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ORIGINAL ARTICLES.

I.—ON A NEW GENUS OF SHORE-CRAB, *GONIOCYPODA EDWARDSI*.
FROM THE LOWER EOCENE OF HAMPSHIRE.¹

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

(PLATE XXI. Fig. 1.)

ONE of the characteristic features of the warmer and intertropical regions of the globe, is the presence in abundance of those highest forms of Crustacea, the Shore- and Land-crabs.

Along our own coast, the common shore-crab, *Carcinus mænas*, prevails; on the coast of Spain the genus *Grapsus* is equally abundant; whilst in the Eastern seas the shores are tenanted by *Gelasimus*, *Macrophthalmus*, and *Ocypoda*.

Among the Decapodous Crustacea which have rewarded the labours of the palæontologist, and furnished materials for Monographs by Professors Bell, Reuss, A. Milne-Edwards, and others, no fossil remains of the Quadrangular Crabs have hitherto been recorded as occurring either in this country or on the Continent.

So long ago, however, as 1822, M. Desmarest² had figured and described one species of *Grapsus*, five species of *Gonoplax*,³ one species of *Gelasimus*, and one of *Gecarcinus*, which were probably all from India and China (although the history of some was unknown); for fossil crabs of these species are still sold in the Bazaars of the East as a medicine.⁴ It is highly interesting, therefore, to record the occurrence, in the fossil state, of a true shore-crab, near to *Ocypoda*, from the Red Marl of the Plastic-clay, of High Cliff, Hampshire.

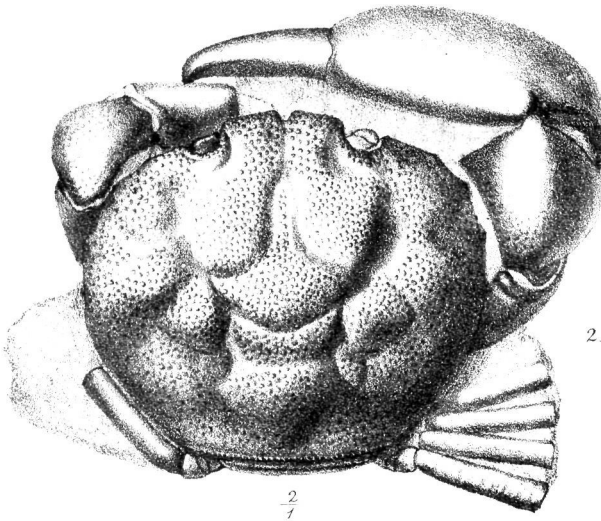
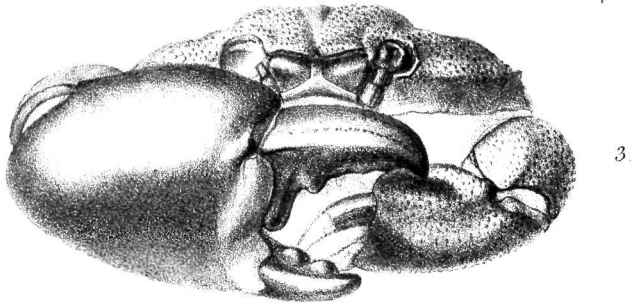
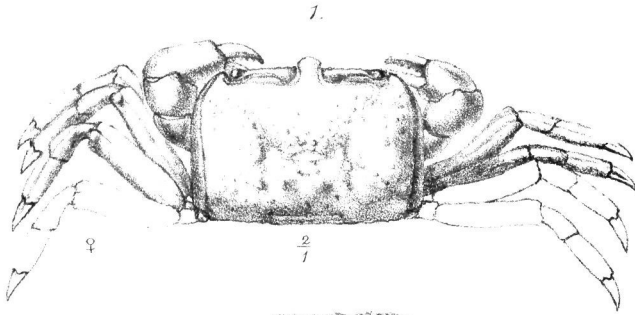
These Plastic or mottled clays and sands, which lie immediately below the London Clay, contain many subdivisions representing repeated changes in the conditions under which they were deposited,

¹ This new species was noticed by the author at the Dundee Meeting of the British Association.

² Brogniart and Desmarest, *Histoire Naturelle des Crustacés Fossiles*. 1822.

³ Prof. Dr. A. Reuss. *Zur Kenntniss fossiler Krabben in Denkschriften der K. Akad. d. Wissensch. Mathem. natur w. cl. xvii. Bd. Vienna, 1859. Taf. xx. and xxiii.*, p. 82 has figured and described four species of *Macrophthalmus* from the East Indies and Molucca.

⁴ See Notes on Chinese *Materia Medica*, by Daniel Hanbury, F.L.S. (Reprinted from the *Pharmaceutical Journal*, February, 1862, and other numbers), p. 40. "*Shih-bee*," Fossil Crabs of the Post-Tertiary period, obtained from the Island of Hainan and on the opposite shores of Kwang-si.



A. T. Hollick del.

W. West imp.

New Genera of Crustacea from the London & Plastic Clays.

sometimes—as their contained fossils prove—marine conditions prevailed, at another freshwater, at a third estuarine. But whatever these conditions were, the contained organic remains indicate a warmer climate than is enjoyed by us in the same latitude at the present day.

The Crab which forms the subject of these remarks was collected by Mr. B. Porter, and now forms a part of the geological collection in the British Museum. It is preserved in a small slab of Red Marl or Clay, having the dorsal aspect exposed to view. The counterpart or intaglio is also preserved, and affords some additional details.

Diagnosis of the genus Goniocypoda.—Carapace quadrangular, nearly one-third broader than long, tumid, borders rounded, surface granulated sparingly, regions of carapace but little distinct from each other; lateral border of carapace entire, deep, forming nearly a right angle with dorsal surface, posterior border straight, anterior angles curving inwards and terminating in the external orbital angle: rostrum small, square: front border of carapace nearly straight and occupied by the orbital fossæ; eye-stalks long: fore-arms short, feeble; thigh of walking-legs broad and flattened, and slightly serrated at distal end: feet formed for running. (The Abdomen and antennæ, if present, are concealed in the matrix).

I have carefully compared this Eocene Crustacean with *Grapsus*, *Gonoplax*, *Macrophthalmus*, *Gelasimus*, and *Ocypoda*. It differs from *Grapsus* in the absence of dentations on the latero-anterior border, in the greater lateral breadth of the carapace behind, and in the greater length of the eye-stalks. It approaches *Grapsus* only in the form of the limbs, and the smallness of the hands. *Goniocypoda* is distinguished from *Gonoplax* by the more rectangular form of the lateral and posterior borders, and by its short, somewhat thick hands and chelæ.

From *Gelasimus* and *Gonoplax* it also differs, in having the latero-anterior angles of the carapace curved in towards the external orbital angle. Compared with *Macrophthalmus* the relative proportions of the length and breadth of the carapace are much the same; but *Goniocypoda* differs from *Macrophthalmus* in the same point as it does from *Gonoplax* and *Grapsus*; namely, in the absence, in the fossil, of dentations along the latero-anterior border.

The form of the rostrum closely corresponds with *Macrophthalmus* and *Ocypoda*; and in both genera the orbital fossæ occupy the whole breadth of the front of the carapace; they are much curved in the two recent genera, but nearly straight in the fossil. The carapace in *Ocypoda* is almost equilateral, in *Goniocypoda* it is one-third broader than long.

Goniocypoda Edwardsi (Pl. XXI. Fig. 1.)—This neat little crab, is smaller than the *Macrophthalmus dilatatus* of De Haan, the carapace being eight lines in greatest breadth, and five lines only in length: the rostrum is only one line in width, and projects the same distance in front, being bent downwards as in *Ocypoda*: the eye-peduncles are two lines in length, and are but slightly curved: the external

orbital angle is marked by a strong incurving spine, which also forms the latero-anterior angle of the carapace.

As is the case with all land- and shore-dwelling crabs the carapace is much swollen, especially in the branchial regions: the cardiac region is marked by four faint tubercles, the gastric by two lateral depressions marking the line of separation between the gastric and branchial regions; with these exceptions and a few scattered granulations on the surface, the carapace is destitute of any well-marked surface-features or divisions into regions. The fore-limbs are nearly equal in size, the arm is almost entirely concealed beneath the carapace, and is very short; the fore-arm is tumid, and is not ornamented with spines along its border: the hand is short and smooth; the fixed ramus and moveable finger being furnished with three or four small teeth along their edges. Three of the true walking legs are preserved on the left and two on the right side; outlines of the absent limbs are given in the figure. As before stated, in form, these limbs closely resemble those of the *Grapsidæ*.

I have failed in my attempt to work out the underside by reason of the exceeding fragile nature of the fossil; but I have no doubt the specimen here described and figured was a female; indeed there is evidence of the first wide abdominal segment behind the posterior border of the carapace. The smallness of the hands would also confirm this view, as in most, if not in all the quadrangular crabs, the male has one or both hands large and well-developed, whilst those of the adult female remain small and feeble.

From the nature of the fossil, I am necessarily unable to offer more than a very incomplete description of *Gonicypoda*, but I think the occurrence of such a rare Crustacean novelty is a sufficient excuse for placing it on record, in the hope that more perfect remains may thus be brought to light.

I have designated it *Gonicypoda Edwardsi*, after MM. Drs. Henry and Alphonse Milne-Edwards, who have by their labours done so much to advance the study of recent and fossil Crustacea in Europe, and for whom I entertain personally so high an esteem.

II.—ON *NECROZIUS BOWERBANKII*, A NEW GENUS OF *CANCERIDÆ* FROM THE LONDON CLAY.¹

By Professor ALPHONSE MILNE-EDWARDS, D.Sc., M.D., etc., etc.

(PLATE XXI., Figs. 2 and 3).

ON the genus *Necrosius*.—This new genus is very near to *Ozius*, and is still more near to a small genus, established a few years since by M. Stimpson, named *Spherosius*. Like this last-named form, the carapace of *Necrosius* is remarkable for its globular form, its width scarcely surpassing its length. The curve of the buckler is slight in a transverse direction, but is great from back to front, the anterior

¹ Translated from the "Histoire des Crustacés Podophthalmes Fossiles," par Alphonse Milne-Edwards: (Reprinted from the *Annales des sciences Naturelle*. Tom. xviii., 4te series, pp. 297). Paris, 1865.