

NOTES FROM THE "CHALLENGER"
VII.

ON Monday the 30th of June we sounded in 1,000 fathoms, about 114 miles westward from Fayal. The dredge was put over early in the forenoon, and came up half filled with a grey sandy ooze with a large proportion

of the dead shells of Pteropods, many Foraminifera, and many pebbles of pumice. Many animal forms of great interest were found entangled in the swabs, or sifted out of the mud. Another Schizopod crustacean of large size and great beauty of form and brilliancy of colouring came up in this haul. Dr. von Willemoes-Suhm regards it as congeneric with the species taken at Station 69, at a

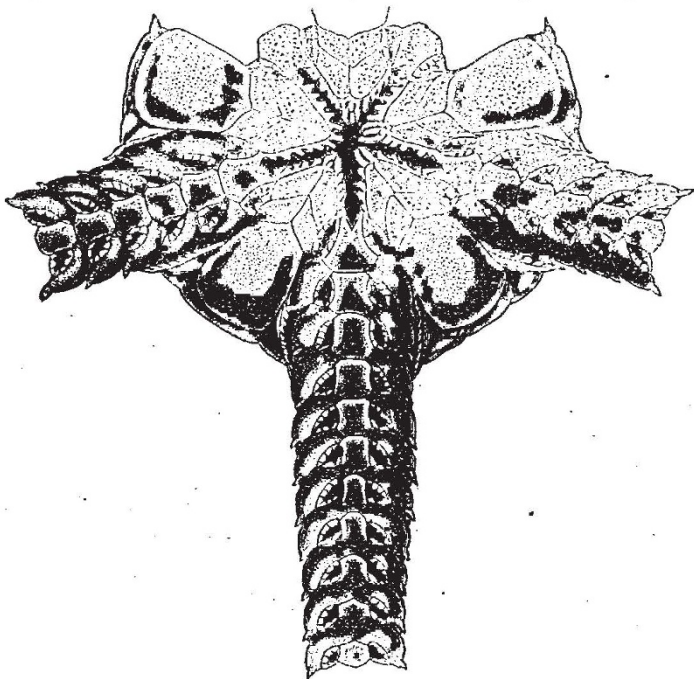


FIG. 1.—Ophioglypha bullata, Wy. Thomson—six times the natural size.

depth of 2,200 fathoms, and as these crustaceans are among our most interesting acquisitions during the voyage between Bermudas and the Açores, I will abstract a brief description of them from his notes.

The two crustaceans for whose reception Dr. von

Willemoes-Suhm proposes to establish the genus *Gnathophausia* present characters which have hitherto been found partly in Schizopods and partly in Phyllopods, but not combined in the same animal. They are, however, essentially Schizopods, and have much in common with

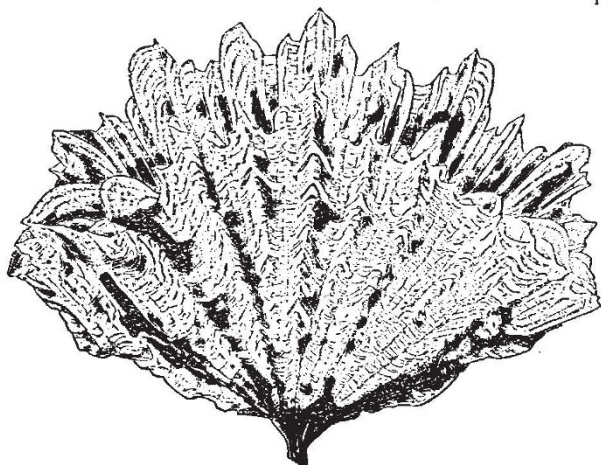


FIG. 2

FIG. 2.—Flabellum alabastrum, H. N. M.

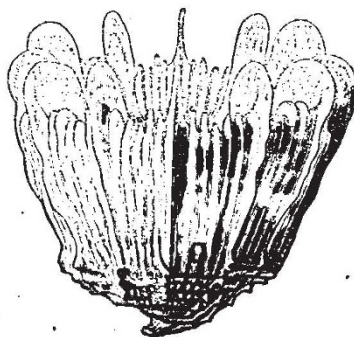


FIG. 3

FIG. 3.—Ceratotrochus nobilis, H. N. M.

Lophogaster, a genus described in great detail by the late Prof. Sars. It is proposed to refer *Gnathophausia* to the family Lophogastridæ, which must be somewhat modified and expanded for its reception.

In *Gnathophausia* the dorsal shield covers the thoracic segments of the body, but it is unconnected with the last

five of these. The shield is prolonged anteriorly into a spiny rostrum. The stalked eyes are fairly developed in the ordinary position. There is an auxiliary eye on each of the maxillæ of the second pair.

The two species of the genus are thus distinguished: *G. gigas*, n. sp. (Figs. 4 and 5). Scale of the outer an-

tenna with five teeth; dorsal shield with the outer angles of its posterior border produced into spines; no posterior spine in the middle line; length 1.42 mm. Of this species one specimen was taken from a depth of 2,200 fathoms, with a bottom of Globigerina ooze, at Station 69, 400 miles to the west of the Açores.

G. zoëa, n. sp. (Fig. 6); Scale of the outer antenna

with one tooth. A long central spine on the posterior border of the dorsal shield, but no lateral spines; length, 60 mm. A single specimen at the present station likewise from a bottom of Globigerina ooze.

On comparing the figures of these two species and of their anatomical details with that of *Lophogaster* given by Sars, one is struck by their great general similarity; but

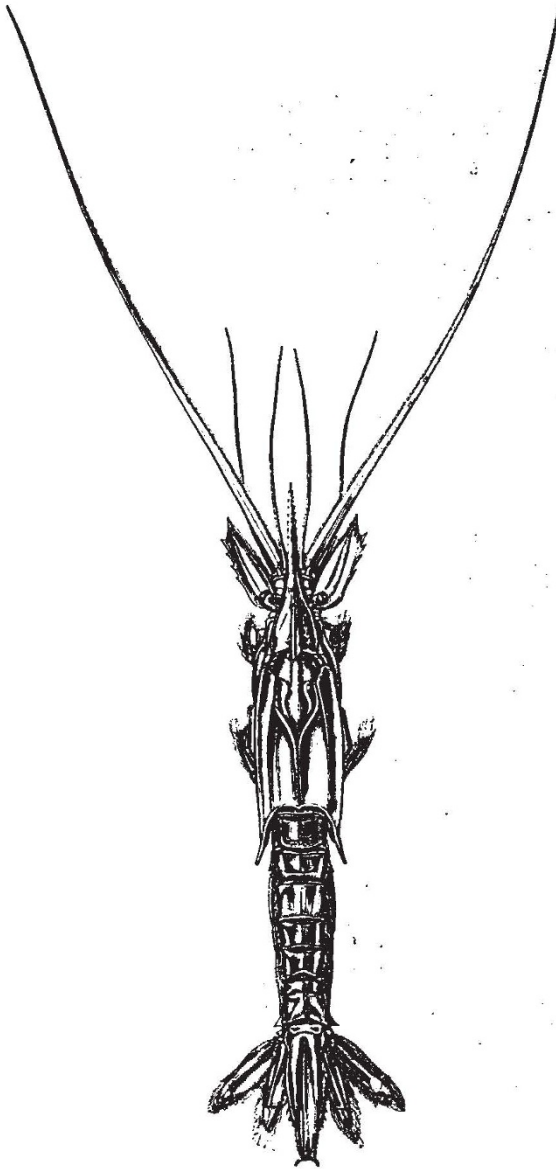


FIG. 4

FIGS. 4 & 5.—*Gnathopansia gigas*, v. W.-S.

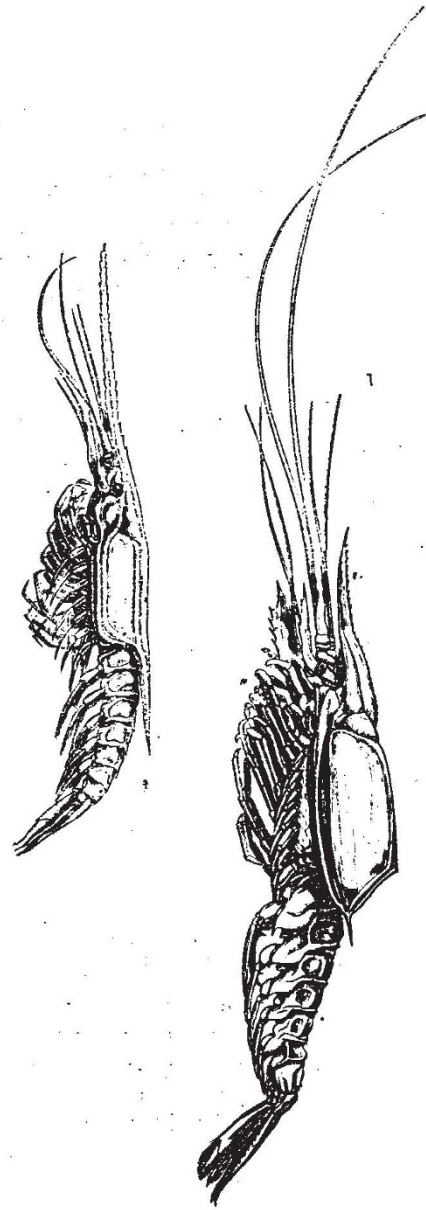


FIG. 6

FIG. 5

FIG. 6.—*Gnathopansia zoëa*, v. W.-S.

there are characters presented by the new genus, particularly in connection with the dorsal shield, which not only entirely separate it from *Lophogaster*, but enlarge our views on the whole Schizopod group. In both species the shield is sculptured by ridges traversing it in different directions, and in both there is a long spiny rostrum; but this shield is merely a soft duplication of the skin, connected with the body only anteriorly, and leaving five thoracic segments entirely free. In the structure of the

shield and its mode of attachment *Gnathopansia* has the greatest resemblance to *Apus* among all crustaceans, but it differs from it widely in all other respects. *Nebalia* is the only Schizopod in which the carapace is not connected with the posterior thoracic segments, but in that genus the form of the carapace is totally different, and the genera are otherwise in no way nearly related.

Neither the antennæ, nor the scales, nor the parts of the mouth present any marked differences from those of

Lophogaster, with the exception of the second maxillæ. These, with nearly the same form as in the Norwegian genus, bear a pair of accessory eyes. Such eyes are well known at the base of the thoracic and even of the abdominal limbs in the Euphansidae, a family with which the Lophogastridae have otherwise nothing in common, but hitherto they have not been met with in any other animal or in any of the manducatory organs.

Of the eight pairs of legs seven are ambulatory, only the first pair is, as in *Lophogaster*, transformed into maxillipeds. The gills are arborescent and attached to the bases of the legs. The abdomen and its appendages scarcely differ from those of *Lophogaster*. We find here also that the last segment is apparently divided into two. This would indicate an approach to such forms as *Nebalia*, which has nine abdominal segments, or at all events a tendency to a multiplication of segments which if really existing would scarcely allow the association of the genus with the true Schizopods.

The weather was remarkably fine. During the day the island of Flores was visible like a cloud on the horizon, about 50 miles to the northward. In the afternoon we obtained a series of temperature soundings at intervals of 100 fathoms down to 1,000, and in the evening proceeded under steam towards Fayal.

On the following day, the 1st of July, we sounded in 1,350 fathoms, about 20 miles west of Fayal, apparently in a depression which separates the western group of the Açores, Flores and Corvo from the central group Fayal, Pico, San Jorge, Terceira, and Graciosa, and during the afternoon we gradually approached the fine island of Fayal, and enjoyed the development of its bold outlines and rich and varied colouring. In the evening we passed into the narrow channel between Fayal and Pico, and anchored in the roadsteads of Hortes. We found to our great disappointment that small-pox was prevalent in Fayal, and as Captain Nares considered it imprudent to give general leave, one or two of us only landed to pick up what general impression we might of the appearance of the place, and on the following morning we proceeded towards San Miguel, first taking a few hauls of the dredge in shallow water between Fayal and Pico, where we found a rather scanty fauna, resembling in character that of southern Europe, on a bottom of dark volcanic sand.

On Friday, July 4, we sounded in 750 fathoms on a rocky bottom. The ship water-bottle was sent down and brought up a sample of the bottom water. In the afternoon we shortened and furled sails, and proceeded under steam towards San Miguel, and in the evening stopped abreast of Ponta Delgada, the capital of the island, where we lay-to for the night, secured to a buoy. Next morning, as we found, greatly to our satisfaction, that the town was considered free from any epidemic of small-pox, we steamed in to the anchorage, and cast anchor in 13 fathoms.

We remained at San Miguel until Wednesday the 9th. We were well aware that the time at our disposal was quite insufficient to enable us to do anything of importance to add to the knowledge of the natural history of the island already so well worked out, and as we had had a long sea-cruise, we were in no way disinclined for a few days of complete relaxation. We accordingly combined into a large party, totally unscientific in its object, and by the aid of mules and donkeys made a most enjoyable raid among the caldeiras and volcanic ranges of the east end of the island. The random impressions collected during these *horæ subsecivæ* may perhaps be chronicled elsewhere.

Our first haul after leaving Ponta Delgada, was in 1,000 fathoms, mid-way between the islands of San Miguel and Santa Maria, and about fifteen miles north-west of the Formigas. The bottom was Globigerina ooze. The principal feature in this dredging was the unusual abundance of stony corals of the deep-sea group.

Two living specimens of a large species of *Flabellum* were sifted out, the same as the one which we had dredged previously at station 73, to the west of Fayal. The corallum is wedge-shaped, the calicle rising from an attenuated pedicle. The extreme height, from the end of the pedicle to the margin of the cup, is 50 mm.; the greatest diameter of this calicle is 65 mm., and the smallest 30 mm. The three species are very nearly of the same dimensions.

The lateral costæ make an angle with one another of 120° to 140°, and are sharp and moderately prominent, with an irregular edge. The external surface of the calicle is covered with a glistening epitheca, and near the margin is of a light pink colour. The costæ of the faces corresponding to the primary and secondary septa are almost as well marked as the lateral costæ, and appear as irregularly dental ridges, separated by slight depressions. The ends of the calicle are broadly rounded, and it is compressed laterally in the centre. The upper margin is curved, describing about one-third of a circle.

There are six systems of septa disposed in five cycles. The septa are extremely thin and fragile. They are tinged with pink, and covered with rounded granules, disposed in rows. The primary septa are approximately equal to the secondary, giving somewhat the appearance of twelve systems. These septa are broad and prominent, with a rounded superior margin, and curved lines of growth. The septa of the third, fourth, and fifth cycles successively, diminish in breadth, and are thus very markedly distinguished from one another, and from the primary and secondary septa. The septa of the fourth cycle join those of the third a short distance before reaching the columella. The septa of the fifth cycles are incomplete. The margin of the calicle is very deeply indented, the costal corresponding to the primary and secondary septa being prolonged in conjunction with the outer margins of these septa, into prominent pointed processes; similar but shorter prolongations accompany the tertiary, and some of the quaternary septa. Between each of the sharp projections thus formed, the edge of the wall of the calicle presents a curved indentation.

Two of the specimens procured, expanded their soft parts when placed in sea-water. The inner margin of the disc round the elongated oral aperture, presents a regular series of dentations, corresponding with the septa, and is of a dark madder colour; the remainder of the disc is pale pink. The tentacles take origin directly from the septa. They are elongated and conical. Those of the primary and secondary septa are equal in dimensions, and along with the tertiary tentacles, which are somewhat shorter, but in the same line, are placed nearest the mouth, and at an equal distance from it. The tentacles of the fourth and fifth cycles are successively smaller and at successively greater distances from the mouth. Placed on either side of each tentacle of the fifth cycle, and again somewhat nearer the edge of the calicle, there are a pair of very small tentacles which have no septa developed in correspondence with them. There are thus four successive rows of tentacles, and the normal number is ninety-six. The tentacles are of a light red colour, and between their bases are stripes of yellowish red and light grey.

This group belongs to the group *Flabella sub-pedicellata* of Milne-Edwards, and probably to that division in which the costæ are prominent and ridge like on the faces of the corallum, as well as on its lateral margins, but it differs from those described under this head by Milne-Edwards, in that it has five cycles, the fifth being incomplete, and in other particulars which appear from the description given.

A single living specimen of a coral referred by Mr. Moseley to the genus *Ceratotrochus* was obtained from this haul. The corallum is white. The base sub-pedicellate with a

small scar of original adherence. The principal costals are prominent, and round the region of the base beset with small spines directed somewhat upwards. The upper portion of the costa is without spines. The primary and secondary septa are broad and exsert. Pali are absent, the columella is fascicular. The absence of pali, the form of the columella, and the nature of the base, associate this form with the *Ceratrotrochi*, as defined by Milne-Edwards.

The animal is of a dark madder colour on the region of the margin of the calicle between the exsert primary and secondary septa, and on the membrane investing the wall of the corallum from the margin down to the commencement of the spines. This dark colour is succeeded on the disc by a band of pale bluish within which there is again a zone of very dark madder colour round the mouth. The dark colouring-matter is interesting, as it gives an absorption spectrum of three distinct bands.

On Friday, July 11, we sounded in 2,025 fathoms, 376 miles to the west of Madeira, the bottom very well marked "globigerina ooze," and the bottom temperature $1^{\circ} 5' C$.

The weather for the last few days had been remarkably fine, with a pleasant light breeze. When we turned up on deck on the morning of the 16th, we were already at anchor in the beautiful bay of Funchal, and looking at the lovely garden-like island, full of anticipations of a week's ramble among the peaks and "carrals" and the summer "quintas" of our friends—anticipations which were doomed to be disappointed.

WYVILLE THOMSON

THE INTERNATIONAL METRIC COMMISSION AT PARIS

IN continuation of the notices of the proceedings of this Scientific Commission (see NATURE, vol. vii. p. 237), it may now be stated that the French Section have been engaged during the present year in the work of the Commission entrusted to them, and have continued their sittings up to the present time. It appears from the printed "Procès Verbaux" that their attention has been principally directed to the further investigations and experiments required for the melting and casting of the large mass of alloy of platinum and iridium, determined upon as the material of all the new standards, with the view of obtaining a homogeneous ingot of these two metals in the proper proportions. This preliminary work is now so far completed that the twelve members of the Commission elected as the Permanent Committee, have been summoned to meet at Paris on October 1, to consult upon the subject with the French Section, and more particularly to discuss and decide the following points:—

1. The date of the definitive of the melting platinum-iridium intended for the construction of the new International metric standards.

2. The question whether the *Mètres-a-bouts* requested by some countries shall be constructed from the metal of the same melting as the *Mètres-à-trails*.

3. Whether the kilograms shall be made from the metal of the same melting as the *Mètres-à-trails*.

As to the number of metric standards required to be constructed by the Commission, the greater number of the Governments represented at the Commission have already intimated their wishes to have in all 31 metres and 24 kilograms. Germany and Italy have not yet notified their decision. Austria and Switzerland have declined to reply until the question of the creation of an International Bureau is satisfactorily settled, and it is understood that the same course is being followed by Germany. Russia is favourable to the creation of the Bureau, but has not yet decided on the number of standards she will require.

In addition to the number of fifty delegates already appointed by twenty-nine Governments to take part in

the International Metric Commission, and whose names have been already announced, the Haytian Government has nominated M. Ch. Laforestie, Chargé d'Affaires of the Haytian Republic, and the Government of Brazil has nominated Prof. Such de Capanema as their respective delegates of the Commission. The French Government has also invited the Governments of Central America, Persia, China, and Japan to send delegates to take part in the proceedings of the Commission.

As it will be expedient to construct a number of spare copies of the new metric standards, it will probably be necessary to prepare for the construction of not less than fifty metres and nearly as many kilograms.

But difficulties must inevitably and at once arise at Paris from the course taken by the Governments of Germany, Austria, and Switzerland, as it tends materially to impede the attainment of the declared primary objects of the Commission to construct and furnish every Government interested with uniform metric standards, which are to be accurately verified, and of equal authority. After the expiration of four years from the date of the appointment of the Commission by the French Government, on September 2, 1869, and the passing of almost unanimous resolutions at a full meeting of the Commission in 1872, upon the mode of constructing the new standards, the time has now arrived when everything has been got ready for commencing the actual construction of the new standards. It can hardly be expected that this, the real work of the Commission, is to be stopped until the ulterior question of the creation of an International Metric Bureau is settled to the satisfaction of the three above-mentioned Governments. Nor does a further significant step which has been recently taken by the Austrian Government lead to much hope of a satisfactory solution of this question.

The Austrian Government has officially declared that it accepts in principle the establishment of an International Metric Bureau upon the basis of the resolutions passed by the Commission, so far as relates to the objects and functions of this Bureau; and that it is quite disposed to take part in a Convention upon the subject, provided that all the other Governments represented at the Commission give their adherence. But it expressly reserves the right of making new propositions when the questions of the organisation, the seat, and the direction of the Bureau are discussed, as well as the right of definitively approving the Convention.

It proposes, at the same time, that in order to maintain the international character of the negotiation, the seat of the Conference shall be at Berne, where the International Telegraphic Conference is now held, or at Brussels, these two cities being equally upon neutral territory.

And that for facilitating the proceedings of the Conference, the Permanent Committee appointed by the Metric Commission, shall previously elaborate a project of Convention to be communicated to the several governments interested; and that the Conference be not convoked for completing the definitive Convention until the preliminary negotiations shall be sufficiently advanced to allow of a favourable result.

The invitation given by the French Government to the Austrian and other governments, was to take part in the creation of the International Metric Bureau based upon the five points proposed by the Commission, and it now appears that Austria objects to three out of these five points. And even as regards the other two points, Austria's adhesion is conditional upon the concurrence of all the other governments represented at the Commission. Up to the present time, however, the governments of five countries only have officially notified their concurrence, whilst those of twelve countries have formally declined to take any part in the establishment of the proposed International Metric Bureau. Under these circumstances, its creation at all seems very problematical, however desirable it may be in the interests of metrological science.