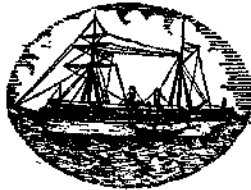


PROCEEDINGS
SYMPOSIUM ON CRUSTACEA

HELD AT
ERNAKULAM
FROM JANUARY 12 TO 15, 1965

PART I



SYMPOSIUM SERIES 2

MARINE BIOLOGICAL ASSOCIATION OF INDIA
MARINE FISHERIES P.O., MANDAPAM CAMP
INDIA

ON SOME DECAPOD CRUSTACEANS FROM THE SOUTH-WEST COAST OF INDIA*

M. J. GEORGE** AND P. VEDAVYASA RAO**

Central Marine Fisheries Research Institute, Mandapam Camp, India

ABSTRACT

Fourteen species of decapod crustaceans, 10 belonging to Natantia (7 Caridea and 3 Penaeidea) and 4 each belonging to Palinura, Astacura, Anomura and Brachyura, collected during the exploratory and research cruises of the vessels of the Indo-Norwegian Project from the waters off the Kerala coast are reported in this paper. Out of these, 5 species are recorded for the first time from these waters.

THE collections on which the following report is based were made during the exploratory and research cruises of the vessels of the Indo-Norwegian Project, *M. V. Kalava* and *R. V. Varuna* in 1962-64 from the waters off the Southwest Coast of India. The macruran shrimps of the families Penaeidae, Sergestidae, Pasiphaeidae, Ophiophoridae and Pandalidae, and one species each from the suborders Palinura, Astacura, Anomura and Brachyura collected from varying depths upto 380 fathoms are included here. Out of these five species are recorded for the first time from these waters.

Suborder MACRURA

Supersection NATANTIA

Section PENAEIDEA

Family PENAEIDAE

Gennadas propinquus Rathbun

Gennadas propinquus Rathbun, 1906, p. 908.

Gennadas alcocki Kemp, 1910, pp. 174-75 (Male).

Gennadas propinquus Burkenroad, 1936, p. 66 (in key).

Material: One female, 26 mm.

Locality: Station 2299, Arabian Sea, off Alleppey (Lat. 9° 31' N.; Long. 75° 33' E.), 380 fathoms.

Distribution: Hawaii Islands, Indo-Pacific. Kemp's record of the species is from the Bay of Bengal and off Cape Comorin, 1043 fathoms. The present record extends the distribution of the species further north in shallower waters.

Remarks: Antennal and infra-antennal angles pointed; branchiostegal spine very small, but distinct. Distance between cervical and post-cervical grooves dorsally about 1/5 distance of latter from hind margin of carapace. Antennal scale 4 times as long as wide, with the terminal spine present. In the 3rd leg, 5th joint slender and longer than 4th joint. Sixth abdominal somite dorsally carinate. Thelycum very much as described by Kemp (1910).

* Published with the permission of the Director, Central Marine Fisheries Research Institute, Mandapam Camp.

** Present Address: Central Marine Fisheries Research Substation, Ernakulam.

Gennadas scutatus Bouv.

Gennadas scutatus Barnard, 1950, p. 634 (with synonymy).

Material: Three males, length 22 mm., 21 mm. and 21 mm.

Locality: Station 2299, Arabian Sea, off Alleppey (Lat. 9° 31' N.; Long. 75° 33' E.), 380 fathoms.

Distribution: North and South Atlantic, Indo-Pacific. Kemp (1910) recorded the species off Cape-Comorin at 1053 fathoms. The present collection indicates the further northerly distribution of the species in the Arabian Sea.

Remarks: Infra-antennal angle acute; branchiostegal spine quite distinct. Distance between cervical and post-cervical grooves dorsally slightly more than 1/5 distance of the latter from the hind margin of carapace. According to Calman (1925), the 4th joint of the 3rd leg is slightly shorter than 5th joint, but in Bouvier's (1908) original description of the species, he has described the 4th joint as longer than the 5th joint. The present specimens agree with Calman's description. The petasma agrees with the previous descriptions in most respects except that the external lobe is more elongated and pointed.

Family SERGESTIDAE

Sergestes seminudus Hansen

Sergestes seminudus Hansen, 1919, pp. 18-22.

Material: Several specimens, both male and female; 24-40 mm.

Locality: Station 2299, Arabian Sea, off Alleppey (Lat. 9° 31' N.; Long. 75° 33' E.), 380 fathoms.

Distribution: Hansen's (1919) collections are from the Indo-Pacific from an area Lat. 0-7° S. and Long. 126-130° E. This is the first record of the species from Indian waters.

Remarks: Rostrum short and acute; hepatic spine present. Cornea wider than stalk, no protuberance on the latter. Telson apically acute, with a pair of minute lateral spinules near the apex and a pair of denticles on postero-lateral margin. In petasma, lamina externa of pars externa shorter than processus uncifer which is slender. Processus ventralis long with a broad base and acute process distally. Lobus armatus does not project beyond processus ventralis as observed by Hansen, but falls a little short of the latter, its whole inner margin has a row of about 10 hooks. Lobus inermis as broad as lobus terminalis at the base, but tapering to a sub-acute tip and without hooks. Two small sharp teeth present on the third coxa of female.

Section CARIDEA

Family PASIPHAEIDAE

Pasiphaea alcocki Wood-Mason

Pasiphaea alcocki Wood-Mason, 1891, p. 190.

Pasiphaea alcocki de Man, 1920, p. 6.

Pasiphaea alcocki Chace, 1940, p. 123.

Material: One female, 63 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 185 fathoms.

Distribution: Bay of Bengal, Gulf of Mannar and Arabian Sea off the Sind Coast—406-947 fathoms. Wood-Mason's record of the species from the Arabian Sea is from the northern region and in 947 fathoms. This is the first record of the species from the southern region of the Arabian Sea and in lesser depths.

Remarks: Carapace not carinate dorsally; abdomen without dorsal carination or armature on any somite. Telson sub-acute on the dorsal surface and not conspicuously forked. First pereopod with 4-6 spines on the merus and 1 spine on the carpus. Second pereopod with 13-16 spines on the merus and 1 spine on the carpus. The fingers of the first chelae slightly more than half the length of the palm, while the fingers of the second chelae almost of the same length as the palm.

Family OPLOPHORIDAE

Oplophorus gracilirostris A. M. Edw.

Hoplophorus gracilirostris Alcock, 1901, p. 73.

Hoplophorus gracilirostris Kemp and Sewell, 1912, p. 20.

Hoplophorus gracilirostris de Man, 1920, p. 48 (in key).

Material: Several specimens, male and female, varying from 48 to 55 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 180-205 fathoms.

Distribution: Off St. Domingo Islands, Dominica, St. Vincent, etc.—118 F. (A. Milne Edwards); Arabian Sea, Bay of Bengal, Andaman Sea—145-1439 F. (Alcock), and Hawaii Islands.

Remarks: Carapace with dorsal carina extending to the posterior margin. Rostrum very long, almost equal in length to the carapace. Branchiostegal spine quite distinct, with a well-defined keel. Spine on the 3rd abdominal tergum very much longer than those on the 4th and 5th. In the male the anterior border of the first abdominal somite is bilobed with the posterior lobe more pronounced and angular.

Acanthephyra sanguinea Wood-Mason

Acanthephyra sanguinea Wood-Mason, 1892, p. 358.

Acanthephyra kemp Balss, 1925, p. 256.

Acanthephyra sanguinea Calman, 1939, p. 193 (with synonymy).

Material: Three females, 115 mm., 116 mm. and 119 mm.

Locality: Arabian Sea, South-West of Cochin, off Alleppey, (Lat. 9° 25' N.; Long. 75° 40' E.), 180-205 fathoms.

Distribution: Indo-Pacific, from the Gulf of Aden and East African coast to 138° E. and 18° N. to 12° S.

Remarks: Rostrum longer than carapace with 7 dorsal and 5 ventral teeth, extending much beyond the tip of the antennal scale. Branchiostegal spine small, forming a small projection on frontal border of carapace and without a carina. Surface of carapace finely pitted as in all the

species of the *purpurea* group. Dorsal carinae of 3rd to 6th abdominal somites ending in pointed spines, that of 3rd somite the longest and of 4th and 5th of equal size and smallest. Four pairs of dorsolateral spines present on the telson.

Family PANDALIDAE

Plesionika martia (A. M. Edw.)

Plesionika martia var. *semilaevis* de Man, 1920, p. 116 (with synonymy).

Plesionika martia Balss, 1925, p. 278.

Plesionika martia Schmitt, 1926, p. 377.

Plesionika martia Calman, 1939, p. 197.

Plesionika martia Chace, 1940, p. 190.

Plesionika martia Barnard, 1950, p. 679.

Material: Several specimens, male and female, varying from 86 mm. to 106 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 150–200 fathoms.

Distribution: Eastern Atlantic and Mediterranean, Indian Seas, Hawaii Islands, Zanzibar area, off South Africa, Japan and Australia. Alcock's (1901) initial record of the species from Indian waters is from the Andaman Sea, Bay of Bengal and the Arabian Sea.

Remarks: The squamose nature of the whole integument caused by numerous short transverse series of setiferous pits as described by Barnard (1950) is easily noticed in the present specimens under low magnification. The specimens on hand agree quite well with the descriptions of Barnard and others.

Parapandalus spinipes Bate

Parapandalus spinipes de Man, 1920, p. 142.

Parapandalus spinipes Calman, 1939, p. 201.

Material: Several specimens, male and female, measuring 90–129 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 180–200 fathoms.

Distribution: Malay Archipelago, North of New Guinea, Japan, Kermadec Islands, off Cape Comorin, Red Sea, Gulf of Aden and Zanzibar area. The present record extends the distribution of the species further north in the Arabian Sea.

Remarks: In a specimen measuring 91 mm. in total length, the rostrum is armed with 46 teeth on the dorsal surface and 31 teeth on the ventral. In the same specimen, the minimum width of the 6th abdominal somite is 3.0 mm. and the length and height of the same segment 9.2 mm. and 5.2 mm. respectively. The telson which is 11.1 mm. in length is almost double the length of the 5th abdominal somite which is slightly more than that of de Man's specimens. The minute tubercle on the dorsal surface of the carapace at about 1/6 of its length from the hinder edge which corresponds in position to the small blunt median spine recorded by Rathbun (1906) in *P. longicauda* and noticed by Calman (1939) is present in almost all the specimens of the present collection.

Heterocarpus wood-masoni Alcock

Heterocarpus wood-masoni Calman, 1939, p. 204 (with synonymy).

Material: One male, 103 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 180 fathoms.

Distribution: East African Coast, Andaman Sea to Kei Islands. This is the first record of the species from the Arabian Sea.

Remarks: The single specimen on hand agrees closely with the detailed descriptions of Alcock and de Man, except that the telson bears 5 pairs of dorsolateral spinules besides those at the tip, as against 4 pairs described by de Man and 2 pairs by Calman.

Heterocarpus gibbosus Bate

Heterocarpus gibbosus de Man, 1920, p. 163 (with synonymy).

Material: 3 males, 100 mm., 127 mm. and 130 mm. and 3 females, 134 mm., 133 mm. and 138 mm., all ovigerous.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 185-200 fathoms.

Distribution: Off Tables Island, Andaman Sea, Bay of Bengal, Arabian Sea off the Travancore Coast to Kei Islands.

Remarks: The teeth on the dorsal crest and the rostrum together vary from 8 to 10 in the 6 specimens, the teeth on the rostrum proper varying from 2 to 4. The dactyli of the 3 posterior legs short, agreeing more with the description of Alcock (1901) rather than that of de Man (1920). The median carination of the 3rd abdominal tergum is quite prominent.

Supersection *REPTANTIA*Section *PALINURIDEA*Family *PALINURIDAE**Panulirus homarus* (Linnaeus)

Panulirus dasyopus Gravely, 1927, pp. 138-139; Miyamoto and Shariff, 1961, p. 255; Balasubramanian *et al.*, 1961, p. 275; De Bruin, 1962, p. 9.

Panulirus burgeri Prasad and Tampi, 1959, p. 397; Miyamoto and Shariff, 1961, p. 255; Balasubramanian *et al.*, 1961, p. 275.

Panulirus homarus, George, 1963, p. 3; Kubo, 1963, p. 68 (with synonymy); George, 1964, pp. 1-6.

Material: Several specimens, male and female, measuring 95-315 mm.

Locality: Arabian Sea, Southwest of India off south of Trivandrum (Lat. 8° 10' N.; Long. 77° 11' E.), 3-10 fathoms.

Distribution: East Indies, South Africa, South Coast of Arabia, Indian Ocean and Indo-West Pacific.

Remarks: So far the records of this species in Indian waters have been under the names *Panulirus dasyopus* and *P. burgeri*, although Holthuis (1946) has proposed synonymising the two as *P. homarus* which has been followed by later authors. Hence this species is recorded here as *P. homarus*.

In the specimens of the present collection, there is considerable variation in the nature of the flagellum of the exopod of the 2nd maxilliped as observed by De Bruin (1962), Gordon (1953) and George (1964). The number of joints in the flagellum when present is shown in Table I which shows that there may be no joints at all or as many as 6.

TABLE I

Number of joints of the flagellum of the exopod of the 2nd maxilliped	Number of lobsters	
	Right	Left
0	8	8
1	7	7
2
3	1	..
4	..	1
5	..	1
6	1	..

In the number of abdominal segments with interrupted grooves also there is considerable variation noticed by different authors. The variability of this feature in the present specimens is shown in Table II.

TABLE II

Segmental groove interrupted medially	Number of lobsters
2nd only	1
3rd only	3
4th only	Nil
5th only	"
6th only	"
2nd and 3rd	4
2nd and 4th	Nil
2nd and 5th	"
3rd and 4th	"
3rd and 5th	"
4th and 5th	"
2nd, 3rd and 4th	2
2nd, 3rd and 5th	Nil
2nd, 3rd, 4th and 5th	"
3rd, 4th and 5th	1
2nd, 4th and 5th	Nil
All grooves 1, 2, 3, 4, 5 and 6 uninterrupted	3
2nd, 3rd, 4th and 6th	1
2nd, 3rd and 6th	2

In the nature of these variations these specimens are more or less similar to De Bruin's (1962) specimens from Ceylon, but differ from the samples of George (1963) from East Aden. From the above it appears that the Ceylon and South-West Indian population are more or less the same, but sufficiently distinct from the East Aden population.

Section ASTACIDEA

Family ASTACIDAE

Nephropsis carpenteri Wood-Mason

Nephropsis carpenteri Wood-Mason, 1885, p. 70.

Material: One male, 90 mm., 2 females (one ovigerous), 88 mm. and 113 mm.

Locality: Arabian Sea, Southwest of Cochin off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 185 fathoms.

Distribution: Bay of Bengal and Jodomi, Japan. This species is now for the first time recorded from the Arabian Sea.

Remarks: Rostrum extends upto the anterior margin of the antennular peduncles in which character it differs from the closely allied species *N. stewarti* which has a slightly longer rostrum. Dorsally the distance of the cervical groove from the posterior margin of the carapace is half the length of the carapace. Carapace and abdomen granulated and finely pilose. Chelipeds are densely clothed with hairs and like the carapace and abdomen finely granulated. Faint median dorsal carinae are present in the last four abdominal segments. Pleopod 1 in male comparatively short, reaching coxa of 4th leg, channelled on its median side and set dorsoventrally parallel with its fellow. The distal half is cultrate and without hairs. Pleopod 1 in female is slender and feeble. Pleopod 2 in male with a conspicuous appendix masculina, the tip of which bears granulated spines.

Suborder ANOMURA

Section GALATHEIDEA

Family CHIROSTYLIDAE

Eumunida funambulus Gordon

? *Eumunida smithii* Parisi, 1917, p. 6.

Eumunida funambulus Gordon, 1929, p. 746.

Eumunida funambulus Van Dam, 1933, p. 7.

Material: One male, 66 mm. in carapace length and 1 female, 56 mm.

Locality: Arabian Sea, Southwest of Cochin, off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 185 fathoms.

Distribution: Timor, Philippines (Parisi); Gulf of Aden, from cable off Philippine Islands, Sakul Bank south of Timor, Sacotra channel, from sub-marine cables between Aden and Bombay and Madura Strait, Java, 70-400 fathoms (Gordon); and Pulu We near Sumatra—111-752 m. (Van Dam). This is the first record of the species from the southern region of the Arabian Sea.

Remarks: The specimens agree well with Miss Gordon's description except for the comparative length in the dactylus and the palm of the cheliped.

Length of dactylus of right cheliped of male	.. 35 mm.
Length of palm of right cheliped of male	.. 40 ..
Length of dactylus of left cheliped of male	.. 50 ..
Length of palm of left cheliped of male	.. 60 ..
Length of dactylus of right cheliped of female	.. 31 ..
Length of palm of right cheliped of female	.. 33 ..
Length of dactylus of left cheliped of female	.. 32 ..
Length of palm of left cheliped of female	.. 35 ..

Gordon (*op. cit.*) observed that the palm of the cheliped is shorter than the finger except in old males with atypical chelipeds, in which, palm is equal to or slightly longer than the finger. Van Dam (1933) recorded a female specimen with palm longer than dactylus. In the present specimens also the palm is longer than dactylus. The two spines on the merus of the external maxilliped are prominent. Spines present on the propodite of the walking legs, but more in numbers than recorded by Gordon (*op. cit.*).

Suborder BRACHYURA

Section DROMIACEA

Family THELXIOPEIDAE

Thelxiope megalops (Alcock)

Homola (*Homalax*) *megalops* Alcock, 1901, p. 62.

Homola megalops Kemp and Sewell, 1912, p. 27.

Thelxiope megalops Gordon, 1950, p. 222 (with synonymy).

Material: 2 males, carapace length 46 mm. and 50 mm., one female, 31 mm. (ovigerous).

Locality: Arabian Sea, Southwest of Cochin off Alleppey (Lat. 9° 25' N.; Long. 75° 40' E.), 180 fathoms.

Distribution: Indian Ocean, Arabian Sea, Andaman Sea, 188-200 fathoms and 379-419 fathoms; off Madras Coast, 145-250 fathoms; off Colombo (Gulf of Mannar), 142-400 fathoms.

Remarks: The specimens listed above agree in general with Alcock's description of the species. The noteworthy variations are (a) cheliped more slender in female than in male, (b) in male the chelipeds reach a little beyond half-way along the propodus of the first pair of legs, whereas in the female, they reach the tip of the carpus, (c) the movable finger is proximally provided with a conspicuous denticle on the inner edge and about $\frac{2}{3}$ as long as the rest of the hand, (d) the 2nd and 3rd pairs of legs are nearly $2\frac{1}{2}$ times as long as carapace. Pleopod 1 in male short, with the distal end having a depression towards the inner side and a short projection at the outer side. Terminally along the outer border are a few simple and long setae. The second pleopod of male is short, extending to the middle of the length of the 1st pleopod, with the distal end truncate.

ACKNOWLEDGEMENTS

The authors wish to thank Shri P. Karunakaran Nair for the help in collecting some of the specimens. Special thanks are due to Dr. N. Krishna Pillai of Marine Biological Laboratory, University of Kerala, and Shri C. B. Subrahmanyam for the help rendered in getting some references.

REFERENCES

- ALCOCK, A. 1901. *A Descriptive Catalogue of the Indian Deep-sea Crustacea, Decapoda, Macrura and Anomala in the Indian Museum, being a Revised Account of the Deep-sea Species collected by the Royal Marine Survey Ship "Investigator"*, Calcutta, India, pp. 286.
- BALASUBRAMANYAM, R., A. V. V. SATYANARAYANA AND K. A. SADANANDAN. 1961. A further account of the rock lobster fishing experiments with the bottom set gill-nets. *Indian J. Fish.*, 8(1): 269-290.
- BALSS, H. 1925. Macrura Deutsch. Tiefsee-Exp. 2, Natantia, Teil A. *Wiss. Ergeb. Deutsch Tiefsee-Exp. "Valdivia"*, 20(5): 221-315.
- BARNARD, K. H. 1950. Descriptive catalogue of South African Crustacea (Crabs and Shrimps). *Ann. S. Afr. Mus.* 38: 1-837.
- BOUVIER, E. L. 1908. Crustaces decapodes (Peneides) provenant des campagnes de "l' Hirondelle," et de la "Princesse-Alice" (1886-1907). *Res. Camp. Sci. Monaco. Fasc.*, 33: 122.
- BURKENROAD, M. D. 1936. The Aristaenae, Solenocerinae and pelagic Penaeinae of the Bingham Oceanographic collection. *Bull. Bingham. Oceanogr. Coll.*, 5(2): 1-151.
- CALMAN, W. T. 1925. On Macrurous Decapod Crustacea collected in South African waters by the S.S. "Pickle". *S. Afr. Fish. Mar. Biol. Surv. Rep.*, 4(3): 1-26.
- 1939. Crustacea: Caridea. *John Murray. Exped., 1933-34, Scientific Reports*, 4(4): 185-285.
- CHACE, F. A. 1940. The bathypelagic caridean Crustacea. IX. *Zoologica*, 25: 117-209.
- DE BRUIN, G. H. P. 1962. Spiny lobsters of Ceylon. *Fish. Res. Stat. Dept. of Fish. Ceylon. Bull.*, No. 14: 6-28.
- DE MAN, J. G. 1920. Decapoda. Part IV. *Siboga-Expedite. Mongor.*, 39a: 1-318.
- GEORGE, R. W. 1963. Report to the Government of Aden on the crawfish resources of Eastern Aden Protectorate *Rep. F.A.O./EPTA.* (1960), 1-23.
- 1964. Variation and possible geographic populations in the Indo-West Pacific scalloped crayfish *Panulirus homarus*. *C.S.A. Specialist Meetings on Crustaceans (Zanzibar, 19-26 April 1964), Crustaceans*, 64: 1-6.
- GORDON, I. 1950. Crustacea: Dromiacea. *John-Murray. Exped., 1933-34*, 9(3): 201-253.
- 1953. On the Puerulus stage of some spiny lobsters (Palinuridae). *Bull. Brit. Mus. (nat. Hist.) Z.*, 2(2).
- GRAVELY, F. H. 1927. Littoral fauna of Krusadi Island in the Gulf of Mannar. Decapoda and Stomatopoda. *Bull. Madras Govt. Mus., n.s. Nat. Hist. Sec.*, 1(1): 135-155.
- HANSEN, H. J. 1919. The Sergestidae of the Siboga-Expedition. *Siboga-Expedite. Monogr.*, 38: 1-65.
- HOLTHUIS, L. B. 1946. The Stenopodidae, Nephropsidae, Scyllaridae and Palinuridae. The Decapoda Macrura of the Snellius Expedition. 1. Biological results of the Snellius Expedition—XIV. *Temminckia, Leiden*, 7: 1-178.
- KEMP, S. 1910. Notes on Decapoda in the Indian Museum. I. The species of Gennadas. *Rec. Indian Mus.*, 5(3): 173-181.
- AND R. B. S. SEWELL, 1912. Notes on Decapoda in the Indian Museum. III. The species obtained by R.I.M.S.S. "Investigator" during the Survey Season, 1910-1911. *Ibid.*, 7: 15-32.
- KUBO, I. 1963. Systematic studies on the Japanese Macrurous Decapod Crustacea. 6. A new and imperfectly known species of palinurid lobster. *J. Tokyo Univ. Fish.*, 49(1): 63-71.
- MİYAMOTO, H. AND A. T. SHARIFF 1961. Lobster fishing off the Southwest coast of India. Anchor Hook and Trap Fisheries. *Indian J. Fish.*, 8(1): 252-268.
- PARISI, B. 1917. Decapodi Giapponesi del Museo di Milano. *Soc. Ital. Sci. Nat.*, 56: 6.
- PRASAD, R. R. AND P. R. S. TAMPI 1959. A note on the first phyllosoma of *Panulirus burgeri* (de Haan). *Proc. Indian Acad. Sci.*, 49(6) B: 397-401.

- RATHBUN, M. J. 1906. The Brachyura and Macrura of the Hawaiian Islands. *Bull. U.S. Fish. Comm. for 1903*, 3: 327-930.
- SCHMITT, W. L. 1926. Report on the crustacea Macrura (Families Penaeidae, Campylonotidae and Pandalidae) obtained by the F.I.S. "Endeavour" in Australian seas. *Biol. Res. "Endeavour"*, 1909-1914, 5(6): 311-381.
- VAN DAM, A. J. 1933. VIII. Galatheidea: Chirostylidae. *Siboga-Expeditie, Monogr.*, 39a: 1-46.
- WOOD-MASON, J. 1885. *Proc. Asiatic Soc. Beng.*, 54: 70.
- 1891. On the results of deep sea dredging during the season 1890-91. *Crustacea, Ann. Mag. nat. Hist.*, (6) 8: 269-286.
- 1892. Natural history notes from H. M. Indian Marine Survey Steamer "Investigator" Commander R. F. Hoskyn, R. N. commanding. Series 2, No. 1. On the results of deep sea dredging during the season 1890-91. *Ibid.*, (6) 8: 358-370 (Crustacea by Wood-Mason).

DISCUSSION

- Dr. R. Serene: I would like to suggest that the materials on which descriptions of new species are based, are deposited and registered in a central institution because it would be otherwise very difficult or at times impossible to trace the material when required for examination.
- Mr. M. J. George: The specimens described here are being deposited in the Reference Collection Museum of the Central Marine Fisheries Research Institute at Mandapam Camp.
- Dr. R. S.: What I want to say is that proper registration numbers be given and cited in the accounts published.
- Dr. S. Jones: I wish to state here that this is being done in the Central Marine Fisheries Research Institute. In fact no paper is allowed to be published unless the material is deposited in the Reference Collections Museum. I would incidentally mention here that the Central Marine Fisheries Research Institute is not intended to do elaborate taxonomic work and whatever has been done in this line was carried out by the workers during their spare time.
- Dr. R. S.: I understand the situation. I would only like to stress that more importance is given to registering and maintenance of the collections.