

ON THE MARINE CRABS (DECAPODA : BRACHYURA)
OF BOMBAY STATE*

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PART II

(With one coloured and five line plates, and one text-figure)

(Continued from p. 439 of this volume)

Family PINNOTHERIDAE

Subfamily PINNOTHERINAE

Genus *Pinnotheres* Latreille

Pinnotheres placunae Hornell & Southwell

(Plate 12)

Pinnotheres placunae, Hornell & Southwell, *Rep. Marine Zool. Okhamandal*,
p. 99 (1909).

Numerous specimens, of both sexes, were found living as commensals within the mantle-cavity of the bivalve *Placuna placenta* at Bombay. The majority were found near the anus. The dimensions of two specimens are given below, in terms of divisions—each division = 0.125 mm.

Male :

length of carapace	...	50 divs.	(or 6.25 mm.)
breadth of carapace	...	58 divs.	(or 7.25 mm.)
ratio of length : breadth of carapace	...	0.862	
Cheliped :—length of dactylus	...	13 divs.	
length of upper border of palm	...	20 divs.	
greatest width of palm	...	13 divs.	
ratio of length of dactylus : length of upper border of palm	...	0.65	
ratio of length of dactylus : width of palm	...	1.1	

Walking legs :—

	ischium & merus	carpus	propodus	dactylus	Total
Right : length of 1st leg	35	12	14	7	... 68 divs.
length of 2nd leg	40	13	20	9	... 82 divs.
length of 3rd leg	40	12	22	15	... 89 divs.
length of 4th leg	21	7	12	12	... 52 divs.
ratio of propodus : dactylus of 4th right leg				...	1:1

* as it existed up to 31st October, 1956.

	ischium & merus	carpus	propodus	dactylus	Total
Left : length of 1st leg	35	9	12	8	... 64 divs.
length of 2nd leg	38	16	18	10	... 82 divs.
length of 3rd leg	43	12	22	17	... 94 divs.
length of 4th leg	19	9	10	12	... 50 divs.
ratio of propodus : dactylus of 4th left leg			...	0.833	
Female :					
length of carapace			...	60 divs.	(or 7.5 mm.)
breadth of carapace			...	90 divs.	(or 11.25 mm)
ratio of length : breadth of carapace			...	0.666	
Cheliped :—length of dactylus			...	16 divs.	
length of upper border of palm			...	25 divs.	
greatest width of palm			...	14 divs.	
ratio of length of dactylus : length of upper border of palm			...	2:3	
ratio of length of dactylus : width of palm			...	1.14	
Walking legs .—					
	ischium & merus	carpus	propodus	dactylus	Total
Right : length of 1st leg	33	9	12	10	... 64 divs.
length of 2nd leg	36	17	18	11	... 82 divs.
length of 3rd leg	40	16	21	14	... 91 divs.
length of 4th leg	30	11	16	18	... 75 divs.
ratio of propodus : dactylus of 4th right leg			...	0.88	
Left : length of 1st leg	35	10	13	9	... 67 divs.
length of 2nd leg	37	16	20	12	... 85 divs.
length of 3rd leg	39	19	23	18	... 99 divs.
length of 4th leg	30	11	14	16	... 71 divs.
ratio of propodus : dactylus of 4th left leg			...	0.87	

In the female, the body is soft and membranous. The carapace is broader than long, circular, smooth and flat. The antero-lateral angles, though rounded, are pronounced. The external maxillipeds have the antero-internal angle of the ischium-merus rounded; the dactylus does not extend to the apex of the propodus.

The legs increase in size posteriorly, except the last pair, which are smaller than the first. The dactyli of the last two pairs are $1\frac{1}{2}$ times as long as those of the first two, those of the last pair being more hairy at the tips. There is a thick tuft of hair at the distal end of the propodite of the last pair.

In the male, the carapace is smooth, and harder than in the female. The legs are slender. The first pair is about equal in length to the chelipeds, the second pair is longer than the first by slightly more than a dactylus, and the third is longer than the second by a dactylus. There is a thick tuft of hair at the distal end of the propodite of the last pair. The abdomen is narrow. Colour light pinkish.

This species is similar to *Pinnotheres similis* Burger, which too lives in *Placuna placenta*, but differs from it in the following :

- (1) the front is not setose ;
- (2) there are no spinules on the dactylus of the last leg ;
- (3) the proportions of the lengths of the legs are different.

The anterior male abdominal appendages are long, cylindrical, and rod-like. Their tips are bent at the end in the shape of a claw, and bear coarse hairs near both margins.

According to Hornell and Southwell, the dactyli of the chelipeds are as long as their palm; in the specimens in the present collection, they are only three-fourths as long as their palm. Also, the anterior male abdominal appendages, according to these authors, always project from beneath the abdomen. In none of the present specimens can this be seen.

From 10 shells of *Placuna placenta* opened, four contained a male as well as a female crab; five contained a female, and one gave negative results. Almost all the females were berried.

This species has been previously recorded from Okha.

Pinnotheres vicajii Chhappgar

(Plate 12)

Pinnotheres vicajii, Chhappgar, *Rec. Ind. Mus.* liii (in press) (1955).

Female: Body soft, carapace subquadrate, anterior angles pronounced but with rounded corners, no pigment spots.

Merus-ischium of external maxillipeds is a broad plate with the inner (posterior) margin slightly concave and the antero-internal angle pronounced: propodus elongate, broad and spatulate, it reaches farther than the inner angle of the merus. Dactylus minute, styliform, inserted at inner margin of propodus, just over-reaching the inner angle of the merus, and reaching to the end of the propodus.

Third pair of walking legs the longest, last pair longer than the first; propodites with a few silky hairs distally; dactyli of the first two pairs subequal in length, strongly hooked, those of the third and fourth pairs about twice as long as the first two, subequal, hairy and slender, regularly curved.

Abdomen of seven joints.

Male: Carapace smooth, well calcified, circular, without any trace of anterior angles, covered with minute, scattered pigment spots on the anterior half of the carapace up to a line joining the bases of the second pair of walking legs.

Merus-ischium and propodus of external maxillipeds similar to those of the female, except that the propodus is abruptly narrowed in the distal half. The dactylus does not even reach the antero-internal angle of the merus, as it does in the female. There is a brush of hairs at the tip of the last joint of the exognath of the external maxillipeds, but no hairs along the sides of this joint.

Third pair of walking legs the longest, the last pair shortest: inner borders of carpus and propodus of the second and third pairs of legs, as also all borders of the last pair fringed with silky hairs. A fringe of hair runs diagonally from the inner border of the proximal end of the carpus to the outer border of the distal end of the propodus of the second and third pairs of legs. Dactyli of first three pairs of legs subequal, those of the last pair slightly shorter; all hairy.

Abdomen seven-jointed, narrow, no fringe of hair on its borders.

Colour yellow; in the male the carapace is covered with minute black pigment spots.

Four females (two of them berried), and two males represent the present collection. Both sexes were obtained from the bivalve *Paphia malabarica* at Bombay, each crab living separately in a shell.

The measurements of the type specimens in millimetres are given in the following table :

		Type female.		Type male.	
Length of carapace	...	5.6		4.0	
Breadth of carapace	...	6.4		4.0	
Breadth of front	...	1.3		1.1	
Breadth of anterior border of carapace		4.1		—	
		left	right	left	right
1st walking leg					
	merus	0.75	0.75	0.84	0.84
	carpus	0.45	0.47	0.34	0.36
	propodus	0.66	0.67	0.47	0.49
	dactylus	0.28	0.28	0.20	0.23
2nd walking leg					
	merus	1.13	1.14	1.00	1.07
	carpus	0.50	0.56	0.45	0.45
	propodus	0.75	0.79	0.50	0.52
	dactylus	0.28	0.29	0.20	0.24
3rd walking leg					
	merus	1.69	1.13	1.70	1.73
	carpus	0.84	0.66	0.44	0.47
	propodus	1.28	0.90	0.60	0.75
	dactylus	0.46	0.38	0.26	0.28
		(regenerated)			
4th walking leg					
	merus	0.84	1.03	0.71	0.70
	carpus	0.41	0.52	0.37	0.33
	propodus	0.73	0.75	0.49	0.47
	dactylus	0.47	0.51	0.23	0.22

This species is allied to *Pinnotheres quadratus* Rathbun in the pigmentation of the male carapace and the small size of the dactylus of the external maxillipeds, but differs from it mainly in the circular male carapace, covered only in the anterior half with minute pigment spots, and without any trace of anterior angles, hirsute nature of the dactyli of all the legs, and narrow abdomen.

Family OCYPODIDAE

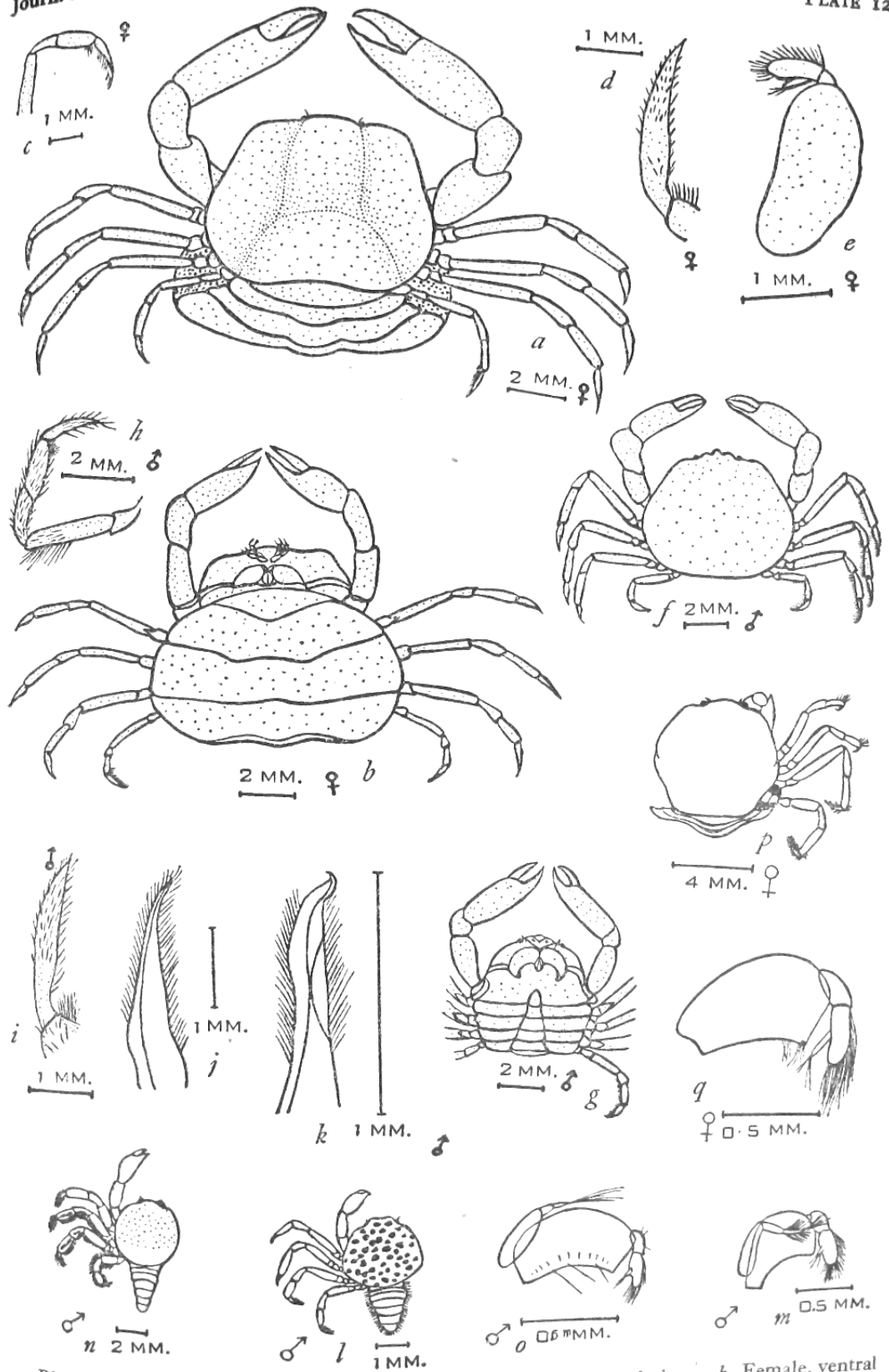
Subfamily OCYPODINAE

Genus *Ocypoda* Fabricius

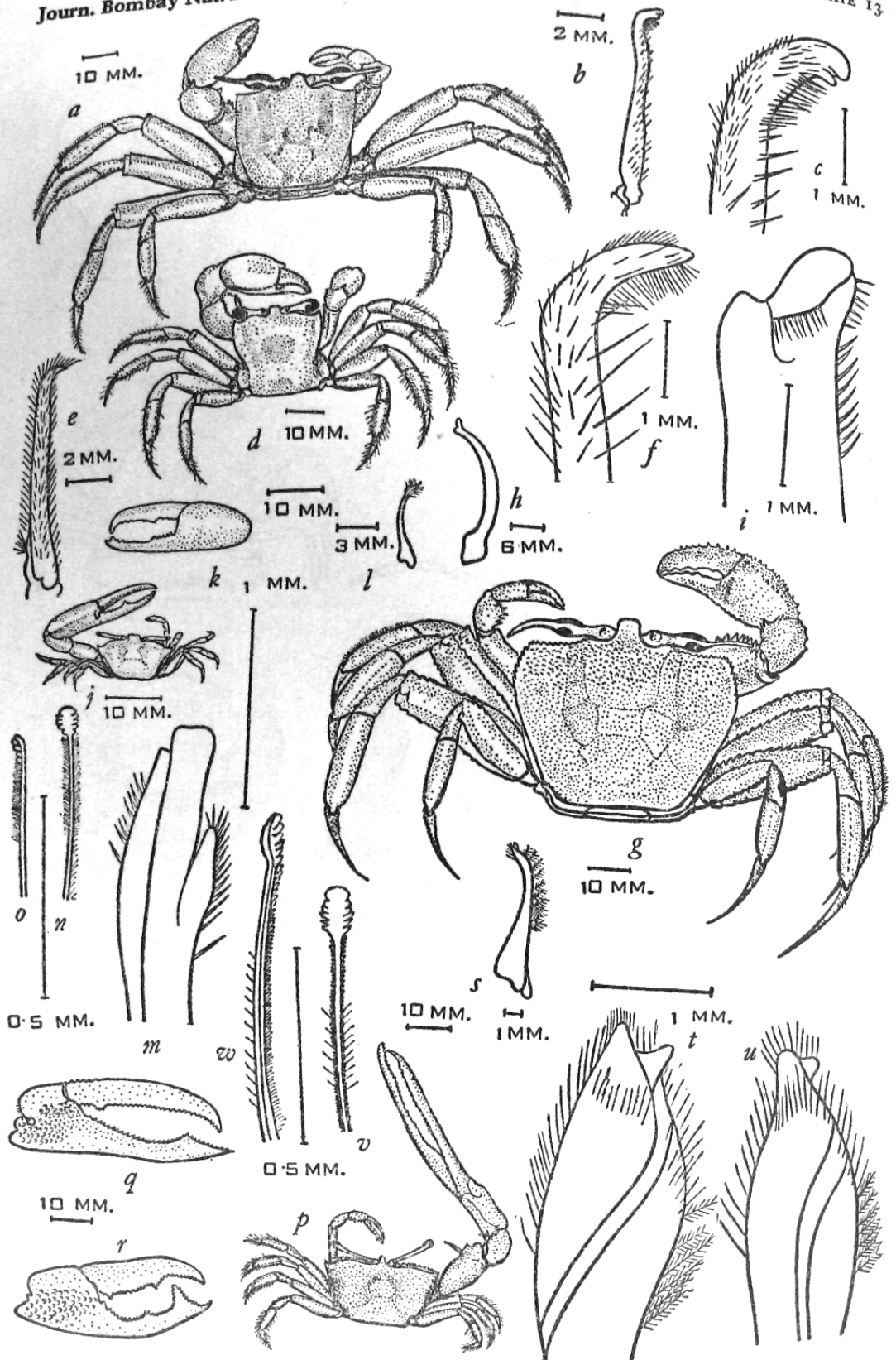
Ocypoda ceratophthalma (Pallas)

(Plate 13)

- Ocypode ceratophthalmus*, Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 86 (1956).
Ocypode ceratophthalma, Lanchester, *Proc. Zool. Soc. London*, p. 751 (1900).
Ocypoda ceratophthalma, Haswell, *Catalogue Austr. Crust.*, p. 94 (1882).
 de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 107 (1887).
 Walker, *Journ. Linn. Soc. London (Zool.)* xx, p. 110 (1890).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 357 (1893).
 Alcock and Anderson, *Journ. As. Soc. Bengal* lxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxi, p. 345 (1900).



Pinnotheres placunae Hornell and Southwell: a. Female, dorsal view. b. Female, ventral view. c. 4th walking leg of female. d. Tip of same, enlarged. e. 3rd maxilliped of female. f. Male, dorsal view. g. Male, ventral view. h. 4th walking leg of male. i. Tip of same, enlarged. j. 1st left abdominal appendage of male. k. Tip of same, enlarged. l. Dorsal view of male *Pinnotheres quadratus* Rathbun. m. External maxilliped of same. n. Dorsal view of male *Pinnotheres vicajii* Chhappgar, with abdomen extended. o. External maxilliped of same. p. Dorsal view of female *Pinnotheres vicajii* Chhappgar. q. External maxilliped of same.



Ocyropa ceratophthalma (Pallas): a. Dorsal view of crab. b. 1st left abdominal appendage of male. c. Tip of same, enlarged. *Ocyropa cordimana* Desmarest: d. Dorsal view of crab. e. 1st left abdominal appendage of male. f. Tip of same, enlarged. *Ocyropa rotundata* Miers: g. Dorsal view of crab. h. 1st left abdominal appendage of male. i. Tip of same, enlarged. *Gelasimus annulipes* Latreille: j. Dorsal view of male. k. Cheliped of male. l. 1st left abdominal appendage of male. m. Tip of same, enlarged. n. Spooned hair on 2nd maxilliped, front view. o. Same, side view. *Gelasimus marionis* (Desmarest), and *Gelasimus marionis nitidus* Dana: p. Dorsal view of male *Gelasimus marionis nitidus*. q. Cheliped of same. r. Cheliped of male *Gelasimus marionis nitidus*. s. 1st left abdominal appendage of same. t. Tip of same, of *Gelasimus marionis* enlarged. u. Tip of same, of *Gelasimus marionis nitidus* enlarged. v. Spooned hair on 2nd maxilliped, front view. w. Same, side view.

- Laurie, *Ceylon Pearl Oyster Fish. Report* (5) p. 426 (1906).
 Parisi, *Atti. Soc. It. Sc. Nat.* lvii, p. 96 (1918).
 Tesch *Siboga Exped. Rep.* xxxix, p. 36 (1918).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 148 (1927).
 Chopra and Das, *Rec. Ind. Mus.* xxxix, p. 418 (1937).
 Tweedie, *Bull. Raffles Mus. Singapore* 13, p. 27 (1937).
 Sakai, *Yokendo Ltd. Tokyo*, p. 614 (1939).
 Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 153 (1950).
 Tweedie, *Bull. Raffles Mus. Singapore* 21, p. 127 (1950).

Numerous specimens, of both sexes, were collected from Bombay, Karwar, Koiak, and Umarsadi. They live in burrows in sand. An average male measures:

length of carapace	...	29 mm.
breadth of carapace	...	33 mm.

This species is distinguished by the eyestalks prolonged to form a style, the presence of a stridulating organ consisting of tubercles passing into striae, and the anterior surface of the propodites of the first two pairs of legs being furnished with a brush of hairs.

Colour whitish, the inner border of the arm of the chelipeds cherry-red.

In the specimens in the present collection, the brush of hairs on the propodites of the second pair of legs is much sparser than that on the first.

The 'spooned' hairs found on the second maxillipeds in *Gelasimus* and *Macrophthalmus* are surprisingly absent in all *Ocyroda*, although the mode of feeding is similar.

The anterior male abdominal appendages are sharply bent near the tip, which is rounded and consists of two somewhat flattened and distally rounded lobes, separated by a narrow incision between them.

This species occurs from Tahiti to the east coast of Africa, and has also been recorded from the Bay of Bengal. This is the first record from the west coast of India.

***Ocyroda cordimana* Desmarest**

(Plate 13)

- Ocyrode (Ocyrode) cordimana*, De Haan, *Fauna Japonica* v p. 57 (1850).
Ocyrode cordimanus, Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 84 (1950).
Ocyrode cordimana, Lanchester, *Proc. Zool. Soc. London*, p. 752 (1900).
Ocyroda cordimana, Haswell, *Catalogue Austr. Crust.* p. 95 (1882).
 de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 108 (1887).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 387 (1893).
 Alcock and Anderson, *Journ. As. Soc. Bengal* lxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxix, p. 349 (1900).
 Parisi, *Atti. Soc. It. Sc. Nat.* lvii, p. 96 (1918).
 Tesch, *Siboga Exped. Rep.* xxxix, p. 35 (1918).
 Kohli, *Proc. Lahore Phil. Soc.* iii, p. 84 (1921-1922).

- Gravely, *Bull. Madras Govt. Mus.* i, p. 148 (1927).
 Chopra and Das, *Rec. Ind. Mus.* xxxix, p. 420 (1937).
 Tweedie, *Bull. Raffles Mus. Singapore* 13, p. 141 (1937).
 Sakai, *Yokendo Ltd. Tokyo*, p. 613 (1939).
 Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 91 (1940).
 Tweedie, *Bull. Raffles Mus. Singapore* 21, p. 126 (1950).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 27 (1951).

The present collection is represented by a male specimen from Umar-sadi. It lives in burrows in sand. It measures :

length of carapace	...	23 mm.
breadth of carapace	...	24 mm.

This species is distinguished by the absence of a stridulating ridge and by the eyestalks not being prolonged to form a style.

Colour grey.

In the anterior male abdominal appendages there is no deep incision separating the two lobes at the tip, though the lobes are well differentiated.

This species has been previously recorded from the Bay of Bengal and Travancore. It occurs from Tahiti and Japan to the Red Sea. This is the first record from Bombay State.

Ocypoda rotundata Miers

(Plate 13)

Ocypoda rotundata, Alcock, *Journ. As. Soc. Bengal* lxxix, p. 348 (1900).

A male from Okha is in the present collection. It lives in burrows in sand. It measures :

length of carapace	...	42 mm.
breadth of carapace	...	49 mm.

This species is distinguished by the antero-lateral angles being rounded off, and the length of the stridulating organ being much less than half the greatest breadth of the palm.

Colour white.

The anterior male abdominal appendages are curved throughout their length. The tip somewhat resembles a camel's head and bears a ridge with hairs. There are hairs also on the distal part of the outer border.

This species has been previously recorded from Cutch, Sind, and Baluchistan. This is the first record from Bombay State.

Genus *Gelasimus* Latreille

Gelasimus annulipes Latreille

(Plate 13)

- Uca annulipes*, Lanchester, *Proc. Zool. Soc. London*, p. 754 (1900).
 Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 97 (1950).
 Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 153 (1950).
 Tweedie, *Sarawak Mus. Journ.* v, p. 356 (1950).
Gelasimus annulipes, de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 118 (1887).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 388 (1893).

- Alcock and Anderson, *Journ. As. Soc. Bengal* lxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxix, p. 353 (1900).
 Laurie, *Ceylon Pearl Oyster Fish. Report* (5), p. 425 (1906).
 Kemp, *Mem. Ind. Mus.* v, p. 221 (1915-1924).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 148 (1927).
 Tweedie, *Bull. Raffles Mus. Singapore* 13, p. 141 (1937).
 Sakai, *Yokendo Ltd. Tokyo*, p. 616, (1939).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 28 (1951).

Numerous specimens, of both sexes, were collected at Bombay, Karwar, Okha, Kolak, and Umarsadi. They live in burrows in sandy mud. An average male measures :

length of carapace	... 10 mm.
breadth of carapace	... 18 mm.
breadth of front	... 3 mm.
length of larger hand	... 29 mm.

This species is distinguished by the subquadrilateral carapace with moderately convergent lateral borders, the front being a fifth to a sixth its breadth. The tip of the thumb of the chelipeds appears notched-truncate due to the presence of an enlarged tooth. An oblique granular ridge along the dentary edge of the thumb, and another along its lower edge, are present.

The anterior male abdominal appendages are bilobed at the tip, the larger lobe being blunt, the smaller one pointed ; both bear hairs.

There are peculiar 'spooned' hairs on the posterior half of the merus and the inner side of the tip of the palp of the second maxillipeds, used probably for feeding. The 'spoon' consists of about five rounded lobes on each side, continuing into hairs.

This species has been previously recorded from both the coasts of India. This is the first record from Bombay State.

Gelasimus marionis (Desmarest)

(Plate 13)

- Uca marionis*, Tesch, *Siboga Exped. Rep.* xxxix, p. 38 (1918).
 Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 90 (1950).
Gelasimus marionis, Alcock, *Journ. As. Soc. Bengal* lxix, p. 359 (1900).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 148 (1927).
 Chopra and Das, *Rec. Ind. Mus.* xxxix, p. 422 (1937).
 Tweedie, *Bull. Raffles Mus. Singapore*-13, p. 143 (1937).
 Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 90 (1940).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 29 (1951).

Numerous specimens were collected from Bombay. They live in burrows in sandy mud. An average specimen measures :

length of carapace	... 17 mm.
breadth of carapace	... 27 mm.
breadth of front	... 1.5 mm.
length of larger hand	... 45 mm.

In this species, the front is less than a fifteenth the breadth of the carapace. The upper surface of the wrist is granular, the fingers are compressed and blade-like, and the edge of the thumb has a simple S-shaped curve.

Colour in spirit blackish, claws white.

The smaller male cheliped is hairy. The larger hand is less than thrice the carapace length.

The anterior male abdominal appendages are suddenly sharp at the tip, which bears numerous long hairs. There is a lobe near the tip, from which a wide groove passes towards the base.

The spooned hairs on the second maxillipeds are present. The 'spoon' is wider than in *Gelasimus annulipes* and consists of about five lobes, the proximal three of which are pointed.

This species has been previously recorded from both the Bay of Bengal and the Arabian Sea. It ranges from Samoa and Fiji to the east coast of Africa and the Red Sea. This is the first record from Bombay State.

Gelasimus marionis nitidus Dana

(Plate 13)

Uca marionis var. *nitidus*, Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 154 (1950).

Tweedie, *Sarawak Mus. Journ.* v, p. 356 (1950).

Gelasimus marionis var. *nitidus*, Alcock, *Journ. As. Soc. Bengal* lxiix, p. 360 (1900).

Gravely, *Bull. Madras Govt. Mus.* i, p. 148 (1927).

Chopra and Das, *Rec. Ind. Mus.* xxxix, p. 422 (1937).

Tweedie, *Bull. Raffles Mus. Singapore* 13, p. 143 (1937).

Gelasimus marionis nitidus, Sakai, *Yokendo Ltd. Tokyo*, p. 622 (1939).

Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 91 (1940).

This variety is distinguished from *Gelasimus marionis* by the cutting edge of the thumb being thrown into a W-shaped curve owing to the strong projection of two large triangular lobes.

Colour, locality, size, distribution, anterior male abdominal appendages and spooned hairs same as in *Gelasimus marionis*.

Opinions differ as to the validity of this variety. Tesch (1918) calls this variety as only a claw-variation of *Gelasimus marionis*. According to Tweedie it is probably a case of 'geographically local dimorphism confined to the males'. The females in the two forms are inseparable. This view is confirmed by the similarity of the anterior male abdominal appendages in the two forms.

Gelasimus dussumieri Milne-Edwards

(Plate 14)

Uca dussumieri, Lanchester, *Proc. Zool. Soc. London*, p. 753 (1900).

Tesch, *Siboga Exped. Rep.* xxxix, p. 39 (1918).

Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 153 (1950).

Tweedie, *Sarawak Mus. Journ.* v, p. 356 (1950).

Gelasimus dussumieri, Haswell, *Catalogue Austr. Crust.*, p. 93 (1882).

Alcock, *Journ. As. Soc. Bengal* lxiix, p. 361 (1900).

Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 91 (1940).

Numerous specimens of both sexes were collected from Kolak and Umarsadi. They live in burrows in mud. An average male measures :

length of carapace	... 21 mm.
breadth of carapace	... 34 mm.
breadth of front	... 2 mm.

In this species, the front is less than a fifteenth the greatest breadth of the carapace, which is at the acute, wing-like, antero-lateral angles. The fingers of the chelipeds end in simple hooked tips, and the meropodites of the last pair of legs are not foliaceous.

Colour in spirit chocolate-brown, chelipeds reddish yellow.

The anterior male abdominal appendages are split into two lobes at the tip.

The 'spoon' is long and narrow, consisting of about 13 large, well-separated, rounded lobes, followed by 13 smaller lobes. The five distal lobes are squarish, the others saw-like and anteriorly directed.

According to Rathbun, *Gelasimus acutus* of Stimpson is synonymous with this species. This species is very closely allied to *Gelasimus urvillei* Milne-Edwards, the latter being distinguished by the accessory row of granules on the lower orbital border. But de Man (1891) has recorded specimens showing traces of this accessory row, which in other respects (shape of carapace, etc.) resemble typical *dussumieri*. One of the specimens in the present collection also shows traces of this row of granules.

This species has been previously recorded from Mergui, the Andamans and Nicobars, and Bimlipatam. This is the first record from the west coast of India.

Subfamily SCOPIMERINAE

Genus *Dotilla* De Haan

Dotilla myctiroides (Milne-Edwards)

(Plate 14)

- Scopimera myctiroides*, Lanchester, *Proc. Zool. Soc. London*, p. 760 (1900).
Dotilla myctiroides, Walker, *Journ. Linn. Soc. London (Zool.)* xx, p. 111 (1890).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 390 (1893).
 Alcock, *Journ. As. Soc. Bengal* lxxix, p. 368 (1900).
 Laurie, *Ceylon Pearl Oyster Fish. Report* (5), p. 426 (1906).
 Kemp, *Mem. Ind. Mus.* v, p. 227 (1915-1924).
 Tesch, *Siboga Exped. Rep.* xxxix, p. 43 (1918).
 Kemp, *Rec. Ind. Mus.* xvi, p. 32b (1919).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 149 (1927).
 Tweedie, *Bull. Raffles Mus. Singapore* 13, p. 147 (1937).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 29 (1951).

Numerous specimens, of both sexes, from Bombay and Karwar represent the present collection. They live in muddy regions in colonies. An average specimen measures :—

length of carapace	... 9 mm.
breadth of carapace	... 8 mm.

This species is distinguished by the absence of any sculpture except the lateral grooves on the carapace, which is slightly longer than broad. The chelipeds are at least three times the length of the carapace. Tympana are present on all segments of the sternum.

Colour pinkish, chelipeds white.

There is no 'brain-convolution' sculpture in this species.

The anterior male abdominal appendages are club-shaped at the tip, which bears tufts of hairs.

This species has been previously recorded from Mahe, Marmagao, Travancore, Rameswaram I., Tuticorin, Ennur, Chilka Lake, Tavoy and Mergui, the Andamans, Singapore, Java, Gaspar Straits and Billiton I., and Mindanao.

Subfamily MACROPHALMINAE

Genus *Macrophthalmus* Latreille

Macrophthalmus pectinipes Guerin

(Plate 14)

Macrophthalmus pectinipes, Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 389 (1893).

Alcock, *Journ. As. Soc. Bengal* lxi, p. 377 (1900).

Tesch, *Zool. Meded. Leiden* i, p. 156 (1915).

Kemp, *Rec. Ind. Mus.* xvi, p. 385 (1919).

Numerous specimens, of both sexes, were collected from Kolak and Umarsadi. An average male measures :

length of carapace	... 32 mm.
breadth of carapace	... 52 mm.

This species is distinguished by the carapace, the length of which is six-elevenths its breadth, being studded with large pearly granules. The eyestalks do not project beyond the antero-lateral angles. In the first three pairs of legs, the meropodites, carpopodites, and propodites are scabrous and serrated.

Colour a uniform grey, the tubercles pearly white.

This species is also known by the synonym *Macrophthalmus simplicipes* Guerin.

In the specimens in the present collection, there is a spine or two on the ischium of the legs on the ventral border.

The anterior male abdominal appendages bear two lobes at the tip—the inner one straight and slender, the outer bent outwards. Both bear hairs, each hair being striped with alternate brown and white bands.

There are three types of hairs on the second maxillipeds in all *Macrophthalmi*, viz. very long smooth hairs, shorter barbed hairs, and very short spooned hairs. The 'spoon' is very long and narrow, and consists of irregular lobes. The last lobe is bent at right angles when seen in a side view.

This species has been previously recorded from Sind, Karachi, Bombay, Cuttack (or Cutch ?), and Penang.

Macrophthalmus sulcatus Milne-Edwards

(Plate 14)

- Macrophthalmus sulcatus*, Alcock, *Journ. As. Soc. Bengal* lxi, p. 379 (1900).
 Tesch, *Zool. Meded. Leiden* i, p. 165 (1915).
 Kemp, *Rec. Ind. Mus.* xvi, p. 388 (1919).
 Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 101 (1950).

A mutilated male specimen from Umarsadi and another from Bombay represent the present collection. The specimen from Bombay measures:

length of carapace	... 7 mm.
breadth of carapace	... 17 mm.

In this species the true first antero-lateral tooth appears to belong to the upper border of the orbit, so that the antero-lateral angle of the carapace is formed by the much larger second tooth, which also is the apparent outer orbital angle. The eyes reach not only beyond the orbits, but also beyond the antero-lateral angles.

The tip of the anterior male abdominal appendage is rounded and broadened like a drum-stick, and bears coarse hairs.

At the upper border of the inner angle of the wrist is a sharp spinule, and there is another exactly below it on the lower border.

The 'spoon' is short and broad, and consists of about five backwardly-directed saw-like lobes.

This species has been previously recorded from Cutch, Mauritius, and Australia. The last locality, according to Kemp (1919), seems to be erroneous.

Macrophthalmus latreillei Desmarest

(Plate 14)

- Macrophthalmus latreillei*, Laurie, *Ceylon Pearl Oyster Fish. Report* (5), p. 427 (1906).
 Tesch, *Zool. Meded. Leiden* i (1915).
 Sakai, *Yokendo Ltd. Tokyo*, p. 626 (1939).
 Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 154 (1950).

The present collection is represented by three males and two females from Bombay. An average male measures:

length of carapace	... 23 mm.
breadth of carapace	... 31 mm.

In this species, the shape of the carapace varies from nearly equilateral to transversely elongated. The whole surface is covered with large granules and, in the young, hairs. There are four teeth on the lateral borders, and the front is one-tenth the breadth of the carapace. The chelipeds of the male are remarkably small. The finger has a tooth near the base, and the thumb is curved downward in the adult, but in line with the palm in the young. A spine is present at the distal end of the meropodites of the last pair of legs.

Colour uniformly grey. The dactyli and the distal half of the propodites of the first three pairs of legs are tinged with a faint violet.

The anterior male abdominal appendages are straight and thick. The tip is narrowed to a sting-like point and bears long hairs.

The 'spoon' is very long and narrow, and consists of lobes of gradually decreasing size.

This species has been previously recorded from Madagascar, Malacca, Luzon, Philippines, Hong Kong, New Caledonia, Japan, Singapore, Gulf of Manaar, Siam, and Makassar. This is the first record from the west coast of India.

Macrophthalmus pacificus Dana

(Plate 15)

Macrophthalmus pacificus, Tesch, *Zool. Meded. Leiden* i, p. 190 (1915).
Kemp, *Rec. Ind. Mus.* xvi, p. 391 (1919).
Sakai, *Yokendo Ltd. Tokyo*, p. 628 (1939).

The present collection is represented by a male from Okha. It measures :

length of carapace	...	11 mm.
breadth of carapace at external orbital angles	...	13 mm.
greatest breadth of carapace	...	16 mm.
breadth of front	...	2 mm.

The carapace is smooth, and two-thirds as long as broad. The lateral borders are divergent posteriorly, and have three teeth. The eyes do not reach the orbital teeth. On each branchial region are two longitudinal, parallel, granular eminences, with a third near the postero-lateral angle.

Colour uniform grey.

The anterior male abdominal appendages are thick and slightly curved, densely covered with barbed hairs along the outer margin. The tip is blunt and angular, and bears a brush of smooth hairs.

There is almost no 'spooning' on the hairs of the second maxillipeds, which consist of numerous lobes.

This species has been previously recorded from Portuguese India, Nicobars, Penang, Loo Choo Is., Australia, and Samoa.

Macrophthalmus depressus Rüppell

(Plate 15)

Macrophthalmus depressus. de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 124 (1887).

Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 389 (1893).

Alcock, *Journ. As. Soc. Bengal* lxix, p. 380 (1900).

Tesch, *Zool. Meded. Leiden* i, p. 196 (1915).

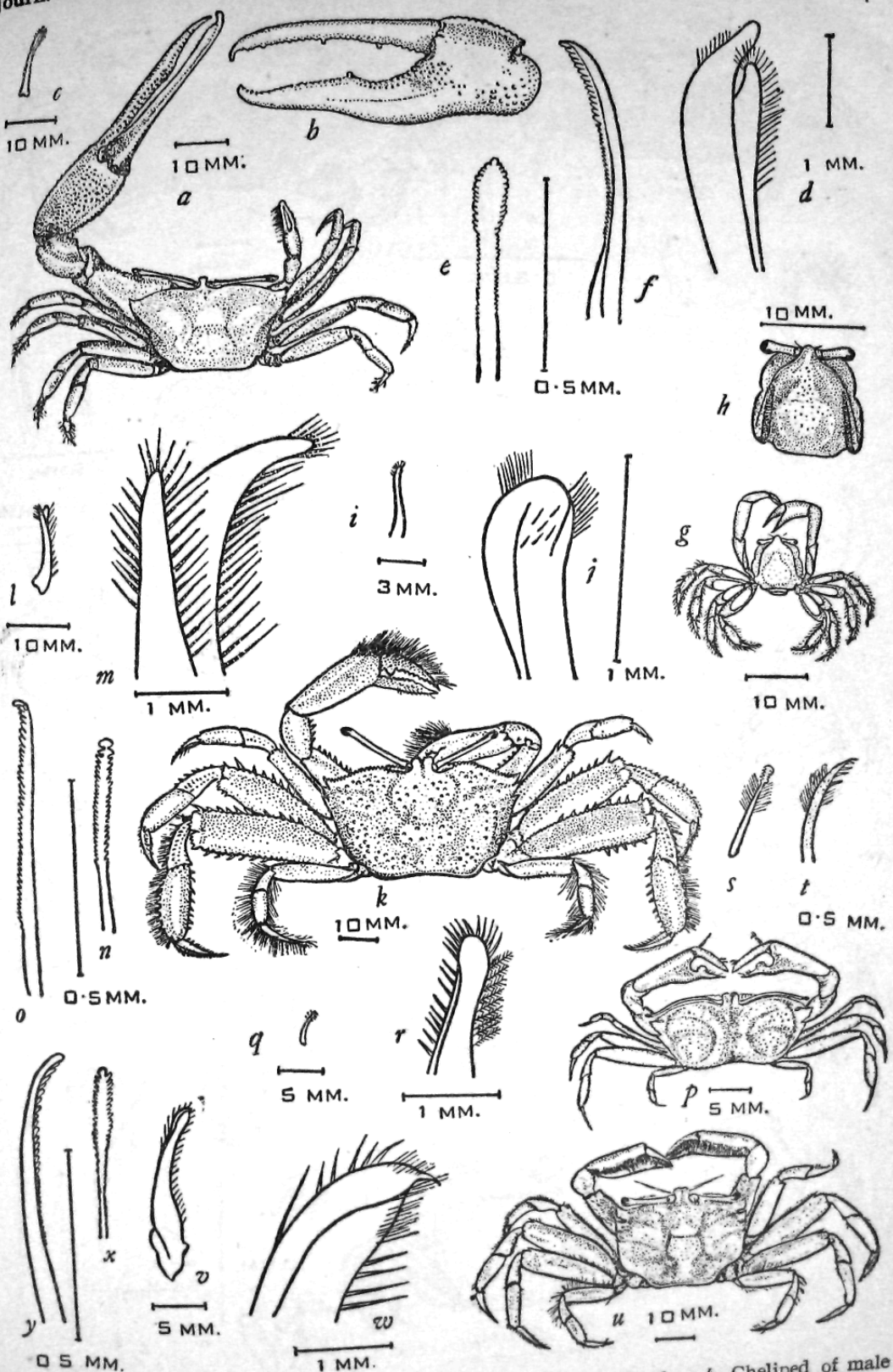
Kemp, *Rec. Ind. Mus.* xvi, p. 392 (1919).

Gravely, *Bull. Madras Govt. Mus.* i, p. 150 (1927).

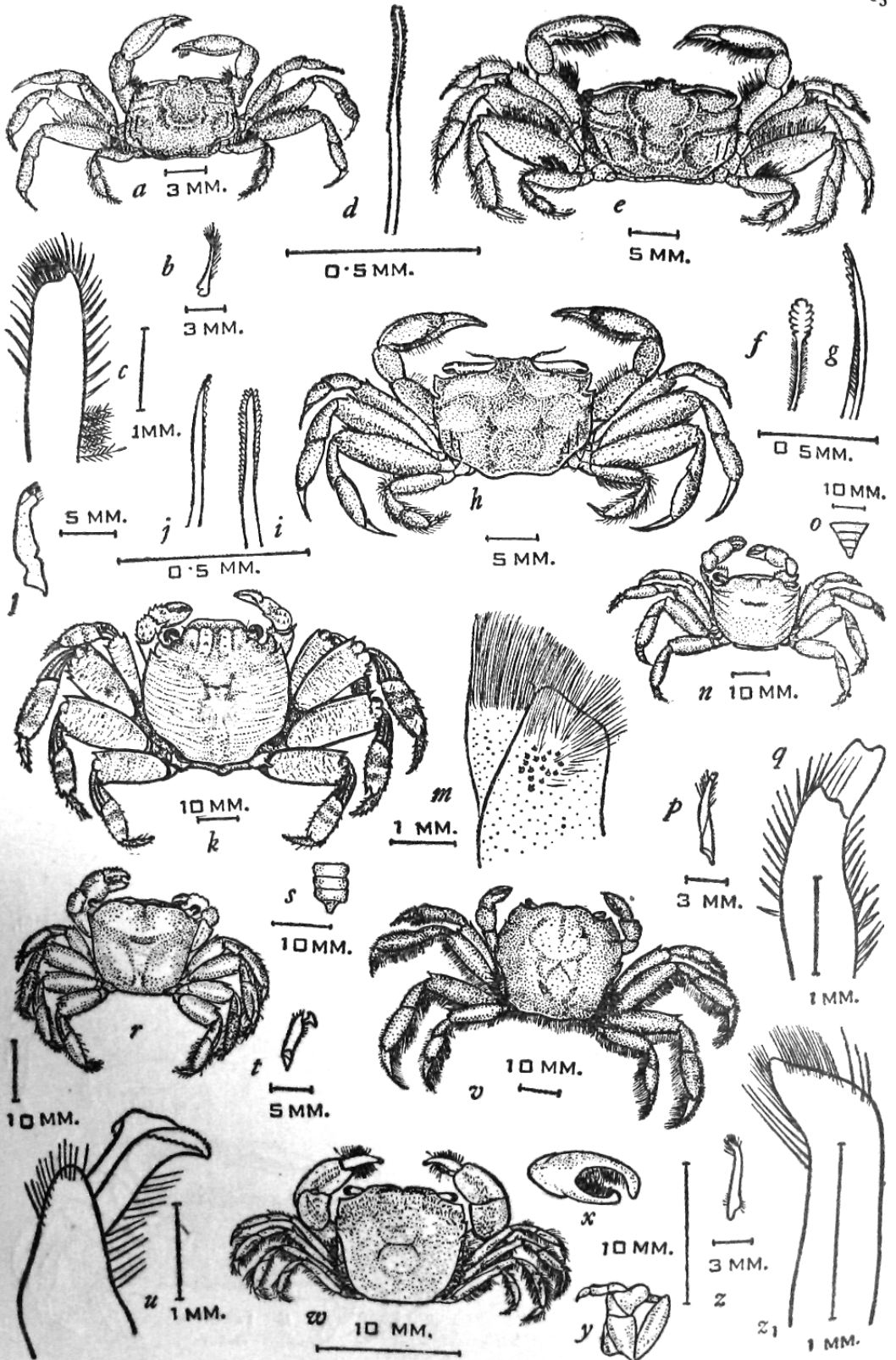
Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 94 (1940).

The present collection is represented by a female from Bombay, and another from Kolak. The larger one measures :

length of carapace	...	12 mm.
breadth of carapace	...	20 mm.
breadth of front	...	3 mm.



Gelasimus dussumieri Milne-Edwards: a. Dorsal view of male. b. Cheliped of male. c. 1st left abdominal appendage of male. d. Tip of same, enlarged. e. Spooned hair on 2nd maxilliped, front view. f. Same, side view. *Dotilla mychiroides* (Milne-Edwards): g. Dorsal view of crab. h. Carapace, enlarged. i. 1st left abdominal appendage of male. l. Tip of same, enlarged. *Macrophthalmus pectinipes* Guerin: k. Dorsal view of male. m. 1st left abdominal appendage of male. n. Tip of same, enlarged. o. Same, side view. *Macrophthalmus sulcatus* Milne-Edwards: p. Dorsal view of male. q. 1st left abdominal appendage of male. r. Tip of same, enlarged. s. Spooned hair on 2nd maxilliped, front view. t. Same, side view. *Macrophthalmus latreillei* Desmarest: u. Dorsal view of male. v. 1st left abdominal appendage of male. w. Tip of same, enlarged. x. Spooned hair on 2nd maxilliped, front view. y. Same, side view.



Macrophthalmus pacificus Dana: a. Dorsal view of male. b. 1st left abdominal appendage of male. c. Tip of same, enlarged. d. Spooned hair on 2nd maxilliped, front view. *Macrophthalmus depressus* Ruppell: e. Dorsal view of crab. f. Spooned hair on 2nd maxilliped, front view. g. Same, side view. *Macrophthalmus crinitus* Rathbun: h. Dorsal view of crab. i. Spooned hair on 2nd maxilliped, front view. j. Same, side view. *Grapsus strigosus* (Herbst): k. Dorsal view of crab. l. 1st left abdominal appendage of male. m. Tip of same, enlarged. *Metopograpsus messor* (Forsk.) n. Dorsal view of crab. o. Male abdomen. p. 1st left abdominal appendage of male. q. Tip of same, enlarged. *Metopograpsus maculatus* Milne-Edwards: r. Dorsal view of crab. s. Male abdomen. t. 1st left abdominal appendage of male. u. Tip of same, enlarged. *Varuna litterata* (Fabricius): v. Dorsal view. *Pseudograpsus intermedius* Chhapparg: w. Dorsal view of male. x. External view of chela of male. y. External maxilliped. z. 1st left abdominal appendage of male. z₁. Tip of same, enlarged.

In this species, the carapace is studded with minute granules. The lateral borders are parallel, and the antero-lateral angle is a square-cut lobe. On the epibranchial region are two nearly parallel, obliquely longitudinal, finely granular lines.

Colour greyish.

The 'spoon' is short and broad, consisting of about six rounded lobes.

This species has been previously recorded from the Red Sea, Persian Gulf, Bombay, Pondicherry, and Rameswaram I.

Macrophthalmus crinitus Rathbun

(Plate 15)

Macrophthalmus crinitus, Tesch, *Zool. Meded. Leiden* i, p. 192 (1915).

Kemp, *Rec. Ind. Mus.* xvi, p. 390 (1919).

Macrophthalmus (?) *crinitus*, Tweedie, *Sarawak Mus. Journ.* v, p. 360 (1950).

Three females from Okha represent the present collection. An average specimen measures :

length of carapace	... 9 mm.
breadth of carapace	... 11 mm.
breadth of front	... 3 mm.

In this species the carapace is $\frac{3}{2}$ as long as broad, being widest behind the tip of the first antero-lateral tooth. The lateral borders are parallel. The orbital teeth are not very sharp, and their outer margins are parallel.

Colour greyish.

The hairs on the second maxillipeds are very thick, and almost without spooning.

This species is closely related to *Euplax bosci*. It has been previously recorded from Halmaheira, Amboina, Mergui, and Singapore. This is the first record from India.

Family GRAPSIDAE

Subfamily GRAPSINAE

Genus **Grapsus** Lamarck

Grapsus strigosus (Herbst)

(Plate 15)

- Grapsus strigosus*, Haswell, *Catalogue Austr. Crust.*, p. 97 (1882).
 de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 148 (1887).
 Walker, *Journ. Linn. Soc. London (Zool.)* xx, p. 110 (1890).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 390 (1893).
 Alcock & Anderson, *Journ. As. Soc. Bengal* lxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxix, p. 393 (1900).
 Lanchester, *Proc. Zool. Soc. London*, p. 755 (1900).
 Tesch, *Siboga Exped. Rep.* xxxix, p. 71 (1918).

- Maccagno, *Ann. Mus. Stor. nat. Genova* lix, p. 178 (1935-1937).
 Tweedie, *Bull. Raffles Mus. Singapore* 12, p. 45 (1936).
 Chopra & Das, *Rec. Ind. Mus.* xxxix, p. 425 (1937).
 Sakai, *Yokendo Ltd. Tokyo*, p. 650 (1939).
 Tweedie, *Bull. Raffles Mus. Singapore* 18, p. 28 (1947).
 Barnard, *Ann. S. Afr. Mus.* xxviii, p. 115 (1950).
 Tweedie, *Bull. Raffles Mus. Singapore* 21, p. 94 (1950).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 34 (1951).

Numerous specimens, of both sexes, were collected at Bombay and Okha. An average male measures :

length of carapace	...	31 mm.
breadth of carapace	...	34 mm.
length of upper border of palm	...	5.5 mm.
length of upper border of dactylus	...	9 mm.

This species is distinguished by the breadth of the front being 39-40 per cent of the distance between the external orbital angles, its free edge being not distinctly crenulate. The tooth at the inner angle of the orbit is subacute, and keeled. The tooth at the inner angle of the wrist of the chelipeds is nearly straight, not talon-like; the length of the upper border of the palm is nearly two-thirds the length of the dactylus. The first pair of legs is about as long as the last pair. The greatest breadth of the meropodites of the last pair is half its length. The distal part of the posterior margin of the last legs is dentate.

Colour dark reddish brown and white.

The propodites in all the legs have a terminal spine on the posterior border.

The anterior male abdominal appendages are very thick and have two lobes at the tip. The inner lobe bears a thick brush of dark brown hairs, while the outer bears lighter straw-coloured hairs and a patch of spinules.

This species is common in the Indian coastal waters, both in the Bay of Bengal and the Arabian Sea. Its range extends from the east coast of Africa to Polynesia and possibly to the west coast of America also.

Genus *Metopograpsus* Milne-Edwards

Metopograpsus messor (Forsk.)

(Plate 15)

- Metopograpsus messor*, de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 144 (1887).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 390 (1893).
 Alcock & Anderson, *Journ. As. Soc. Bengal* lxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxix, p. 397 (1900).
 Calman, *Trans. Linn. Soc. London (Zool.)* vii, p. 24 (1900).
 Laurie, *Ceylon Pearl Oyster Fish. Report* (5), p. 429 (1906).
 Tesch, *Siboga Exped. Rep.* xxxix, p. 79 (1918).
 Gravely, *bul. Madras Govt. Mus.* i, p. 147 (1927).
 Maccagno, *Ann. Mus. Stor. nat. Genova* lix, p. 178 (1935-1937).

- Sakai, *Yokendo Ltd. Tokyo*, p. 654 (1939).
 Tweedie, *Bijdragen tot de Dierkunde* 28, p. 469 (1949)
 Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 118 (1950).
 Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 156
 (1950).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 35
 (1951).

Numerous specimens, of both sexes, were collected at Bombay, Okha, and Umarsadi. It lives among rocks and is very active. An average male measures:

length of carapace	... 15 mm.
breadth of carapace	... 19 mm.
breadth of front	... 11 mm.

In this species the carapace is four-fifths as long as broad. There are some fine transverse markings on the post-frontal region. The front is about three-fifths the greatest breadth of the carapace; its free edge is sinuous and thin, but hardly laminar. The orbits are little oblique, the inner angle of their lower border being denticulate. The finger of the chelipeds is not much longer than the upper border of the palm. In the last three pairs of legs the greatest breadth of the merus is half its length. The terminal segment of the male abdomen is simply triangular.

Colour dark bottle-green; the claws in some adult males are a brilliant violet, in others bright orange, dull in the female; the legs are striped with alternate light and dark bands.

The male abdomen narrows gradually from the base to the terminal segment.

The anterior male abdominal appendages are in the form of a brown chitinous tube with its tip slightly bilobed and straw-coloured. Both the borders bear hairs at the distal end.

This species has been previously recorded from both the coasts of India, including Bombay. It ranges in distribution from the Red Sea to Australia.

Metopograpsus maculatus Milne-Edwards

(Plate 15)

- Metopograpsus maculatus*, de Man, *Journ. Linn. Soc. London (Zool.)* xxii, p. 145 (1887).
 Alcock, *Journ. As. Soc. Bengal* lxxix, p. 398 (1900).
 Tesch, *Siboga Exped. Rep.* xx xix, p. 80 (1918).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 35
 (1951).

A few specimens, of both sexes, from Kolak and Umarsadi, are in the present collection. Habits and habitat same as *Metopograpsus messor*. An average male measures:

length of carapace	... 23 mm.
breadth of carapace	... 28 mm.
breadth of front	... 17 mm.

This species is distinguished by the carapace being seven-eighths as long as broad, with markedly convergent sides and the absence of transverse markings on the post-frontal region. The front is nearly three-fourths the greatest breadth of the carapace; its free edge is nearly straight

and laminar. The orbits are oblique, and the inner angle of their lower border is not dentate. The fingers of the chelipeds are much longer than the upper border of the palm. Except in the last pair of legs, the greatest breadth of the meropodites is decidedly less than half their length. The terminal male abdominal segment has a three-lobed appearance.

The segments of the male abdomen from the first to the penultimate are of the same width, their sides being parallel; the last segment suddenly narrows to a point.

The anterior male abdominal appendages are coarse and thick; the tip is a separate hammerhead-shaped lobe with serrated margins.

This species has been previously recorded from both the coasts of India, Ceylon, Mergui, and East Indies. This is the first record from Bombay State.

Subfamily VARUNINAE

Genus *Varuna* Milne-Edwards

Varuna litterata (Fabricius)

(Plate 15)

- Trichopus litteratus*, De Haan, *Fauna Japonica* v, p. 32 (1850).
Varuna litterata, Miers, *Catalogue New Zealand Crust.*, p. 40 (1876).
 Haswell, *Catalogue Austr. Crust.*, p. 103 (1882).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 391 (1893).
 Alcock and Anderson, *Journ. As. Soc. Bengal* lxxiii, p. 202 (1894).
 Alcock, *Journ. As. Soc. Bengal* lxxix, p. 401 (1900).
 Calman, *Trans. Linn. Soc. London (Zool.)* viii, p. 24 (1900).
 Lanchester, *Proc. Zool. Soc. London*, p. 756 (1900).
 Kemp, *Mem. Ind. Mus.* v, p. 232 (1915).
 Parisi, *Atti. Soc. It. Sc. Nat.* lvii, p. 105 (1918).
 Tesch, *Siboga Exped. Rep.* xxxix, p. 85 (1918).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 147 (1927).
 Hora, *Proc. Zool. Soc. London*, p. 881 (1933).
 Tweedie, *Bull. Raffles Mus. Singapore* 12, p. 49 (1936).
 Sakai, *Yokendo Ltd. Tokyo*, p. 665 (1939).
 Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 99 (1940).
 Barnard, *Ann. S. Afr. Mus.* xxxviii, p. 122 (1950).
 Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 156 (1950).
 Pillai, *Bull. Central Inst. Travancore* ii, p. 36 (1951).

The present collection is represented by numerous females from Bombay and Kolak. The largest measures:

length of carapace	... 38 mm.
breadth of carapace	... 41 mm.

In this species the carapace is depressed and is very little broader than long. The legs have the three terminal joints compressed, dilated, and plumed. Colour mottled black and brown.

This species is commercially important in Bengal where it is eaten by the poor people, and where its numbers compensate for its small size (Hora, 1933).

It has been previously recorded from the east coast of Africa to New Zealand, Australia, and Japan. It is frequently found clinging to logs of driftwood in the open sea, which accounts for its wide distribution.

Genus *Pseudograpsus* Milne-Edwards*Pseudograpsus intermedius* Chhappgar

(Plate 15)

Pseudograpsus intermedius, Chhappgar, *Rec. Ind. Mus.*, liii (in press) (1955).

Carapace squarish, flat, depressed, very little broader than long. Anterior half of carapace up to the cervical groove covered with minute, scattered, fine, brownish hairs, which are more profuse on the front, orbits, epigastric lobes, and lateral borders. Regions of carapace not well indicated except in the middle of the carapace where the grooves are disposed in the shape of the letter H. Cervical groove distinct but not very deep, semicircular. The antero-lateral borders are lined with profuse hair and cut into three distinct, flat teeth (including the external orbital angle) which decrease in size from before backward and are not serrate.

Buccal cavern square. External maxillipeds gaping, but not very widely: their exognath is narrower than the ischium: their merus shorter, but anteriorly much broader, than the ischium: it is auriculate (expanded) at the outer angle, so that the palp articulates near the middle of the merus.

The space between the fingers is covered with a thick matt of long entangled, silky hairs, under which, at the base of the fingers, is hidden a white fleshy lobe. The borders of the joints of all the legs, particularly the posterior border of the merus and both borders of the carpus and propodus, thickly fringed with long, dusky hairs. The anterior male abdominal appendages are stout and straight, but bent suddenly at the tip, which bears brushes of hairs.

Colour chestnut.

Ten males and four females (two of them berried) from Bombay city represent the present collection. They were caught in mud under stones.

The measurements of the type specimens are given below:

	male	female
length of carapace	... 10.0 mm.	6.75 mm.
breadth of carapace	... 11.0 mm.	7.25 mm.
breadth of front	... 4.0 mm.	2.60 mm.

Tesch¹, in the discussion of the *Grapsidae*, divides the species of *Pseudograpsus* into two different groups, viz.

(1) large species (up to 4 cm.), chestnut coloured. Cervical groove very deep, semicircular. Three last joints of the legs with a fur of black hairs;

(2) small species (up to 1.5 cm.), white. Cervical groove indistinct, nearly straight. Legs naked.

It will be seen that this species offers a combination of the characters of the above two groups. Although it is a small species (measuring only up to 1 cm.), the specimens are chestnut coloured. Again, the cervical groove, though semicircular, is not very deep. The legs, too, are covered with dusky hair.

¹ Tesch, J. J., *Siboga Exped. Rep.* xxxixc, pp. 97, 98 (1918).

Subfamily SESARMINAE

Genus *Sesarma* SaySubgenus *Sesarma**Sesarma (Sesarma) quadrata* (Fabricius)

(Plate 16)

- Grapsus (Pachysoma) quadratus*, De Haan, *Fauna Japonica* v, p. 62 (1850).
Sesarma (Parasesarma) plicata, Tesch, *Zool. Meded. Leiden* iii, p. 187 (1917).
Sesarma (Sesarma) quadratum, Pillai, *Bull. Central Inst. Travancore* ii, p. 36 (1951).
Sesarma quadratum, Alcock, *Journ. As. Soc. Bengal* lxxix, p. 413 (1900).
 Gravely, *Bull. Madras Govt. Mus.* i, p. 147 (1927).
Sesarma quadrata, de Man, *Notes Leyden Mus.* xii, p. 99 (1890).
 Henderson, *Trans. Linn. Soc. London (Zool.)* v, p. 392 (1893).
 Alcock and Anderson, *Journ. As. Soc. Bengal* lxxiii, p. 202 (1894).
 Lanchester, *Proc. Zool. Soc. London*, p. 756 (1900).
Sesarma (Sesarma) quadrata, Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 96 (1940).

Numerous specimens, of both sexes, were collected at Karwar, Kolak, and Umarsadi. It is a rock-dweller. An average male measures:—

length of carapace	... 17.5 mm.
breadth of carapace	... 20 mm.

This species is distinguished by the deep carapace which is broader than long, and without any tooth on the lateral borders behind the orbital angle. The front is more than half the greatest breadth of the carapace. The inner border of the arm bears a large tooth at its distal end. On the upper surface of the palm are two oblique pectinated ridges, and the dorsal surface of the male finger is milled with 11 to 19 blunt, transverse lamellae.

Colour mottled grey, the fingers cherry-red.

The anterior male abdominal appendages are bent outwards at the extreme tip, which bears hairs along both borders.

This species has been previously recorded from the coasts of India, Ceylon, the Andamans and Nicobars. This is the first record from Bombay State.

Sesarma (Sesarma) oceanica de Man

(Plate 16)

- Sesarma oceanicum*, Alcock, *Journ. As. Soc. Bengal* lxxix, p. 423 (1900).
Sesarma (Sesarma) rotundata, Tesch, *Zool. Meded. Leiden* iii, p. 193 (1917).

Numerous specimens, of both sexes, from Kolak are in the present collection. An average male measures:

length of carapace	... 36 mm.
breadth of carapace	... 31 mm.
breadth of front	... 17 mm.
length of merus of leg	... 26 mm.
breadth of merus of leg	... 11 mm.

This species is distinguished by the shallow, depressed carapace, which is longer than broad, and has two teeth on the lateral borders behind the outer orbital angle. The post-frontal lobes of the gastric region are smooth. The fingers of the chelipeds have no milling. The meri of the legs are more than three times as long as broad, and the dactyli are short.

Colour of the carapace and legs varying from light violet to almost black. The palm and fingers of the chelipeds orange to cherry-red, finger tips white, extreme tips horny.

The carapace in its anterior half is covered with little dense tufts of hair resembling tubercles, amid a finer fur resembling granules.

The palm of the chelipeds is almost smooth, except for two granular ridges, one extending along the lower border up to the base of the immobile finger, the other along the inner edge of the same finger. The angular lobe near the far end of the inner border of the arm is hardly prominent, being a blunt projection. The inner angle of the wrist is pronounced but not dentiform; close to and parallel to it runs a ridge; a smooth ridge runs outside the granular ridge at the upper border of the palm. On the upper border of the dactylus are two horny teeth; the tips of the fingers are cut off diagonally, resembling tongs. The meropodites of the legs are only $2\frac{1}{2}$ times as long as broad. The male abdomen is long and narrow.

The anterior male abdominal appendages are straight up to the tip, which bears numerous long hairs.

This species has been previously recorded from the Nicobars. This is the first record from the west coast of India.

Sesarma (Sesarma) taeniolata White

(Plate 16)

Sesarma taeniolatum, Alcock, *Journ. As. Soc. Bengal* lxi, p. 419 (1900).

Sesarma taeniolata, Lanchester, *Proc. Zool. Soc. London*, p. 756 (1900).

Sesarma (Sesarma) taeniolatum, Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 96 (1940).

Suvatti, *Dept. of Fisheries, Bangkok, Thailand*, p. 157 (1950).

Sesarma (Sesarma) taeniolata, Tesch, *Zool. Meded. Leiden*, iii, p. 201 (1917).

Tweedie, *Bull. Raffles Mus. Singapore* 12, p. 53 (1936).

The present collection is represented by a mutilated male from Ratnagiri. It measures :

length of carapace	... 24 mm.
breadth of carapace	... 25 mm.

This species is distinguished by the deep, square carapace, covered with tufts of hair, and with a tooth on the lateral borders behind the orbital angle. There is a finely pectinated ridge on the upper surface of the palm, and another transverse granular ridge on its inner surface. The upper border of the finger in the male has a milled crest of 40-60 fine lamellae. The dactyli of the legs are two-thirds, or more, the length of the propodites.

Colour brown.

The anterior male abdominal appendages are slightly curved, with a bulge covered with hair near the tip.

This species has been previously recorded from Mergui, the Andamans, Malaya, Singapore, Thailand, and China. This is the first record from the west coast of India.

Sesarma (Sesarma) minuta de Man

(Plate 16)

Sesarma (Sesarma) minuta, Tesch, *Zool. Meded. Leiden* iii, p. 127 (1917).

A berried female was obtained from Bombay, clinging to the bivalve *Paphia malabarica*. It measures :

length of carapace	... 2.5 mm.
breadth of carapace	... 3.2 mm.

This species can be distinguished by its minute size, the carapace being broader than long. The upper border of the palm of the chelipeds has no longitudinal pectinated crest. The posterior borders of the meropodites of the legs are serrated near the carpus.

Colour lemon yellowish.

This species has been previously recorded from Batavia. This is the first record from India.

Genus **Metaplax** Milne-Edwards

Metaplax indica Milne-Edwards

(Plate 16)

Metaplax indica, Alcock, *Journ. As. Soc. Bengal* lxxix, p. 432 (1900).

Shen, *Bull. Fan Mem. Inst. Biol. (Zool.)* x, p. 95 (1940).

The present collection is represented by a male from Kolak. It measures :—

length of carapace	... 12 mm.
breadth of carapace	... 18 mm.

This species is distinguished by the equal sized male chelipeds, which are less than three times the length of the carapace. The finger has no prominent lobe on its dentary edge. The anterior borders of the carpopodites and propodites of the legs are smooth. The third, fourth, and fifth male abdominal segments are fused. There are seven to nine teeth on the male infra-orbital ridge beginning with four or five small teeth, followed by two larger rounded lobules, that are separated by a large inter-space from three very small tubercles in the lateral part of the ridge.

Colour grey, legs and chelipeds pink, the fingers a darker pink.

In the specimen in the present collection, the inner border of the arm, lower border of the hand, and teeth of the antero-lateral borders are serrated. The front is bilobed. The meropodites of all the legs, and the propodites and carpopodites of the middle two are densely hairy only on the anterior border. The third, fourth, and fifth male abdominal segments are only partly fused.