Stout antennal acicles reach almost distal ends of penultimate segments of antennal peduncles, with serrated upper borders. Left cheliped vastly larger than right, smooth, with-

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