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GEOI.

N.H.

OF THE

EOLOGICAL SOCIETY OF LONDON.

EDITED BY

THE ASSISTANT-SECRETARY OF THE GEOLOGICAL SOCIETY.

Quod si cui mortalium cordi et curæ sit non tantum inventis hærere, atque iis uti, sed ad ulteriora netrare; atque non disputando adversarium, sed opere naturam vincere; denique non belle et probabiliter nari, sed certo et ostensive scire; tales, tanquam veri scientiarum filii, nobis (si videbitur) se adjungant Novum Organum, Præfatio.

VOLUME THE TWENTY-SECOND

1866.

PART THE FIRST. PROCEEDINGS OF THE GEOLOGICAL SOCIETY.

LONDON:

LONGMAN, GREEN, READER, AND DYER. ARIS:-FRIED. KLINCKSIECK, 11 RUE DE LILLE; J. ROTHSCHILD, 14 RUE DE BUCI. LEIPZIG, T. O. WEIGEL.

SOLD ALSO AT THE APARTMENTS OF THE SOCIETY.

MDCCCLXVI.

PROCEEDINGS OF THE GEOLOGICAL SOCIETY. [May 23,

In the swollen form of the branchial regions, and the wellmarked nuchal furrow, it resembles the genus *Inachus*, with which it also agrees in the form and proportion of its limbs; but the bifid and diverging rostral tubercles more nearly agree with the *Maiadæ*, thus offering a connecting link for these divisions of Milne-Edwards's *Triangulares*. The Triangular Crabs are certainly one of the earliest families of Brachyura; and notwithstanding their dull habits, they make up by their exceeding fecundity* for want of strength and cunning, and have thus been enabled to maintain their ground even to the present day.

PALÆINACHUS LONGIPES, H. W. Pl. XXIV. fig. 1.

Carapace suborbicular, broadest behind; branchial regions large and rounded, their surfaces covered with extremely minute rounded tubercles; the gastric region well defined by a somewhat deep furrow; the frontal and hepatic regions more than half the length of the entire carapace, tumid and ornamented with two subcentral tubercles and a semicircle of five other tubercles; margin irregularly swollen and depressed, and contracting towards the rostrum, which is represented by two prominent widely diverging and rounded horns, at the exterior bases of which, in the recent *Leptopodidæ*, the eyes are placed; these, however, cannot be detected in the fossil.

The abdomen is imperfect, but indicates a female ; the lateral margins of the most perfect segment are somewhat angular, deeply grooved across, and also between the central portion and the epimera.

The arm, wrist, and hand have respectively five, three, and two tubercles on their upper angle; the hand is didactyle, and resembles the recent *Stenorhynchus* in form.

The walking legs are of about three times the length of the carapace, very slender, and have a row of minute tubercles upon their upper surface.

Breadth of carapace across the branchial region 8 lines, length from attachment of abdomen to base of rostral spines 9 lines; rostral spines $2\frac{1}{2}$ lines in length; arm about 5 lines; wrist $2\frac{1}{2}$ lines; hand $5\frac{1}{2}$ lines; longest limb 28 lines.

EXPLANATION OF PLATE XXIV. fig. 1.

Fig. 1. Palæinachus longipes, H. Woodw. Forest Marble, Malmesbury, Wilts. Natural size.

3. Notes on the Species of the Genus Erron, Desm., from the LIAS and OOLITE of ENGLAND and BAVARIA. By HENRY WOOD-WARD, Esq., F.G.S., F.Z.S. (of the British Museum).

[PLATES XXIV. figs. 2-4, & XXV. figs. 1-3.]

THE genus *Eryon* was established by Desmarest (in Brongniart and Desmarest's 'Natural History of Fossil Crustacea :' Paris, 1822)

* The female Maia squinado bears at one time upwards of seventy-six

thousand eggs (Couch).

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for certain forms of *Astacidæ*, with extremely broad and flat carapaces, found in the Lithographic stone of Solenhofen, one of the earliest known geological localities on the continent, and perhaps the most prolific in its yield of organic remains.

Only one species was then determined—the Eryon Cuvieri of Desmarest (Macrourites arctiformis of Schlotheim (1820), Locusta marina of Bajer (1757), and first figured by Knorr and Walch in 1755). Since that time Herr Germar, Count Münster, H. von Meyer, Professors M'Coy and Quenstedt have each contributed new species. Lastly, the late Dr. Albert Oppel, of the Royal Bavarian Museum, Munich, a Foreign Correspondent of this Society (whose early death we must all lament*), has collected, revised, and added to our knowledge of this genus, so that in 1862 (the date of his book) the list of recorded species amounted to fourteen †.

Professor M'Coy was the first to record an English species of this genus, the *Eryon Barrovensis*, from the Lias of Barrow-on-Soar, Leicestershire. [See the 'Annals and Magazine of Natural History,' 1849, p. 172.] But as his description varies in some points and is unaccompanied by a figure, I have ventured to delineate it by the help of the fine examples in the cabinet of the Rev. P. B. Brodie, F.G.S., and those in the British Museum. I also subjoin a revised description of it, and notices of other British species of this genus from the Lias and Oolite, collected and lent by Charles Moore, Esq., F.G.S., of Bath, Captain Hussey, of Lyme Regis, and from specimens in the British Museum obtained by E. C. H. Day, Esq., F.G.S., formerly of Charmouth.

ERYON, Desmar. 1822.

Coleïa, Broderip, 1835, Trans. Geol. Soc. 2nd ser. vol. v. t. 12. f. 1 & 2.

1. ERYON ANTIQUUS, Brodp., sp.

Although unwilling to abolish a genus named in honour of so great a geologist as the Earl of Enniskillen, I am compelled to endorse the decision of my late friend Dr. Albert Oppel, and make this the first and largest English species of the genus *Eryon* (*Eryon antiquus*, Brodp. sp.)[‡].

From the Lias, Lyme Regis.

2. ERYON BARROVENSIS, M'Coy, 1849. Pl. XXV. fig. 1.

The carapace of this species (like that of its congeners) is extremely flat, about one-eighth broader than long, the posterior margin is truncated, the lateral margins are fringed with minute spines; two indentations intersect the border on either side (the first being somewhat behind, and the second upon the line of the cervical furrow), and enclose between them a short rotundato-quadrate lobe.

* Dr. Oppel died on 22nd December, 1865, at the early age of thirty-four years.

† Vide Paläontologische Mittheilungen aus dem Museum des Kön. Bayer.

Staates, von Dr. Albert Oppel : Stuttgardt, 1864. ‡ See Oppel's Pal. Mittheil. p. 11.

The sides of the carapace curve rapidly inwards in front, leaving the anterior margin only half the width of the posterior portion.

The carapace is broadly notched in front with two lateral orbital fossæ formed by the lateral angles of the carapace.

A tuberculated ridge passes up the centre of the carapace, from the posterior margin to the cervical furrow, by which it is intersected; it reappears for a short space in front.

Two lateral equidistant tuberculated ridges mark out the branchial regions, and are also continued smoothly upon the frontal portion of the carapace.

Each antenna of the inner pair has two many-jointed setæ, the outer one being slightly the longer. Each of the outer antennæ has a large oval scale attached to its broad basal joint; the setæ are single, and scarcely thicker than those of the inner pair.

The eyes, but rarely preserved, are placed near the base of the scale of the outer antennæ. In a specimen from Lyme Regis (from Mr. Day's collection, and now in the British Museum) the external pair of footjaws (or sixth pair of maxillary appendages), with their broad oblong basal joints and their more slender four-jointed palpi, are well preserved.

The first pair of legs are robust and short, as compared with *Eryon antiquus*, the hand and carpus nearly equalling the length of the middle of the carapace; fingers slender, pointed, of equal length, incurved at the tip, the moveable one most incurved. The succeeding pairs of feet are much smaller, and are each terminated with pincers, except the fifth pair, which are monodactylous at their extremities. The abdomen is slightly longer than the carapace, and one-third less in width; the first segment is narrow, and has two tubercles on its lateral margins; the second, third, and fourth have each two lateral and a median tubercle; the sixth segment has a median and two lateral ridges; these are continued on the seventh segment or "telson," which is acutely triangular in form; the caudal plates are very broad, and roundly quadrate in form; the outer pair of plates are divided by a curved suture near their extremities as in other *Astacidee**.

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The epimera of the first five segments are rounded; that of the sixth is falcate, and to its lateral and posterior margins the caudal lamellæ are articulated.

Dimensions (from a specimen in the British Museum).—Length $4\frac{3}{4}$ inches; extreme breadth of carapace 2 inches 4 lines; length of carapace 2 inches 2 lines; breadth of frontal portion of carapace 1 inch; length of abdomen 2 inches 8 lines, breadth of same $1\frac{1}{2}$ inch; breadth of caudal plates 2 inches 4 lines; extreme length of chelæ 2 inches 10 lines (length of second pair of limbs 2 inches 4 lines, Mr. Brodie's specimen); breadth of first pair of limbs 3 lines, second pair 2 lines.

Localities.—Lias, Barrow-on-Soar.

The affinities of this species are more with Eryon antiquus, save * This suture is absent in the outer caudal lamellæ of the Solenhofen species

-a most important distinction : they differ widely also in form.

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for the extreme length of the forearms of the latter and the more oval form of its carapace.

3. ERYON CRASSICHELIS, spec. nov. Pl. XXV. fig. 2.

I have had the opportunity of examining two specimens representing this species,—one a detached and folded carapace, exhibiting the upper surface; the other an almost entire example exhibiting the under surface—a position in which at least nine-tenths of the specimens occur, not only in our own Lias, but in the Lithographic Stone of Solenhofen.

The separate carapace (obtained by Mr. E. C. H. Day, F.G.S., and now in the British Museum) is one-third broader than long, and is altogether more rounded in form than *E. Barrovensis* or *E. antiquus*.

The branchial margin has along its border a row of strong spines, which gradually decrease in size towards the frontal portion of the carapace, where they entirely disappear.

The indentations along the lateral margins of the carapace are less deep, and the lobes formed thereby have not the pointed character seen in E. Barrovensis and other species. The orbital fossæ are rounder, and have one spine on their exterior border; the rostral notch is but slightly indented.

Between the orbital fossæ and the nuchal furrow there is seen upon the margin of Mr. Day's specimen a prominent round body, which, from its form, is most probably the eye somewhat displaced; but in *E. arctiformis* they are placed *outside* the outer antennæ.

The surface of the carapace is uniformly and finely punctated, and has the three ridges seen in *Eryon Barrovensis*; but they are *not* tuberculated, save at the posterior margin, where one tubercle is placed at the base of each of the lateral ridges.

A striking distinction marks this species, in the shortness and thickness of the hands (as seen in an almost entire example from the collection of Captain Hussey of Lyme Regis). The fixed and moveable digits are less equal, broader, and more curved than in the other English species.

The four following pairs of limbs are only imperfectly preserved; nor does the underside of the abdomen yield much detail.

The seventh segment (or telson) is perhaps more pointed, and the caudal plates less round, than in E. Barrovensis.

The only species with which I am acquainted that is furnished with hands like *E. crassichelis* is the *E. Escheri**, Oppel (also from the Lower Lias); but the specimen is one-half the size and too imperfect for comparison, save in the chelæ. The specimen figured by Oppel is from Mülligen, near Baden.

Dimensions.—Carapace (detached): length 2 inches 1 line; breadth 3 inches (measured across the branchial region); breadth of frontal portion of carapace 16 lines.

Nearly entire specimen (Captain Hussey's collection):—Greatest length of animal 3 inches 6 lines; greatest breadth of carapace 1

* See Oppel, op. cit. t. 1. fig. 1, p. 10.

inch 10 lines; greatest breadth of abdomen 1 inch 1 line; length of carapace 1 inch 7 lines; length of abdomen 1 inch 10 lines; length of telson 7 lines; length of forearm and hand 15 lines; breadth of hand 4 lines.

4. ERYON WILMCOTENSIS, spec. nov. Pl. XXIV. fig. 3.

A slab from the collection of Charles Moore, Esq., F.G.S., of Bath, contains no fewer than fifteen individuals of a small species * of Eryon, which I have been extremely unwilling to treat as distinct from E. Barrovensis, on account of the circumstance that the entire group are preserved with their ventral surfaces exposed, and in none can the contour of the carapace be traced.

Among the specimens from the collection of R. F. Tomes, Esq., F.Z.S., is a small carapace without any appendages, which, however, agrees very well in size with the above-mentioned examples, and may, perhaps, be identical with them.

The former is from the railway-cutting at Pyle Hill, near Bristol, from the "insect-bed" or "Modiola-minima" bed of the geological surveyors, one of the basement beds of the Lower Lias.

The latter is from Wilmcote, near Stratford-on-Avon, from the "bottom block"-bed of the Lower Lias.

This carapace (see figure) is somewhat shorter and broader in its proportions than E. Barrovensis (measuring $14\frac{1}{2}$ lines in breadth, 12 lines in length); the branchial region is more rounded; and the dentations around the margin of the carapace are much wider in proportion to its size; whilst the relative distance across the frontal portion is twice that of *E. Barrovensis*. The surface of the carapace is evenly covered with minute granulations; and there are no large tubercles along the median line, such as occur in the former species.

Whether the Pyle-Hill specimens be identical with the Wilmcote example remains to be proven; in the meantime I have ventured to name the carapace Wilmcotensis, as I think it important to draw the attention of Liassic palaeontologists to this subject, in the hope that more complete specimens may be sought for.

5. ERYON BRODIEI, spec.nov.[†] Pl. XXIV. fig. 2.

This unique form is from the Lower Lias rock, Lyme Regis, and is at once distinguishable from the other species of this genus by its more strongly ridged carapace and the straightness of the margin along its branchial regions; the greatest width of the carapace is not in the centre of the branchial portion, but at its extreme front, from which point the breadth decreases to one-third at the posterior margin, which, however, is mutilated. The hepatic region is less dilated laterally, but wider in front than in E. Barrovensis; and the orbital fossæ and rostral indentation are less deep. In this specimen one eye is preserved in situ. A second furrow (but faintly seen in the centre of other species of Eryon) crosses the entire breadth of the

* Measuring 2 inches in their greatest length, and about 3 inch in width. **†** British Museum Collection.

carapace behind the nuchal furrow, entering the margin at the lateroposterior indentation.

A rounded protuberance occupies the centre of the carapace in front of the nuchal furrow, and a small tubercle behind it. There are two lateral furrows upon the branchial region on either side of the mesial ridge. The surface of the carapace is sparingly granulated.

Dimensions. — Length of carapace 2 inches (when perfect); greatest breadth 1 inch 10 lines; width in front 11 lines; width at nuchal furrow 1 inch 4 lines.

I have named this example after the president of the Warwickshire Naturalists' Field-club, the Rev. P. B. Brodie, M.A., F.G.S., who has obligingly placed his collection at my service.

6. ERYON MOOREI, Spec. nov. Pl. XXV. fig. 3.

Those who have visited the Bath Museum (especially during the British Association Meeting in Bath) will remember the fine suite of fossils from the Upper Lias fish-bed obtained by Mr. Charles Moore, F.G.S., of Bath, who has devoted years of labour to the investigation of this and other Jurassic beds.

Among a number of specimens (including six or seven different species) is the present very perfect little *Eryon*, which I have named after its discoverer.

The original is 14 lines in length, and 6 lines in its greatest width.

The carapace is smooth and nearly oval, but truncated at its extremities, being 4 lines wide at its posterior border, and $2\frac{1}{2}$ lines at its anterior.

A double furrow, uniting in the centre of the carapace, crosses the entire breadth, diverging at the lateral border, and forming, by two slight indentations, a square central lobe on either side, 1 line in breadth.

A small projecting tooth marks the shallow orbital depression on either side, while two prominent rostral spines enclose the antennæ.

The forearm (which is the only limb preserved) is, in its entire length, equal to the length of the carapace, of which the slender didactyle extremities form one fourth part.

The median ridge of the carapace only extends as far as the nuchal furrow.

The frontal central portion is tumid, and is slightly granular anteriorly.

The abdominal segments are 4 lines in width, and are strongly grooved transversely, and have their lateral margins granulated.

The telson is acutely angular; the side lobes are more narrow and pointed than in the other English species, more closely resembling in this respect E. arctiformis from Solenhofen.

Eryon Moorei is represented in the Solenhofen Stone by E. Schuberti of Meyer, from which it differs, however, in the lateral emargi-

nations and transverse furrows on the carapace, E. Schuberti being

apparently destitute of a nuchal furrow; it differs also in the form of the anterior border of its carapace.

Upper White Lias. Ilminster. Museum of Charles Moore, Esq., F.G.S.

7. ERYON OPPELI, spec. nov. Pl. XXIV. fig. 4.

I beg leave to call attention to a curious specimen of *Eryon* (part of the Häberlein collection, now lodged in the British Museum) from the Lithographic Stone of Solenhofen.

It is preserved upon the plane surface of a slab, and shows the five pairs of limbs, the large and broad maxillipedes with their palpi attached, one of the inner antennæ with its two setæ, and, lastly, the fourth, fifth, sixth, and seventh abdominal segments with their caudal plates attached.

Out of the large number of specimens of *Eryon* which I have been able to examine from Solenhofen, and among the numerous examples figured, I cannot find a single instance in which, as in this individual, the first pair of chelæ are so small as compared with the four succeeding pairs of legs, or in which the caudal plates, including the central plate (the telson) are so remarkably round and broad.

In illustration of the complete manner in which the Solenhofen

Crustacea have been treated, I believe this to be the only indeterminable example out of a collection containing upwards of 400 specimens of this class.

I propose to name it *Eryon Oppeli*, after the author of the 'Paläontologischen Mittheilungen,' whose works will long remain his best monument.

Length of forearm 1 inch 4 lines, breadth 2 lines; length of chelæ 2 lines, second pair 18 lines long, breadth $1\frac{1}{2}$ line; length of third pair 14 lines, breadth $1\frac{1}{2}$ line; length of fourth pair 13 lines, breadth $1\frac{1}{2}$ line; all these are chelate, but the fifth pair are monodactylous; length of fifth pair $7\frac{1}{2}$ lines, breadth 1 line.

Maxillæ $5\frac{1}{2}$ lines in length by 3 lines in breadth, semiorbicular in form exteriorly, interior margins straight and finely serrated; palpus 3 lines in length; antennæ $3\frac{1}{2}$ lines in length; abdomen $8\frac{1}{2}$ lines in breadth; telson 7 lines long by $6\frac{1}{2}$ broad—with the overlapping caudal plates, making 11 lines in breadth.

ERYON, sp.?

I wish to record the fact that Mr. Moore has also obtained from this same Upper Lias rock a fine *Eryon*, which measured at least 6 inches in length, its abdomen 2 inches in breadth, and the carapace probably $2\frac{1}{2}$ inches; much of the latter, however, has been destroyed; and therefore I do not feel warranted in giving it a specific name, as it may perhaps prove to be *Eryon antiquus* when we know more about it.

ERYON, sp?

Lower Chalk, Steyning. (Vide Morris's Catalogue, p. 108.)

This is probably a portion of a Squilla, several fragments of which

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have been found. Two are in the British Museum (from Mrs. Smith's collection), from the hard chalk of Dover; another is in the collection of James Carter, Esq., of Cambridge, and is figured in Mr. Lowry's 'Chart of Fossil Crustacea.' I know of no Cretaceous species of *Eryon*.

	Lias.			Dogger.			Malm		ai l
	Lower.	Middle.	Upper.	Lower.	Middle.	Upper.	Kelloway.	Oxford Clay.	Lithogr. Stone
ERYON, Desmar.									
1. propinquus, Schlot									*
2. spinimanus, Germ									*
3. orbiculatus, Münst									*
4. elongatus, Münst.				• •	• •			• •	*
5. arctiformis, Schlot		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		• •	• •	••	• •		*
6. bilobatus, Münst	1	1.000				• •	••	• •	*
7. longipes, Fraas	••	••	••	••	••	•••	••	••	*
8. Schuberti, Meijer	••	••	•••	•••	•••	•••		• •	*
10. Perroni, <i>Etall</i>		••		••				•••	*
11. Hartmanni, Meyer								*	
12. Edwardsii, Morière			*		1	n S			-
13. Escheri, Oppel					2.			1	
14. antiquus, Brod					1.		6		
15. Barrovensis, M. Coy				2					
16. Moorei, H. Woodw			*						
17. Wilmcotensis, H. Woodw	*				1				
18. Brodiei, H. Woodw	*		2				1	1	
19. crassichelis, H. Woodw			3			2		1	
20. Oppeli, H. Woodw					• •				*
	0		0		-		-	-	10
	0	5-10-	3	••	• •			I	10

NOTE.—The species, in the above Table, numbered 1 to 9 are from the Solenhofen Limestone, and described and figured by Dr. Oppel (op. cit.), also :—

- E. Escheri from the Lower Lias, Baden.
- E. (Coleia) antiquus, Lower Lias, Lyme: by Mr. Broderip, Trans. Geol. Soc. 2nd series, vol. v. t. 12. f. 1 & 2.
- E. Barrovensis, Lower Lias, Barrow-on-Soar: by Prof. M'Coy, Ann. Nat. Hist. 1849, p. 172.
- E. Hartmanni, from the Upper Lias, Würtemberg: by H. von Meyer, Nova Act. Acad. C. xviii. Bd. p. 263.
- E. Perroni, from the Oxfordian, Calmoutiers, Haute-Saône, France: by M. Etallon, Crust. Foss. de la H.-Saône, Bullet. Soc. Géol. de France, t. xvi. p. 169, tab. 4. f. 1–3.
- E. Edwardsii, from the Upper Lias, Calvados: by M. Morière, 1864, Bull. de la Soc. Linn. de Normandie, t. viii. p. 89, pl. vi.

For directing my attention to this last species, I am much indebted to Mr. Ralph Tate, F.G.S., the obliging Subcurator of the Geological Society's Museum.

The remaining five species enumerated are figured and described in this paper.

Although the genus Eryon occurs fossil at Solenhofen with a

Limulus so like our own recent species that, I think, no one will

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doubt their consanguinity, yet the former has died out, and the latter remains to this day.

The Scyllaridæ, which take their place at the present day, have only a mimetic resemblance to them, the simulation being assisted in a great degree by the broad scale-like form of the outer pair of antennæ, which are flattened out and lie in a plane with the carapace. They, however, offer some points for comparison, and occur most commonly in the China Seas and on the coast of Japan, associated with recent *Limuli* and forms of *Palinurus*, &c., which are found together in a fossil condition in Bavaria.

Where a series of similar forms occur together, fossil and recent, it is fair to infer a similarity of conditions favourable to such a group.

The wide tracks of fine argillaceous mud which characterize the enormous rivers of China, the coast, and its adjacent islands, agree well with the lithological texture of the Solenhofen beds in which the fossil crustacea lie imbedded; and the terrestrial conditions evidenced by the remains of Sauria, the Archaeopteryx, and Pterodactyles, with countless Libellulæ, spiders, and Cycadeæ of large size, point to a continent close at hand, the rivers of which brought down the periodic mud-avalanches which entombed the cuttlefishes and crustacea in such quantities both at Pappenheim and Solenhofen. By referring to the preceding Table, it will be seen that only three continental species of Eryon (E. Escheri, Edwardsi, and Hartmanni) occur in the Lias, the remainder being from the Lithographic Stone (Upper Oolite). We ought then, I think, either to find many more species in our Onlite, or to regard the lithographic species as the representatives of our Liassic forms in Bavaria.

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A comparison of further genera and species from the Lias will show that we have representatives of nearly every form from Solenhofen in our Lias beds.

EXPLANATION OF THE PLATES

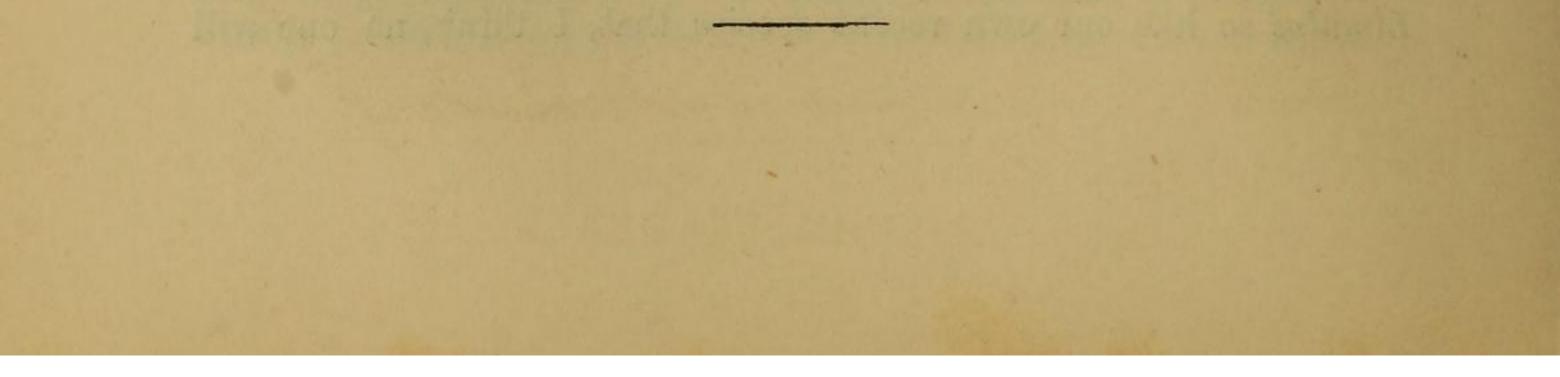
(Illustrative of the genus Eryon).

PLATE XXIV. figs. 2-4.

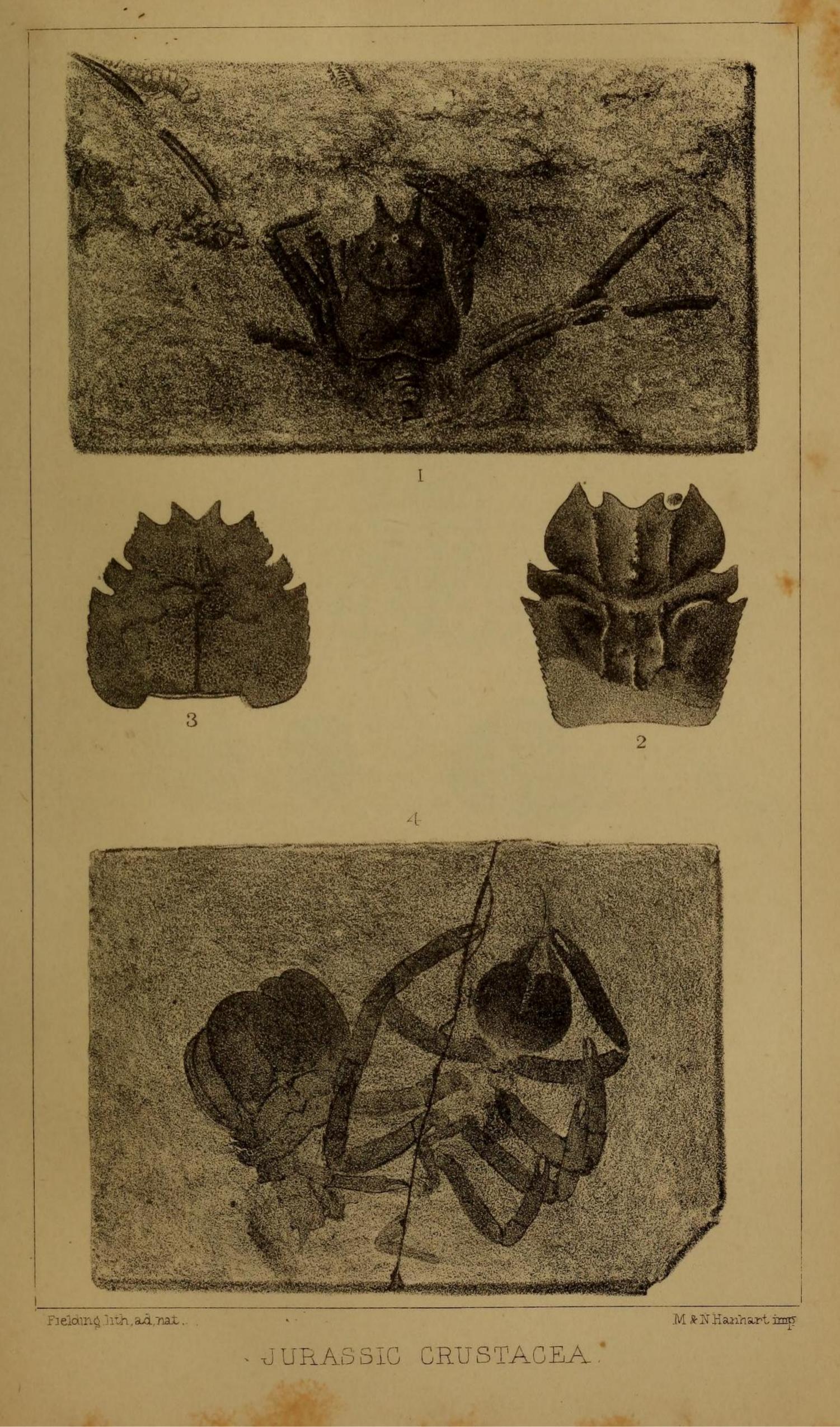
- Fig. 2. Carapace of *Eryon Brodiei*, H. Woodw. Lower Lias, Lyme Regis. Twothirds the natural size. Collection of the British Museum.
 - 3. Eryon Wilmcotensis, H. Woodw. Lower Lias, Wilmcote. Natural size. Collection of R. F. Tomes, Esq., F.Z.S.
 - 4. Eryon Oppeli, H. Woodw. Lithographic stone, Solenhofen. Natural size; from the original in the British Museum.

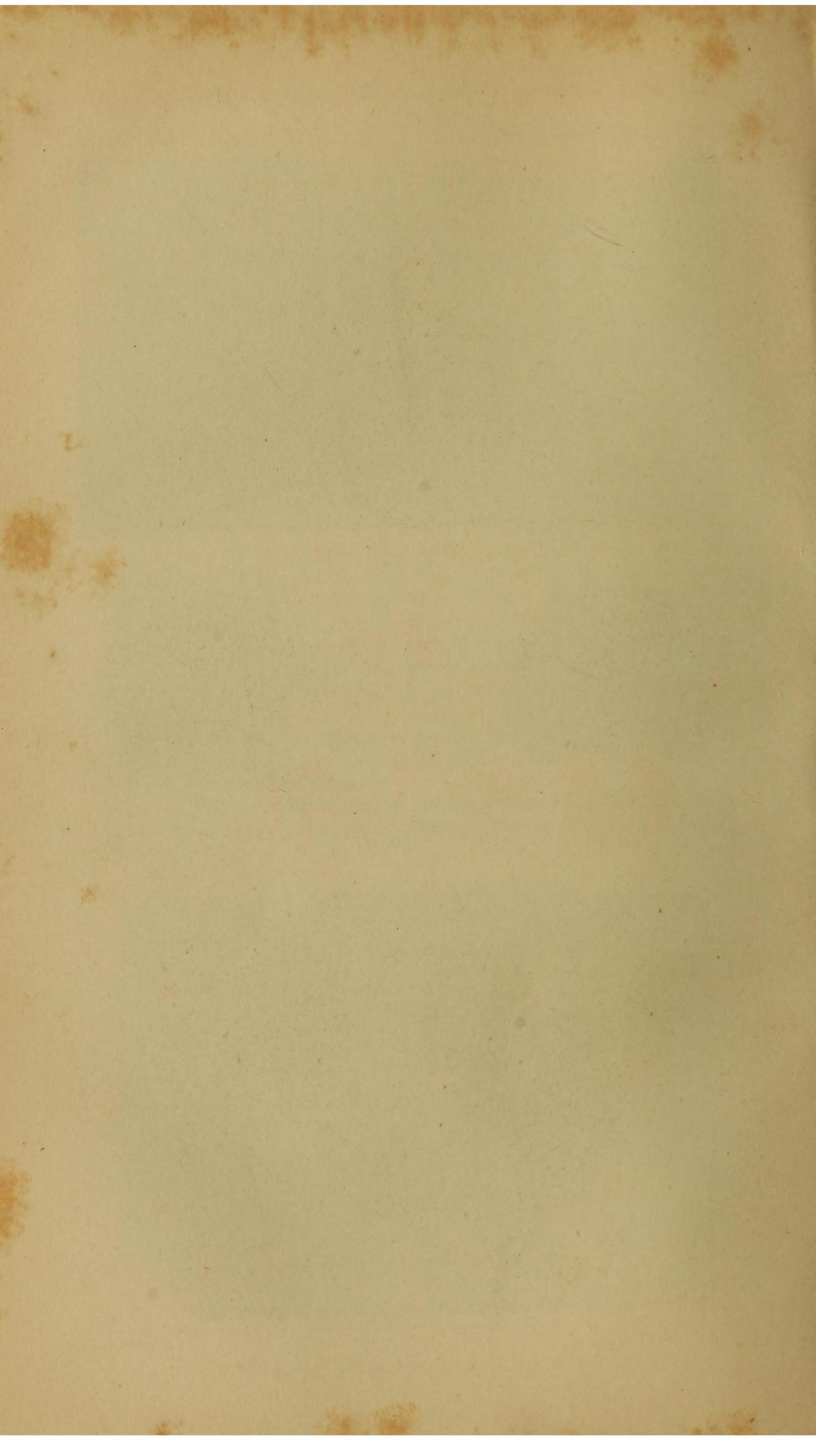
PLATE XXV. figs. 1-3.

- Fig. 1. Eryon Barrovensis, M'Coy. Lower Lias, Barrow on Soar, Leicestershire. One-half the natural size; restored from specimens in the collection of the Rev. P. B. Brodie, M.A., F.G.S., and in the British Museum.
 - 2. Eryon crassichelis. H. Woodw. Lower Lias, Lyme Regis. One-third the natural size. Collection of Captain Hussey, Lyme.
 - 3. Eryon Moorei, H. Woodw. Upper White Lias, Ilminster. Twice the natural size. Collection of Charles Moore, Esq., F.G.S., Bath.



Quart, Journ, Geol, Soc. Vol. XXII. Pl. XXIV.





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