

## LEUCOTHOID AMPHIPODA FROM THE MADRAS COAST

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THE paper deals with four species of amphipods of the genus *Leucothoe*, collected from the sea weeds, sponges and holothurians from the Gulf of Mannar, Palk Bay and Madras. Two species, viz., *L. spinicarpa* (Abildgaard) and *L. furina* (Savigny) are already reported (Nayar, 1959, 1966; Sivaprakasam, 1968), but figured in detail here. *L. richiardi* Lessona is recorded for the first time from India. *L. madrasana* sp. nov. is a hitherto undescribed species. Another leucothoid amphipod, *Leucothoides pottsi* Shoemaker was reported in an earlier paper by the author (Sivaprakasam, 1967).

Family LEUCOTHOIDAE

Genus *Leucothoe* Leach

*Leucothoe spinicarpa* (Abildgaard)

(Fig. 1)

*Leucothoe spinicarpa* Sivaprakasam, 1968, p. 93.

**Material examined:** 8 males and 3 females collected from sponges at Appa island, near Kilakkarai; 1 female from sea weeds at Pamban; 5 males and 3 females from sponges at Rameswaram. Length upto 10.0 mm.

**Remarks:** The synonymy of this cosmopolitan species was discussed by Chilton (1923) and Barnard, K. H. (1916). The present material agrees with the earlier descriptions of this species by Stebbing (1888, as *L. miersi*) and Sars (1895) with a few variations. The postero-inferior corner of 3rd epimeral plate is rounded and not pointed. This character is however very variable (Walker, 1904). 3rd uropods reach considerably beyond 1st uropods, almost by 1/3 its length. Telson ends in a blunt spine, instead of ending in an acuminate point.

**Distribution:** Cosmopolitan.

*Leucothoe richiardi* Lessona

(Fig. 2)

*Leucothoe Richiardi* Della Valle, 1893, p. 654, pl. 19, fig. 21.

*Leucothoe richiardi* Stebbing, 1906, p. 167.

Chevreux, 1911, p. 196.

Barnard, K. H., 1916, p. 150.

**Material examined:** 7 males and 11 females collected from sponges at Appa island, near Kilakkarai; 2 males from sponges at Tondi. Length upto 8.0 mm.

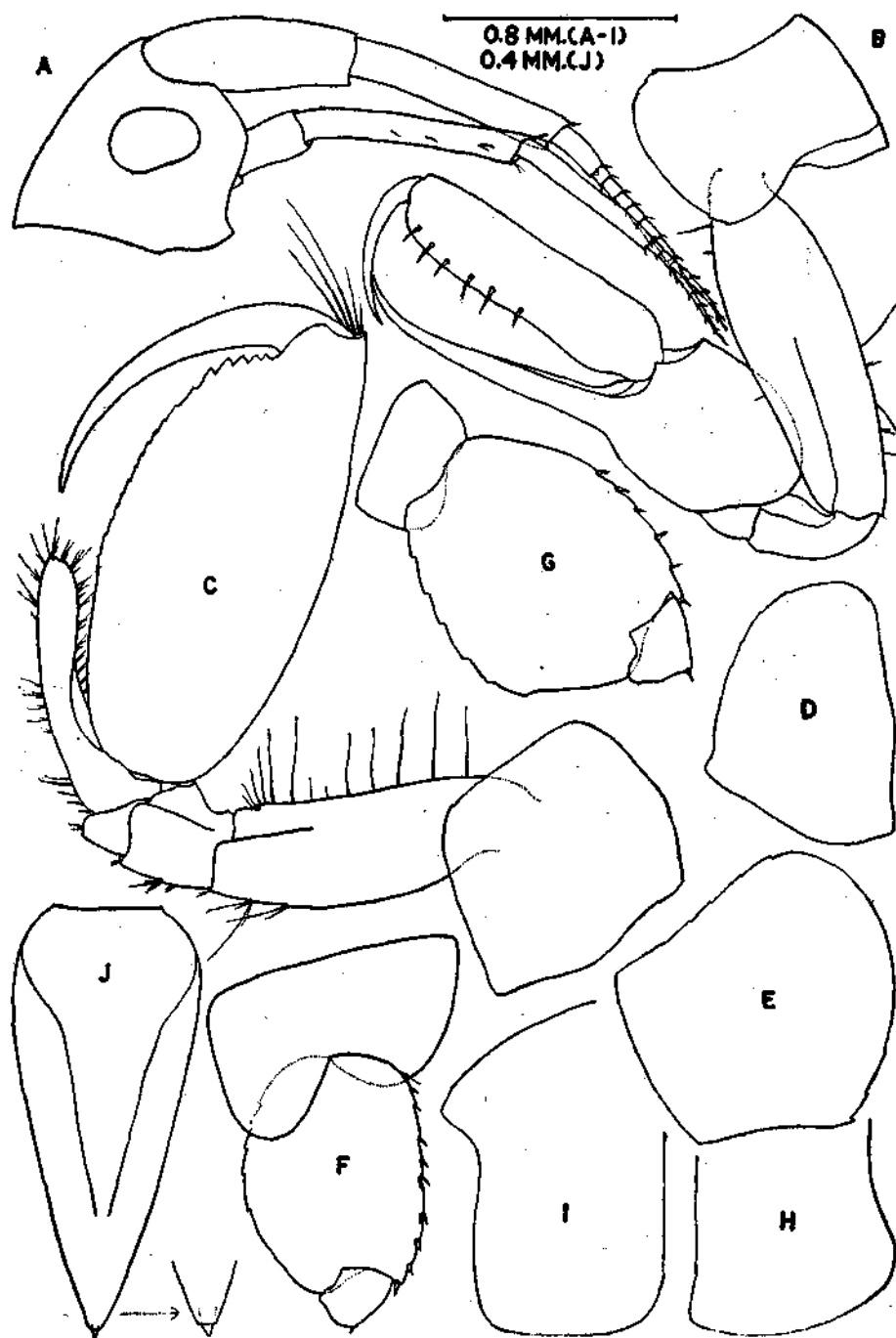


FIG. 1. *Leucothoe spinicarpa* (Abildgaard). Male: A. head; B. gnathopod 1; C. gnathopod 2; D. side plate 3; E. side plate 4; F. pereopod 3; G. pereopod 5; H., I. epimeral plates 2 and 3; J. telson.

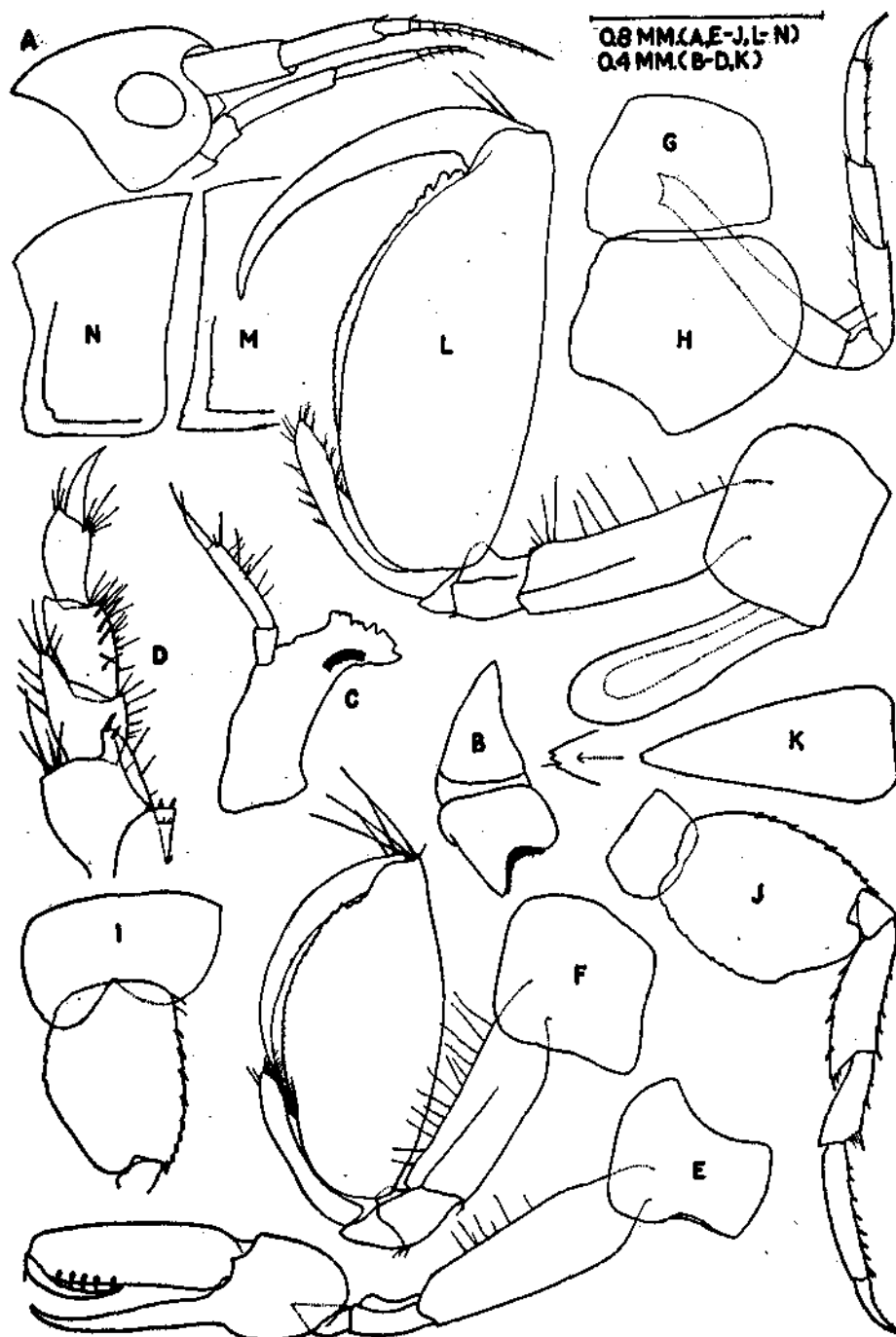


FIG. 2. *Leucothoe richiardi* Lessona. Female: A. head; B. upper lip and epistome; C. mandible; D. maxilliped; E. gnathopod 1; F. gnathopod 2; G. pereopod 1; H. side plate 4; I. pereopod 3; J. pereopod 5; K. telson; M, N. (inner figs.) epimeral plates 2 and 3. Male: L. gnathopod 2; M., N., (outer figs.) epimeral plates 2 and 3.

*Remarks:* The material examined closely agrees with the description of this species by Della Valle (1893) and Barnard, K. H. (1916) in the following features. The eyes are large, dark and oval. Lateral lobes of head rounded. Postero-inferior corner of epimeral plates 2 and 3 with a slight sinus above in some females, while in others it is indicated by a notch. Telson  $2\frac{1}{4}$  as long as broad, reaches beyond  $\frac{1}{2}$  of peduncle of uropod 3 and tapers into 3 unequal teeth. Antenna 2 shorter than antenna 1, reaching 5th flagellar joint of the latter. Gnathopod 1 as usual in the genus. Gnathopod 2 with 6th joint elongate-oval, tapering distally in the male. Palm with about 28 denticles, of which the distal five are prominent. Peraeopods as figured. Uropod 3 reaches only a little beyond uropod 1.

The sinus above postero-inferior corner of epimeral plates 2 and 3 is not well-marked in all the specimens, as also observed by Barnard. Antenna 2 is, unlike earlier descriptions, considerably shorter than antenna 1.

*Distribution:* Mediterranean and South Africa. This species is recorded here for the first time from India.

***Leucothoe furina* (Savigny)**

(Fig. 3)

*Leucothoe furina* Schellenberg, 1928, p. 635.

Barnard, K.H., 1931, p. 120. 1937, p. 152.

Sheard, 1937, p. 20.

Ruffo, 1938, p. 156.

Nayar, 1966, p. 142, fig. 5d.

*Leucothoe hornelli* Walker, 1904, p. 258, pl. 3, fig. 17. 1905, p. 925.

Chevreaux, 1908, p. 470.

Walker, 1909, p. 331.

*Leucothoe spinicarpa* Rudwick, 1951, p. 151, fig. 2. (*non* Abildgaard).

*Material examined:* 1 female from sea weeds at Rameswaram. Length 4.5 mm.

*Remarks:* Schellenberg (1928) re-established the identity of this species and synonymised *L. hornelli* Walker (1904) with it. The single female examined agrees well with their description. The sinus above postero-inferior corner of 3rd epimeral plate is only slight and not markedly concave. The sculpture on palm of gnathopod 2 is characteristic, and in this respect, Rudwick's (1951) record of *L. spinicarpa* from Aden appears to belong to this species.

**Distribution :** Red sea, Suez, South Arabia, Maldives, Ceylon, India, East Indies, Australia and Gambier Archs.

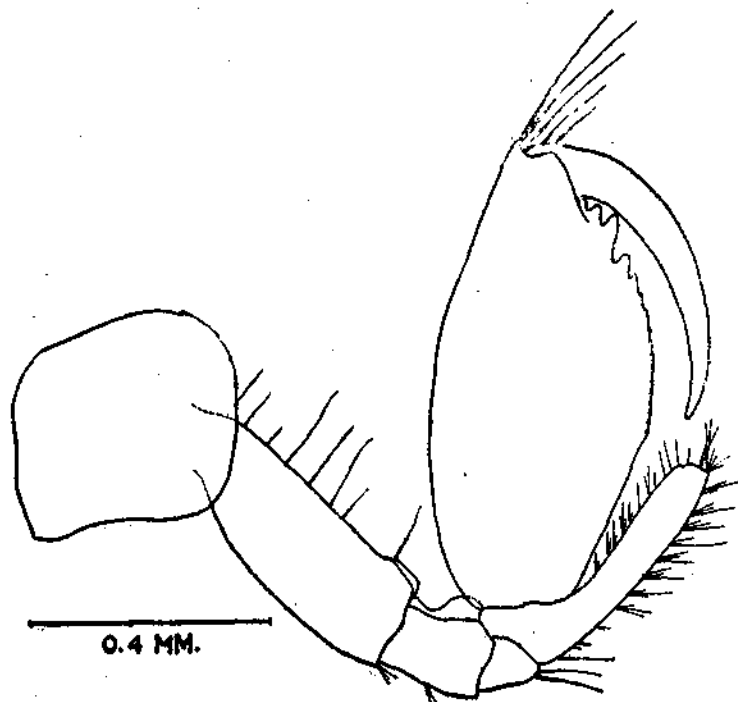


FIG. 3. *Leucothoe furina* (Savigny), female gnathopod 2.

***Leucothoe madrasana* sp. nov.**

(Fig. 4)

**Material examined and types :** 15 males and 7 females collected from the washings of holothurians at Royapuram beach, Madras. Length upto 3.7 mm. Male holotype, female allotype and 5 paratypes (3 males and 2 females) are deposited in the National Zoological Collections, Zoological Survey of India, Calcutta.

**Description :** *Male :* Body smooth and rounded. Head as long as first two segments. Lateral lobes quadrate with acute angle and projecting. Eyes large, round and dark. Side plates as described below. Epimeral plate 2 with postero-inferior corner quadrate. Epimeral plate 3 with a little tooth at this corner, followed by convex hind margin. Telson about twice as long as broad and ending in 3 minute teeth, with a setule in each notch. Branchiae elongate-oval.

Antenna 1 about  $\frac{1}{4}$  as long as body. 1st joint of peduncle stout and longer than 2nd. 3rd joint  $\frac{2}{5}$  as long as 1st. Flagellum  $\frac{2}{3}$  as long as peduncle and 9-jointed. Accessory flagellum minute and rudimentary. Antenna 2 a little shorter than antenna 1. Peduncle reaches 2nd flagellar joint of antenna 1. 4th joint of peduncle a little longer than 5th. Flagellum subequal in length to 5th peduncular joint and 7-jointed.

Mouth parts typical of the genus. Epistome conical and acute. Mandible with 3rd joint of palp  $\frac{3}{4}$  as long as 2nd. Maxilla 1 with inner plate very small

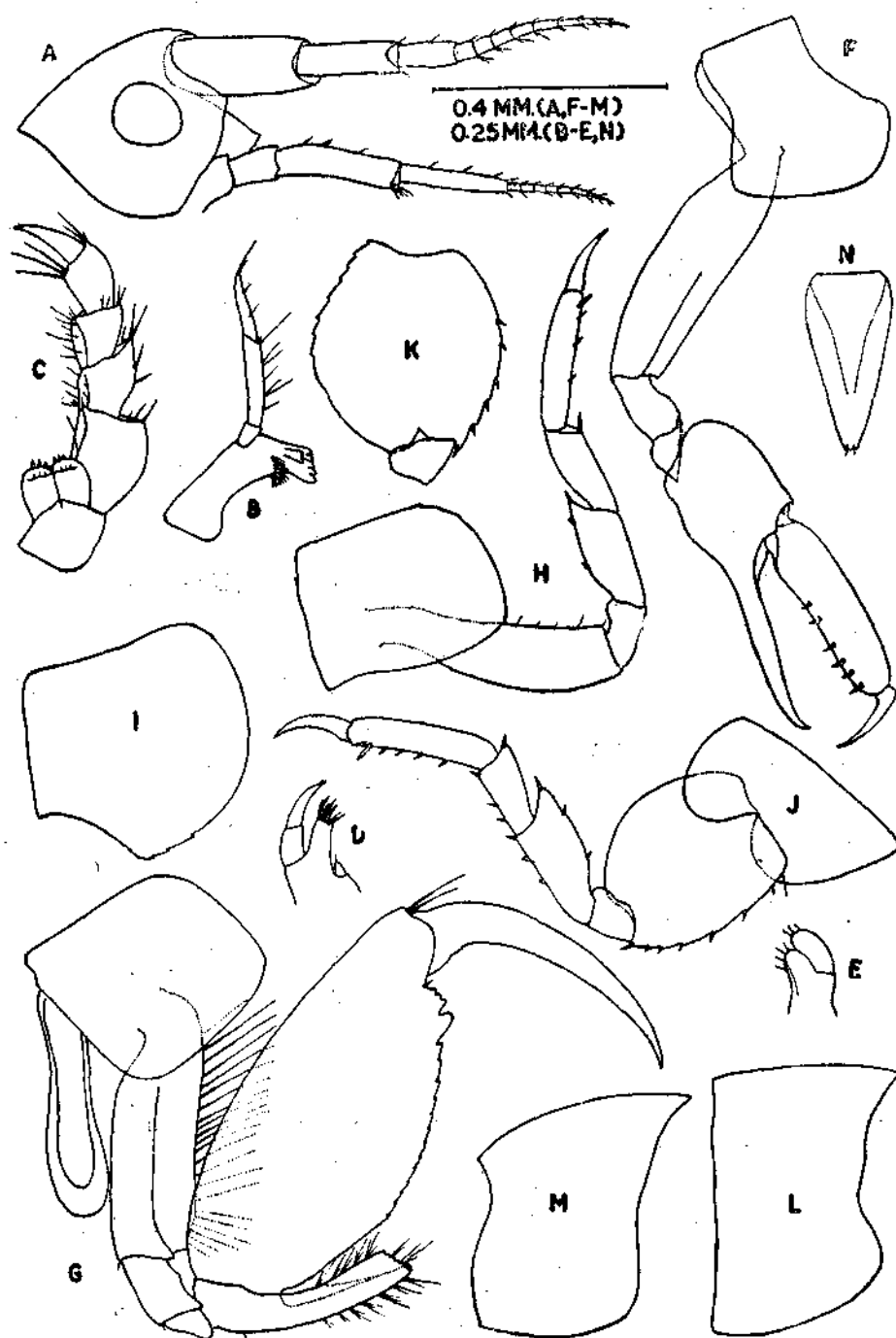


FIG. 4. *Lencothoe madrasana* sp. nov. Male: A. head; B. mandible; C. maxilliped; D. maxilla 1; E. maxilla 2; F. gnathopod 1; G. gnathopod 2; H. pereopod 1; I. side-plate 4; J. pereopod 3; K. pereopod 5; L, M. epimeral plates 2 and 3; N. telson.

Outer plate with 7 spines. 2nd joint of palp tapering. Maxilla 2 with inner plate as broad as outer and slightly inflated on inner margin. Maxilliped with 3 spines on inner plate. The joint bearing rudimentary outer plate considerably broad. Palp stout, with stiff setae.

Gnathopod 1 with side plate widening below. Front margin concave with 4 teeth distally. Lower margin rounded in the anterior half. Hind margin slightly concave. 2nd joint stout and 2-ribbed. 3rd joint also with 2 lamellar expansions in front. 5th joint not very bulbous at base. 6th joint with 6-7 spines on inner margin. Dactylus slender and nearly straight. Gnathopod 2 large. Side plate quadrate, with rounded corners. 2nd joint stout, with close-set setae on front margin. 3rd joint stout and 2-ribbed. 4th joint small. 5th joint reaches palmar angle, setose on inner aspect and apex truncate, with about 10 teeth. 6th joint large, elongate-oval and widest near the middle. Front margin not ending in an acute tooth. Palm convex, twice as long as hind margin and with about 17 denticles in all. Distally following the hinge of dactylus, there is a 3-toothed prominence, followed by a sinus and a stout, rounded tooth. This is again followed by a slight sinus and a small tooth. Dactylus stout and strongly curved.

Peraeopod 1 stout and normal. Side plate deeper than long, with 2-3 teeth on rounded, antero-inferior corner. Peraeopod 2 similar to the above. Side plate widening and broadly rounded below. Hind margin concave forming prominent angle with the lower and with 3 teeth at this corner. Peraeopods 3-5 considerably stout and increasing in length. Peraeopod 3 with side plate large and bilobed. 2nd joint rounded, with hind margin nearly smooth. Peraeopod 4 as above, but hind margin of 2nd joint faintly serrate. Peraeopod 5 with hind margin of 2nd joint distinctly serrate and angular in the middle.

Uropods with styliform rami and weak spines. Uropod 1 reaches  $3/4$  length of rami of uropod 3. Peduncle as long as outer ramus which is shorter than inner. Uropod 2 reaches beyond peduncle of uropod 3. Outer ramus  $2/3$  as long as inner and  $4/5$  as long as peduncle. Uropod 3 with inner ramus a little longer than outer and shorter than peduncle. Telson reaches beyond half of peduncle of uropod 3.

*Female* : Similar to the male, but the teeth on distal part of palm of gnathopod 2 are less prominent. Incubatory lamellae ribbon-like.

*Remarks* : *L. madrasana* sp. nov. derives its specific name from the type locality. Among 21 valid species included under the genus (Barnard, J. L., 1958, 1959), it is closely related to *L. tridens* Stebbing, which was redescribed by Schellenberg (1938). The new species resembles *L. tridens* in the form of the eyes, lateral lobes of head and the telson, and differs in the following features : (1) the form of side plates 1 and 4 ; (2) the epimeral plate 3 with a little tooth at postero-inferior corner ; (3) the relative proportions of antennae ; (4) the mandible with 3rd joint of palp comparatively longer ; (5) the maxilla 2 with outer plate as broad as inner ; (6) the maxilliped with the joint bearing rudimentary outer plate, comparatively broader ; (7) the gnathopod 2 with different sculpture on palm ; and (8) the peraeopods with 2nd joint of different form.

#### SUMMARY

The paper contains notes and figures of four species of *Leucothoe*, of which, one, *L. madrasana*, is new to science.

## REFERENCES

- BARNARD, J. L. 1958. Index to the families, genera and species of the gammaridean Amphipoda (Crustacea). *Occ. Pap. Allan Hancock Fdn.*, 19 : 1-145.
- . 1959. Ecology of Amphipoda and Polychaeta of Newport Bay, California. Part II. Estuarine Amphipoda. *Ibid.*, 21 : 13-69.
- BARNARD, K. H. 1916. Contributions to the crustacean fauna of South Africa. 5. The Amphipoda. *Ann. S. Afr. Mus.*, 15(3) : 105-302.
- . 1931. Amphipoda. *Great Barrier Reef Expedition, 1928-29. Sci. Rep.*, 4(4) : 111-135.
- . 1937. Amphipoda. *John Murray Expedition, 1933-34. Sci. Rep.* 4(6) : 131-201.
- CHEVEREUX, E. 1908. Amphipodes recueillis dans les possessions francaises de l'Océanie par M. L. Dr. Seurat, 1902-1904. *Mem. Soc. zool. Fr.*, 20 : 470-527.
- . 1911. Campagnes de la Melita. Les Amphipodes d'Algerie et de la Tunisie. *Ibid.*, 23 : 145-285.
- CHILTON, C. 1923. Occasional notes on Australian Amphipoda, Nos. 1-9. *Rec. Aust. Mus.*, 14(2) : 79-100.
- DELLA VALLE, A. 1893. Gammarini del Golfo di Napoli. Fauna und Flora des Golfes von Neapel, 20 : 1-948.
- NAYAR, K. N. 1959. The Amphipoda of the Madras coast. *Bull. Madras Govt. Mus. nat. hist.*, 6(3) : 1-59.
- . 1966. On the gammaridean Amphipoda of the Gulf of Mannar, with special reference to those of the pearl and chank beds. *Proc. Symp. Crustacea, Mar. Biol. Ass. India, Mandapam Camp*, 1 : 133-168.
- RUDWICK, M. J. S. 1951. Notes on some Crustacea (Amphipoda) from Aden. *Ann. Mag. nat. Hist.*, (12) 4 : 149-156.
- RUFFO, S. 1938. Studi sui Crostacei Anfipodi. IX. Gli Anfipodi del Red Sea. *Ann. Mus. Stor. nat. Genova*, 60 : 152-180.
- SARS, G. O. 1895. *An account of the Crustacea of Norway, with short descriptions and figures of all the species. I. Amphipoda.* 711 pp.
- SCELLENBERG, A. 1928. Report on the Amphipoda collected by the Cambridge Expedition to the Suez Canal, 1924. *Trans. zool. Soc. Lond.*, 22(5) : 633-692.
- . 1938. Litorale Amphipoden des tripischen Pazifiks. *K. svenska Vetensk Akad. Handl.*, (3) 16(6) : 1-105.
- SHEARD, K. 1937. A catalogue of Australian Gammaridea. *Trans. roy. Soc. S. Aust.*, 61 : 17-29.
- SIVAPRAKASAM, T. E. 1966. Amphipoda from the east coast of India. Part 1. Gammaridea. *J. Mar. biol. Ass. India*, 8(1) : 82-122.
- . 1967. Notes on some amphipods from the south east coast of India. *Ibid.*, 9(2) : 372-383.
- STEBBING, T. R. R. 1888. Report on the Amphipoda collected by H. M. S. Challenger during the years 1873-76. *Rep. on Sci. Res. of voyage of H.M.S. Challenger, Zool.*, 29 : 1-1737.
- . 1906. Amphipoda I. Gammaridea. *Das Tierreich*, 21 : 1-806.
- WALKER, A. O. 1904. Report on the Amphipoda collected by Professor Herdman at Ceylon in 1902. *Rep. to Govt. of Ceylon on Pearl Oyster Fisheries in the Gulf of Mannar*, 2(17) : 229-300.
- . 1905. Marine crustaceans, XVI. Amphipoda. *Fauna and Geogr. of Maldive and Laccadive Archipelagoes*, 2(1) : 923-932.
- . 1909. Amphipoda Gammaridea from the Indian Ocean, British East Africa and the Red Sea. *Trans. Linn. Soc. Lond. (Zool.)* (2) 12(4) : 323-344.