

# PROCEEDINGS

OF THE

## COTTESWOLD NATURALISTS'

### FIELD CLUB

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*On a new Astacamorphous Crustacean, from the Middle Coral Reef of Leckhampton Hill. By DR. THOS. WRIGHT, F.R.S., F.G.S., &c.*

The *Astacina* form a small interesting group of the Decapodous Crustacea, which are well represented by the common Cray-fish (*Astacus fluviatilis*) so abundant in some of the rivulets of the Cotteswold Hills.

The genus *Astacus* has the external skeleton partly calcareous and partly membranous; the cephalothorax large, and compressed on the sides; the post abdomen flattened; the plastron small and linear; the rostrum a prominent spear-pointed projection; the external pair of antennæ long, filiform, and annulated like a whip-lash; supported on short round stems, making a complete structure two-thirds the length of the entire animal; at the external side of the antennæ is a sabre-like scale attached to the stem; the internal antennules are very short, the two on each shaft are small filiform annulated processes which lie above and external to the long antennæ. The two eyes project beyond the rostrum, each is seated on a moveable stalk, wider at the base, which readily turns the eye in all directions. The first pair of feet are weapons of offence and defence; they are strong instruments, and terminate in a pair of didactyle chelæ, forming forceps, which they use dextrously and with a good deal of disposable energy. The 2nd and 3rd pairs of ambulatory feet are much more slender, and they likewise terminate in a pair of small weak forceps. The 4th and 5th ambulatory feet are about the same thickness, but much shorter, and terminate in short pointed claws. The abdomen consists of six rings or somites; the upper half (*tergum*) of each somite is arched and shield-like, with two lateral wing-like projections (*pleura*); the lower half (*sternum*) is flat and more membranous, and in the female develops a pair of swimmerets attached to the five anterior rings. Behind the



sixth abdominal ring is the telson, with a transverse fold in the middle; and beneath the telson on each side are two broad plates, the highly modified swimmerets of the sixth ring. This structure—the telson in the middle with the two plates on each side—constitute the flapper of the Cray-fish, by the aid of which it executes its retrograde swimming movements.

The fossil Crustacea, which closely resemble our Cray-fish, were first separated from the fresh water genus *Astacus* in 1835, by H. VON MEYER, into the genus *Glyphea*, erected by him for the marine fossil forms of *Astacina*. In 1840 the same author proposed the genus *Eryma*, for a “neue gattung foss. Krebse;” and the genus *Clytia* for another new form; and the genus *Bolina* Münster for a form allied to *Glyphea*. *Glyphea* has great affinities with *Astacus*, from which it is distinguished by having the cephalothorax divided into three regions by well-marked transverse lines. The first pair of feet also, instead of terminating in stout didactyle chelæ nearly equal in strength, have the upper chelæ formed like a bent claw, and the under absent or rudimentary. They are found in the Lias and other Jurassic strata.

*Eryma*, like *Glyphea*, has a large cephalothorax, divided by well-marked lines into three regions, the middle being prolonged much backwards. The anterior pair of feet are shorter, and much resemble those of *Astacus*, and like the forceps of our Cray-fish, terminate in a pair of nearly equal-sized chelæ, and by this character alone are they distinguished from *Glyphea*, a circumstance which renders it impossible to determine to which genus a cephalothorax belongs, unless it happens to be associated with the anterior feet or forceps of the animal.

The fossil which I have the pleasure of introducing to the notice of the members of the Cotteswold Club, was obtained from the Fimbria marl of Leckhampton hill, out of the mudstone derived from the middle coral reef of the Inferior Oolite, in the zone of *Harpoceras Murchisonæ*.

Astacomorphous Crustacea are very rare in our Oolitic rocks, but the well-marked cephalothorax figured above places the fact beyond dispute. I am inclined to place this fossil in the genus



*Eryma*, from the great resemblance the tergal folds on the carapace have to those in *Eryma elegans*, (OPPEL.) from the zone *Cosmoceras Parkinsoni*, of Longwy Moselle. The absence of the anterior legs which would have decided the question of the generic place of our fossil, leaves the determination in doubt which time may possibly soon clear up. It may with equal justice be referred to *Pseudoglyphea*, (OPPEL.) or *Glyphea*, (MEYER,) as to *Eryma*, inasmuch as the carapace of our fossil might be placed in either genus; so until the anterior legs with the *chelæ* are found, I propose to call it *Eryma Guisei*, WR.

Fig. 2.

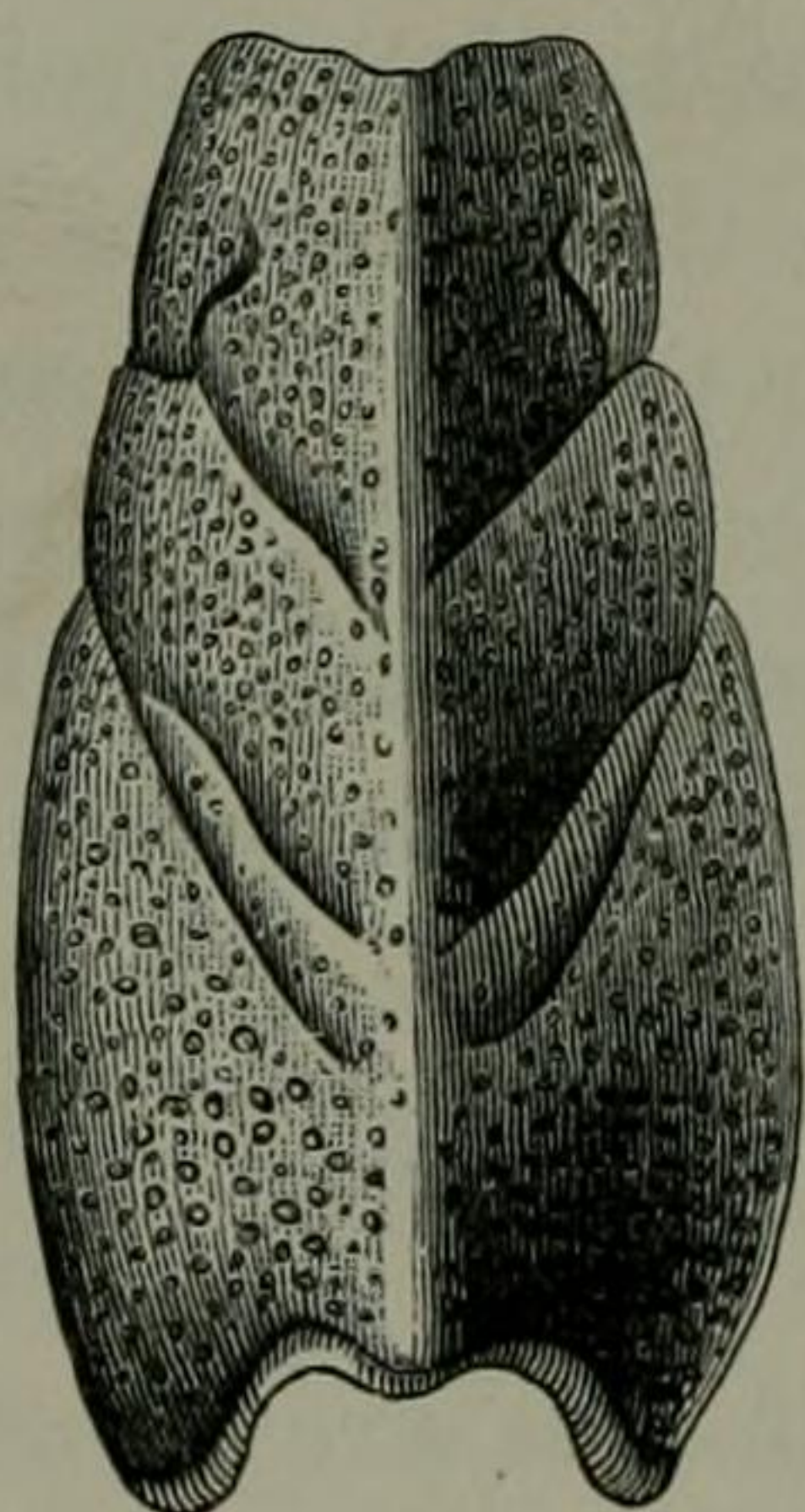
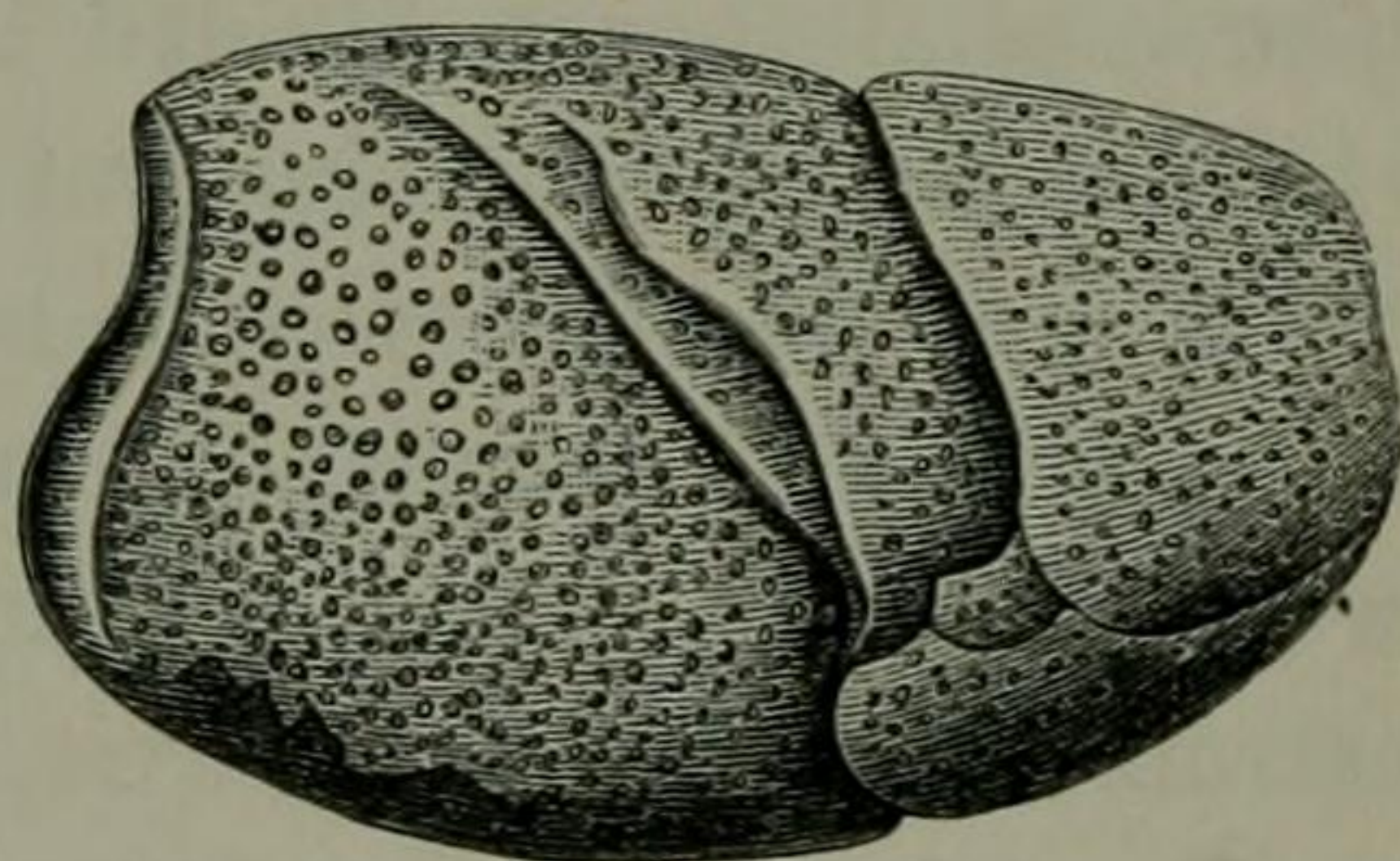


Fig. 1.



ERYMA GUISEI, Wright.

I dedicate this species to our much esteemed and excellent President, Sir WILLIAM VERNON GUISE, Bart., F.L.S., F.G.S., &c., as a recognition of the extreme interest he takes in all Natural History discoveries made in the Cotteswold country.

The cephalothorax of this Astacomorphous Crustacean is divided into three regions, by two well-marked deep lines; the first is compressed on the sides, is narrow on the tergal region, and extends outwards into the rostrum. The groove which divides this from the middle region is very deep, and the entire surface is covered with short, sharp, prominent granules, which are much better shown in a specimen I obtained since the type carapace was figured; this segment is not so deep as the others,



and is slightly inflated at the lower border. The second segment is narrower than the first, and prolonged obliquely backwards; it is separated from the first by a shorter very deep groove, and from the posterior by a longer and shallower furrow. The third region forms nearly one half of the entire cephalothorax, and is bounded posteriorly by a graceful sinuous line which passes round the hinder border, where it played under the first abdominal somite. Fig. 1 gives a lateral view of the cephalothorax of *Eryma Guisei*, WR., showing the deep transverse lines which divide the carapace into three regions. Unfortunately the outer lamina of the crustaceous covering is absent in the figured specimen, so that the prominences appear as depressions, whilst in another and better specimen lately collected, the entire surface is covered with pointed granulations, which are largest and most prominent on the tergal region and diminish in size on the lower part of the flanks. The lower portion of the middle region has a kind of supplementary inflated portion, and the upper half of its side has a second oblique line, shorter and shallower than the divisional line. The tergal region (Fig. 2) exhibits the three divisions of the cephalothorax, and the oblique course they all take backwards. This view of the cephalothorax of *Eryma Guisei* closely resembles the same region of the cephalothorax in *Eryma elegans*, (OPPEL.) (Mittheilungen, Tab. iv., Fig. 7.) a species which is found in the Inferior Oolite of Pipf, near Bopfingen, (Germany.)

The interest attaching to this fossil is great, inasmuch as it shows that Astacomorphous Crustacea were contemporary with the coral builders of our lower Oolites, and that they have come down through Jurassic, Cretaceous and Tertiary times into our present rivers, with a marvellous persistence in their typical structure, and exemplifying in another class of the Articulata that persistency of form in animal types which the Anthozoa, Echinodermata and Mollusca so abundantly afford.