

NH

THE  
GEOLOGICAL MAGAZINE;

OR,  
*Monthly Journal of Geology:*

WITH WHICH IS INCORPORATED

“THE GEOLOGIST.”

NOS. XIX. TO XXX.

EDITED BY

HENRY WOODWARD, F.G.S., F.Z.S.

ASSISTED BY

PROFESSOR JOHN MORRIS, F.G.S., &c., &c.

AND

ROBERT ETHERIDGE, F.R.S.E., F.G.S., &c.

VOL. III.

JANUARY—DECEMBER, 1866.

LONDON:

TRÜBNER & Co., 60, PATERNOSTER ROW.

LEIPSIC: F. A. BROCKHAUS.

TURIN & FLORENCE: H. LOESCHER. NEW YORK: LEYPOLDT & HOLT.

1866.



In the cases above cited the conglomerate beds are highly tilted, but another kind, namely, flat-roofed caves, may be observed where the beds are horizontal. A good example of this class is afforded by a nearly isolated rock of Old Red Sandstone at the village of Ballochantye (Fig. 3); a rock, truly wave-worn, and now so far

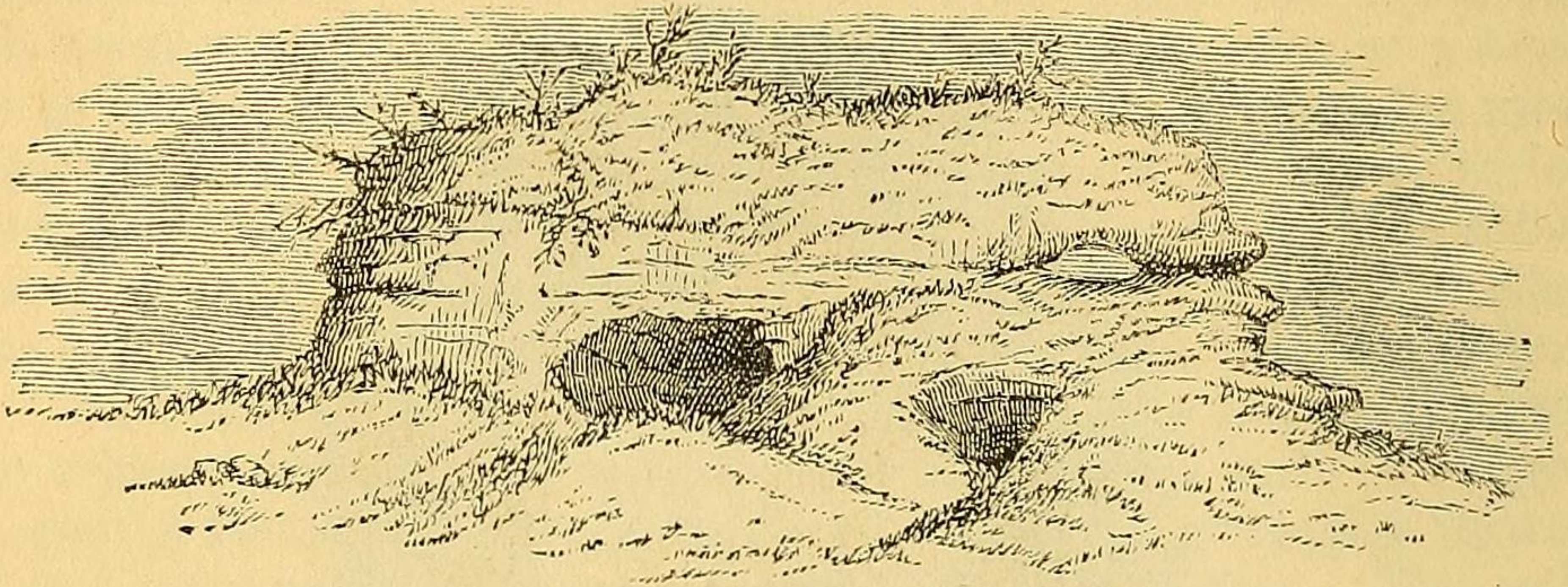


Fig. 3.—CAVE IN OLD COAST-CLIFFS, BALLOCHANTYE, CANTYRE.

out of reach of the sea, that the village is built between it and the shore, at a lower level. In this case the sea has acted horizontally by working in a stratum softer than the others within its reach, somewhat after the plan adopted by coal-miners. The upper layers then give way until one is reached sufficiently firm to form the roof. In another part of the rock a hole has actually been pierced right through along the line of another softer layer of sandstone.

Though the very recent elevation of the land, the evidences of which we have now been considering, has added some millions of acres to the area of Western Scotland, it cannot be doubted that the present action of the sea tends year by year to narrow the terrace, and to obliterate the vestiges of ancient sea action. As the present sea cliffs and skerries are being worn back towards the former coast-line, the two have in some places become as one, and it is sometimes impossible to trace the dividing line. Still, for all we can say to the contrary, it is quite possible another elevation of the coast may take place before all traces of “the thirty-feet” beach have disappeared.

### III.—ON A NEW CRUSTACEAN (*ÆGER MARDERI*, H. W.), FROM THE LIAS OF LYME REGIS, DORSETSHIRE.

By HENRY WOODWARD, F.G.S., F.Z.S.

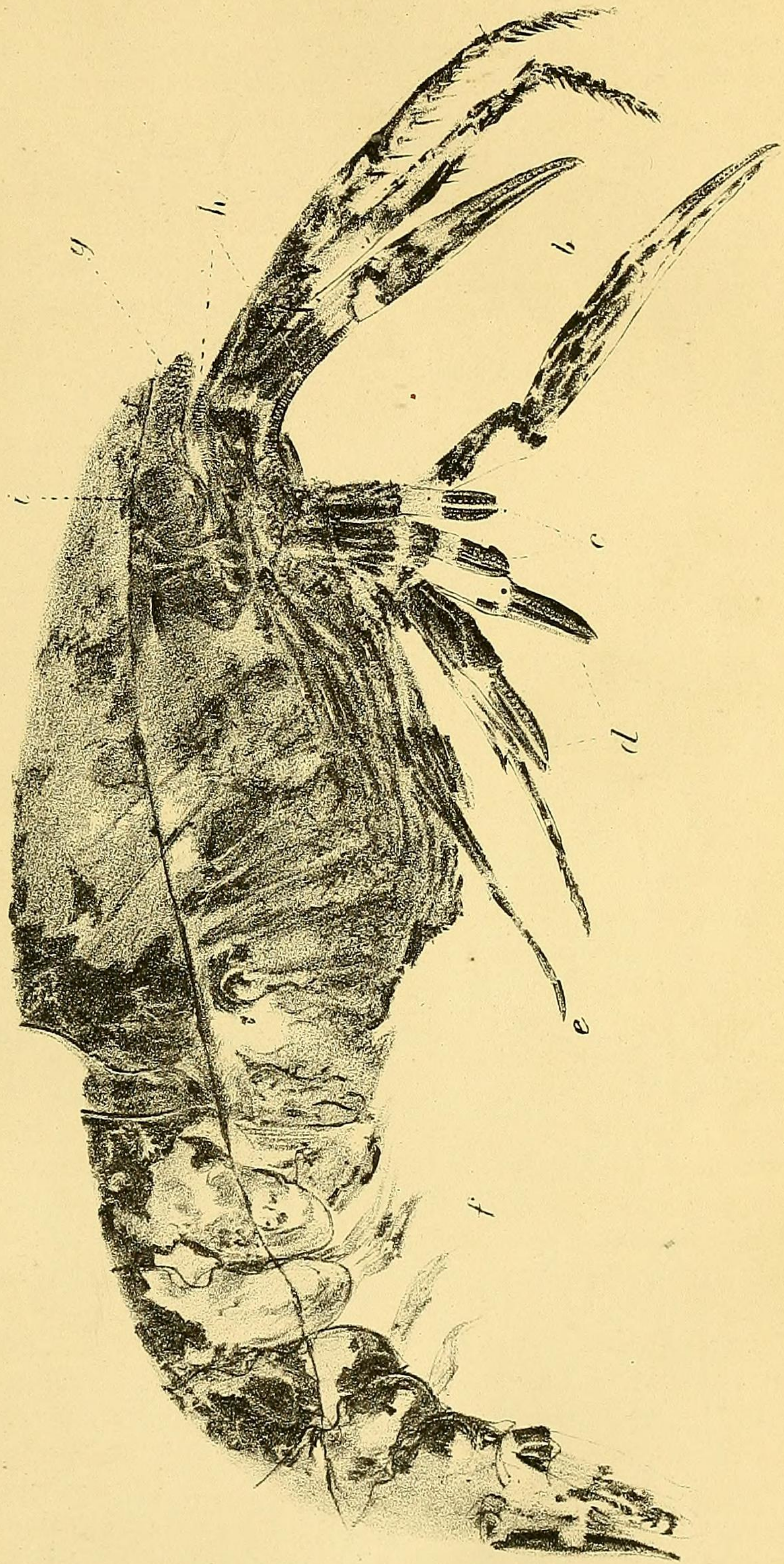
(PLATE I.)

THE beautiful crustacean, forming the subject of this paper, which is represented of the natural size in the accompanying plate, was obtained by Mr. J. W. Marder, from the Lower Lias of Lyme Regis, in Dorsetshire.

It is the first British example of the genus *Æger* of Count Münster,<sup>1</sup> a well-known form in the Lithographic stone of Solenhofen, in Bavaria. The specimen, which is now in the Geological Collection of the British Museum, is exposed on a slab of soft Blue-

<sup>1</sup> Münster's Beiträge Zur Petrefacten-kunde. Bayreuth, 1839. Heft ii. p. 64.





E. Fielding, del.

*AEGER MARDERI. H. Woodward.*

Hanhart imp.







Lias-clay: the shelly envelope, black, and glistening, still remains upon the darkest parts, whilst the lighter portions, though retaining the brown stains which indicate the general contour of the animal, have been decorticated, as it were, by the shrinkage of the clay in drying.

[All fossils from clay strata, but especially those from the Gault, the Oxford-clay, and the Lias, require almost daily care and attention for the first few weeks after they are removed from the bed in which they occur, or the entire surface will flake off in drying. A judicious application of very dilute gum, mixed with one-fourth part glycerine or sugar, is found to give the necessary tenacity to these delicate remains. But the practised fossil-collector prefers treating such objects with thin gelatine as a more durable hardening material.<sup>1</sup> The Readers of the GEOLOGICAL MAGAZINE must pardon this digression, but I speak feelingly, having seen beautiful specimens perish, for lack of daily gum-water.]

Although the extremely long and slender rostrum (see woodcut, fig. 1) observable in most specimens from Solenhofen (and most

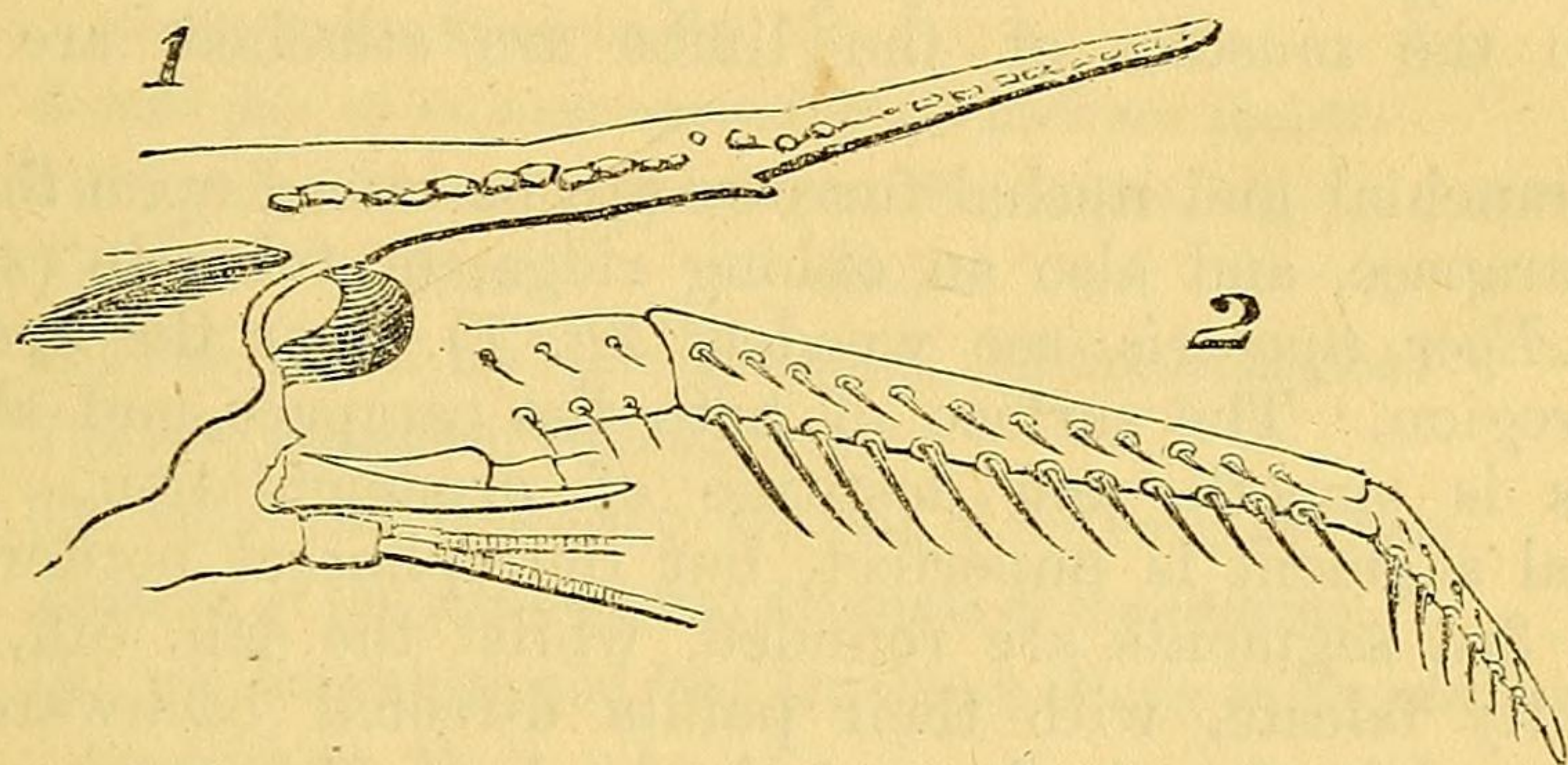


Fig. 1.—Rostrum of *Æger tipularis*, Schlot. sp. Lithographic stone, Solenhofen.

Fig. 2.—Distal extremity of 1st thoracic limb of *Æger tipularis*, showing the double row of *setæ* with which it is furnished.

probably existing in all the species of this genus<sup>2</sup>) is wanting in this Lias example, it may have been present when first removed from the cliff. The slab has, however, been unfortunately fractured longitudinally, just across the very part where the rostrum would have laid. The five pairs of thoracic limbs and the abdominal segments are very well preserved, and I have therefore no hesitation in assigning it to the genus *Æger*.

If we refer to the plate we shall see that the first pair of thoracic legs (marked *a*) are long and slender, with monodactylous extremities; each joint is fringed with a double row of fine spines or *setæ*. In this well-marked generic character it agrees exactly with the Solenhofen species (see woodcut, fig. 2); but the body and limbs are much more robust in our Lias example, than in any of

<sup>1</sup> See GEOLOGICAL MAGAZINE, vol. ii. p. 239.

<sup>2</sup> Dr. Oppel in his valuable work, *Palaeontologische Mittheilungen*, etc., Stuttgart, 1862, has figured and described five species of *Æger* from Solenhofen, two of which, *Æ. Bronni* and *Æ. armatus*, are destitute of any prominent rostrum.



the species found in Bavaria. The second pair of limbs (*b*) are much thicker, and are furnished with long and tapering *chelæ*. The third and fourth pairs of appendages (*c* and *d*) are also chelate, but are much shorter and more robust than the preceding pair. The extremities of the fifth and last pair of legs (*e*) are extremely long and slender and are destitute of *chelæ* or *setæ*.

The antennæ are but imperfectly preserved, but portions of their many-jointed filaments may be seen at *h*; there is also a scale-like body seen at *g*, which was no doubt attached to the base of the outer antenna. This lamellar appendage is not shown in any Solenhofen example of the genus *Æger*. A dark oval spot (*i*), just beneath the projection formed by the rostrum, indicates the position of the eye (see also woodcut, fig. 1).

The carapace has been slightly displaced by pressure, in an upward direction, as is usually the case in the fossil *Macrura*, both from the Lias and the Lithographic stone. That portion of the shield which would have covered the *branchiæ*, or gills, being absent, the internal vertical walls (formed by the re-duplication and infoldings of the shelly portion of the thoracic segments) to which the muscles of the limbs are attached, are exposed to view.

The branchial and nuchal furrows can be traced upon the surface of the carapace, and also an oblong ridge, or tubercle (similar to that in *Æger tipularis*, see woodcut fig. 1), near the eye, in the hepatic region. The surface of both the carapace and abdominal segments is smooth, and destitute of ornamentation. The 1st abdominal segment is imperfect, but the epimeral borders of the 2nd and 3rd segments are rounded, whilst the 4th, 5th, and 6th are broadly falcate, with their points directed backwards. The exterior caudal plate is long and slender, with a groove down its centre, and appears to be divided near the extremity by a transverse line of articulation or suture, marked by a small spine on the border as in the *Astacidæ*. The inner caudal plate is smooth, and is not divided at its extremity. The central plate is narrow, and ornamented with two deep grooves; the extremity is pointed. Parts of four or five pairs of the false abdominal swimming-feet (Plate I., *f*) are also preserved upon the surface of the slab.

The specimen figured in our plate is the only example I am acquainted with from the English Liassic formation. In compliment, therefore, to the discoverer, Mr. J. W. Marder, of Lyme Regis (a well-known local geologist and earnest collector of Lias fossils), I have named it *Æger Marderi*.

The present well-marked genus offers another connecting link between the Crustacean fauna of our Lias, and that of the Upper White Jura of Germany.

In my Report to the Geological Section of the British Association this year, I have recorded six genera (namely, five Decapods—*Eryon*, *Palinurina*, *Æger*, *Glyphæa*, and *Pseudoglyphæa*; and one Stomapod of the genus *Squilla*, or *Sculda*), as occurring both in England and Bavaria, and represented in this country by no less



than sixteen species, several of which are as yet undescribed. Dr. Oppel's work (already referred to) furnishes us with figures and descriptions of the Lithographic limestone species; and the specimens may be studied to great advantage in the British Museum, which is now the fortunate possessor of probably the finest collection of Solenhofen fossils ever yet brought together. We allude, of course, to the Häberlein collection, which contains, among other rarities, the wonderful long-tailed bird, the *Archæopteryx*. When the entire English series are figured and published by the Palæontographical Society, it will afford one of the most instructive groups for comparison between two distant formations of dissimilar age, that has yet been called up to give evidence against that most unphilosophical dogma of the contemporaneity of particular strata, because they happen to occur in a similar geological horizon.

#### EXPLANATION OF PLATE I.

*Æger Marderi* (H. Woodw.) natural size, Lower Lias, Lyme Regis. Drawn from a specimen in the Geological collection of the British Museum.

- a.* First pair of monodactylous thoracic limbs, with the *setæ* (seen more clearly in the woodcut, fig. 2).
- b.* Second pair of thoracic appendages, which are chelate.
- c.* Third pair of thoracic appendages, also chelate.
- d.* Fourth ditto ditto.
- e.* The fifth pair of limbs, long, slender, and monodactylous.
- f.* The false abdominal swimming feet.
- g.* The broad scale attached to the base of the outer antennæ.
- h.* Remains of the many-jointed filaments of the antennæ.
- i.* The eye (its position and form are shown clearly in the woodcut of *Æger tipularis*, fig. 1).

#### IV.—NOTES ON THE CORRELATION OF THE CRETACEOUS ROCKS OF THE SOUTH-EAST AND WEST OF ENGLAND.

By C. J. A. MEYER, Esq.

(PLATE II.)

IT is attempted in the accompanying diagram (Plate II.) to exhibit, as clearly as is possible in a single section, the local chronological arrangement and position of the more remarkable Cretaceous deposits between Folkestone and Guildford, and also their probable correlation with the same series in the Isle of Wight and the vicinity of Lyme Regis. The diagram therefore represents an ideal section of the Cretaceous series from Folkestone in Kent to Lyme Regis in Dorsetshire, exhibiting at a glance the relative positions of the strata in the order of their deposition, but without allowing for variation in thickness or possible want of conformity in stratification.

The section is divided into several distinct horizons, in accordance with the recognized sub-divisions of the Cretaceous series as named in the margin.

Without either questioning or asserting the correctness of these