



Fig^s 1 & 2. *Præatya scabrosa*, H. Woodw.

Lower Liass. Bay of St. Lawrence.

Fig. 3. Isopod, Liass. Recent N. America

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ORIGINAL ARTICLES.

I.—ON A NEW AND UNDESCRIBED MACROURAN DECAPOD CRUSTACEAN,
FROM THE LOWER LIAS, BARROW-ON-SOAR, LEICESTERSHIRE, ETC.

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(PLATE VII.)

IN my third Report "on the structure and classification of the fossil Crustacea," presented to the Geological Section of the British Association, at their Meeting in Dundee,¹ 1867, I stated that a new Crustacean had been obtained, in 1858, by Sir Philip Grey-Egerton, Bart., M.P., F.R.S., from the Lower Lias of Barrow-on-Soar, Leicestershire, by whose kindness it is now preserved in the British Museum: and also that another specimen, from the Lower Lias of Somersetshire, belonging evidently to the same species, had subsequently been found by Mr. Charles Moore, F.G.S., at Bath. The specimen from Barrow-on-Soar (the impression and counterpart of which is contained in two blocks of Blue Lias Stone) exhibits on the surface of the slabs, the entire carapace, the eye, antennæ, the five ambulatory thoracic feet; but in this specimen the abdominal somites and caudal appendages are entirely wanting.² (See Pl. VII. Fig. 1.)

Mr. Moore's specimen, though rather less well preserved, exhibits the carapace with the antennæ; the walking limbs are displaced and expose the thoracic apodemata to which the branchiæ and the coxal joint of each limb were attached. The six abdominal somites are also seen, but the caudal plates are only very imperfectly preserved. (See Plate VII. Fig. 2.)

The carapace of this Crustacean evidently was extremely thin and much less chitinous than in the genera *Ager* and *Penæus*; it was therefore more easily destroyed or distorted. In Fig. 1, the crumpled and wrinkled appearance of the carapace is well shown. In Fig. 2, the test is less well preserved, but near the posterior border there is evidence to show that the surface was finely granulated (not punctated as represented by the artist in the Plate). The dorsal

¹ See British Association Reports for 1867 (1868), p. 44.

² The abdominal somites have been added by the artist in outline to Fig. 1, Pl. VII. merely to indicate their normal position; they are wanting in this specimen, and although present in Mr. Moore's Crustacean from Bath (Fig. 2. Pl. VII.), they are displaced.

line of the carapace, as seen in profile in our specimens, was much arched, and the anterior portion bends down to terminate in a short and blunt rostrum.

The orbital fossa forms a deep hollow on either side of the blunt rostrum giving insertion to the eye-peduncles; the bases of the antennæ take their rise from the outer border of the orbits.

The carapace is marked at its posterior margin by a double line or raised border, and is somewhat roundly inflected mesially, to give insertion to the abdominal somites; but it again expands roundly on the postero-lateral border over the branchial region.

None of the usual divisional lines or prominences, marking the regions of the carapace, are visible on this Crustacean, and, save a small marginal ridge on the hepatic border, near the orbital fossa, the carapace is otherwise quite plain.

Length of carapace 50 mm., depth from dorsal line 25 mm.

The antennules have slender multiarticulate flagella 15 mm. in length. The antennæ have three robust and very rugose basal joints, 15 mm. long, succeeded by a stout but tapering many-jointed flagellum nearly 25 mm. in length, reminding us of the stiff outer antennæ of *Palinurus*.

The thoracic limbs are stout and rugose, all their extremities are monodactylous. The first pair is the most robust, the second is nearly equal in size to the first; the third and fourth pairs are more slender and nearly as long; the fifth pair is much the smallest.

I subjoin the measurement of the five thoracic limbs in millimètres.

Limbs of thorax.....	I.	II.	III.	IV.	V.
1st joint or Coxa	3 ♀	3	3	3	2
2nd „ Basos	4 ♀	4	4	4	2
3rd „ Ischium	7	6	7	4	4
4th „ Meros	13	12	9	8	7
5th „ Carpus	6	5	5	5	5
6th „ Propodos	6	6	8	9	7
7th „ Dactylus.....	7	6	5	5	5
Total length	46	42	41	38	32

The figures of the fossil drawn in the Plate do not sufficiently show the rugosity of the limbs, which is a strongly-marked character in the fossil. The abdominal somites are preserved more or less perfectly in Mr. Charles Moore's specimen (Fig. 2). Their breadth is about 7 mm. each, and extreme depth of profile of segment 19 mm.; the epimeral border of the segments is lanceolate. The segments were finely granulated on their margins. The caudal plates appear to have been broadly rounded in outline, but they are too imperfect to describe minutely.

Total length of abdomen 55 mm.

In most of our common living *Macroura*, the first and second pairs of thoracic appendages resemble the last pair of the cephalic series, being maxillipeds, or mouth-organs. The third pair are usually the largest of the series, and are mostly chelate (serving as hands), the four remaining pairs being commonly employed as the ambulatory legs.

In the fossil before us neither the third pair, nor the four pairs of

limbs succeeding it, are chelate, all the five pairs of legs being monodactylous, as in *Palinurus*, *Scyllarus*, and *Thenus*: but in this division the carapace and the abdominal segments are not arched, but expanded laterally; whilst this Lias Crustacean, like the *Astacidae*, *Palæmonidae*, etc., has the carapace compressed laterally, and the segments of the abdomen are not flattened, but are well arched. The antennules are not like those of *Palinurus*, which have a few long articuli, but are multiarticulate like those of the *Astacidae* and *Palæmonidae*.

From a careful comparison, made in 1867, of its general characters, I was led to consider the fossil before us as probably most near to the recent genus *Atya* of Leach, from South¹ America, and I then proposed to name it *Prætya scabrosa*, but in all the recent species of the genus *Atya* the third and fourth pairs of thoracic appendages are modified so as to subserve, like the first and second pairs, rather the office of maxillipeds or mouth-organs than of feet; the fifth, sixth, and seventh pairs alone remaining as simple monodactylous ambulatory legs. Whether this modification of the third and fourth pairs of thoracic appendages in the genus *Atya* has taken place since Liassic times, and so the fossil form be really ancestrally related to that modern crustacean, can only be a matter of conjecture, but bearing in mind this important difference in the modification of the thoracic limbs, they have nevertheless still many points of resemblance. I have therefore retained the original name *Prætya* (conferred upon it in 1867), and by that appellation I now beg leave to introduce it to palæontologists and especially to those who are interested in Liassic fossils.

EXPLANATION OF PLATE VII.

- Fig. 1. *Prætya scabrosa*, H. Woodw., Lower Lias, Barrow-on-Soar (drawn nat. size). The original specimen in the British Museum.
 „ 2. *Prætya scabrosa*, H. Woodw., Lower Lias, Bath. The original specimen in the Collection of Charles Moore, Esq., F.G.S., of Bath.
 „ 3. Outline of *Atya scabra*, Leach (recent), South America.

II.—ON THE POSSIBILITY OF CHANGES IN THE LATITUDES OF PLACES ON THE EARTH'S SURFACE; BEING AN APPEAL TO PHYSICISTS.

By O. FISHER, Clk., M.A., F.G.S.

MR. HILL'S paper in the June Number of the MAGAZINE has incited me to recur to the great question of the possibility of changes in the earth's axis of rotation within itself. Mr. Hill is well known to be an accomplished geologist; but he writes as if he were simply a physicist, without sympathies for the difficulties of his brethren of the hammer. Yet we feel certain that such is not the case. We know that he has studied in the field the tremendous movements which the strata have undergone, being often compressed into a small part of their original length: that he has appreciated the almost ubiquitous presence, either in past or present time, of volcanic activity: that he must feel how unsatisfactory all explana-

¹ Incorrectly marked as N. America on the Plate.