

T1 512

b. A "Potato Stone," partially coated with marl and filled with pinkish calcite. The inside of the shell was studded with small brilliant pyramids of quartz.

c. Grey sandstone.

d. A nodule of Triassic Trap. A hard red rock, slightly micaceous; very closely resembles some varieties of the Triassic Trap of Thorverton, with affinities to those of Pocombe and Cawsand.

W. 6. S. by W. Deadman, 20 miles.

a. A light salmon-tinted drab calcareous sandstone, in a slab nearly two feet in longest diameter, the under surface intact and slightly pitted.

b. Granitic and granitoid pebbles.

c. Quartzite pebbles.

d. Flints.

W. 7. S. Deadman, 7 miles.¹

Slabs of Triassic conglomerate, evidently torn from a submarine reef-point, sides, and upper and lower surfaces being intact in each instance, and the only broken surface that of fracture from the parent rock. Examined microscopically this conglomerate proves to contain pebbles of slate, grits, vein quartz, quartz-felsite, and andesite.

W. 8. S.E. Deadman, 3 miles.

W. 9. W. Deadman 4 miles.

W. 10. S.W. Deadman, 10 and 12 miles.

W. 11. S. by E. Deadman, 27 miles.

No Trias found at any of the last four positions.

W. 12. S.W. Falmouth, 10 miles.

Ochreous volcanic ash.

¹ "Additional Notes on the Cornish Trias," *Trans. Royal Cornwall Geological Society*, 1891.

EXPLANATION OF PLATES.

- Plate VI. (Opp. p. 123). (1). Micro-pegmatite, with characteristic intergrowth of felspar and quartz. (2). Central portion of (1), more highly magnified.
- " VII. (Opp. p. 135). (1). Hornblende-gneiss. Showing 3 garnets; immediately beneath the central one a small, uniformly tinted area of chlorite. (2). Chlorite schist with crushed plagioclase felspar.
- " VIII. (Opp. p. 143). Grit, with derived fragment of older rock (A-B).
- " IX. (Opp. p. 151). (1). Hard yellow chalk, with derived inclusion of earlier chalk rock. (2). Section of same, showing foraminifera, shell fragments and other organic remains.
- " X. (Opp. p. 153). Decomposed black flint, with shell fragments and complete foraminifera in carbonate of lime. (2). Lower part with carbonate of lime removed.
- " XI. (Opp. p. 156). Eocene limestone.
- " XII. (Opp. p. 157). Eocene limestone, showing foraminifera.
- " XIII. (Opp. p. 163). Chart, Start to Hand Deep. Illustrating Dr. Allen's Start-Eddystone dredgings.
- " XIV. (Opp. p. 166). Chart showing distribution of granite and gneiss.
- " XV. (Opp. p. 168). " " " trias, rhaetic, and lias.
- " XVI. (Opp. p. 169). " " " hard yellow chalk.
- " XVII. (Opp. p. 179). " " " location of dredgings recorded by Mr. A. R. Hunt and Mr. R. N. Worth.

The Schizopoda and Isopoda collected by the "Huxley" from the north side of the Bay of Biscay, in August, 1906.

By

W. M. Tattersall, M.Sc.

I AM indebted to the courtesy of Dr. Allen for the opportunity of examining the collections of these two orders of Crustacea in the *Huxley's* material.

None of the species are new to science, and but few of them present any features worthy of remark. The chief interest of the collection lies in its bearing on the known geographical distribution of the species captured for, out of a total of twenty-eight, no fewer than sixteen are recorded for the first time from localities south of the British Islands, while only eight of the species have previously been recorded from the Bay of Biscay. The bathymetrical range of five of the species recorded has been considerably increased by this material.

A comparison of the following lists with those for the same orders collected by the *Caudan* expedition, reveals little that is common to the two, the explanation of which is probably that the *Caudan* was working in much deeper water and considerably south of the area explored by the *Huxley*. The results of the work done by the *Hirondelle* and the *Travailleur* and *Talisman* in the Bay of Biscay are not available for the orders now under consideration. The only other expedition which has worked in the Bay is the *Research*, but as that dealt entirely with plankton, the results are not strictly comparable with those of the *Huxley*.

List of Species and the stations at which they occurred.

Station	II	V	VII	VIII	IX	X	XI	XII	XIII	
Longitude, N.	45°24'	47°48'	47°36'	47°30'	48°7'	48°7'	48°10'	48°7'	48°7'	
Longitude, W.	6°28'	7°46'	7°31'	7°31'	8°13'	8°13'	8°11'	8°13'	8°13'	
Fathoms	75	109	111	Surface	240	Surface	146	246	412	
SCHIZOPODA.										
<i>Euphausia Mülleri</i>	-	-	-	ca. 1000	-	28	-	-	-	
<i>Meganyctiphanes norvegica</i>	-	-	-	5	-	ca. 300	-	22	-	
<i>Nyctiphanes Couchi</i>	-	-	-	-	-	ca. 200	-	-	-	
<i>Nematoscelis megalops</i>	-	-	-	2	-	32	-	-	-	
<i>Lophogaster typicus</i>	-	2	-	-	2	83	1	-	-	
<i>Siriella norvegica</i>	-	3	-	-	-	-	7	-	-	
<i>Haplostylus Normani</i>	-	-	-	-	-	26	-	-	-	
<i>Anchialina agilis</i>	-	-	-	-	-	38	-	-	-	
<i>Amblyops abbreviata</i>	-	-	-	-	-	-	-	31	-	
<i>Paramblyops rostrata</i>	-	-	-	-	1	-	-	-	-	
<i>Pseudomma affine</i>	-	-	-	-	-	-	-	3	-	
<i>Mysideis insignis</i>	-	-	-	-	1	-	-	36	-	
<i>Mysidopsis didelphys</i>	-	1	-	-	-	-	-	-	-	
<i>Leptomysis gracilis</i>	-	-	-	-	-	1	-	-	-	
<i>Leptomysis sp.</i>	-	-	-	-	-	-	2	-	-	
<i>Mysidetes Farrani</i>	-	-	-	-	-	-	-	4	-	
<i>Boreomysis arctica</i>	-	-	-	-	-	-	-	3	-	
<i>Schistomysis ornata</i>	-	10	-	-	-	-	3	-	-	
ISOPODA.										
<i>Aega Strömii</i>	-	-	-	-	-	-	-	3	-	
<i>Rocinela damnoniensis</i>	-	-	-	-	-	1	-	4	-	
<i>Cirolana borealis</i>	1	1	-	-	4	-	-	12	-	
<i>Cirolana Hanseni</i>	-	-	-	-	-	-	-	-	1	
<i>Eurydice truncata</i>	-	-	-	-	-	53	-	-	-	
<i>Astacilla longicornis</i>	1	-	-	-	-	-	-	16	1	
<i>Ianira maculosa</i>	-	-	5	-	-	-	-	-	13	
<i>Munna Boeckii</i>	-	-	2	-	-	-	-	-	-	
<i>Eurycope longipes</i>	-	-	-	-	-	-	-	3	-	
<i>Aspidophryxus peltatus</i>	-	1	-	-	-	-	-	-	-	

SCHIZOPODA.

Of the eighteen species of this order represented in the collection, none can be described as new, though two specimens of the genus *Leptomysis* cannot be referred satisfactorily to any described form. They are, however, very closely allied to *L. gracilis*; and I await further material before deciding the point. The depth at which they were found is unusual for the genus.

Only four of these species have been previously recorded from the Bay of Biscay, viz., *Euphausia Mülleri*, *Meganyctiphanes norvegica*, *Nematoscelis megalops*, and *Lophogaster typicus*.

Four other species, *Nyctiphanes Couchi*, *Haplostylus Normani*, *Anchialina agilis*, and *Boreomysis arctica* are, however, known from

the Mediterranean, and their occurrence in the Bay of Biscay merely fills, in part, the gaps existing in their geographical distribution. The remaining species have not hitherto been recorded from localities south of the British and Irish area (*Leptomysis gracilis* is, however, known from the French side of the English Channel). The majority of them are deep water forms, which recent work has shown to be more or less abundant off the west coast of Ireland on the fringe of the Atlantic slope, and it was only natural, therefore, to expect that their known distribution would be considerably extended when the slope was further explored to the south.

Siriella norvegica and *Schistomysis ornata* are here recorded from depths greater than any at which they have up till now been taken, while the capture of no fewer than one thousand specimens of *Euphausia Mülleri* and eighty-three of *Lophogaster typicus* in surface hauls are features worthy of special note.

The records of *Paramblyops rostrata* and *Mysidetes Farrani* are of interest, since these two species have only lately been described from material collected in deep water off Ireland.

SCHIZOPODA.**FAMILY EUPHAUSIIDAE.*****Euphausia Mülleri*, Claus.**

STATION VIII. ca. one thousand specimens, up to 22 mm.

STATION X. Twenty-eight specimens, 5-11 mm.

The occurrence of no fewer than one thousand specimens of this species in a surface haul, Station X, is worthy of special note.

***Meganyctiphanes norvegica* (M. Sars).**

STATION VIII. Five specimens, 14-28 mm.

STATION X. ca. three hundred specimens, 11-33 mm.

STATION XII. Twenty-two specimens, 17-34 mm.

***Nyctiphanes Couchi* (Bell).**

STATION X. ca. two hundred specimens, 7-17 mm.

***Nematoscelis megalops*, G. O. Sars.**

STATION VIII. Two specimens, 10 and 11 mm.

STATION X. Thirty-two specimens, 10-18 mm.

FAMILY **LOPHOGASTRIDÆ.**

Lophogaster typicus, G. O. Sars.

STATION V. Two females, 20 and 22 mm.

STATION IX. Two females, 21 mm.

STATION X. Eighty-three specimens, 5-10 mm.

STATION XI. One female, ovigerous, 21 mm.

The occurrence at Station X of no fewer than eighty-three specimens of this species in a surface haul is a feature of great interest. *L. typicus* is regarded as essentially a bottom living form, though Holt and Tattersall* have recently recorded a specimen from a haul made at 44 fathoms, over a depth of 136 fathoms. This latter specimen was a gravid female, in which the young were ready to be liberated from the brood pouch. The probable fact is that *L. typicus*, in its normal adult condition, is a true bottom haunting form, but that the female rises to the surface to liberate the young and thus to ensure a wide distribution. The haul at Station X above supports this view, since all the specimens are small, and only two or three of the very largest have assumed quite adult form.

FAMILY **MYSIDÆ.**

Siriella norvegica, G. O. Sars.

STATION V. One male, 19 mm.
Two females, 14 and 17 mm.

STATION XI. Five males, 17-19 mm.
Two females, 15 and 19 mm.

Haplostylus Normani (G. O. Sars).

Gastrosaccus Normani, G. O. Sars; Middlehavet's Mysider, p. 65; Pls. XXIV, XXV, 1876.

STATION X. Fifteen males, 6-8 mm.
Eleven females, 5-11 mm.

These specimens differ in one important respect from the description and figures given by Sars. Without exception, they have the hinder margin of the carapace furnished with two dorsal, upwardly and forwardly, directed lobes. The absence of lobes from the hinder margin of the carapace was one of the characters on which Kossmann separated the genus *Haplostylus* from *Gastrosaccus*. The present examples, however, agree exactly with *H. Normani* in the structure of the antennules, the length, form and armature of the telson, and

* Holt and Tattersall, "Fisheries, Ireland, Sci. Invest., 1904 V., [1906]."

especially in the rudimentary inner branch to the third pleopods of the male and the curiously twisted rami of the second pleopods of the same sex.

It is curious to note in this respect that Holt and Beaumont, writing of *Gastrosaccus sanctus* from the west of Ireland,* remark: "most of the specimens from Bofin have practically no trace of the upturned processes of the hind margin of the carapace, though agreeing in other respects with the type." From these observations it would seem that the presence or absence of lobes is a character which cannot be relied on either for generic or specific separation, but the point is obviously one that requires further investigation. In the meantime, the present specimens agree so well with *H. Normani* in other respects, that I provisionally record them here as that species.

Anchialina† agilis (G. O. Sars).

STATION X. Ten males, 6-9 mm.
Twenty-eight females, 6-9 mm., most of them ovigerous.

Amblyops abbreviata, G. O. Sars.

STATION XII. Fifteen males, 12-16 mm.
Sixteen females, 12-16 mm.

Paramblyops rostrata, Holt and Tattersall.

STATION IX. One female, head and thorax only.

Pseudomma affine, G. O. Sars.

STATION XII. Two males, 11 mm.
One female, 11 mm.

Mysideis insignis, G. O. Sars.

STATION IX. One female, 25 mm.
STATION XII. Ten males, 14-20 mm.
Twenty-six females, 9-22 mm.

Mysidopsis didelphys (Norman).

STATION V. One male, 13 mm.
A specimen of the Isopod parasite, *Aspidophryxus peltatus*, G. O. Sars, was found attached to the basal joint of the left antennule.

Leptomysis gracilis, G. O. Sars.

STATION X. One female, 10 mm.

* HOLT and BEAUMONT, *Sci. Trans. Royal Dublin Soc.*, Series ii., Vol. vii., Pt. vii, 1900.

† *Anchialina*, Norman for *Anchialus*, G. O. Sars. See Norman and Scott, "Crustacea of Devon and Cornwall," London, 1906, p. 24.

Leptomysis sp.

STATION XI. One male, 11 mm.

One female, 11 mm.

These two specimens differed from *L. gracilis* (1) in having the dermis quite smooth instead of hispid; (2) the rostrum is quite short, and does not extend beyond the eyestalks, whereas in *L. gracilis* it is produced into a broadly triangular acutely pointed plate, which extends beyond the middle of the basal joint of the antennules. Otherwise they agree perfectly with normal specimens of *L. gracilis*, and it seems better to await further material before deciding whether they represent a hitherto undescribed form, or are merely abnormal specimens of *L. gracilis*.

Mysidetes Farrani (Holt and Tattersall).

STATION XII. Four females, 18 mm.

Boreomysis arctica (Kröyer).

STATION XII. Two males, 15 and 18 mm.

One female, 14 mm.

Schistomysis ornata (G. O. Sars).

STATION V. Two males, 14 mm.

Eight females, 12-15 mm.

STATION XI. Three females, 14 mm.

Both the stations at which these species occur are over 100 fathoms in depth. This depth is most unusual for the species, the greatest depth at which it has previously been captured being 50 fathoms. I cannot, however, at present find any substantial difference between these specimens and those from shallower water, and I am, therefore, obliged to consider them as belonging to the same species.

ISOPODA.

In all ten species of Isopoda are here recorded from the material collected by the *Huxley*. Of these only four have hitherto been found in the Bay of Biscay, viz., *Cirolana borealis*, *Cirolana Hanseni* (the type specimen of which was dredged by the *Caudan* expedition a little further south of the area explored by the *Huxley*), *Eurydice truncata*, and *Ianira maculosa*.

The remaining six species have not been recorded from localities south of the British and Irish marine area, so that the present records indicate the most southerly limit of their known geographical range.

With regard to the bathymetric range of the species, I am not

aware that *Ianira maculosa*, *Munna Boeckii*, and *Astacilla longicornis* have up till now been recorded from greater depths than 400 fathoms, so that the vertical distribution of all three has been extended as a result of the present material. *Ianira maculosa* was only found at Stations VIII and XIII, and from Professor Hickson's report on the *Alcyonaria* of the *Huxley's* cruise it was at both these stations that the majority of the *Alcyonaria* were taken. In shallow water *Ianira maculosa* is very frequently found in considerable numbers crawling over colonies of *Alcyonium digitatum*, and in all probability the specimens in the present collection were clinging to the *Alcyonarians* found on the same grounds. *Eurycope longipes* is a species only recently described from specimens found off the west coast of Ireland on the edge of the Atlantic slope. Its occurrence further south on the same slope, while interesting, is only naturally to be expected.

FAMILY **EGIDÆ.****Ega Strömii**, Lutken.

STATION XII. Three specimens.

Rocinela damnoniensis, Leach.

STATION IX. One specimen.

STATION XII. Four specimens.

FAMILY **CIROLANIDÆ.****Cirolana borealis**, Lilljeborg.

STATION II. One specimen.

STATION V. One specimen.

STATION IX. Four specimens.

STATION XII. Twelve specimens.

Cirolana Hanseni, Bonnier.

STATION XIII. One specimen.

Stebbing, in his report on Professor Herdman's Ceylon Isopoda, suggests that this species should be referred to his genus *Hansenolana*, while Hansen, in his recent revision of the European members of the genus, still retains in it the genus *Cirolana*. The present specimen measures only 3 mm., and is therefore smaller than Hansen's largest specimens, which was 4.2 mm., and which Hansen thought to be still immature. As it is obvious that adult specimens are necessary before the correct genus for the species can be determined, I follow Hansen in retaining it in its original genus, *Cirolana*, for the present.

Eurydice truncata (Norman).

STATION X. Fifty-three specimens.

FAMILY ARCTURIDÆ.

Astacilla longicoris (Sowerby).

STATION II. One specimen.

STATION XIII. Sixteen specimens.

STATION XIII. One specimen.

FAMILY IANIRIDÆ.

Ianira maculosa, Leach.

STATION VII. Five specimens.

STATION XIII. Thirteen specimens.

FAMILY MUNNIDÆ.

Munna Boeckii, Kröyer.

STATION VII. Two specimens.

FAMILY MUNNOPSISIDÆ.

Eurycope longipes, Tattersall.

STATION XII. Three specimens.

FAMILY DAJIDÆ.

Aspidophryxus peltatus, G. O. Sars.STATION V. One specimen on the basal joint of the left antennule of *Mysidopsis didelphys* (Norman).Both Sars and myself have recorded this parasite from the antennules of *Mysidopsis didelphys*, while I have also noted it on the same host from the more normal position for such parasites, viz., the dorsal surface of the thorax.Notes on the littoral *Polychæta* of Torquay.

By

Major E. V. Elwes.

The following notes are confined to the species of *Polychæta*, which have been found by myself during the last four years, between tide-marks, on the coast comprised within the Borough of Torquay. Torquay is so well known as a hunting ground for the marine zoologist that it is unnecessary to describe the features of the shores. No special study of the *Polychæta* of Torquay appears to have been previously made, although the locality, Torbay, occurs somewhat frequently in the British Museum Catalogue of Worms.

Syllidæ.

Twenty species of Syllids have been found; of these eight have not apparently been previously recorded from the British area. They are, *Trypanosyllis celiaca*, Clpd.; *Autolytus ehbiensis*, de St. Joseph; *A. longiferiens*, de St. Joseph; *A. macrophthalma*, Marenzeller; *Grubea clavatu*, Clpd.; *Eurysyllis paradoxa*, Clpd., and *Pionosyllis lamelligera*, de St. Joseph. The Syllids were nearly all obtained by bringing home the roots of *Laminaria* and placing them in glass vessels, when in a few hours the Annelids crawl out and can be picked out with a pipette.

EXOGONE GEMMIFERA, Pagenstecher. *McIntosh, Mon. Brit. Ann.*, vol. ii., 1908, p. 151; *de St. Joseph, Ann. Sc. Nat. Zool.*, 1886, p. 209 (as *Pædophylax claviger*).

This species is by no means uncommon at Torquay amongst seaweeds from half-tide mark downwards. When such weeds are placed in a glass jar, *Exogone* is one of the first species to leave the shelter of the weeds and crawl out on the glass sides; but unless observed within five or six hours from the time the weed is placed in the vessel, it probably will not be noticed, because it very quickly dies and falls down amongst the debris, where, owing to its small size, it is almost impossible to find it.