MINISTRY OF COMMERCE AND INDUSTRY, EGYPT.

FOUAD I INSTITUTE OF HYDROBIOLOGY
AND FISHERIES

NOTES AND MEMOIRS No. 35

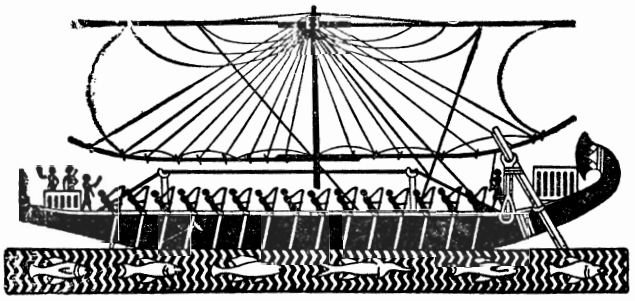
THE FISHERY GROUNDS NEAR ALEXANDRIA

XXI.—TANAIDACEA AND ISOPODA

(with 17 Figures)

BY

H. J. LARWOOD (*Abergavenny*)



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Introduction

The collection of Tanaidacea and Isopoda made by Professor A. Steuer off the coast at Alexandria consisted of about 270 specimens belonging to 29 species. This number includes an apparently new species of *Cirolana* and an unidentified species of *Munna*. Of the remaining 27 species only 4 do not belong to the Mediterranean fauna. Three of these (*Apanthura sandalensis*, *Sphaeroma Walkeri* and *Bagatus Stebbingi*) are probably recent immigrants from the Indo-Pacific via the Suez Canal, and the fourth (*Apseudes intermedius*) has been recorded only from the Cape Verde Islands and from the Atlantic coast of Morocco.

Only four species of the nine taken by the Cambridge Expedition to the Suez Canal occurred in the present collection. These were: *Tanais robustus*, *Sphaeroma serratum*, *Sphaeroma Walkeri* and *Ligia italica*.

I wish to express my thanks to Dr. Th. Monod and Mr. J. G. Cattley who have kindly examined certain specimens, to Prof. A. D. Hobson, and in particular to Mr. Joseph Omer-Cooper and Prof. W. M. Tattersall for their constant help and encouragement.

MINISTRY OF COMMERCE AND INDUSTRY, EGYPT

The Fishery Grounds near Alexandria

XXI.—Tanaidacea and Isopoda

BY

H. J. LARWOOD

ORDER TANAIDACEA HANSEN

Family Apseudidae

Genus *Apseudes* Leach.

Apseudes Latreillii Milne-Edwards. (Fig. 1).

Rhoea Latreillii Milne-Edwards, 1828, p. 288, pl. 13A, Figs. 1–8; id., 1840, p. 141.

Apseudes Latreillii Bate and Westwood, 1866, p. 153; G. O. Sars, 1882, p. 1.; Carus, 1884, p. 433; Norman and Stebbing, 1886, p. 82, pl. XVI; G. O. Sars, 1886, p. 290, pl. 5; Norman, 1899, p. 327; Nierstrasz, 1913, p. 11.

Locality.

Mud with sand. 25 fathoms. St. 75. (4–XI–1933).

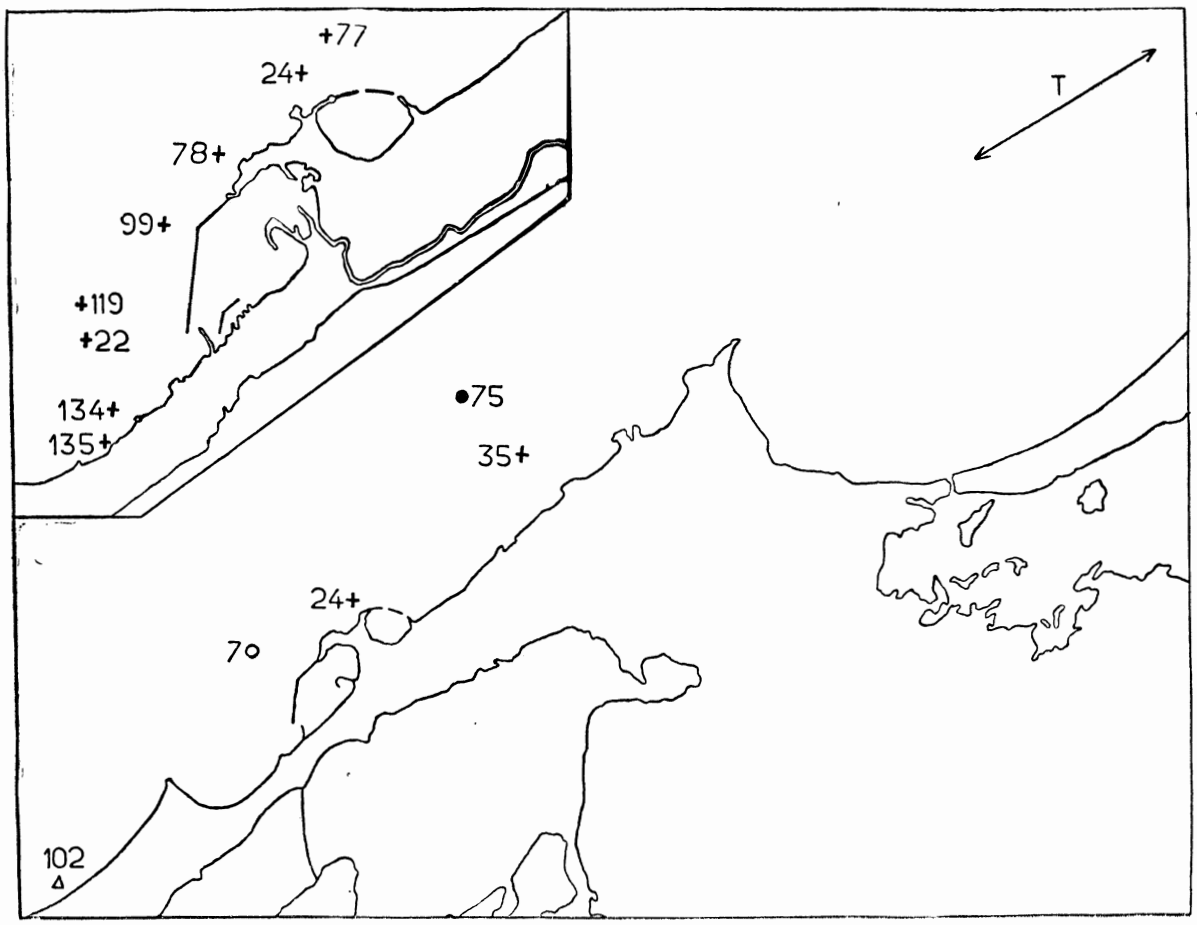
1 ♀, with brood pouch but no eggs. Length 5·0 mm.

Remarks.

This is a young specimen, but, apart from the segments of the flagellum of the antennule and antenna, it agrees with *A. Latreillii* (M. Edw.). The number of spines on the carpus of the 2nd gnathopod varies and cannot be used as a specific character. In this specimen there are 4 spines as in the figures of Milne-Edwards and Bate and Westwood. Sars (1886) and Norman and stebbing show only 3. In this connection it may be recalled that Norman found that in the closely allied *A. acutifrons* G. O. Sars, the Adriatic examples had 6 spines on the carpus of the 2nd gnathopod while in the Naples form there are 4.

The length of Bate and Westwood's specimen is given as 6 mm·

FIG. 1



● *Apseudes Latreillii.*

○ *Apseudes robustus.*

⊤,+ *Apseudes intermedius.*

▲ *Parapseudes latifrons.*

Distribution.

N.E. Atlantic: coasts of Scotland, England (Northumberland, Plymouth) and France (Brittany): North Sea, Channel Islands (Guernsey); Mediterranean (Naples); Adriatic (Trieste).

Apseudes robustus G. O. Sars. (Figs. 1, 3–2*a–f*).

Apseudes robustus G. O. Sars, 1882, p. 15 ; id., 1886, p. 299, pl. 7 ; Carus, 1884, p. 433 ; Nierstrasz, 1913, p. 11.

Locality.

Small stones. Caulerpa bottom. 17 fath. St. 7. (16–IX–1933). 1 ♂, Length 6·0 mm.

Remarks.

This is undoubtedly the little known species described from the Gulf of Goletta in comparatively shallow water.

As Sars omitted to figure the mouth parts I have thought it worth while to do so, together with the 1st and 2nd gnathopods of the male (Fig. 3, 2*a–f*). Description is scarcely necessary owing to the similarity to the corresponding appendages of *Apseudes Latreillii* M.-Edw. from which they differ chiefly in being more robust. The same is true of the chela but the 2nd gnathopod differs more conspicuously in its armature of spines. The hand bears 5 spines on the palm of the hand as compared with 3 (or 4) in *A. Latreillii*.

Distribution.

This appears to be the only other record of this species apart from Sars original one from the Gulf of Goletta (Tunis).

Apseudes intermedius Hansen. (Figs. 1, 2, 3/1*a–d*).

Apseudes intermedius Hansen, 1895, p. 49, pl. V, Figs. 10–10*b*, pl. VI, Fig. 1.

Locality.

Off Aboukir. Halimeda bottom. 10 fath. Trawl (T.) (3–IX–1933). 13 ♀ ♀, 6 with brood pouches and eggs. 7 with lamellæ undeveloped.

"The Great Pass," rocks and yellow sand. Posidonia and Caulerpa ground. 7 fathoms. Station 22 (20–IX–1933).

1 specimen.

By Fort Ada, stony. Caulerpa-Halimeda ground. 10 fathoms. St. 24 (21–IX–1933).

8 ♀♀ (2 with eggs, 4 with brood lamellæ).

Coast by Sidi Bishr, coarse sand and stones. Caulerpa-Halimeda-Amphioxus ground. 7 fath. St. 35 (7–X–1933).

3 ♀♀, 1 with eggs.

Stones. Caulerpa ground. 7 fath. St. 77 (5–XI–1933).

1 specimen.

Stones. Caulerpa-Halimeda ground. 5–6 fath. St. 78 (5–XI–1933).

1 damaged specimen.

Stones (and sand ?). Posidonia-Caulerpa-Halimeda ground. $5\frac{1}{2}$ fath. Station 99 (7–XI–1933).

1 specimen (2 mm.).

"The Great Pass," yellow sand and stones. Caulerpa-Posidonia-Amphioxus ground. $5\frac{1}{2}$ fathoms. St. 119 (12–XI–1933).

1 incomplete specimen (2 mm.).

Coarse sand, a little dark mud. Posidonia-Caulerpa-Amphioxus ground. 6 fathoms. Station 134 (14–XI–1933).

1 specimen.

Posidonia-Caulerpa-Halimeda. 4 fath. St. 135 (14–XI–1933).

1 specimen with brood pouch but no eggs.

Description.

Body about 6 times as long as broad; it reaches its greatest width at the first (fixed) thoracic segment.

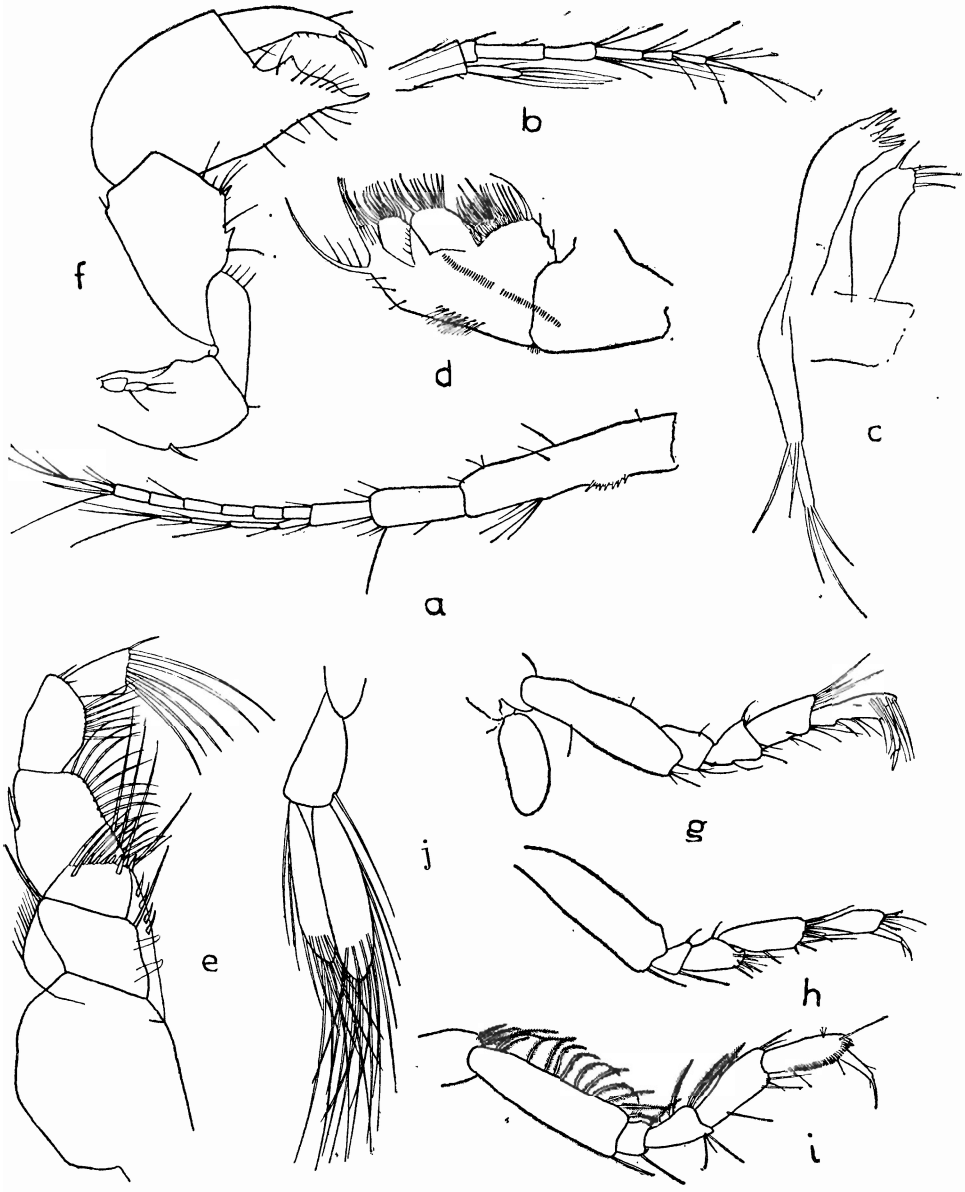
Cephalo thorax somewhat longer than broad, with two transverse grooves on the lateral surface anterior to the middle line. These are continued anteriorly and posteriorly into two curved grooves ending anteriorly in front of the eyelobes and behind at the postero-lateral corners. Lateral lobes of the carapace rounded behind.

Rostrum triangular; apex blunt when viewed from above; viewed laterally it is seen to be produced into a downwardly-curved process ending in a blunt point; rostral spine absent.

Eyes distinct, small, with black pigment; ocular lobes produced anteriorly into short processes at the lateral margins.

Epistome with a prominent median process directed forward.

FIG. 2



Apseudes intermedius (♀)

(*a*) Antennule.
(*b*) Antenna.
(*c*) Maxillule.
(*d*) Maxilla.
(*e*) Maxilliped.
(*f*) Chela.
(*g*) 3rd peraeopod.
(*h*) 5th peraeopod.
(*i*) Last peraeopod.
(*j*) Pleopod.

First (fixed) thoracic segment bears coxal plates in the form of a forwardly directed process ending in a spine. The following coxal plates are more rounded and project laterally. Each of the free segments furnished with antero-lateral processes bearing setae, the last 4 being also produced into lateral plates in front of and dorsal to the coxal plates.

First 5 segments of the pleon rounded, projecting slightly, not spiniform, provided with only a few setæ on the dorsal surface although bearing many at the sides. The terminal segment is not more than $1\frac{1}{2}$ times longer than broad, and is equal to the preceding 4 segments. It has two lateral projections bearing setæ on each side and the posterior part is triangular in form. The dorsal region is sparsely furnished with setæ.

Four pairs of incubatory lamellæ attached to the 3rd-6th thoracic appendages.

Antennules longer than the cephalo thorax and the first free segment combined. First segment of the peduncle twice as long as the second, the third equal to $\frac{2}{3}$ second. Outer flagellum $\frac{2}{3}$ as long as the peduncle and consisting of 7 segments. Inner flagellum rather more than half the length of the outer, with 4 segments. First segment of the peduncle finely serrated on the inner proximal margin.

Antennæ not much longer than the peduncle of the antennules. Scale equal in length to the second segment of the peduncle; flagellum with 6–7 segments.

Chela robust, hand half as broad as long with a tooth in the middle of the upper side of the thumb; setæ on the inner and the outer margin; thumb ending in a spine; finger ending in a large, blunt tooth. Wrist less than twice as long as broad, bearing two prominent teeth, one on the middle of the inner margin, the other at the upper inner angle. Third segment more than twice as long as broad, furnished with setæ at the distal end. Second segment twice as long as broad, provided with a spine at the middle of the lower side and an incipient process on the upper margin.

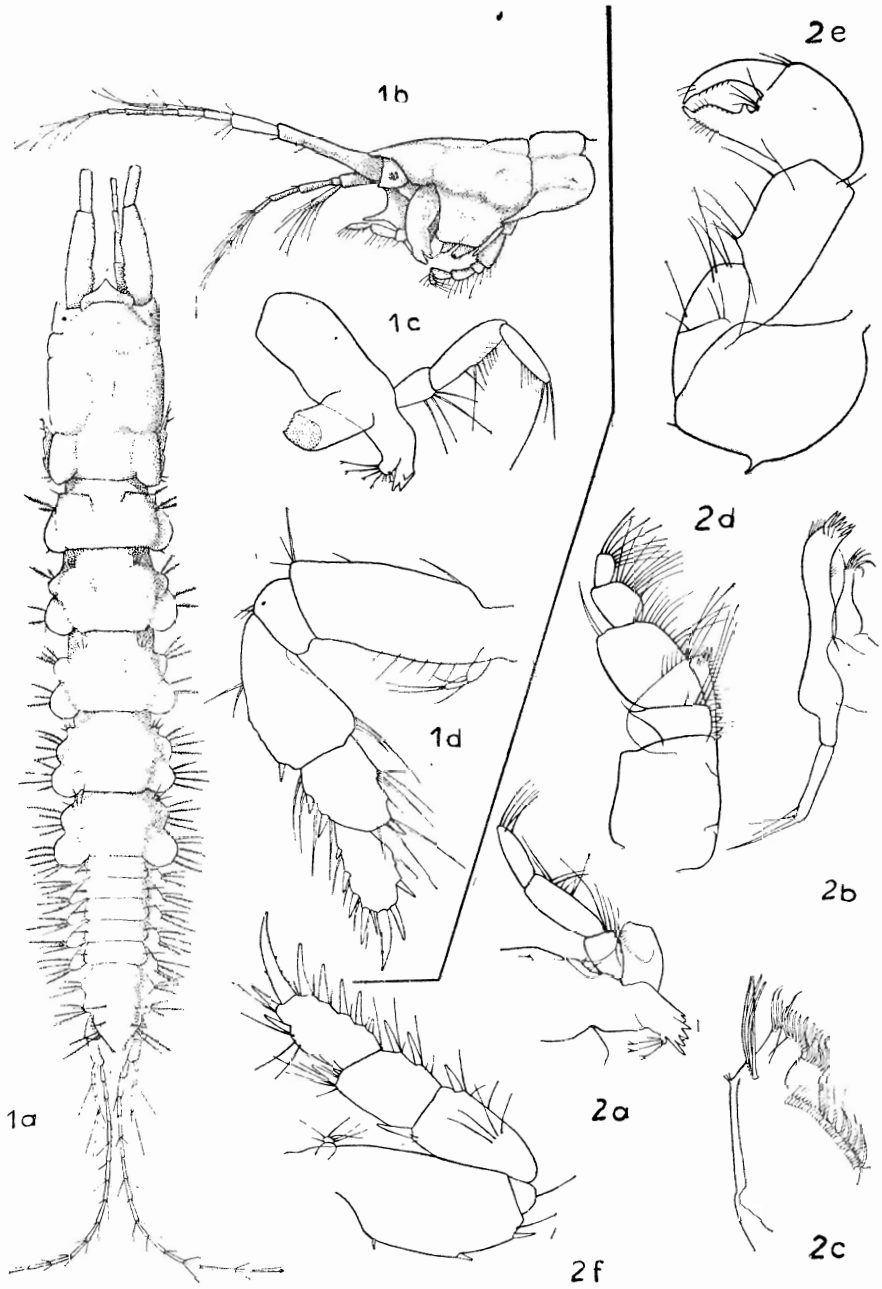
Third thoracic appendage robust; meros with a spine at each distal margin; carpus provided with two spines on the inner face, one at the outer distal angle; hand with 3 spines on the palm, two on the opposite margin. (In one small specimen (2 mm.) the right appendage bears only 3 spines while the left is normal and has 4).

At the base of the finger is a minutely pectinated spine.

3rd, 5th and last peraeopods closely resemble those of *Apseudes spinosus* G. O. Sars (except that the armature of setæ is less than in the latter species).

Uropods long, over half the length of the body; peduncle reaching beyond the telson; inner branch, consisting of 14–18 segments, is nearly twice as long as the outer which has but 4–5 segments.

FIG. 3



1. *Apseudes intermedius* (♀)

(*a*) Entire ♀, dorsal view.
(*b*) Lateral view of cephalothorax of ♀.
(*c*) Mandible.
(*d*) 3rd thoracic appendage.

2. *Apseudes robustus* (♂).

(*a*) Mandible.
(*b*) Maxillule.
(*c*) Maxilla.
(*d*) Maxilliped.
(*e*) Chela.
(*f*) 3rd thoracic appendages.

5 pairs of pleopods ; bilobed and densely clothed with long seta. Length of adult female 3·3 mm.

Monod (1925, p. 233, pl. XLIII) gave diagrams of the 1st and 2nd gnathopods of a species of *Apseudes* taken at 13 fathoms from sand and coralline algæ on the Atlantic coast of Morocco at Azamov. These appendages correspond closely to those of the species just described, and, after kindly examining specimens of the latter, Dr. Monod has declared them to be the same as his. He further suggested that both specimens belonged to *Apseudes intermedius* Hansen, from the description of which they differ only in that the rostrum of the Alexandrian examples is not so elongated.

The species is similar to *A. spinosus* G. O. Sars in the general form of the cephalothorax and the thoracic segments with their armature of spines. The 1st and 2nd gnathopods, as well as the mouth-parts, also resemble those of Sars' species. The maxillipeds of *A. intermedius*, however, are much more slender and bear a spine half way up the outer margin of the 4th segment, while in *A. spinosus* the spine is at the distal end of the outer margin of this segment. *A. intermedius* may also be distinguished from *A. spinosus* by (*a*) the presence of eyes, (*b*) the relative shortness of the telson, (*c*) smaller number of segments of flagellum of both antennæ, (*d*) relative shortness, and smaller number of segments of uropods, (*e*) much smaller size, the length of *A. spinosus* being given as 13 mm.

Habitat.

Sand and stones covered with Posidonia, Caulerpa, Halimeda, often found with Amphioxus.

Depth 4–13 fathoms.

Distribution.

Cape Verde Islands (St. Vincent), among *Gonodactylus Folinii* M. Edw., Atlantic coast of Morocco at Azamov.

Genus *Parapseudes* G. O. Sars.

Parapseudes latifrons Grube. (Fig. 1).

Rhoea latifrons Grube, 1864, p. 75.

Parapseudes latifrons G. O. Sars, 1882, p. 17 ; id., 1886, p. 304, pl. 8 ; Nierstrasz, 1913, p. 19 ; Monod, 1925, p. 64.

Locality.

Stones. Halimeda-Cystosira-Caulerpa bottom. 5–6 fathoms.

St. 102 (7–XI–1933).

1 ♀, with eggs. Length 2·5 mm.

Distribution.

This is the only species of the genus *Parapseudes* to be found in the Mediterranean where it has been previously recorded by Grube from the Isle of Lussin (Adriatic Sea) and by G. O. Sars from the Gulf of Spezia at 6–10 fathoms depth. The length of these individuals is given as 3·0 mm.

Family Tanaidae

Genus *Tanais*, Audouin and Milne-Edwards.

Tanais cavolinii Milne-Edwards. (Fig. 4).

Tanais cavolinii Milne-Edwards, 1828, in Audouin and Milne-Edwards, vol. I, pl. XXIX, Fig. 1 ; id., 1840, p. 141, pl. XXXI, Fig. 6 ; Heller, 1866, p. 735 ; G. O. Sars, 1882, p. 23 ; id., 1886, p. 312, pl. 9, Figs. 1–3 ; Dollfus, 1897, p. 207 ; id. 1898, p. 35 ; Norman, 1899, p. 332 ; Richardson, 1905, p. 8 ; Nierstrasz, 1913, p. 24 ; Maury, 1929, p. 153 ; Koumans, 1928, p. 202.

Tanais tomentosus Kröyer, 1842, p. 183 ; G. O. Sars, 1899, p. 12, pl. 5.

Crossurus vittatus Rathke, 1843, p. 39, pl. I, Fig. 7.

Tanais vittatus Bate and Westwood, 1866, p. 125 ; Dohrn, 1870, pl. XII, Figs. 1–5 ; Harger, 1880, p. 418 ; pl. XIII, Figs. 81–82.

Locality.

Western Harbour epifauna, amongst *Serpulid* tubes (18–IX–1933).
1 ♀, with eggs. Length 3·0 mm.
Western Harbour epifauna. (18–IX–1933).
1 immature ♀. Length 3·4 mm.
Off Port Ada. Stones, Caulerpa-Halimeda bottom. 10 fathoms. St. 24 (21–IX–1933).
1 immature ♀. Length 2·5 mm.

Habitat.

Commonly found on algæ, eel-grass (Harger), sponges, etc., on rocks amongst *Chthamalus* and *Fucus* (Maury) ; on piles, chiefly wooden, with *Limnoria, Corophium acherusicum* and *Chelura terebrans* (Maury) ; amongst *Balanus*.

Found at depths from the littoral zone down to 17 fathoms.

Length given by Richardson 4·0 mm.

Distribution.

Appears to be cosmopolitan, ranging from the Norwegian coast as far North as 63° 29′ N. down to the Azores including the Faroe Isles and the British Isles ; Mediterranean : Banyuls, Cannes, Algiers, Naples, etc. ; Adriatic : Lesina ; East coast of North America ; Greenland ; Bermudas.

Tanais robustus Moore. (Fig. 4).

Tanais robustus Moore, 1894, p. 90 ; Richardson, 1905, p. 11 ; Stebbing, 1905, p. 2 ; Nierstrasz, 1913, p. 24 ; Stephensen, 1915, p. 29 ; J. Omer-Cooper, 1927, p. 202.

Tanais testudinicola Dollfus, 1897, p. 37, Fig. 2.

Hexapleona Schmidti Dudich, 1931, p. 142.

Locality.

East Port epifauna. (10–IX–1933).

1 immature and 2 gravid ♀♀.

Pharo, Kayed Bey, outside in " Kalkalgen." (25–X–1933).

1 ♂. Length 3·4 mm.

1 gravid ♀ (2·9 mm.), and 1 immature ♀ (2·0 mm.).

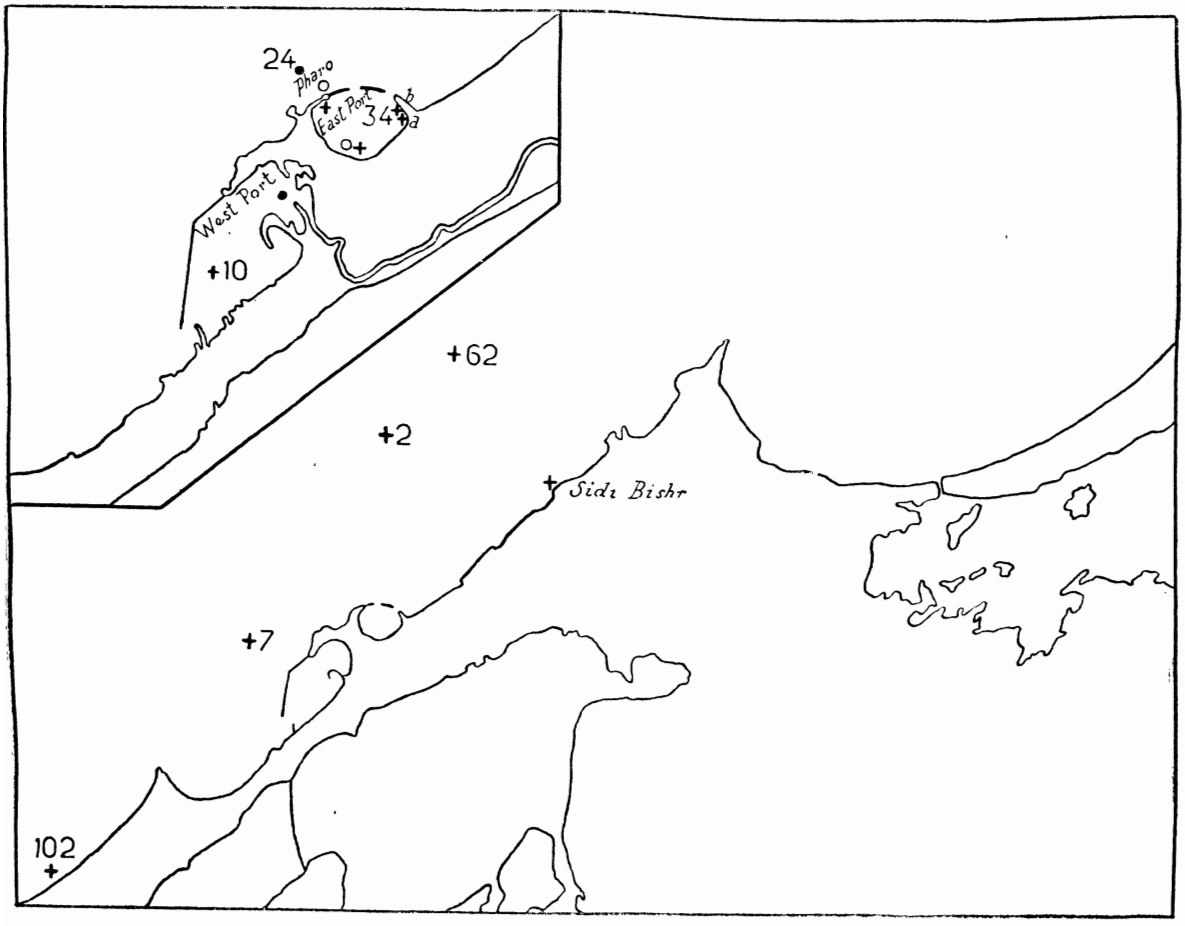
Remarks.

Dudich (1931) proposed a new generic name, *Hexapleona*, to include those forms of Tanaidæ with 6-segmented pleon, and described a new species *Hexapleona Schmidti*. This species differs from *Tanais robustus* Moore, only in the possession of a tooth at the inner angle of the palm of the chela of the male, instead of a mere projection as found in *T. robustus*. The present male example corresponds in this respect with Dudich's figures, but in no other character departs from the description of *Tanais robustus* as given by Moore. I am inclined, therefore, to regard the difference as being merely one of locality, or possibly growth. The formation of a new genus seems likewise unnecessary.

Habitat.

Moore and Dollfus both found their specimens on the backs of the turtle *Thalassochelys caretta*. Stephensen's specimens were obtained from the green algæ on the backs of two sea turtles, but not inhabiting the " minute tubes in the crevices between the scales

FIG. 4



○ *Tanais robustus.*
● *Tanais cavolinii.*
\+ *Leptochelia dubia.*

of the turtle's carapace." As in that of Ømer-Cooper from Port Said, the presence of turtles is not stated in the present record. Dudich found his specimens living near the shore in algæ, together with *Tanais cavolinii* and *Leptochelia dubia*.

Distribution.

East coast of North America (New Jersey); Mediterranean: between the Balearic Islands and Algiers, between Sardinia and Tunis, Bay of Naples, Port Said.

Like Stephensen's specimens the colour (in spirits) is brown, not pale yellow as given by Moore. Nor did the present specimen reach such large dimensions as those of Moore (4·7 mm.) or of Dollfus (4·2 mm.).

Genus *Leptochelia* Dana.

Leptochelia dubia Kröyer. (Fig. 4).

Tanais dubius Kröyer, 1842, p. 178, pl. II, Figs. 20–22.

Tanais Savignyi Kröyer, 1842, p. 168, pl. II, Figs. 1–12 ♀; Dohrn, 1870, p. 293, pls. XI, XII, Figs. 6–19.

Tanais Edwardsii Kröyer, 1842, p. 174, pl. II, Figs. 13–19 ♂.

Leptochelia dubia G. O. Sars, 1882, p. 26; id., 1886, p. 317, pls. X, XI; Carus, 1884, p. 429; Norman, 1899, p. 334; Richardson, 1905, p. 28; Nierstrasz, 1913, p. 45; Monod, 1925, p. 65; id., 1933, p. 163.

Leptochelia Savignyi G. O. Sars, 1882, p. 25; id., 1886, p. 326, pl. IX, Figs. 4–8; Carus, 1884, p. 429; Dollfus, 1898, p. 40; Richardson, 1905, p. 26; Barnard, 1920, p. 332; id., 1925*a*, p. 382.

Paratanais algicola Harger, 1878, p. 377; id., 1879, p. 162.

Leptochelia algicola Harger, 1880, p. 421, pl. XII, Fig. 3; pl. XIII, Figs. 83–86; Dollfus, 1898, p. 41.

Leptochelia neapolitana G. O. Sars, 1882, p. 27; id., 1886, p. 329, pl. XII.

Leptochelia lifuensis Stebbing, 1900, p. 616; pl. LIV C ♀, D ♂, and pl. LV B ♂; id., 1905, p. 7, pl. 1 C ♂♀; Nobili, 1907, p. 414.

Locality.

North of Pharo. Sand and mud. Halimeda bottom. 25 fathoms. St. 2 (6–IX–1933).

17 ♀♀, 2 ♂♂.

Off Sidi Bishr, "an Kustenalgen, oberflächlich." (9–IX–1933).

9 ♀♀.

Small stones, Caulerpa bottom. 17 fath. St. 7 (16–IX–1933).

21 ♀♀.

Eastern Harbour, before the Laboratory. Kayed Bey. Ulva and Corallina zone. (5–IX–1933).

1 ♀.

Eastern Harbour epifauna. (10–IX–1933).

1 ♀.

Western Harbour, mud with sand. Caulerpa bottom. 6 fathoms. St. 10. (17–IX–1933).

2 ♀♀.

Eastern Harbour, Silsila corner. St. 34. (4–X–1933).

3 ♀♀.

Eastern Harbour, sand, only Caulerpa. St. 34 b. (4–X–1933).

1 ♀.

Mud. Caulerpa bottom. 28 fath. St. 62. (31–X–1933).

1 ♀.

Stones, Halimeda-Cystosira-Caulerpa bottom. 5–6 fath. Station 102. (7–XI–1933).

3 ♀♀.

Remarks.

From a consideration of the conflicting opinions regarding the synonymy of *Leptochelia dubia*, *Savignyi*, *algicola*, *neapolitana* and *lifuensis*, the conclusion which must be drawn is that of Monod (1933) that they are all identical.

It is possible that most apparent differences could be explained on a basis of differential growth. Thus Dollfus (1898, p. 42) distinguished between *L. Savignyi* Kröyer (=*L. Edwardsii* Kröyer) and *L. algicola* Harger (= *L. dubia* Dohrn) by the size of the propus of the chela and the spacing of the teeth on this segment. This would easily be accounted for if the chela was positively heterogonic (*see* J. S. Huxley 1932,

Problems of Relative Growth, London) as was found to be the case in *Cancer magister* (Weymouth and Mackay, Proc. Zool. Soc. London, 1936, Part I, p. 257). It is significant that Dollfus observed that these two species are usually found together.

Similarly, Richardson (1905, p. 29) remarked that *L. dubia* can only be distinguished from *L. Savignyi* by the number of segments in the uropods. The following examination of 56 individuals shows that the number of segments in the uropods increases with increase in length :—

Size	Over 5mm.	4-5 mm.	3-4 mm.	2-3 mm.	Under 2 mm.
Average No. of segments in uropods	6·0	5·89	5·33	5·57	4·91
Number of individuals examined	2	9	14	14	17

Characters depending upon the number of segments in antennæ, uropods, etc., are therefore of doubtful diagnostic value.

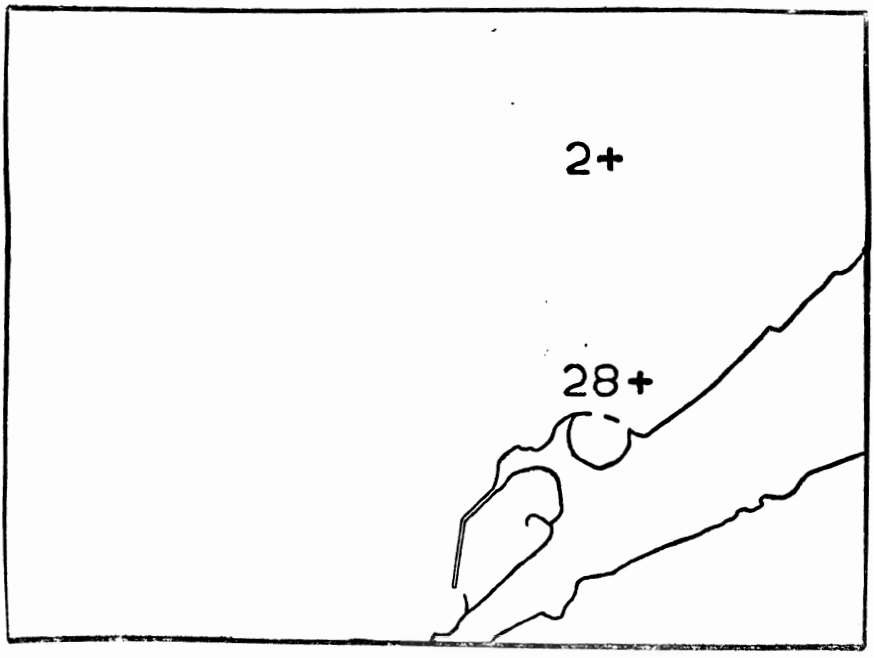
Habitat.

Amongst algæ, eel-grass and dead coral of the littoral zone down to depths of 30 fathoms. Also occurs on piles and ship's bottoms and on sponges, *Lichina*, *Zostera*, etc.

Distribution.

East coast of North America ; North-East Atlantic from Brittany and the Channel Islands as far south as Senegal and Madeira and the Azores ; Mediterranean : Gulf of Naples, Spezia, Messina, Marseilles, Syracuse, coast of Algeria ; Adriatic : Gulf of Trieste ; West Indies ; Brazil ; Indo-Pacific : Loyalty Islands, Isle of Pines, Ceylon and the Red Sea.

FIG. 5



+ *Gnothia vorax.*

GNATHIIDEA H. J. HANSEN

Family Gnathiidae Harger

Genus *Gnathia* Leach.

Gnathia vorax Lucas. (Fig. 5).

Anceus rapax Lucas, 1849, p. 73 ; Carus, 1884, p. 435.

Anceus vorax Lucas, 1849, p. 85 ; Heller, 1866, p. 749 ; Carus, 1884, p. 435.

Praniza obesa Lucas, 1849, p. 88 ♀ ; *A. obesus*, Carus, 1884, p. 435.

Praniza mauritanica Lucas, 1849, p. 87 (juv.) ; *A. mauritanicus*, Carus, 1884, p. 435.

Anceus maxillaris (pro parte) Bate and Westwood, 1866, p. 187.

Gnathia vorax Monod, 1923, p. 13, Fig. 7 (3–4) ; id., 1923*a*, p. 187 ; id., 1926, p. 480, Figs. 210–214 (for full synonymy).

Locality.

Stones, Caulerpa-Halimeda ground. 10-12 fath. St. 28. (25-IX-33).
1♂, Length 3·7 mm.

North of Pharo. Sand and mud, Halimeda ground. 25 fathoms. Station 2. (6–IX–1933).
2 praniza larvae, 5·4 and 3·7 mm.

Remarks.

The male specimen shows the closest resemblance to the figures of Lucas' specimen from Bône (Algeria). It is of interest on account of its small size and in that the tubercles on the peraeopods are less marked than indicated by Monod's (1926, Fig. 210) figures. The length is less than that given by Monod (4·5–7·5 mm.) but there is no confusion with *G. illepida* Monod, for the latter species has a 3rd segment on the pylopod, and the antennae are more robust than in the present specimen.

Habitat.

This species occurs on neritic, coralline and muddy bottoms and is not confined to littoral regions, being recorded from the Adriatic Sea down to 190 fathoms.

Distribution.

West coast of Europe from west coast of Greenland (?) down to the Canary Isles : Scotland (Moray Firth, Loch Fyne), west coast of France (Brittany, Bay of Biscay), Morocco (Casablanca) ; Mediterranean : Balearic Islands (Formentara), Sicily (Messina, Syracuse), Gulf of Naples, Algeria (Bône) ; Adriatic : Lesina, Lagosta, Lissa, Curzola.

Distribution of larva similar.

FLABELLIFERA

Family Anthuridae

Genus *Paranthura* Bate and Westwood

Paranthura nigropunctata Lucas. (Fig. 6).

Anthura nigropunctata Lucas, 1849, vol. I, p. 64, vol. XIV, pl. 5, fig. 9 ; Heller, 1866, p. 732 ; Carus, 1884, p. 434.

Paranthura nigropunctata Stephensen, 1915, p. 5 ; Monod, 1925, p. 66 ; Barnard, 1925, p. 153, pl. 4, fig. 21.

Locality.

Stones. 10–12 fath. Caulerpa-Halimeda ground. St. 28. (25-IX-33).

1 ♀, Length 9·0 mm.

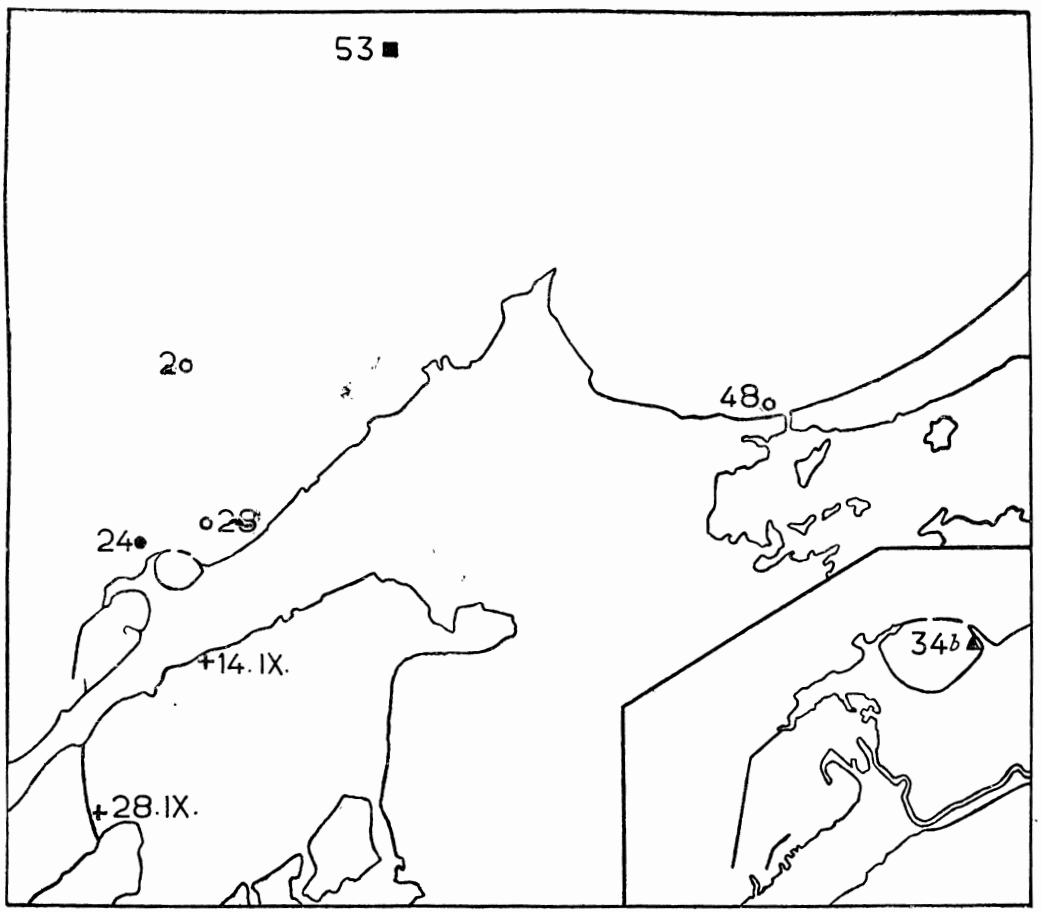
North of Pharo, sand and mud. Halimeda. 25 fath. St. 2. (6-IX-33).

1 ♀, Length 10·0 mm.

Lake Edku Bridge, sea edge, sand. St. 48. (17-X-1933).

1 ♀, Length 9·0 mm.

FIG. 6



○ *Paranthura nigropunctata.*
\+ *Cyathura carinata.*
▲ *Apanthura sandalensis.*
□ *Exanthura filiformis.*
● *Ananthura ovalis.*

Remarks.

Barnard (1925) distinguished between the *Paranthura nigropunctata* of Lucas and that of Norman and Stebbing (1886) whose specimens according to Barnard, belong to *P. costana* of Bate and Westwood (1868). The chief difference between the two species lies in the form of the uropods, the endopod and exopod of *P. nigropunctata* being proportionately narrower. The above examples belong to *P. nigropunctata* (Lucas) and support Barnard's contention by complete agreement with the proportions stated by him. The size of the present specimens is in each case less than that given by Barnard (15 mm.). If the specimens of Monod (see below) do belong to this species they are also small—10 mm. from Rio de Oro (Mauretania) and 8 mm. from Tunis.

Distribution.

East Atlantic : C. Verde Islands (10–40 fathoms), Rio de Oro ; Mediterranean : North African Coast (Oran, Algiers, Bône, among *Fucus* covering rocks, Adjim (Tunis), Messina, Gulf of Aegina (27 fathoms) ; Adriatic : Lesina, Lissa, Lagosta.

A possibility of doubt arises in Monod's records. He states (1925) *Paranthura nigropunctata* to be synonymous with *Leptanthura melanomma* Vanhöffen, which Barnard regards as synonymous with *P. costana*. The question arises as to whether Monod's specimens should be assigned to the latter species.

Genus *Cyathura* Norman and Stebbing

Cyathura carinata Kröyer, 1847. (Fig. 6).

Cyathura carinata Norman and Stebbing, 1886, p. 124, pl. XXVII, fig. 3 (for synonymy) ; Richardson, 1905, p. 63, fig. 47, 48, 49, 50.

Cyathura estuaria Barnard, 1914, p. 334*a*, pl. XXVII, D.

Cyathura carinata Gurney, 1907, " The Crustacea of the East Norfolk Rivers," Trans. Norfolk and Norwich Nat. Soc. VIII, pt. 3, p. 432, pl. ; W. Omer-Cooper, 1916, " Some undescribed features of *Cyathura carinata*," Journ. Zool. Res. vol. I, No. 3, pp. 97–101 ; Barnard, 1925, p. 140 ; Monod, 1925, p. 66 ; Legueux et Maury, 1927, p. 22 ; Maury, 1929, p. 155.

Locality.

Lake Maryut. (28–IX–1933).
4 ♀♀ , 1 ♂.
Lake Maryut. Mud. (14–IX–1933).
7 ♀♀ .

Habitat.

This species is characteristic of brackish waters, particularly estuaries. In the present record the analysis is given as : Cl=6·15 per cent, S=11·13 per cent (S being the salt content).

The size is stated by Barnard to be 13–27 mm. and Norman and Stebbing give 20 mm. The specimens from Alexandria, the largest of which measures only 13 mm., are therefore small, a number being sexually mature. However, Monod records that his examples from Morocco also only reached 13 mm. while those from Benodet (R. Quimper) and l'Oued Seybouse were smaller still.

Distribution.

E. coast of North America (New Jersey, Connecticut, Massachusetts) ; N.E. Atlantic : Greenland, Denmark, Kielerbucht (Germany), England (Plymouth, Christchurch Harbour, E. Norfolk Rivers), France (Normandie, Brittany), Morocco (mouth of the Oued Ykem), Algeria (mouth of l'Oued Seybouse) ; South Africa ; China.

Genus *Apanthura* Stebbing

Apanthura sandalensis Stebbing. (Figs. 6, 7/1*a–h*).

Apanthura sandalensis Stebbing, 1900, p. 621, pl. LXV. A ; Barnard, 1925, p. 141.

Apanthura dubia Barnard, 1914*a*, p. 342*a*, pl. XXVIII.D.

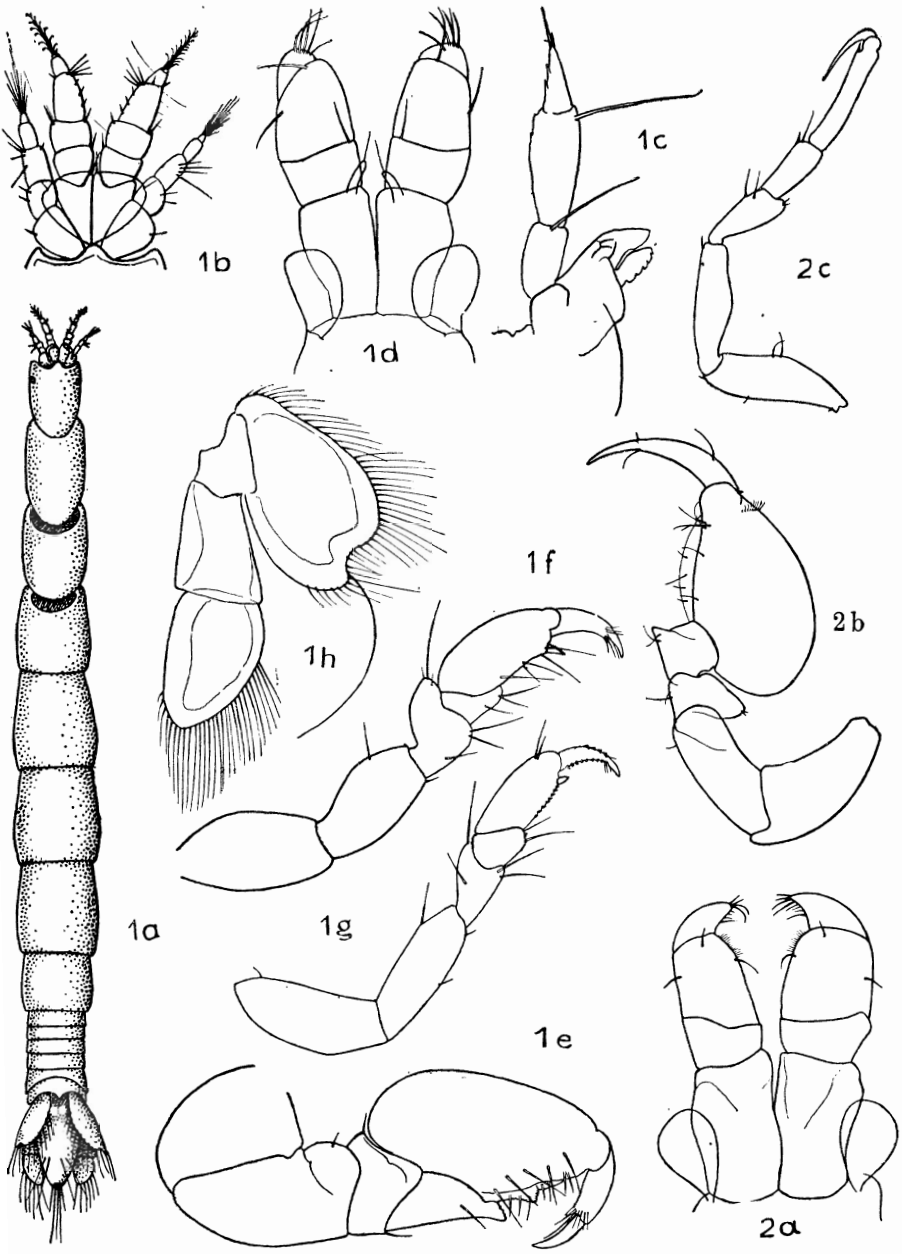
Locality.

Eastern Harbour, off Silsila. Sand, only Caulerpa. St. 34b. (4–X–1933). 2 immature ♀♀. Length 5·0 and 6·0 mm.

Remarks.

Mr. J. G. Cattley has kindly compared the present specimens with ones from the " John Murray " collection which he has identified as *Apanthura sandalensis* Stebbing, and declares them to be in full agreement. Only in one minute character is there any divergence, namely that in the 6th segment of the second thoracic appendage the proximal portion of the palm is straight in the " John Murray " specimens, slightly concave in those from Alexandria.

FIG. 7



1. *Apanthura sandalensis* (♀).

(*a*) Dorsal view of entire specimen.
(*b*) Antennules and antennae from above.
(*c*) Mandible.
(*d*) Maxilliped.
(*e*) 2nd thoracic appendage.
(*f*) 3rd thoracic appendage.
(*g*) Last thoracic appendage.
(*h*) Uropods of left side.

2. *Exanthura filiformis* (♀).

(*a*) Maxilliped.
(*b*) 2nd thoracic appendage.
(*c*) 7th thoracic appendage.

In both sets of specimens, as Mr. Cattley pointed out to me, the tip of the telson is slightly excavate, the long terminal setæ being confined to this excavation. Furthermore Stebbing appears to have overlooked the fact that the 2nd segment of the antenna is expanded into a dorsal lamina extending partly over the peduncle of the antennule. (Fig. 7/1*b*). On the other hand the Alexandrian specimens confirm the observation of Stebbing that the maxilliped bears a minute inner plate. The presence of this plate was subsequently denied by Barnard (1925, p. 141) who said " I have not observed this (inner plate) in any specimens belonging to species which I consider really belong to this genus (Apanthura)."

Apanthura sandalensis has not yet been recorded except in the Indo-Pacific, and I was at first inclined to refer my specimens to *Cyathura robertiana* Monod, with the brief description of which (1925*a*, p. 236, pl. XLVI) they agree fairly well. After comparison with the " John Murray " specimens of *Apanthura sandalensis*, which have a normal distribution, there is, however, no doubt that the present is the first Mediterranean record of this species.

Stebbing gave 7 mm. as the length of the type, and Barnard has recorded a length of 16 mm., hence the Alexandrian examples are small.

Distribution.

Loyalty Islands (Stebbing) ; Chilka Lake (Chilton) ; Travancore Southern India (Barnard) ; South Africa (Barnard) ; Red Sea, 15 fath., 13° 39′ 30″ N., 42° 43′ 00″ E. (Cattley).

Genus *Exanthura* Barnard 1914

Exanthura filiformis Lucas. (Figs. 6, 7/2*a–c*).

Anthura filiformis Lucas, 1849, p. 63, pl. 5, fig. 8 ; Carus, 1884, p. 434 ; Norman and Stebbing, 1886, p. 130.

Exanthura filiformis Barnard, 1920, p. 340 ; id., 1925, p. 131, pl. 4, fig. 22 ; id., 1925*a*, p. 388.

Locality.

Off Aboukir-Montazah, yellowish mud. 33 fath. St. 53. (26–X–1933).

1♀. Length 6·5 mm.

Remarks.

There seems to be no reason to doubt that this specimen belongs to Lucas' species despite the somewhat inadequate description.

The presence of the distinctly keeled telson makes diagnosis simpler. It agrees very well with Barnard's description (1920, p. 342) except that the maxilliped appears to be 5-segmented instead of 4 as given by Barnard. If this is so in Lucas' specimens then the problem arises whether they belong to the genus *Haliophasma* (Haswell) in spite of the fact that the sutures of the pleon segments are distinct.

In view of the rather confused state of knowledge regarding the two genera it seems wiser to leave the present examples in the genus *Exanthura* until further evidence is forthcoming.

Distribution.

Algeria (Bône) ; South Africa (off Lion's Head, Cape Peninsular, S.E. distant 22 miles, 95 fathoms ; Cape St. Blaize N. by E. distant 73 miles, 125 fathoms ; Cape infanta, N.E. by N.$\frac{1}{2}$N. distant 13 miles, 43 fathoms).

Genus *Ananthura* Barnard

Ananthura ovalis Barnard. (Figs. 6, 8/1*a–h*).

Ananthura ovalis Barnard, 1925, p. 136, pl. 4, fig. 10.

Locality.

Off Fort Ada. Stones. 10 fathoms. Caulerpa-Halimeda ground. St. 24. (21–IX–1933).

1 specimen. Length 5·0 mm.

Remarks.

This specimen clearly belongs to Barnard's species despite the brief description and the paucity of figures. I am able to add a few notes to the original account, although it has been impossible to figure the entire specimen as it is damaged.

Head longer than broad, equal in length to the 1st thoracic segment ; peraeon segments not keeled, increasing in length to the 5th which is the longest, 7th segment shortest ; pleon sutures distinct.

Eyes present, pigment light brown.

Antennules with flagellum 3-segmented.

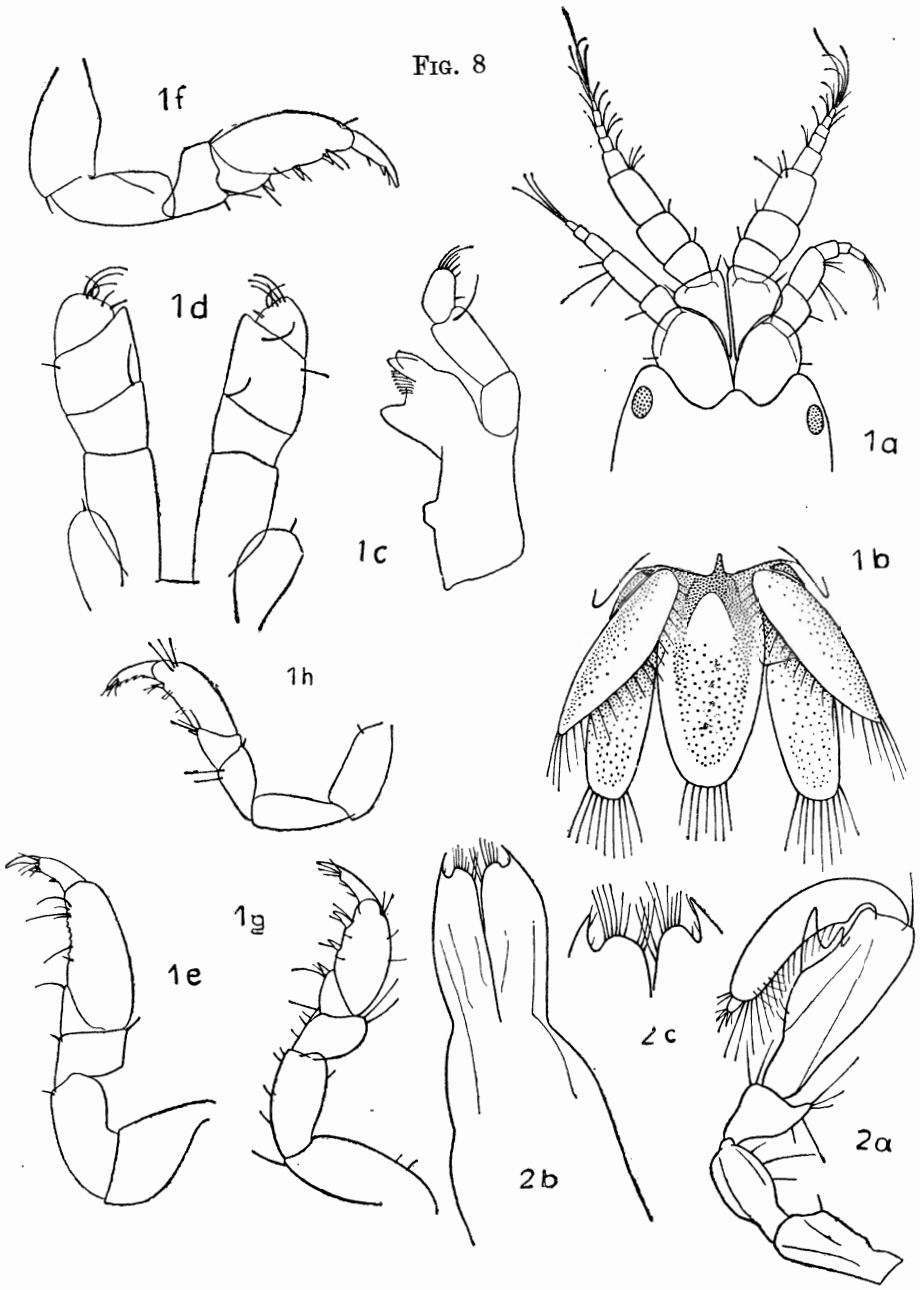
Antennae with flagellum 5–6 segmented ; 2nd segment of peduncle expanded so as to partly cover the proximal segments of the peduncle of the antennules, in a fashion similar to *Apanthura sandalensis*.

Mandible with 1st and 3rd segments of palp subequal.

Maxilliped 5-segmented, with small plates on the second segment.

Peraeopod 1 with hand not greatly expanded, palm straight, unguis short.

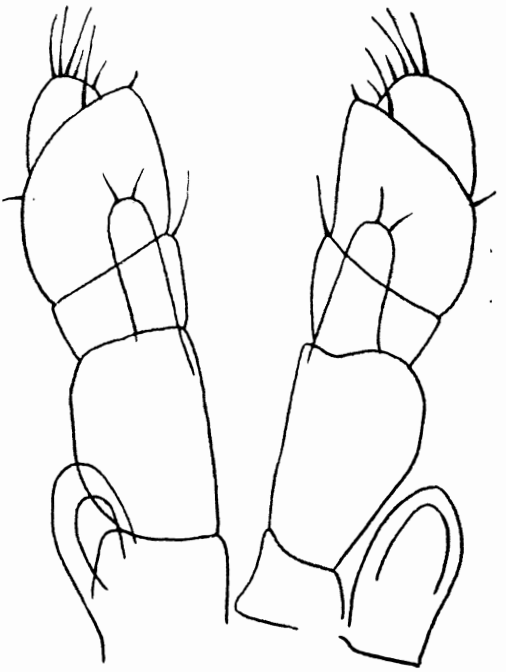
FIG. 8



1. *Ananthura ovalis* (♀).
   - (*a*) Dorsal view of antennules and antennae.
   - (*b*) Dorsal view of telson and uropods.
   - (*c*) Mandible.
   - (*d*) Maxillipeds (this figure is cancelled; in its stead, *see* Fig. 8—1*d* corrigenda).
   - (*e*) Chela.
   - (*f*) 2nd peraeopod.
   - (*g*) 3rd peraeopod.
   - (*h*) Last peraeopod.

2. *Bagatus Stebbingi* (♂).
   - (*a*) 1st peraeopod.
   - (*b*) 1st pleopod.
   - (*c*) Tip of 1st pleopod under higher magnification.

FIG. 8—1*d* (corrigenda)



Ananthura ovalis Maxillipeds

Peraeopods 2 and 3 nearly as large as peraeopod 1, 6th segment ovate ; palm of hand bearing two spines, with a third on the inner distal angle of the 5th segment.

Peraeopods 4–7 with 5th segment short but not underriding 6th.

Telson ovate-lanceolate, not very thick, dorsal surface smooth, with a longitudinal pit near the base.

Uropods : endopod long, subequal to peduncle, apically rounded ; exopod broadly ovate, margin convex, setose.

Distribution.

Mediterranean : Syracuse (Copenhagen · Museum).

Family Sphaeromatidae

Sub-Family Sphaeromatinae Hansen

Genus *Sphaeroma* Bosc

Sphaeroma serratum Fabricius. (Fig. 9).

Oniscus serratus Fabricius, 1787, tome I, p. 242.

Cymathoa serrata Fabricius, 1793, tome II, p. 510.

Sphaeroma cinerea Bosc, 1801, tome II, p. 186, pl. XV, fig. 8 ; Risso, 1816, p. 146.

Sphaeroma serratum Guérin-Meneville, 1840, p. 27, pl. 30, fig. 1 ; Milne-Edwards, 1840, p. 205 ; Lucas, 1849, p. 74 ; Heller, 1886, p. 746 ; Bate and Westwood, 1866, p. 405 ; Carus, 1884, p. 446.

Sphaeroma conglobator Stebbing, 1910, p. 219.

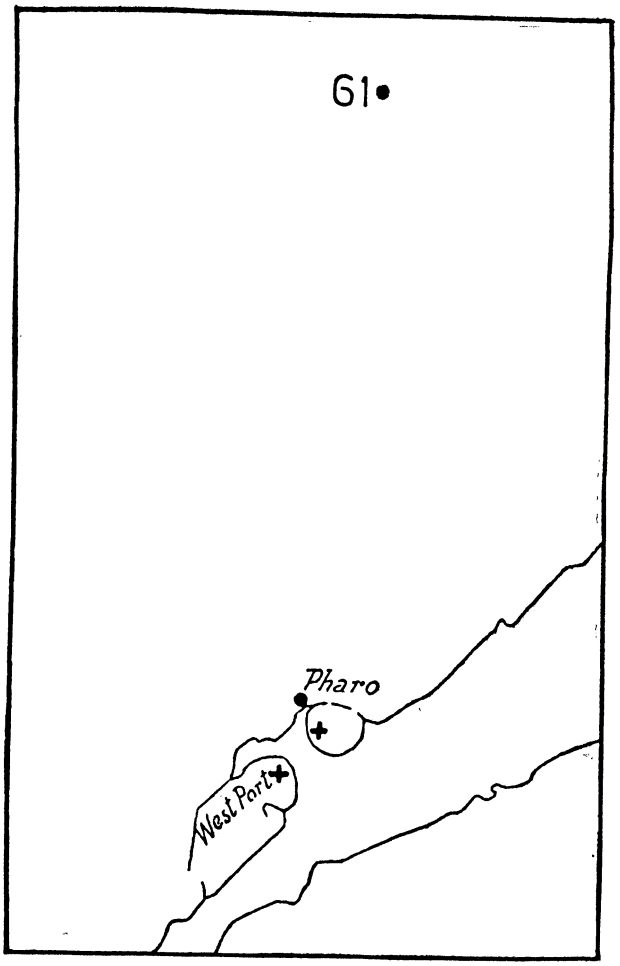
Sphaeroma serratum Omer-Cooper, 1927, p. 203 ; Torelli, 1930. p. 300, pl. 8, fig. 1 ; Nierstrasz, 1931, p. 193 ; Monod, 1932, p. 27, text-figs. ; id., 1933, p. 197 ; Omer-Cooper and, Rawson, 1934, p. 32, pl. I, fig. 2 (for complete synonymy)

Locality.

Mud. 50 fathoms. St. 61. (30–X–1933).
1 specimen. Length 4·1 mm.

Pharo, Kayed Bey, outside on calcareous algae. (25–X–1933).
2 specimens. Length 4·1 and 3·6 mm.

FIG. 9



● *Sphaeroma serratum.*

\+ *Sphaeroma Walkeri.*

Habitat.

Usually occurs in communities under stones and in the sand of the middle and upper littoral zone, although it is also stated to swim well. Monod records it from the hull of a boat. Omer-Cooper and Rawson state that it is " also found at the mouths of estuaries in semi-brackish waters." The present record is therefore remarkable on account of the considerable depth at which one specimen was taken (50 fathoms).

Omer-Cooper and Rawson give 10 mm. or more as a common length for this species.

Distribution.

East Atlantic coasts of Europe and West Africa from the British Isles to Mauretania : Heligoland ? (probabiliter *S. rugicauda*), Belgium ? (probabiliter *S. rugicauda*), all coasts of British Isles, France, Spain, Morocco, Mauretania, Azores ; Mediterranean : Algeria, Tunisia, Egypt, Italy, Sicily, France, Balearic Islands, Spain ; Adriatic ; Suez Canal.

Sphaeroma Walkeri Stebbing. (Fig. 9).

Sphaeroma Walkeri Stebbing, 1905, p. 31, pl. VII ; id., 1910, p. 220 ; id., 1917, p. 444, pl. XXIII ; Barnard, 1920, p. 360 ; Omer-Cooper, 1927, p. 204 ; Baker, 1928, p. 49 ; Nierstrasz, 1931, p. 192 ; Monod, 1932, p. 36, fig. 5, 23*a*, 43*a–b* ; id., 1933, p. 198 ; Barnard, 1936, p. 178.

Locality.

Eastern Harbour epifauna. (10–IX–1933).
2 ♂♂, 6 ♀♀. (1 ♀ labelled from ship's hull).

Western Harbour epifauna amongst *Serpulid* tubes. (18–IX–1933). 1♀ .

Distribution.

New South Wales ; Ceylon ; Orissa coast (Devi River) ; Durban ; Red Sea ; Suez Canal ; Port Said.

Stebbing's specimens from Durban were obtained " on posts in water with sea-squirts." This species occurs from the littoral zone down to 23–25 fathoms.

Both Monod (1933) and Omer-Cooper record the presence of this species on the hulls of boats as in the present instance.

Stebbing (1917) gives 12 mm. as the length of his largest female. The greatest length reached in the Alexandrian examples was 9 mm.

Genus *Cymodoce* Leach

Cymodoce truncata Leach. (Fig. 10).

Cymodoce truncata Leach, 1814, p. 433 ; id., 1818, p. 342.

Cymodoce pilosa Milne-Edwards, 1840, p. 213 ; Stebbing, 1910, p. 222.

Cymodoce truncata Stephensen, 1915, p. 12 ; Torelli, 1928, p. 61 ; id., 1930, p. 307, pl. IX, figs. 7–9 ; Nierstrasz, 1931, p. 201 ; Monod, 1932, p. 53, figs. 47–49 ; id., 1933, p. 201 ; Omer-Cooper and Rawson, 1934, p. 39, pl. II, figs. 1–2, pl. III, figs. 1–2, pl. IV (for complete synonymy.)

Locality.

In the " Great Pass." Rocks and yellow sand, Posidonia-Caulerpa bottom. 7 fathoms. St. 22 (20–IX–1933).

1 gravid ♀, 6·5 mm.

Stones, Caulerpa bottom. 7 fath. St. 30 (25–IX–1933).

1 ♂ , 9·1 mm.

Pok crags, near the barracks at Ras el Tin, off Posidonia ground, Caulerpa-Halimeda. (10–X–1933).

1 larval form, 3·5 mm.

Sand, mud. Caulerpa-Halimeda bottom. 35 fathoms. St. 116 (11–XI–1933).

1 ♂ , 8·1 mm. 1 ♀, 7·0 mm.

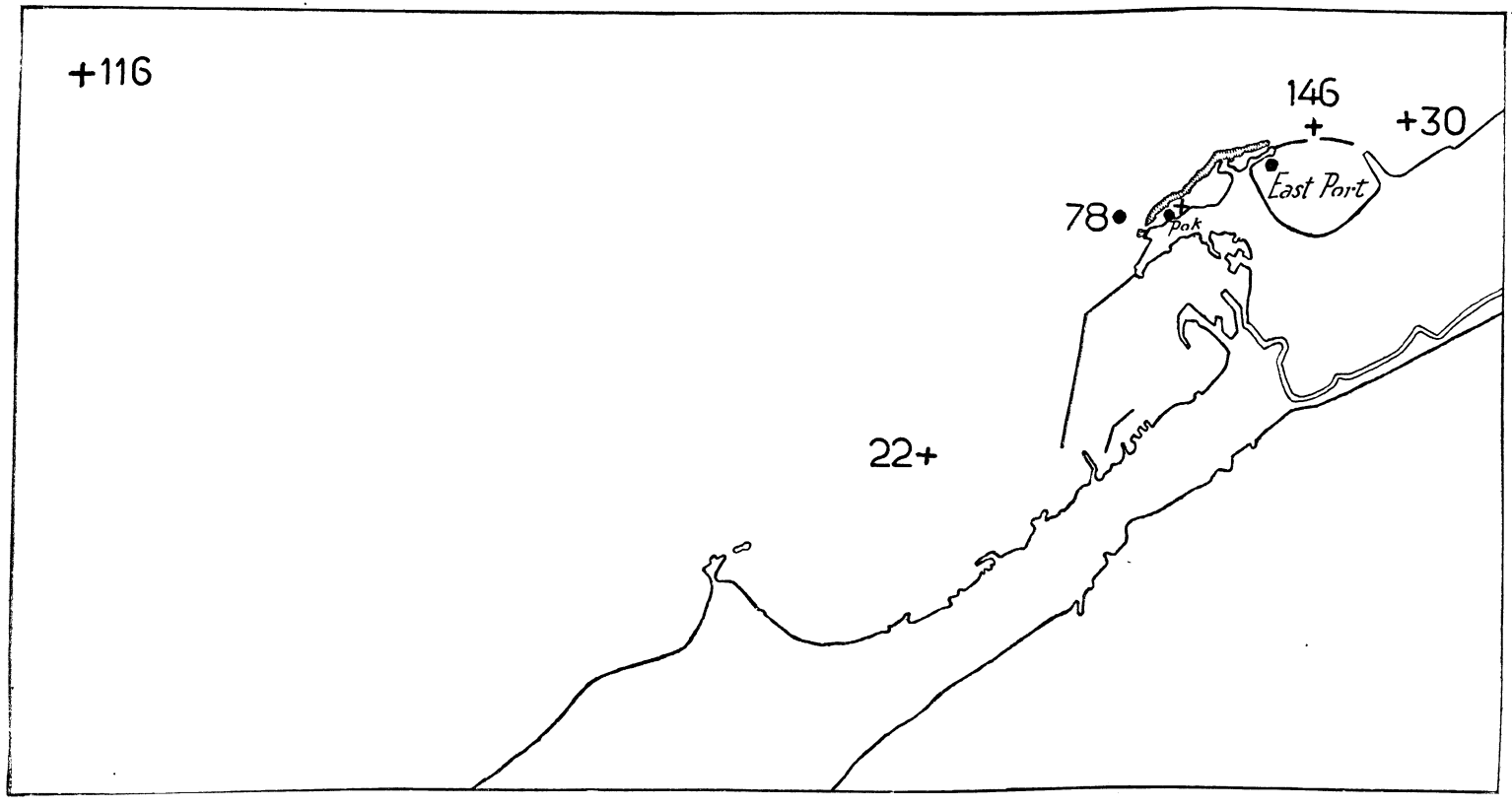
Outside Eastern Harbour. Posidonia-Caulerpa-Halimeda bottom. 10–11 fathoms. St. 146 (15–XI–1933).

1 ♂, 8·8 mm.

Habitat.

On *Fucus* and other algae on rocks of the middle and lower littoral zone down to 40 fathoms. Occurs with *Dynamene bidentata* " au bas de l'eau à marée basse " (Fage 1933, p. 191). The young forms swim but soon take refuge in the algae of the littoral region. Torelli records specimens from the empty shells of *Balanus perforatus* and also from *Hydroides uncinata* and states that this species occurs on Tunicates, sponges and tubicolous worms. The abdomen of the *Balanus*, she says, affords a convenient hold for the swimming larva.

FIG. 10



+ *Cymodoce truncata.*
● *Dynamene bidentata.*

Distribution.

East Atlantic from the British Isles (except the east coast of England and Scotland) down to the Azores; France, Channel Isles, Spain, West Africa (Morocco); Mediterranean: 38°31′ N., 8°57′E., 30°30′N., 19°02′E., Tunisia, Balearic Islands, Spain, France, Italy; Adriatic: Lesina, Lissa.

The wide variation in form exhibited in this species has led to some confusion in synonymy. This makes the estimation of the geographical distribution difficult. Thus if *C. pilosa* of Stebbing (1910, p. 222) is synonymous with *C. truncata* of Leach, as Torelli supposes (1930, p. 307) the distribution is extended to the Suez Canal. Further, Monod says that the Red Sea form *C. Richardsoniae* Nobili may also be a synonym.

Genus *Dynamene* Leach

Dynamene bidentata Adams 1800. (Fig. 10).

Dynamene bidentata Torelli, 1930, p. 327, pl. XIX, figs. 14, 15; Monod, 1932, p. 61, figs. 46*e–i*, 59; Omer-Cooper and Rawson, 1934, p. 43, pl. V, figs. 1–2 (for full bibliography).

Locality.

Eastern Harbour epifauna. (10–IX–1933).
1 spec. 3·1 mm.

Stones. Halimeda-Caulerpa ground. 5–6 fath. St. 78 (5–XI–1933).
1 spec. 2·9 mm.

Pok crags near the barracks at Ras el Tin, off Posidonia bottom. Caulerpa-Halimeda. (10–X–1933).
2 specs. 3·7 mm. and 2·8 mm.

Habitat.

This species occurs in the middle and lower littoral zone and is found under rocks, in the algae covering rocks, on empty barnacle shells, etc. Fage (1933, p. 191) declares it to be an active swimmer and that it occurs in the plankton. Omer-Cooper and Rawson (op. cit. p. 46) mention that it is "not, apparently, very usually captured by the dredge."

Distribution.

East Atlantic from the British Isles (where it is recorded from all coasts except the east coast of England and Scotland, although two specimens were taken on a ship's hull in the Firth of Forth) down to the Azores including the Channel Isles: France, Spain, Morocco, Mauretania; Mediterranean: Tangiers, Tunisia, Italy, Spain, Black Sea, Bosphorus, Jugo-Slavia.

Family Cymothoidae

Sub-Family Cirolaninae

Genus *Cirolana* Leach

Cirolana Cranchii Leach. (Fig. 11).

Cirolana Cranchii Leach, 1818, p. 347.

Nelocira Swainsonii Leach, 1818, p. 347 ; Desmarest, 1825, p. 302, pl. 48, fig. 2.

Cirolana Cranchii Desmarest, 1825, p. 303 ; Milne-Edwards, 1840, p. 236.

Eurydice Swainsonii Milne-Edwards, 1840, p. 238 ; Grube, 1864 p. 76.

Cirolana Cranchii Bate and Westwood, 1866, p. 296 ; Hansen, 1890, p. 341, pl. III, figs. 3–3*i* ; id., 1905, p. 350, pl. 33, fig. 3*a* ; Stephensen, 1915, p. 11 ; Monod, 1923, p. 14 ; id., 1930, p. 145, figs. 1*c*, 2, and 5*b* ; Nierstrasz, 1931, p. 160 ; Monod, 1931, p. 3.

Locality.

Small stones, Caulerpa-Halimeda bottom. 15 fath. St. 8 (16–IX–1933).

1 ♀, 13·2 mm.

Stones, Caulerpa-Halimeda bottom. 10–12 fathoms. St. 28 (25–IX–1933).

1 ♂, 11·2 mm., 1 ♀, 11·5 mm.

Eastern Harbour, near entrance. Coarse sand, stones, a little mud. Caulerpa bottom. 5½ fathoms. St. 32 (27–IX–1933).

1 ♀, 9·5 mm.

Off Aboukir. Sand and stones. Amphioxus-ground. 9 fathoms. St. 50 (18–X–1933).

1 ♂, 9·2 mm., 1 ♀, 10·5 mm.

Stones, Caulerpa bottom. 7 fath. St. 77 (5–XI–1933).

1 gravid ♀, 16 mm.

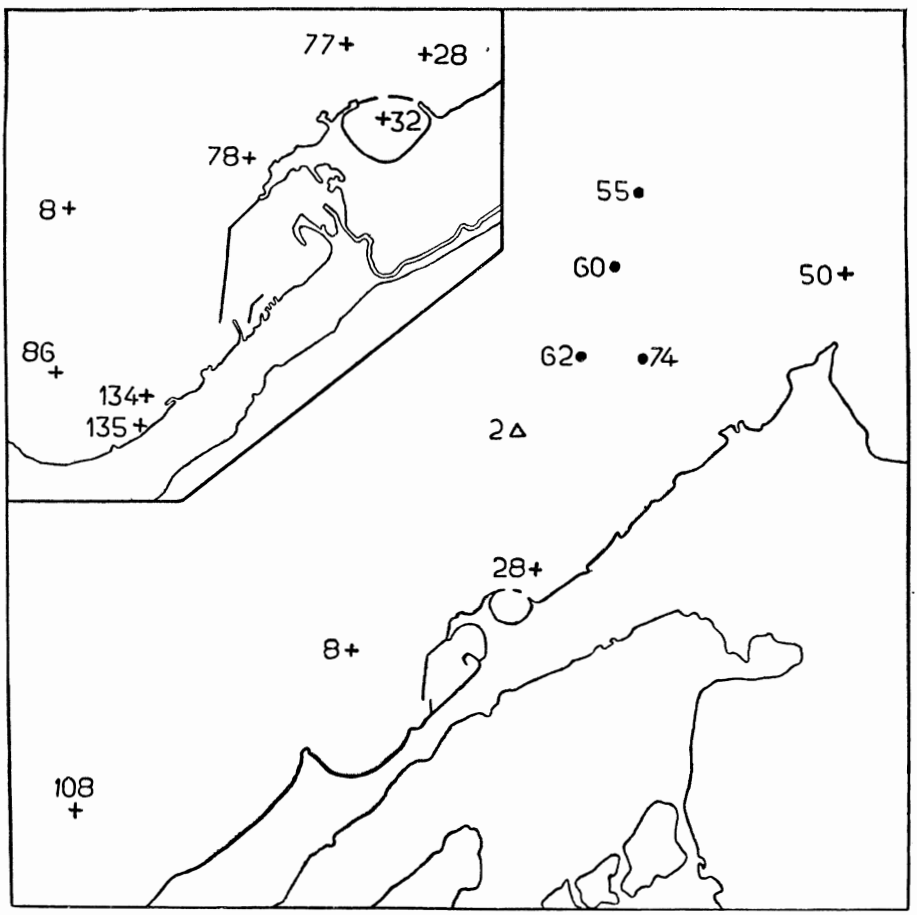
Stones, Caulerpa-Halimeda bottom. 5–6 fath. St. 78 (5–XI–1933).

1 ♂, 13·0 mm.

Coarse sand. Amphioxus ground, Posidonia-Caulerpa bottom. 5 fathoms. St. 86 (5–XI–1933).

1 ♂, 9·5 mm.

Fig. 11



+ *Cirolana Cranchii.*
● *Cirolana neglecta.*
△ *Cirolana* sp.

Sand and stones. Halimeda-Caulerpa bottom, many *Dasycladus*. 14 fathoms. St. 108 (8–XI–1933).

2 ♂♂, 14·0 and 12·0 mm.

Coarse sand, some dark mud. Posidonia-Caulerpa bottom, Amphioxus ground. 6 fathoms. St. 134 (14–XI–1933).

1 ♀, 10·2 mm.

Posidonia-Caulerpa-Halimeda bottom. 4 fathoms. St. 135 (14–XI–1933).

1 ♀, 11·5 mm.

Habitat.

This species is confined to stony or sandy regions and usually where algae abounds. It is common in shallow water but has been recorded at depths down to 100 m. (55 fathoms). *Cirolana neglecta* occurs exclusively on mud and is usually only found in deeper water (23–40 fathoms). Like this species, *C. Cranchii* is said to gorge itself upon the blood of fishes taken on the line (Monod 1923).

Hansen (1905) states that it has been recorded from a dead *Cancer pagurus* and from a *Maja*, from the cavities in wood dredged up, and in sponges.

Distribution.

East Atlantic : west coast of Scotland (Firth of Clyde), S.W. coast of England (Plymouh, Falmouth), Channel Islands, west coast of France (Roscoff, Concarneau, Le Croisic), Spain (Cadiz), Senegambia, Cameroun ; Mediterranean : Villefranche, Cannes, Monaco, Toulon ?, Corsica (Porto Vecchio), Tunis (Gabès).

Cirolana Cranchi-australiensis Hale, is found in South and West Australia (H. M. Hale, The Fauna of Kangaroo Island, South Australia. Trans. Roy. Soc. South Australia, Vol. 51, 1927, p. 307–321).

Cirolana neglecta Hansen. (Fig. 11).

Cirolana neglecta Hansen, 1890, p. 327, pl. I, figs. 3–3*i*, pl. II, figs. 1–1*b* ; Dollfus, 1903, p. 7 ; Hansen, 1905, p. 345 ; Monod, 1923, p. 14 ; id., 1924, p. 64 ; id., 1930, p. 144.

Locality.

Mud. 40 fathoms. St. 55 (26–X–1933).

1 ♂, 7·5 mm.

Mud. 33 fathoms. St. 60 (30–X–1933).

2 ♀♀, 10·5 mm. and 6·0 mm.

Mud. Caulerpa. 28 fathoms. St. 62 (31–X–1933).

1 ♂, 10·0 mm.

Mud. A little Caulerpa. 23 fathoms. St. 74 (4–XI–1933).

1 gravid ♀, 10·5 mm., 1 ♀, 8·0 mm.

Habitat.

This species appears to be confined to mud bottoms where algæ are not abundant, principally at depths of 20-50 fathoms. Monod (1923) states that this species was found in abundance on the fish taken on the line at Monaco and (1924) in fish traps on sandy, shell-covered bottoms off Cap Blanc (Mauretanian coast). Hansen (1890, p. 329) considered it probable that it was this species and not *C. hirtipes* which Valle found embedded in the oesaphagus of *Thalassochelys corticata* Rond., and on *Centrina Salviani* Riss.

Distribution.

Atlantic coast of France (Le Croisic); coast of Mauretania (Cap Blanc); Mediterranean (Naples, Monaco, Villefranche, Nice, Bay of Giardini (Sicily); Adriatic (? specimens referred by Heller, Stalio and Stossich to *C. hirtipes* M.-Edw. probably belong to *C. neglecta* according to Hansen (1905, p. 346).

Hansen (1905, p. 346) doubts whether the specimens taken in the Western (?) Atlantic at depths from 1007 m. down to 1924 m. which were referred by Dollfus to *C. neglecta* may not belong to another closely allied species.

It may be noted that the present specimens are of uniformly small size compared with that given by Hansen (12–15 mm.).

Cirolana sp. (Figs. 11, 12/*a–k*, 13/1*a–e*).

Locality.

North of Pharo. Sand and mud, Halimeda ground. 25 fathoms. St. 2 (6–IX–1933).

1 ♀.

Description of Female.

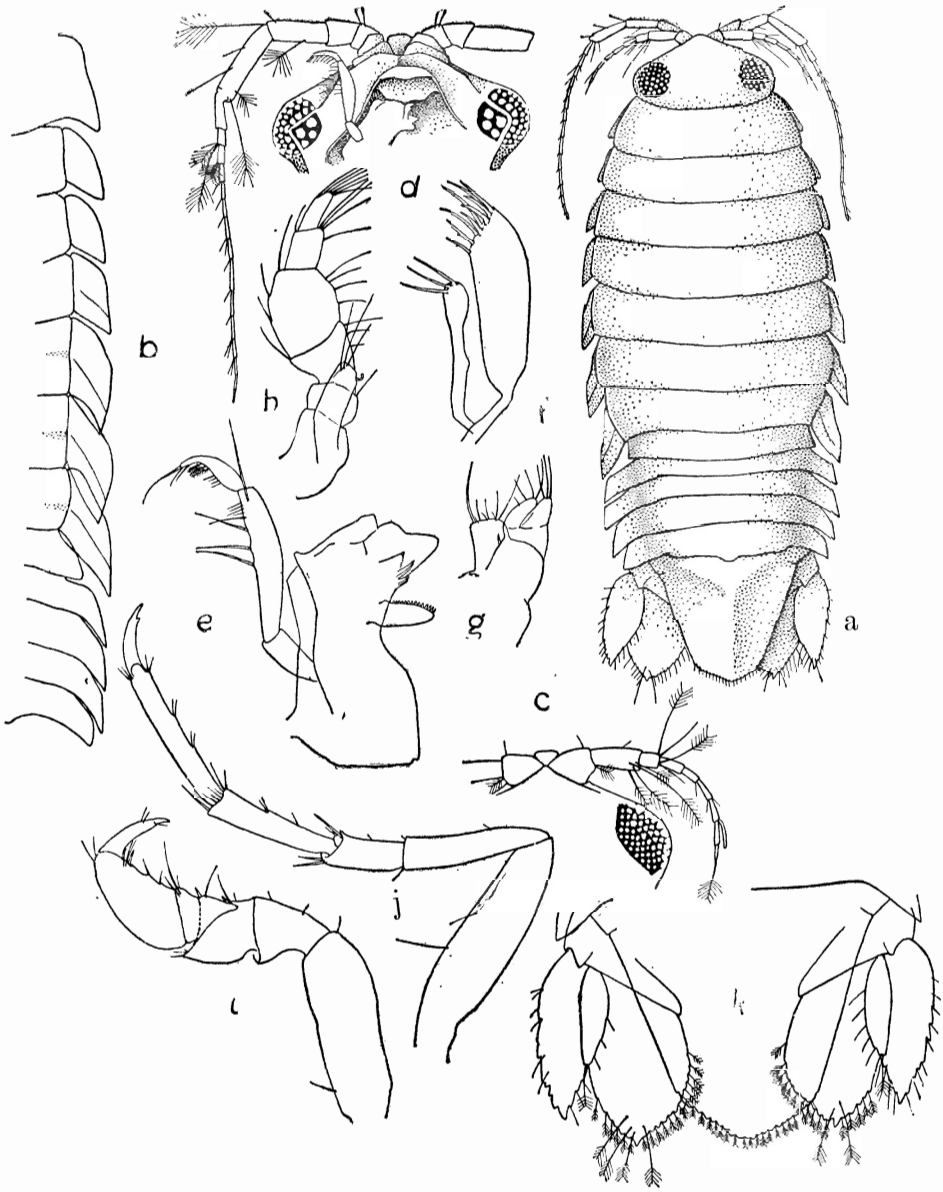
Body regularly oval in shape, $2\frac{1}{2}$ times longer than broad; depressed, smooth. Pigmentation slight and confined to transverse bands.

Cephalon broad, not quite twice as broad as long; depressed anteriorly, coming to a blunt point at the medio-frontal margin (which is more easily seen when the specimen is flattened out).

Eyes large, dark brown, internal margins convex, corneal facets distinct.

Mesosome consisting of 7 segments subequal in length, reaching their greatest width at the 5th segment. Epimera distinct on all except the first thoracic segment which, nevertheless, is produced

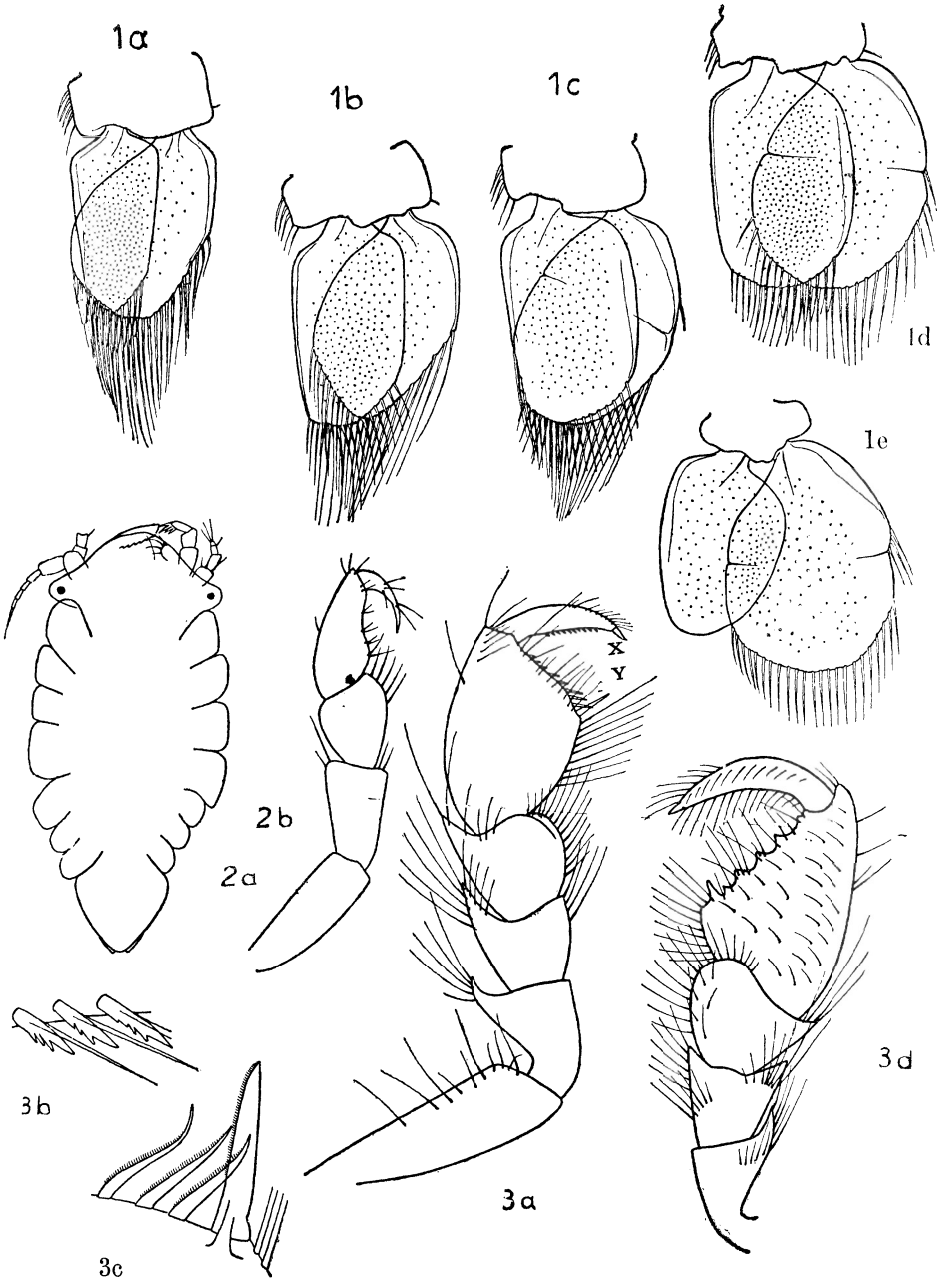
FIG. 12



Cirolana sp. (♀).

(*a*) Dorsal view of entire ♀.
(*b*) Lateral view of ♀ showing epimera.
(*c*) Dorsal view of head with antennule.
(*d*) Ventral view of head with antenna.
(*e*) Mandible.
(*f*) Maxillule.
(*g*) Maxilla.
(*h*) Maxilliped.
(*i*) Chela.
(*j*) 2nd peraeopod.
(*k*) Dorsal view of telson and uropods.

FIG. 13



1. *Cirolana* sp. ♀.
   (*a–e*) Pleopods 1–5.
2. *Munna* sp.
   (*a*) Entire specimen.
   (*b*) 2nd thoracic appendage.
3. *Stenetrium longicorne.*
   (*a*) 2nd thoracic appendage of immature ♂.
   (*b*) Do. region **X** under higher magnification.
   (*c*) Do. region **Y** under higher magnification.
   (*d*) 2nd thoracic appendage of mature ♂.

laterally into plate-like expansions terminating posteriorly in an acute angle. Epimera increase in length from in front backwards, those of the hinder segments having very acute posterior angles; a conspicuous oblique furrow traverses the last 4 epimera.

Metasome composed of 6 distinct, rather flattened, segments, the 2nd–5th being produced laterally so that the width of the metasome is not much less than the mesosome; 1st segment without lateral expansions. Telson rather broader than long with a median dorsal ridge; posterior border with an obtuse median angle and making similar obtuse angles with the sides; posterior margin with conspicuous teeth, about 12 on each side of the median angle, each tooth alternating with a plumose seta.

Antennules a little longer than the peduncle of the antennae; peduncle 3-segmented: 1 st robust, 2nd twice as long as the third; flagellum 6-segmented; 2nd and 3rd segments of peduncle and last segment of flagellum with long plumose setæ.

Antennae extending to the posterior margin of the third thoracic segment; peduncle 5-segmented (although there may be an additional one owing to the indistinct division of the 2nd segment); flagellum 14-segmented, longer than the peduncle.

Mandibles with *lacinia mobilis* bearing 6-7 spines and a blunt tooth; *pars molaris* with about 20 spines; *acies* with 3 blunt teeth; palp 3-segmented, 1st and 3rd equal, half the length of the 2nd.

Maxillules slender; 1st segment with 3 spines, 3rd with 9.

Maxillae: external lobe with 3 setæ; median lobe with 3 large setæ and 1 small; internal lobe with 4 long setæ and 2 small, together with a single much larger one at the inner margin; at the base of the median lobe is a minute tooth.

Maxillipeds slender, internal lobe with a single hook and 2 long and 2 short setæ.

Lamina frontalis short and expanded anteriorly; in ventral view appears triangulate. Clypeus broad, rather short in ventral view but appears to extend vertically downward, terminating in a conspicuous angle. Labrum with a median posterior angle.

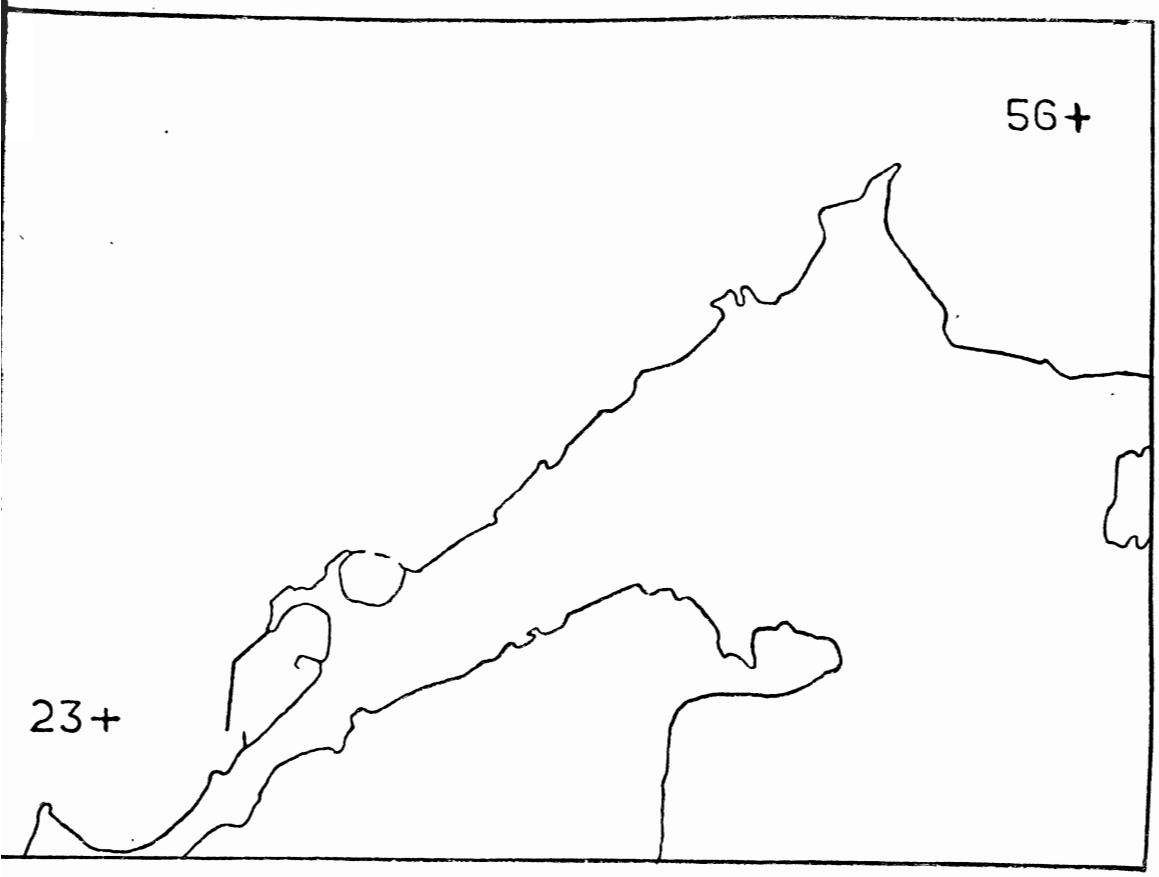
Peraeopods 1–3 prehensile, 4–7 ambulatory. Unguis of dactylos simple.

Peraeopod 1 not strongly armed with spines, there being only two small ones on the inner margin of the meros. Propus ovate, with straight palm bearing a group of setæ at the distal end.

Peraeopod 7 very slender, bearing only a few short setæ.

Pleopods similar to those of *Cirolana japonica*. Pleopods I-IV with internal and external lobes setigerous; pleopod V, internal lobe glabrous, external setigerous; no branchial lobes; incomplete suture across the internal lobe of pleopods III-V, this may be expressed in Monod's notation as follow: I-IV is-es, V ig-es (br O, Sic i III-V).

FIG. 14



+ *Eurydice spinigera.*

Uropods serrulate and bearing plumose setæ; endopod 1½ times longer than broad with a conspicuous notch about half way down the external margin bearing a long seta, posterior angle with a tooth and several longer setæ; exopod more than twice as long as broad, external margin with about 7 teeth and a further large one at the posterior angle.

Length 4·5 mm.

In general appearance this specimen closely resembles *Cirolana japonica* (Hansen, 1890, p. 349, pl. IV, figs. 2–2*l*). This agreement extends to the form of the peraeopods, the mouth parts and the pleopods as well as the fronto-clypeal region of the head. The following differences, however, are sufficient to mark it off from this species: (i) the 5th abdominal somite is not covered laterally by the 4th as in *C. japonica*, (ii) the antennae are comparatively short, reaching not much beyond the hinder margin of the 3rd thoracic somite, (iii) the maxilliped is less broad than in *C. japonica* and (iv) the 1st peraeopods are more robust.

The systematic position of *C. japonica* is not yet clear. Monod (1930, p. 167) regards *C. japonica* Hansen, + *C. Hanseni* Bonnier, and *C. sphaeromiformis* Hansen, as being congeneric and proposed to retain them in the genus *Cirolana* where they occupy a special place. From a consideration of this work, Neirstrasz (1931, p. 162) put *C. japonica* in a new genus *Metacirolana*. To avoid the possibility of further confusion I hesitate to describe my specimen as a new species until further material is forthcoming.

Genus *Eurydice* Leach

Eurydice spinigera Hansen. (Fig. 14).

Eurydice spinigera Hansen, 1890, p. 367, pl. V, fig. 4–4*c*, pl. VI, fig. 1–1*c*; id., 1905, p. 359; Richardson, 1905, p. 125, fig. 109, Tattersall, 1905, p. 44; id., 1911, p. 204, figs. 37–41, Stephensen, 1915, p. 11; Nierstrasz and Schuurmans Stekhoven, 1930, p. X*e*70, fig. 4; Monod, 1930, p. 170, fig. 28*c*; Torelli, 1933, p. 75; Fage, 1933, p. 184.

Locality.

Outer margin of the "Great Pass." Yellow sand, Halimeda bottom, Amphioxus-ground. 5–7 fathoms. St. 23 (20–IX–1933).

1 ♂, 7·5 mm.

Coarse sand, Amphioxus-ground. 4 fath. St. 56 (28–X–1933).

2 gravid ♀♀, 10·0 mm. and 9·0 mm.

1 juv. spec. 4·7 mm.

Habitat.

Like other species of *Eurydice*, *E. spinigera* does not usually occur in the tidal zone and is found there only when temporarily attracted by organic debris upon which it feeds. It is significant that both the present records were on Amphioxus-grounds. *E. spinigera* is generally taken at the surface. Torelli (op. cit.) states that while they are not common at the surface during the day-time, yet at night, by fishing with a light, this species is found to constitute the preponderant element in the plankton (off the coast of Calabria). Evidently the animals, attracted by the light, rise from the bottom to the surface.

This species occurs most frequently at about 20 fathoms and is not, apparently, found in deeper water.

Distribution.

East Atlantic : 54°16′N., 6°06′E., south and west coasts of the British Isles, Channel Isles, Brittany (Concarneau), Atlantic coast of Morocco ; Mediterranean : Banyuls, Calabria where it occurs abundantly in a narrow littoral band on all coasts ; between Denmark and the West Indies.

The distribution is sporadic and casual. It is not, for instance, recorded from the Atlantic coast of Spain, and Torelli suggests that the genus *Eurydice* is undergoing a process of reduction and contraction.

VALVIFERA

Family Idoteidae Miers

Genus *Idotea* Fabricius

Idotea baltica Pallas. (Fig. 15).

Oniscus balthicus Pallas, 1772, p. 67.

Idotea entomon Pennant, 1777, p. 38, pl. XVIII, fig. 5.

Idotea tricuspidata Desmarest, 1823, p. 373, pl. XLVI ; Roux, 1828, pl. XXIX, figs. 11, 12 ; Milne-Edwards, 1840, p. 129 ; Bate and Westwood, 1866, p. 379 ; Dollfus, 1895, pp. 39, 55.

Idotea marina Miers, 1881, p. 25.

Idotea baltica G. O. Sars, 1899, p. 80, pl. XXXII ; Richardson, 1905, p. 364, figs. 394, 395 ; Tattersall, 1911, p. 219, figs. 83–86 ; Stephensen, 1915, p. 14 ; Collinge, 1917, p. 739, pl. II, figs. 15–25 ; Koumans, 1928, p. 203 ; Nierstrasz and Schuurmans Stekhoven, 1930, p. X*e*39, fig. 31.

Locality.

Beach at Silsila, on Caulerpa. (26–IX–1933).
30 ♂♂, 16 ♀♀.

Eastern Harbour, near Silsila. Caulerpa-Codium. Shallow. St. 34*a*. (4–X–1933).
27 ♂♂, 14 ♀♀.

Pharo, Kayed Bey. Outside, on calcareous algae. (25–X–1933).
2 ♀♀.

Pharo, Kayed Bey. Outside, on Caulerpa. (2–XI–1933).
1 ♂, 2♀♀.

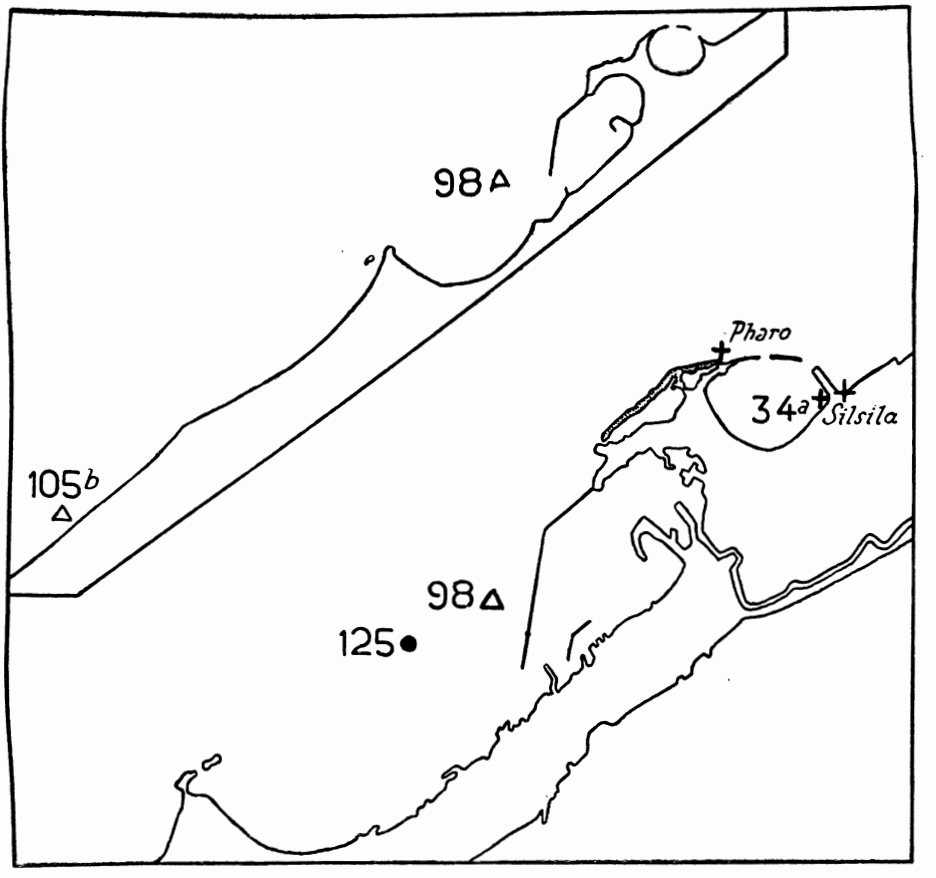
Remarks.

In spite of the abundance of this species, the size of the examples was invariably less than that given by all previous authors with the exception of Richardson who gave the length as 20 mm. Sars, Tattersall and Collinge each give the length of European specimens as 35 mm. for the ♂, 20 mm. for the ♀. In the present collection, apart from a single specimen of 30·5 mm., only four individuals reached 23 mm. The greatest length of any ♀ was 16·5 mm.

From a consideration of the number of segments in the flagellum of the antenna it is evident that the specimens are fully grown. This conclusion is supported by the fact that the proportionate size of ♂ : ♀ is roughly the same as in other places. In connection with this curious variation in size it may be recalled that Bate and Westwood report (p. 383) that this species, like the herring, grows to a larger size in Loch Fyne (Scotland) than it does on the neighbouring sea coast.

The variation exhibited by *Idotea baltica* is well known (see Miers, Collinge and Koumans). Collinge (op. cit. p. 729) says that in his Mediterranean specimens " the tridentate terminal segment of the metasome is less pronounced." This is borne out in the present collection in which the larger specimens had well marked lateral projections while they were less apparent in the smaller ones. Indeed, in the minute specimen which probably belongs to this species the telson was entirely without lateral angles. Miers (op. cit. p. 28) found the median posterior tooth to be small in Mediterranean examples and proposed that they should be designated var. *Basteri* Audouin.

Fig. 15



+ *Idotea baltica.*

△ *Zenobiana prismatica.*

● *Astacilla mediterranea.*

Habitat.

Idotea baltica occurs in the lower littoral zone and in shallow water, although it tends to seek deeper water when the sea is rough (Roux). It is found chiefly upon floating and fixed algae, *Fucus*, *Laminaria*, *Ascophylum*, *Antennularia* and *Zostera* as well as *Caulerpa* and *Codium*. This species can swim actively, in jerks, but during the day it generally crawls about, hidden by algae. In the Mediterranean they are used as bait by fishermen (Collinge, p. 734 and Steuer, Prelim. Rep. p. 8) and specimens have been taken in the stomachs of many fishes.

Distribution.

Atlantic coast of Europe from East Finmark (Vadsö) as far South as Morocco : W. Norwegian coast, Baltic Sea, Iceland, Faroes, British Isles, Holland, Belgium, France, Channel Isles, Spain, Portugal ; Mediterranean : Sicily, Algeria, Egypt, Syria ; Adriatic Sea ; Black Sea ; Caspian Sea ; Red Sea ; Indian Ocean ; Java (?) ; Australia ; New Zealand ; West Indies ; Brazil ; Atlantic coast of North America from Nova Scotia and Gulf of St. Lawrence to North Carolina.

Genus *Zenobiana* Stebbing

Zenobiana prismatica Risso. (Fig. 15).

Zenobia prismatica Risso, 1826, p. 110, pl. V, fig. 24.

Idotea chelipes Costa, 1838, p. 2, pl. XI, fig. 2*a*, *b*, *c*.

Idotea prismatica Heller, 1866, p. 729.

Idotea parallela Bate and Westwood, 1866, p. 391.

Zenobia prismatica Dollfus, 1895, p. 53.

Zenobiana prismatica Stebbing, 1895, p. 24 ; Tattersall, 1911, p. 232, fig. 120 ; Issel, 1912, p. 450, figs. 1–6 ; id., 1913, p. 1, figs. 1–9 ; Collinge, 1917, p. 749, pl. X, figs. 103–114 ; Maury, 1926, p. 89.

Locality.

Dark, foul, mud. Posidonia-Cystosira bottom. About 6 fathoms. St. 105*b*. (8–XI–1933).

1 ♂, 8·0 mm., with " Wohnröhre."

Fine sand. Posidonia-Caulerpa bottom. 4 fathoms. St. 98. (7–XI–1933).

1 ♀, 8·5 mm.

Habitat.

This species generally inhabits algae or small pieces of wood of which it makes a sheath. At Plymouth, one was found inhabiting a *Zostera* stem. Maury (1926) found it with *Halopteris scoparia* Sauvageau, in a tube of sand grains which he presumed was not its own manufacture and probably a worm's. Another specimen was found in a Serpulid tube. The specimen from St. 105*b* was found inhabiting a tube about 20 mm. long and 2 mm. in diameter. This has been kindly examined by Mr. W. R. Philipson of the British Museum who declares it to be a flowering plant, but as all the tissues except the xylem have been worn away even approximate identification is impossible.

Zenobiana prismatica has been recorded at depths down to 60 m. (about 30 fathoms) but Tattersall (op. cit. p. 232) found it at the surface among floating " Seegras."

Issel states that his specimens and those of Aubert were usually found on Posidonia as in the present instance.

The length is given as 15 mm.

Distribution.

West coast of Scotland (Firth of Clyde), S.W. and S. coasts of England, Channel Isles, W. coast of France (Normandie) ; Mediterranean : S. coast of France (Cannes, Villefranche, Antibes), Corsica (Gulf of Ajaccio), Italy (Taranto, Portofino-Ligure, Marsiglia), Algeria (Bône) ; Adriatic (Lesina).

Family Astacillidae G.O. Sars

Genus *Astacilla* Cordiner

Astacilla mediterranea Koehler. (Fig. 15).

Astacilla mediterranea Koehler, 1911, p. 52, figs. 25–29 ; Stephensen, 1915, p. 18 ; Barnard, 1920, p. 388 ; Fraenkel, 1927, p. 219.

Locality.

Stones, yellow sand. Halimeda-Caulerpa bottom. 6 fathoms. St. 125. (13–XI–1933).

2 ♂♂. Length 5·0 mm.

Remarks.

Koehler (op. cit.) distinguished between *Astacilla Bocagei*, Nobre (Ann. Sci. Nat. pub. por Augusto Nobre, Vol. XII, 1903, pp. 37-94,

pl. 1, Porto.) and *A. mediterranea* by (i) the swollen 3rd segments of the peduncle of the antenna of the former species, and (ii) the number of sensorial filaments on the flagellum of the antennule (5 in *A. mediterranea*, 14 in *A. Bocagei*). These differences, however, apply to the female as Nobre had no male specimens.

The above examples agree closely with the description of *A. mediterranea* apart from the fact that one individual (an extremely moribund specimen) appears to have about 12 olfactory filaments on the flagellum of the antennule, while the other specimen has 6 and 7. The 3rd segment of the antennal peduncle is not swollen. It may be noted that in Fraenkel's figure of *A. mediterranea* there are many filaments on the flagellum of the antennule.

Koehler was doubtful whether the two species were really different and Tattersall (*in* Monod 1925, p. 83) wondered if his new species *A. Monodi* might not prove to belong to either *A. mediterranea* or *A. Bocagei*. The specimens from Alexandria show important differences from *A. Monodi*, particularly (i) in the proportion of the segments, (ii) the absence of tubercles on the 3rd and 4th segments of the antennal peduncle, (iii) absence of tubercles on the 5th thoracic somite, (iv) first 3 abdominal segments not clearly marked off, and (v) the 1st pleopod has no constriction as in *A. Monodi*. Hence, until more material is available and the male of *A. Bocagei* is described it seems wiser to refer the present specimens to *A. mediterranea*.

Habitat.

This species has been recorded living on algae, hydroids, Bryazoa and on the Gorgonacean *Villogorgia mauritiensis* Ridley.

Distribution.

Mediterranean : Villefranche, Naples; South Africa, Umkomaas River, NW. by W½W., distant 5 miles. 40 fathoms.

ASELLOTA

Family Stenetriidae Hansen

Genus *Stenetrium* Haswell

Stenetrium longicorne Lucas (Figs. 13/3*a–d*,16).

Jaera longicornis Lucas, 1849, p. 66, pl. VI, fig. 4; Heller, 1866, p. 733; Carus, 1884, p. 451.

Jamna longicornis Bovallius, 1886 (Bihang till K. Svenska Vet-Akad. Hand. XI, No. 15, p. 22); Stebbing, 1893, p. 379.

Stenetrium mediterraneum Hansen, 1904, p. 320, pl. XIX, figs. 2*a–h*; Barnard, 1914, p. 219.

Stenetrium longicorne Monod, 1925*a*, p. 238, pl. XLVII*a–c*.

Locality.

North of Pharo. Sand and Mud. Halimeda ground. 25 fathoms. St. 2 (6–XI–1933).

1 ♂, length 7·2 mm., 1 ♀, length 5·5 mm.

North of Pharo. Halimeda ground. 34 fath. St. 3 (6–IX–1933).

1 ♂, length 5·0 mm.

Stones. Caulerpa-Halimeda ground. 10-12 fath. St. 28. (25 –IX –33).

2 ♀♀, length 6·2 mm. and 4·5 mm.

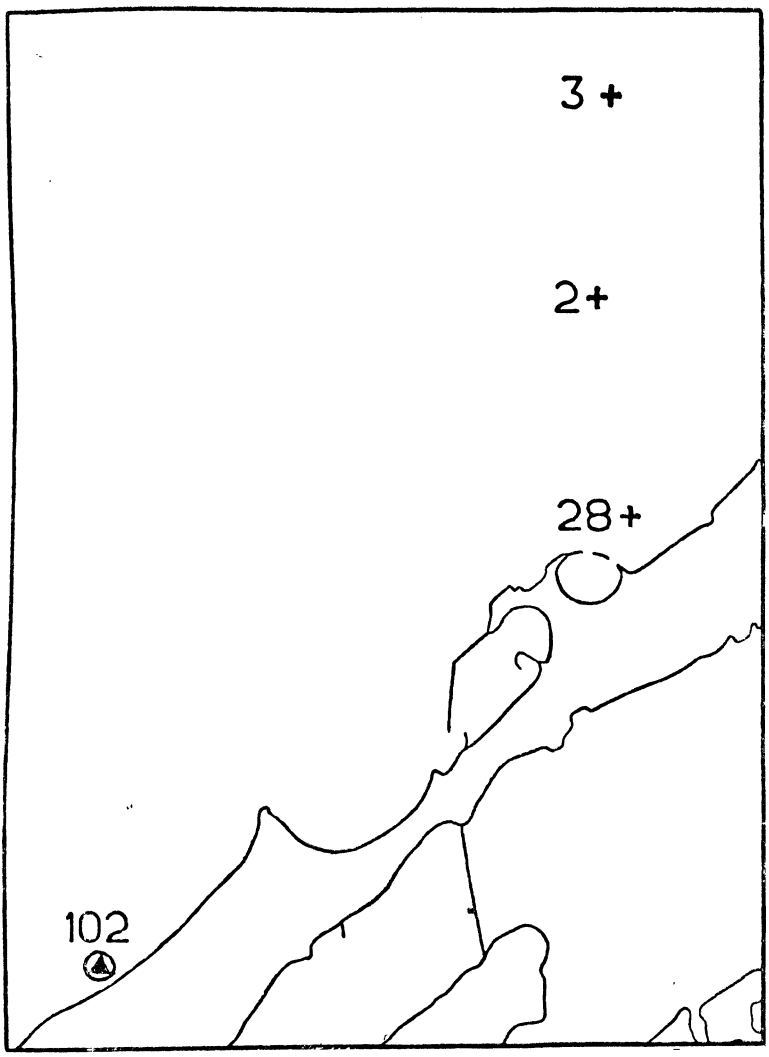
Remarks.

The female specimens agree perfectly with Hansen's description of *S. mediterraneum* and there can be no doubt that the male specimens belong to the same species. Nevertheless, both males show anomalous chelae. In the case of the small male from St. 3 this appendage (fig. 13/3*a*,*b*,*c*) is similar to the typical female chela, the likeness extending to the detailed structure of the armature of the finger and the palm of the hand. In *S. occidentale*, Hansen (op. cit. p. 324) points out that the chela of an immature male is almost the same as that of a mature female. It seems possible that this may also be true of *S. longicorne*.

The male specimen from St. 2 also undoubtedly belongs to the same species (the larger number of segments in the flagellum of the antennules, 16 instead of 12, being no doubt due to the greater size compared with Hansen's specimens). The chela in this case has the form shown in fig. 13/3*d*. The palm of the hand has about 4 deep notches and at the lower angle there is a conspicuous tooth. There are no pectinated setæ along the margin. The upper margins of the 4th and 5th segments are not produced distally into sharp points as they are in the female appendage. Other differences from the female chela are found in the shortness of the lower margin of the hand, in the absence of serrated teeth on the finger and in the numerous setæ which clothe the lateral surfaces of the hand and finger.

These appendages have a superficial resemblance to those of *S. Chiltoni* Stebbing from the Red Sea (♀ chela, Stebbing, 1905, pl. XII, ♂ chela, Monod, 1933). There are, however, important differences: in *S. Chiltoni*, the 5th segment of the ♀ appendage is truncate

Fig. 16



+ *Stenetrium longicorne.*

▲ *Bagatus Stebbingi.*

○ *Munna* sp.

in form, and in the ♂ the 5th segment is produced distally into a long rounded expansion extending along the lower margin of the hand. The significance of this comparison with *S. Chiltoni* lies in the evidence it provides for regarding the chela under discussion (♂ spec. from St. 2) as the mature form of male chela, hitherto undescribed. Hansen, too (op. cit. p. 324, pl. XX, figs. 2*b–c*), has shown that such growth variation does occur in *S. occidentale.*

Habitat.

At depths from 10–60 fathoms on Caulerpa-Halimeda bottoms.

Distribution.

Atlantic coast of Morocco; Mediterranean: Algeria (Bône), Corsica (Ajaccio), Sicily (Syracuse); Adriatic, Lesina.

Family Jaeridae Stebbing

Genus *Bagatus* Nobili

Bagatus Stebbingi Monod. (Figs. 8/2*a–c*, 16).

Janira Crosslandi Stebbing, 1910*a*, p. 108, pl. 6*A*; Monod, 1931*a*, p. 408, fig. 9 (1–3).

Bagatus Stebbingi Monod, 1933, p. 169, fig. 71 (1–5).

Locality.

Stones. Halimeda-Cystosira-Caulerpa bottom. 5–6 fathoms. St. 102 (7–XI–1933).

1 ♂, length 1·5 mm.

Remarks.

Stebbing (1910, p. 225, pl. 22*A*) described a new species, *Janira Crosslandi* from the Red Sea, the description of which he amplified in the same year (1910*a*, p. 108, pl. 6*A*) from specimens taken at the Seychelles. Monod (1933, p. 169) regarded these specimens as belonging to different species. The former, Red Sea form, he identified with *Bagatus stylodactylus* Nobili, 1907, while he renamed the latter specis *Bagatus Stebbingi.* It was to this last species that he referred his specimens from Syria (Monod, 1931, p. 408).

The specimens from Alexandria certainly belong to *B. Stebbingi* the form of the first pleopod being identical with Monod's figures, and therefore possibly adds further evidence in favour of Monod's suggestion (1931) that this species may be a recent immigrant from the Indian Ocean.

Habitat.

Shallow water on Halimeda, Cystosira, Caulerpa. Found with *Munna* sp., *Parapseudes latifrons* and *Leptochelia dubia.*

Distribution.

Indian Ocean: Seychelles Islands (Egmont); Mediterranean: Syria (Beyrouth).

Family Munidae G. O. Sars

Genus *Munna* Boeck.

Munna sp. (Figs. 13/2*a–b*, 16).

Locality.

Stones. Halimeda-Cystosira-Caulerpa ground. 5-6 fathoms. St. 102 (7–XI–1933).

1 spec.

Remarks.

This specimen is in very bad condition, lacking all apendages except one 1st peraeopod. This limb is shown in Fig. 13/2*b*, fig. 2*a* indicating as much as could be made out of the entire specimen. Identification is clearly impossible.

Sub-Order Epicaridea

Genus *Gyge* Cornalia and Panceri

Gyge branchialis Cornalia and Panceri. (Fig. 17).

Gyge branchialis Cornalia and Panceri, 1858, p. 1, pl. I-II; Heller, 1866, p. 749; Carus, 1884, p. 452; Bonnier, 1900, p. 353, pl. XXXIV; Tucker, 1931, p. 1.

Locality.

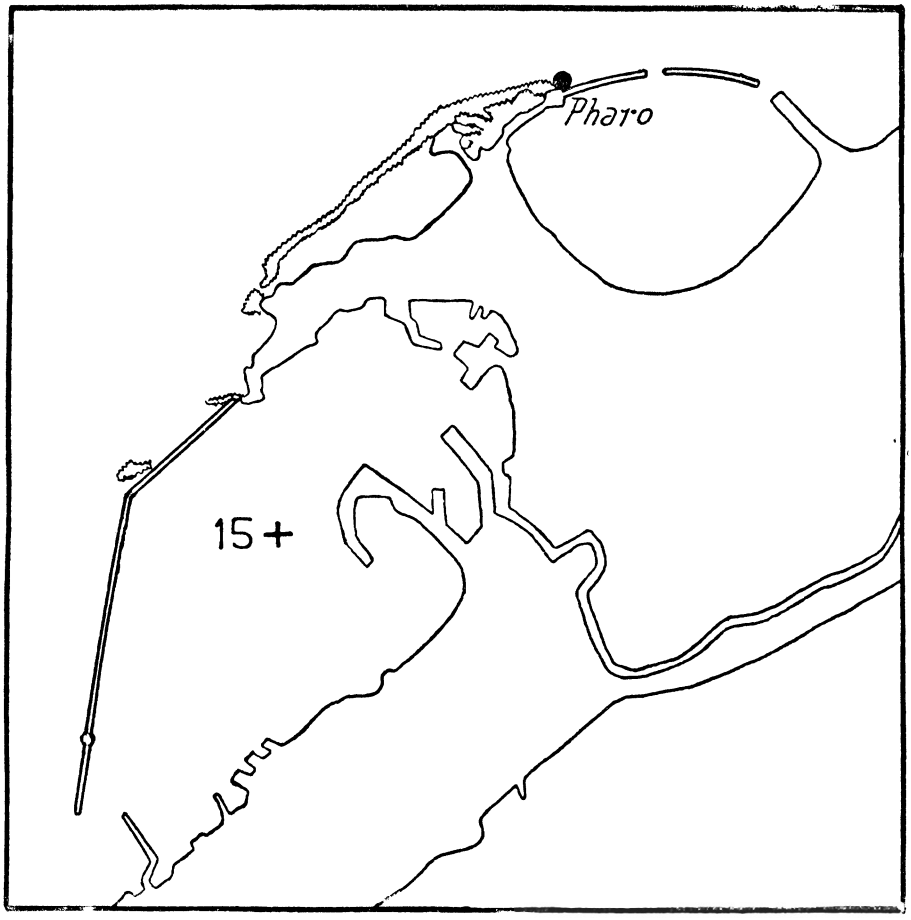
West Port. Sand. 6 fath. St. 15 (19–IX–1933).

1 ♂, length 2·2 mm.

Remarks.

In spite of the possibility of error in identifying a single male there appears to be no reason to doubt that this specimen belongs to *Gyge branchialis* in view of the precise description and figures of Bonnier (op. cit.).

FIG. 17



+ *Gyge branchialis*

● *Ligia italica.*

This species was first described as a parasite on *Upogebia stellata* Montagu. Carus (op. cit.) reports that it was taken on *Callianassa subterranea* Montagu, while in the Plymouth Marine Fauna 1931 (p. 187) *Upogebia deltura* Leach, is given as a host. Tucker (op. cit.) found that, in the Bay of Naples, the host chosen was *Upogebia litoralis* Risso. In the present record *Upogebia litoralis* was also taken at the same station (H. Balss, 1936, The Fishery Grounds near Alexandria, VII—Decapoda, Notes and Memoirs No. 15 of the Fisheries Research Directorate, Egypt, p. 47).

Distribution.

South coast of England (Plymouth), Atlantic coast of France (Arachon, Concarneau); Mediterranean (Marseilles, Naples); Adriatic (Venice).

ONISCOIDEA

Family Ligiidae G. O. Sars

Genus *Ligia* Fabricius

Ligia italica Fabricius. (Fig. 17).

Ligia italica Fabricius, 1798, p. 302; Budde-Lund, 1885, p. 269; id., 1908, p. 11; Jackson, 1922, p. 695, pl. II, figs. 11–12; Omer-Cooper, 1927, p. 206; Santucci, 1928, p. 1; Monod, 1931, p. 410, figs. 1–3.

Locality.

Pharo, Kayed Bey, outside. (29–VIII–1933).
11 spec.

Remarks.

Santucci (op. cit.) examined specimens of *Ligia italica* from a number of widely separated stations in the Mediterranean and found that they varied in a number of characters such as colour, number of spines on the margin of the propus of the peraeopods, length and number of segments of the antennae, length of the uropods and the arrangement of the chromatophores.

Specimens from Liguria and Malta were found to show the greatest disparity in these characters, but it is notable that examples from Rovigno resembled those from the Dodecanese in spite of the difference in latitude. As stated by Steuer (Prelim. Rep., p. 8) the Alexandrian specimens appear to belong to the "Western form."

Contrary to what has been found in the majority of other species (see Prelim. Rep. by Steuer) the Alexandrian specimens of *Ligia italica* reached a greater size (13 mm.) than those from other parts of the Mediterranean (8·5 mm. Jackson, 11·0 mm. Budde-Lund).

Habitat.

Ligia italica occurs in the subterrestrial zone (supralittoral zone) "On the 'artificial steep coast' of the quai in front of the Marine Laboratory" where *Littorina* also is found.

Distribution.

Common on all shores of the Mediterranean and also recorded from Madeira, Canary Islands, Azores and Teneriffe.

Horizontal Distribution of the Isopods of Alexandria.

In his preliminary report (p. 15) Steuer alludes to the observation of Chambost ("Essai sur la Region Littorale dans les environs de Salammbô," Bull. Stat. Océanogr. Salammbô, Nr. 8, 1928, p. 24) that in the littoral zone of Salammbô species are represented by a small number of individuals. This is also strikingly true of the Isopods of Alexandria. Ten species were taken from one station only (see fig. 12). Such records can provide little information about the habitat of the species. Nor is it more helpful when a species is recorded from several stations markedly different in nature. Consider, for instance, the case of *Gnathia vorax* which was taken at two stations, thus :—

1 ♂, St. 28, stones, Caulerpa-Halimeda bottom. 10–12 fathoms.

2 praniza larvae, St. 2, sand and mud, Halimeda bottom. 25 fathoms.

It is possible, in this species, that the habitat of larva and adult varies. This cannot, however, be said of *Zenobiana prismatica* which was likewise recorded from two stations :—

1 ♂, St. 105*b*, dark, foul mud. Posidonia-Cystosira bottom. about 6 fathoms.

1 ♀, St. 98, fine sand. Posidonia-Caulerpa bottom. 4 fath.

Only for those species which occurred in greater abundance can significant observations be made. Thus, between *Cirolana Cranchii* and *C. neglecta* a conspicuous difference in habitat can be noticed. The former occurs on or near coarse Amphioxus sand while *Cirolana neglecta* is recorded exclusively from Glandiceps mud. Similarly, a fair degree of consistency in habitat can be seen in the case of *Apseudes intermedius*, which, like *Cirolana Cranchii* is found on coarse Amphioxus sand covered with Halimeda, Caulerpa and Posidonia. *Cymodoce truncata*, too, is usually recorded from rocks, sand and stones covered with the same vegetation while *Eurydice spinigera* was twice taken on coarse Amphioxus sand.

The simplest way of comparing the faunas of the different types of bottoms is by a table such as fig. 18, but even this lacks precision owing to the overlapping of, for instance, " sand and stones," " mud and sand," etc.

It may be worth while remarking the obvious fact that those species represented by a considerable number of individuals show more variability in their choice of bottom. Thus *Leptochelia dubia* is found on all types of bottom except coarse Amphioxus sand. This may also be associated with the fact that such species are found at a greater range of depths.

Consideration of the maps of distribution of the Isopods of Alexandria shows the striking lack of this Order east of the peninsula of Aboukir, where the salinity of the water is reduced by the Nile, and where the flora is poor. Only four species were recorded here : *Apseudes intermedius* (St. T, 13 ♀♀) *Paranthura nigropunctata* (St. 48, 1 ♀), *Cirolana Cranchii* (St. 50, 2 spec.), and *Eurydice spinigera* (St. 56, 3 spec.). Even at these three last stations (48, 50, 56) the fauna is noticeably richer than those further east where Isopods are quite absent.

Apseudes intermedius and *Cirolana Cranchii* extend to the most westerly stations of the area investigated. These species can therefore be said to be euryhaline.

Other species recorded from the most westerly stations were *Cymodoce truncata* and *Zenobiana prismatica.*

The majority of species occur around the harbours at Alexandria. Nine species were recorded inside the harbours; seven in the Eastern Harbour which is less used and has a comparatively rich fauna, and four in the Western Harbour which is more frequented.

FIG. 18

	No. of Individuals	Algae of intercotidal zone	Algae covering stones of littoral zone	Sand	Coarse Amphioxus Sand	Mud (and mud with sand)
Apseudes latreillii...	1	—	—	—	—	+
Apseudes robustus	1	—	+	—	—	—
Apseudes intermidius	31	—	+	—	+	—
Parapseudes latifrons	1	—	+	—	—	—
Tanais cavolinii	3	+	+	—	—	—
Tanais robustus	6	+	—	—	—	—
Leptochelia dubia...	61	+	+	+	—	+
Gnathia vorax	1	—	+	—	—	—
Do. Praniza larva	2	—	—	—	—	+
Paranthura nigropuncata	3	—	+	+	—	+
Apanthura sandalensis	2	—	—	+	—	—
Exanthura filiformis	1	—	—	—	—	+
Ananthura ovalis	1	—	+	—	—	—
Sphaeroma serratum	3	+	—	—	—	+
Sphaeroma Walkeri	9	+	—	—	—	—
Cymodoce truncata	6	+	+	+	—	+
Dynamene bidentata	4	+	—	—	—	—
Cirolana Cranchii	13	—	+	—	+	—
Cirolana neglecta	5	—	—	—	—	+
Cirolana sp.	1	—	—	—	—	+
Eurydice spinigera	4	—	—	—	+	—
Idotea baltica	94	+	—	—	—	—
Zenobiana prismatica	2	—	—	+	—	+
Astacilla mediterranea...	2	—	—	+	—	—
Stenetrium longicorne	5	—	+	—	—	+
Bagatus Stebbingi	1	—	+	—	—	—
Munna sp.	1	—	+	—	—	—
Gyge branchialis	1	—	—	+	—	—

In the Eastern Harbour, the following species were found :—

Tanais robustus.
* *Leptochelia dubia.*
Apanthura sandalensis.
* *Sphaeroma Walkeri.*
Dynamene bidentata.
Cirolana Cranchii.
Idotea baltica.

*Indicates that this species was also found in the Western Harbour.

In the Western Harbour were recorded :—

Tanais Cavolinii.
* *Leptochelia dubia.*
* *Sphaeroma Walkeri.*
Gyge branchialis.

*Indicates that this species was also found in the Eastern Harbour.

Isopods were absent from the black, stinking mud which is gradually covering the sand of the Western Harbour.

Within an arbitrary radius of 4 miles from the peninsula of Alexandria a further 11 species were taken (*i.e.* making 20 of the 28 marine species recorded). These were : *Apseudes robustus*, *A. intermedius*, *Gnathia vorax*, *Paranthura nigropunctata*, *Ananthura ovalis*, *Sphaeroma serratum*, *Cymodoce truncata*, *Zenobiana prismatica*, *Astacilla mediterranea*, *Stenetrium longicorne*, and *Ligia italica*.

In Lake Mareotis, only the brackish water (stenohaline) form *Cyathura carinata* was recorded. Isopods were not recorded from Lake Edku.

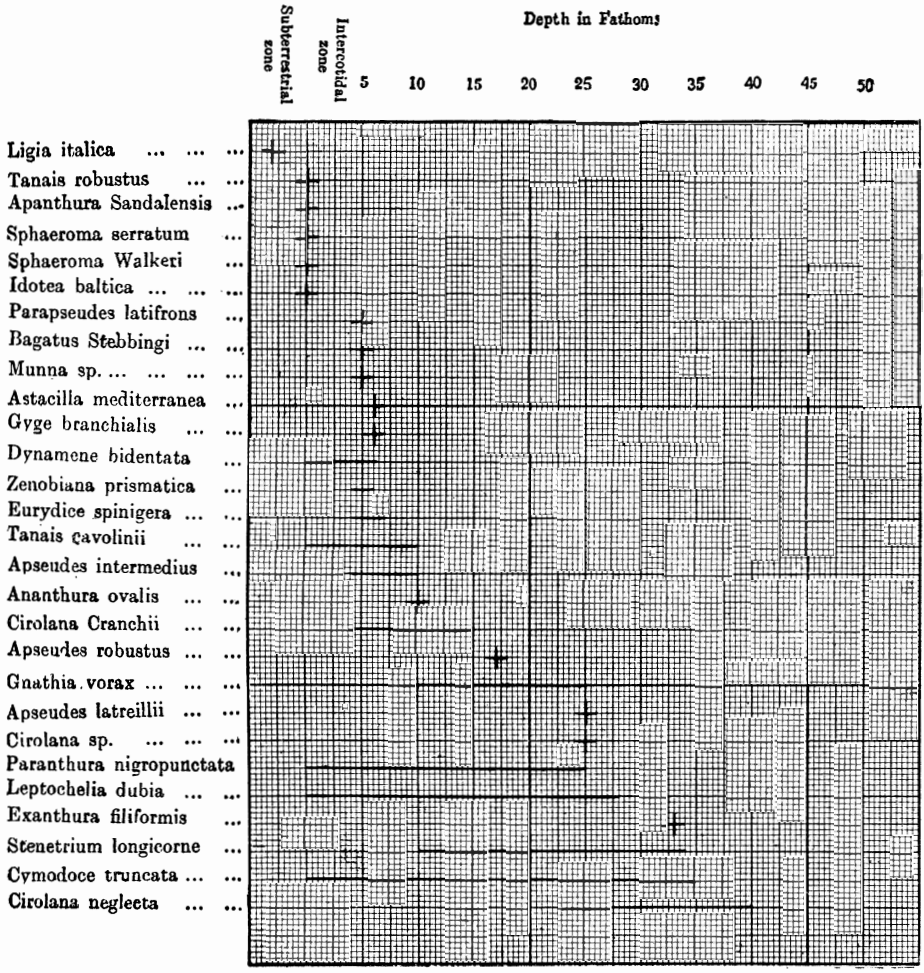
Vertical Distribution of the Isopods of Alexandria.

Once more the fewness of specimens makes it impossible to draw any useful conclusions. Species recorded from one or two stations clearly must be neglected.

Most of the Isopods recorded from Alexandria belong to shallow water. Only 11 species (excluding the aberrant record of *Sphaeroma serratum*) occur at depths greater than 10 fathoms. Excluding the sub-terrestrial *Ligia italica* and the brackish-water *Cyathura carinata*, 21 species (out of 27) were recorded at depths less than 10 fathoms.

Ligia italica occurs in the sub-terrestrial (supralittoral) zone which stands out of the sea and is only wet by the spray of high seas.

FIG. 19


Depth in Fathoms
Subterrestrial zone
Intercotidal zone
5
10
15
20
25
30
35
40
45
50
Ligia italica ... ...
Tanais robustus ... ...
Apanthura Sandalensis ...
Sphaeroma serratum ...
Sphaeroma Walkeri ...
Idotea baltica ... ...
Parapseudes latifrons ...
Bagatus Stebbingi ... ...
Munna sp. ... ...
Astacilla mediterranea ...
Gyge branchialis ... ...
Dynamene bidentata ...
Zenobiana prismatica ...
Eurydice spinigera ... ...
Tanais cavolinii ... ...
Apseudes intermedius ...
Ananthura ovalis ... ...
Cirolana Cranchii ... ...
Apseudes robustus ... ...
Gnathia vorax ... ...
Apseudes latreillii ... ...
Cirolana sp. ... ...
Paranthura nigropunctata
Leptochelia dubia ... ...
Exanthura filiformis ...
Stenetrium longicorne ...
Cymodoce truncata ... ...
Cirolana neglecta ... ...

In the littoral zone proper, there are species which are limited to very shallow water (stenobath forms) and those which extend down to 20–30 fathoms (eurybath forms).

The stenobath forms include :—

(*a*) Intercotidal forms, living among the algae at the surface :

Idotea baltica.

Tanais robustus.

Sphaeroma serratum.

Sphaeroma Walkeri (recorded from Ceylon down to 25 fath.).

(*b*) Those forms extending below the surface :

Dynamene bidentata (0–6 fathoms).

Tanais Cavolinii (0–10 fathoms).

Eurydice spinigera (4–7 fathoms). Off the coast of Calabria it is common at 20 fathoms but not in deeper water.

Apseudes intermedius (4–10 fathoms).

Among those forms which may, perhaps, be termed eurybath are :

Paranthura nigropunctata (0–25 fathoms). Off the Cape Verde Islands, 0–40 fathoms.

Leptochelia dubia (0–28 fathoms).

Cymodoce truncata (0–35 fathoms).

Cirolana Cranchii (4–15 fathoms). Has been recorded down to 55 fathoms off west coast of France.

Other forms are met with lower down :

Gnathia vorax (10–25 fathoms). In the Adriatic has been recorded from the littoral zone down to 190 fathoms.

Stenetrium longicorne (10–34 fathoms).

Cirolana neglecta (23–40 fathoms).

Exanthura filiformis (1 spec., 33 fathoms). Occurs off the South African coast at 43-125 fathoms.

These results are graphically summarised in fig. 19. An interesting fact appears in the case of *Cirolana Cranchii* and *C. neglecta.* The former species is in this locality confined to shallow water (4–15 fathoms) and does not overlap *C. neglecta* which occurs from 23–40 fathoms.

Geographical Relations of the Species Recorded.

Balss (1936, p. 60) distinguished two groups among the Decapods of Alexandria :—

(*a*) Forms belonging originally to the Mediterranean fauna.

(*b*) Forms immigrated or transported lately in consequence of the opening of the Suez Canal, deriving from the Indo-Pacific.

The same division can be made for the Isopods although the second group contains, at most, three species.

(*a*) Forms belonging to the Mediterranean fauna.

(i) Lusitanian species, *i.e.* those which are not confined to the Mediterranean but which occur in the Eastern Atlantic as far north as the North Sea and even Norway, and south as far as the west coast of North Africa. This group includes :

Apseudes Latreillii.
Tanais Cavolinii.
**Leptochelia dubia.*
Gnathia vorax.
Cyathura carinata.
Sphaeroma serratum.
**Cymodoce truncata.*
**Dynamene bidentata.*
**Cirolana Cranchii.*
* *Eurydice spinigera.*
Idotea baltica.
* *Zenobiana prismatica.*

* Indicates that this species has not been recorded on the east coast of the British Isles.

(ii) Certain pecies are found in the Eastern Atlantic but do not extend as far north as the North Sea. Such are :

* *Apseudes intermedius.*
* *Parapseudes latifrons.*
* *Paranthura nigropunctata.*
Cirolana neglecta.
* *Stenetrium longicorne.*
Gyge branchialis.
* *Ligia italica.*

* Indicates that the species in recorded from North Africa only, *i.e.*, it is not recorded north of Gibralter.

It is of interest that this appears to be the first Mediterranean record of *Apseudes intermedius*.

(iii) Only a few species from Alexandria are endemic to the Mediterranean :

Apseudes robustus.
Ananthura ovalis.
Astacilla mediterranea.

It is possible that *Exanthura filiformis* ought also to be included in this group, for Barnard (1925, p. 131) expressed considerable doubt as to whether his specimens from South Africa belonged to Lucas' species from Algeria.

The only species which can be said to have a world-wide distribution are *Leptochelia dubia*, *Idotea baltica* and *Cyathura carinata*. *Tanais cavolinii* and *T. robustus*, it is true, are recorded from the N.E. coast of America, the former from the North Atlantic as well, but neither have been found in the Pacific.

It is not certain, however, that *Leptochelia dubia* and *Idotea baltica* are relicts of the Tethys Ocean. If the criteria of Balss (1936, p. 62) are applied, both species are seen to belong to the littoral region, and *Leptochelia dubia* is a warm-water form. *Idotea baltica* is, however, recorded from Greenland. Furthermore, both species may owe their wide distribution in part to transmission on floating weed, timber, etc.

(*b*) Recent immigrants from the Indo-Pacific.

Only three species can be included in this group :

Sphaeroma Walkeri.
Bagatus Stebbingi.
Apanthura sandalensis.

The case of *Sphaeroma Walkeri* is well known. Monod (1933, p. 198) recorded it from Suez and previous to that Omer-Cooper had recorded it from Port Said. Hence, in reaching Alexandria, the species has made further progress in the Mediterranean. It is interesting to note that the above two records, as well as one of the present specimens, were made on the hulls of ships.

The genus *Bagatus* Nobili, 1907, includes four species, all from the Indo-Pacific (*vide* Monod, 1933, p. 169) : *Bagatus stylodactylus* (Polynesia, Red Sea and Gulf of Suez) ; *B. nanus* (Ceylon) ; *B. Stebbingi* (Seychelle Isles and Syria) and *B. platydactylus* (Polynesia). It will be noted that *B. Stebbingi* has already been recorded by Monod from Syria (Mediterranean) and that there is no direct evidence that

this species has migrated from the Red Sea. Monod, however, was of the opinion (1931) that it was such a recent immigrant. This is supported by the fact that the genus is otherwise confined to the Indo-Pacific. (It must be remembered, too, that the Mediterranean fauna has been more fully worked out than that of the Indo-Pacific which may, perhaps, account for *B. Stebbingi* not being more widely recorded in the latter). Another observation of Monod (1932*a* p. 72) is also of interest in this connection: that species migrating from the Red Sea by way of the Suez Canal tend to move relatively quickly along the Palestine and Syrian coasts on account of the prevailing ocean currents.

It has already been sated (p. 22) that the present is apparently the first Mediterranean record of *Apanthura sandalensis*. This species was first recorded from the Loyalty Islands, and has since been taken from Southern India, South Africa and the Red Sea. Its presence at Alexandria is therefore not improbably due to its migration through the Suez Canal.

These results are graphically summarised in fig. 20.

The size of the Isopods of Alexandria compared with that of the same species elsewhere.

Balss (1936, p. 59) observed that the majority of the Decapods of Alexandria were smaller than the corresponding species in the Adriatic. The same is true in general of the Isopods. Five species were, however, larger than the previously recorded sizes. These were:—

	Alexandria	Elsewhere
Apseudes intermedius (31 specs.)	♀ 3·3 mm.	2–3 mm. (C. Verde Isles).
Leptochelia dubia (61 specs.) ...	♀ 5 mm.	♀ 2·4, ♂ 1·9 mm. (W. Mediterranean).
Eurydice spinigera (4 specs.)...	♀ 10 mm.	3·0–3·5 mm. (South Africa). 9·0 mm. (N.E. Atlantic).
Stenetrium longicorne (5 specs.)	♂ 7·2 mm. ♀ 6·2 mm.	♂ 5·5 mm. ♀ 6·0 mm. (W.Mediterranean).
Ligia italica (11 specs.)	13 mm.	11 mm. (W. Mediterranean).

It is significant that three of the above species were captured in relative abundance. Apart from notable exceptions such as *Idotea baltica* and *Cyathura carinata*, the species found to be smaller than at other places were taken in smaller numbers. Nearly two thirds of the species taken at Alexandria reached roughly three quarters of the size

Fig. 20

	East Coast of North America	North Atlantic (Greenland)	North Sea (E. Coast of British. Isles)	Atlantic Coast of France, Spain.	West Coast of North Africa	Mediterranean	South Coast of Mediterranean	Adriatic Sea	Suez Canal	Red Sea	Indian Ocean	Pacific Ocean
Apseudes latreillii			+	+		+		+				
Apseudes robustus							+					
Apseudes intermedius												
Parapseudes latifrons												
Tanais cavolinii	+	+	+	+	+	+	+	+	+	+	+	
Tanais robustus	+				+		+	+	+			
Leptochelia dubia				+	+	+	+	+				
Gnathia vorax		+	+	+	+	+	+	+				
Paranthura nigropunctata												
Cyathura carinata	+	+	+	+		+						
Apanthura sandalensis							+					
Exanthura filiformis												
Ananthura ovalis						+	+	+	+	+	+	
Sphaeroma serratum			+	+	+		+					
Sphaeroma Walkeri...						+		+				
Cymodoce truncata			+	+	+	+	+	+	+	+	+	+
Dynamene bidentata												
Cirolana Cranchii			+	+	+		+	+				
Cyrolana neglecta												
Eurydice spinigera												
Idotea baltica	+	+	+	+	+	+	+	+		+	+	+
Zennobiana prismatica												
Astacilla mediterranea											+	
Stenetrium longicorne					+		+	+			+	
Bagatus Stebbingi												
Gyge branchialis				+				+				
Ligia italica					+		+	+				

of the same species in the Western Mediterranean. The following are typical :—

	Alexandria	Elsewhere
Tanais robustus (6 specs.) ...	♂ 3·4 mm.	4·7 mm. (N.E. America). 4·2 mm. (W. Mediterranean).
Sphaeroma Walkeri (9 specs.) ...	9·0 mm.	12·0 mm. (Durban, S. Africa).
Cymodoce truncata (6 specs.) ...	♂ 9·1, ♀ 7·0 mm.	♂ 14–16, ♀ 10–12 mm. (W. Mediterranean).
Cirolana Cranchii (13 specs.)...	♂ 14·0 mm. ♀ 13·2 mm.	♀ 18·0mm.(Belle Isle, France).
Idotea baltica (94 specs.) ...	♂ 30·5 mm. ♀ 16·5 mm.	♂ 35 mm. ♀ 20 mm. (N.E. Atlantic).
Bagatus Stebbingi (1 spec.) ...	♂ 1·5 mm.	♀ 1·6 mm. ♂ 1·6–1·9 mm. (E. Mediterranean).

The remaining few species were conspicuously smaller than the records from other parts, such as :—

	Alexandria	Elsewhere
Gnathia vorax (1 spec.)	♂ 3·7 mm.	♂ 4·5–7·5 mm. (W. Mediterranean).
Cyathura carinata (12 specs.) ...	♀ 13 mm.	13–27 mm. (South Africa). 20 mm. (N.E. America).
Exanthura filiformis (1 spec.) ...	♀ 6·5 mm.	20 mm. (W. Mediterranean). ♂ 23, ♀ 13 mm. (S. Africa).
Sphaeroma serratum (3 specs.)...	4·1 mm.	15 mm. (W. Mediterranean). 10 mm. or more. (British Isles).
Zenobiana prismatica (2 specs.)	♀ 8·5 mm.	15 mm. (W. Mediterranean).

It is impossible to generalise from these results but the case of *Gnathia vorax* is worth repeating. The limits prescribed for this species are 4·5–7·5 mm., *G. illepida* being of smaller stature (3–3·3 mm.). In the present instance, however, there is no possibility of confusing the specimen with the latter species, for the pylopod is 2-segmented. *Gnathia illepida* has a 3-segmented pylopod. This shows clearly the reduction in size shown by the Isopods of Alexandria, an observation well supported by *Idotea baltica* which, despite the large numbers captured, reaches only $\frac{3}{4}$ of the size in the Western Mediterranean.

List of Stations and of the Isopods found at them

Pharo, Kayed Bey, outside. 29–VIII–1933.
Ligia italica.

Aboukir Bay. Trawl. 10 fathoms. 3–IX.
Apseudes intermedius.

Eastern Harbour before the Laboratory, Kayed Bey. Ulva and Corallina zone. 5–IX. Leptochelia dubia.

St. 2; North of Pharo, sand, mud, Halimeda bottom. 6–IX. 25 fathoms. Leptochelia dubia, Gnathia vorax (praniza larvae), Paranthura nigropunctata, Cirolana sp., Stenetrium longicorne.

St. 3; North of Pharo, Halimeda bottom. 34 fathoms. 6–IX.
Stenetrium longicorne.

Sidi Bishr, on "Kustenalgen" at the surface. 9–IX.
Leptochelia dubia.

St. 7; Small stones, Caulerpa bottom. 17 fathoms. 16–IX.
Apseudes cavolinii, Leptochelia dubia.

St. 8; Small stones, Caulerpa-Halimeda bottom. 15 fathoms. 16–IX.
Cirolana Cranchii.

Eastern Harbour, epifauna. 10–IX.
Tanais robustus, Leptochelia dubia, Sphaeroma Walkeri, Dynamene bidentata.

Lake Mareotis, 14–IX, near the fresh-water fish market, at the coast in the mud of the bottom.
Cyathura carinata.

St. 10; Western Harbour, mud, sand. Caulerpa bottom. 6 fathoms. 17–IX. Leptochelia dubia.

Western Harbour epifauna. 18–IX.
Tanais Cavolinii.

Western Harbour epifauna, among Serpulid tubes. 18–IX.
Tanais Cavolinii, Sphaeroma Walkeri.

St. 15; Western Harbour, sand. 6 fathoms. 19–IX.
Gyge branchialis.

St. 22; The "Great Pass," rocky, yellow sand, Posidonia-Caulerpa bottom. 7 fathoms. 20–IX.
Apseudes intermedius, Cymodoce truncata.

St. 23; on the outer edge of the "Great Pass," Halimeda-Amphioxus ground yellow sand. 5–7 fathoms. 20–IX.
Eurydice spinigera.

St. 24; off Fort Ada, stony, Caulerpa-Halimeda bottom. 10 fathoms. 21–IX.
Apseudes intermedius, Tanais cavolinii, Ananthura ovalis.

St. 28; Stony, Caulerpa-Halimeda bottom. 10–12 fathoms. 25–IX.
Gnathia vorax, Paranthura nigropunctata, Cirolana Cranchii, Stenetrium longicorne.

Coast at Silsila, among collected algae. 26–IX.
Idotea baltica.

St. 30; Stony, Caulerpa bottom. 7 fathoms. 25–IX.
Cymodoce truncata.

St. 32; Eastern Harbour, near the exit, coarse sand, stones, a little mud, Caulerpa bottom. $5\frac{1}{2}$ fathoms. 27–IX.
Cirolana Cranchii.

Lake Mareotis, 28–IX, near the Mex Experimental Station, between water plants.
Cyathura carinata.

St. 34*a*; Eastern Harbour at Silsila, Caulerpa-Codium bottom. Shallow. 4–X.
Leptochelia dubia, Idotea baltica.

St. 34*b*; Eastern Harbour at Silsila, Caulerpa only, sandy. 4–X.
Leptochelia dubia, Apanthura sandalensis.

St. 35; Coast at Sidi Bishr, coarse sand with stones, Caulerpa Halimeda-Amphioxus ground. 7 fathoms. 7–X.
Apseudes intermedius.

Pok crags, off Posidonia bottom, near the barracks at Ras el Tin, Halimeda-Caulerpa bottom. 10–X.
Cymodoce truncata, Dynamene bidentata.

St. 48; Lake Edku, near the bridge, sea-side, sandy ground. Shallow. 17–X.
Paranthura nigropunctata.

St. 50; off Aboukir, sand and stones, Amphioxus ground. 9 fathoms. 18–X.
Cirolana Cranchii.

Pharo, Kayed Bey, outside off calcareous algae. 25–X.
Tanais robustus, Sphaeroma serratum, Idotea baltica.

St. 53; off Aboukir-Montazah, yellowish mud. 33 fathoms. 26–X.
Exanthura filiformis.

St. 55; Mud. 40 fathoms. 26–X.
Cirolana neglecta.

St. 56; Coarse sand, Amphioxus ground. 4 fathoms. 28–X.
Eurydice spinigera.

St. 60; Mud. 33 fathoms. 30–X.
Cirolana neglecta.

St. 61; Mud. 50 fathoms. 30–X.
Sphaeroma serratum.

St. 62; Mud. Caulerpa bottom. 28 fathoms. 31–X.
Leptochelia dubia, Cirolana neglecta.

Pharo, Kayed Bey, outside, off Caulerpa. 2–XI.
Idotea baltica.

St. 74 ; Mud, a little Caulerpa. 23 fathoms. 4–XI.
Cirolana neglecta.

St. 75 ; Mud with sand. 25 fathoms. 4–XI.
Apseudes Latreillii.

St. 77 ; Stony, Caulerpa. 7 fathoms. 5–XI.
Apseudes intermedius, Cirolana Cranchii.

St. 78 ; Stones, Caulerpa-Halimeda. 5–6 fathoms. 5–XI.
Dynamene bidentata, Cirolana Cranchii.

St. 86 ; Coarse sand, Amphioxus-Posidonia-Caulerpa. 5 fathoms. 5-XI.
Cirolana Cranchii.

St. 98 ; Fine sand, Posidonia-Caulerpa. 4 fathoms. 7–XI.
Zenobiana prismatica.

St. 99 ; Stones (and sand ?), Posidonia-Caulerpa-Halimeda. 5½ fathoms. 7–XI.
Apseudes intermedius.

St. 102 ; Stones, Halimeda-Cystosira-Caulerpa. 5–6 fathoms. 7–XI.
Parapseudes latifrons, Leptochelia dubia, Bagatus Stebbingi, Munna sp.

St. 105*b*. ; Dark, foul mud, Posidonia-Cystosira. About 6 fathoms. 8 –XI.
Zenobiana prismatica.

St. 108 ; Sand and stones, Halimeda-Caulerpa bottom, many Dasycladus. 14 fathoms. 8–XI.
Cirolana Cranchii.

St. 116 ; Sand, mud, Caulerpa-Halimeda bottom. 35 fathoms. 11–XI.
Cymodoce truncata.

St. 119 ; Yellow sand, stones, mud. Caulerpa-Posidonia-Amphioxus ground. 5½ fathoms. 12–XI.
Apseudes intermedius.

St. 125 ; Stones, yellow sand, Halimeda-Caulerpa. 6 fathoms. 13–XI.
Astacilla mediterranea.

St. 134 ; Coarse sand, a little dark mud. Posidonia-Caulerpa-Amphioxus ground. 6 fathoms. 14–XI.
Apseudes intermedius, Cirolana Cranchii.

St. 135 ; Posidonia-Caulerpa-Halimeda bottom. 4 fathoms. 14–XI.
Apseudes intermedius.

St. 135 ; Posidonia-Caulerpa-Halimeda bottom, from Synascidia. 4 fathoms. 14 –XI.
Cirolana Cranchii.

St. 146 ; Posidonia-Caulerpa-Halimeda bottom. 10–11 fathoms. 15–XI.
Cymodoce truncata.

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