V.—On a new Brachyurous Crustacean from the "*Clypeus*-Grit" (Inferior Oolite) of the Cotteswold Hills.

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In November last Mr. L. Richardson, of Cheltenham, very kindly sent me (with other fossils for inspection and determination) the carapace of a small Crustacean from the "*Clypeus*-Grit" of the Cotteswolds, which had been picked up and given him by Mr. C. L. Walton. As Mr. Richardson anticipated, the species proves to be new to this country, and I readily obtained his permission to describe the same.

Forty years ago (in November, 1866) I communicated to the Geological Society of London an account of the then oldest known British crab, *Palæinachus longipes*, from the Forest Marble of Malmesbury, Wilts (see Quart. Journ. Geol. Soc., vol. xxii (1866), pp. 493–494, pl. xxiv, fig. 1), obtained by the late Wm. Buy, of Christian Malford, the well-known collector of Oxford Clay and Oolitic fossils. This form (which has the limbs preserved and still attached to the carapace) agrees closely with the living 'Spider-crabs' of the genus *Inachus*, and differs generically from the newly-discovered fossil. Two years later, in 1868, I described an Oolitic crab from the "Stonesfield Slate," of which three specimens (two of them very imperfect and one a nearly perfect carapace) are known. It was named by me *Prosopon mammillatum* (see Geol. Mag., 1868, p. 1, Pl. I, Figs. 2, 2*a*). This crab carried the Brachyurous Decapods considerably further back, chronologically, than the Forest Marble example, which in its turn has now been surpassed in age by the newly-discovered specimen from the "*Clypeus*-Grit" of the Inferior Oolite. The Stonesfield crab, *Prosopon mammillatum*, although near generically to the new crab, is twice its size, and differs in several important details from it—especially in the frontal region of the carapace—but the absence of limbs and other ventral and oral structures renders strict determination rather unsatisfactory.

Fortunately Professors Reuss[1] and Herman von Meyer[2] have described and figured three genera and twenty-nine species of small crab carapaces, some fifteen of which have been refigured by me in Salter & Woodward's Chart of Fossil Crustacea.[3] These are from the Upper White Jura of Oerlinger Thal and other localities in Germany, also one from the Lower Oolite, three from the Coral Rag, and one from the Neocomian. In my paper in 1868 (Geol. Mag., January, pp. 3–4), I endeavoured to separate von Meyer's Oolitic species of the genus *Prosopon*, and referred eleven of them with some hesitation to Bell's genus *Plagiophthalmus* (op. cit., p. 4). Of the remaining species—still retained by me in the genus *Prosopon*—those *most nearly* related to the new species from the "*Clypeus*-Grit" are *P. marginatum*, *P. grande*, *P. excisum*, and *P. lingulatum*. To these also most probably belong *P. elongatum* and *P. sublæve*.

[1] Sitzungsb. k.k. Akad. d. Wiss. in Wien, xxxi, 1858.
[2] Mon. Prosoponidæ: Palæontographica, 1859–61, Bd. vii, p. 183, t. xxiii (Cassel).
[3] Catalogue and Chart Fossil Crustacea, 1865, figs. 1–15.

Subclass **MALACOSTRACA.**

Order 1. PODOPHTHALMA.

Suborder 1. BRACHYURA.

PROSOPON RICHARDSONI, H. Woodward, sp. nov. (Fig. 1.)

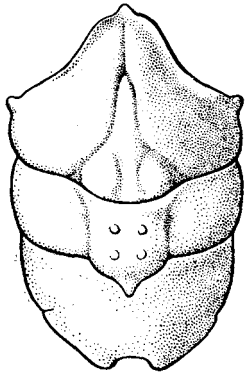

FIG. 1.—*Prosopon Richardsoni*, H. Woodw., sp. nov. Enlarged $2\frac{1}{2}$ times nat. size. *Clypeus* - Grit, Inferior Oolite: South Cotteswolds. From the collection of Mr. Linsdall Richardson, F.G.S., of Cheltenham.

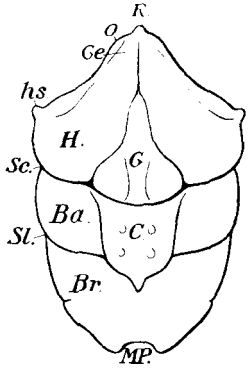

FIG. 2. — Outline key-figure to regions of carapace of *Prosopon Richardsoni*, H. W. *R.* rostrum; *O.* orbit; *hs.* hepatic spine; *Sc.* cervical furrow; *Sl.* lateral furrow; *MP.* posterior margin; *Ge.* epigastric lobe; *H.* hepatic region; *G.* gastric lobe; *C.* cardiac region; *Br.* branchial region; *Ba.* epibranchial lobe.

Diagnosis.—Carapace 21 mm. long by 15 mm. broad; frontal border broadly triangular, converging from the small hepatic spines (*hs.*) on the margin of the hepatic region (*H.*), where the width is 14 mm., to the obtusely prominent rostrum (*R.*), the frontal lateral margins being at first slightly concave, but becoming roundly convex as they join the rostrum, which is curved downwards at its point and furrowed along its centre. The orbits (*O.*) are not clearly to be made out. The gastric lobe (*G.*) lies in front of the cervical furrow (*Sc.*), and is 9 mm. broad at its base, its sides uniting to form with the base a triangle, 6 mm. long, terminating in a narrow acuminate point on the centre line of the carapace, where it merges in the rostral furrow. Immediately behind the gastric lobe is the cardiac region (*C.*), forming a shield-shaped escutcheon, 5 mm. broad in front, and terminating behind in a point 6 mm. from the cervical furrow on the central line and 5 mm. from the posterior margin (*MP.*); the lateral furrow (*Sl.*) crosses the carapace 4 mm. behind the cervical furrow (*Sc.*) and nearly parallel with it, but is interrupted by the shield-shaped cardiac escutcheon in the centre of the carapace, which is here 13 mm. broad; this furrow divides the branchial region into the epibranchial (*Ba.*) in front of (*Sl.*) and the branchial (*Br.*), which lies behind it. The carapace is rounded on its posterior-lateral border, and contracts to its posterior margin (*MP.*), which is 7 mm. in breadth and slightly

emarginate. There is no evidence of any abdominal or caudal segments having been preserved, the ventral surface being firmly imbedded in very hard matrix.

There is evidence of the presence of four minute rounded tubercles on the surface of the cardiac region (*C.*), but as the carapace is decorticated it may have had other small papillæ upon its perfect test. No appendages of any kind are preserved.

Formation.—"*Clypeus*-Grit," Inferior Oolite.

Locality.—Tor Hill, near Wotton-under-Edge, South Cotteswolds.

Collection.—Mr. Linsdall Richardson, Cheltenham.

Remarks.—Although, thanks principally to the memoir of Herman von Meyer (1859), we are acquainted with quite a number of small carapaces of Crustacea of an oblong-oval form, from strata somewhat similar in character and age to that now under consideration, it is difficult without a knowledge of their appendages or the ventral surface of the carapace to place such forms more than approximately in their natural family, in relation to existing forms. There is, too, a strong tendency amongst these earlier Secondary Crustacea to present, in the same individuals, characters observed to be peculiar to distinct families in more modern times.

Thus it becomes difficult in the species of the genus *Prosopon*, which are only known by their carapaces, to refer them to the Maioidea (=Oxyrhyncha), the Leucosiidea (=Oxystomata), or to the Anomura (= Anomala), to each of which groups they seem to show synthetic relations.

In the evolution of the short-tailed crabs (Brachyura) one feature of great interest is the very noticeable change in the form of the carapace or cephalothorax. Thus in most modern crabs the body is broader than it is long, but in the earliest forms it is longer than broad. If the elongation of the cephalothorax is further accompanied by the exposure of the abdomen, which in most of the section Brachyura is quite small and carefully concealed beneath the cephalothorax, then the division between the short-tailed crabs (Brachyura) and the long-tailed lobsters and prawns (Macroura) disappears, and they become one group (the Decapoda).

No crabs are met with after the close of the Secondary period, but the Macroura are found in the Carboniferous rocks. These show evident signs of a further modification in structure, and we find many characters of the Schizopoda (the Squillidæ and Mysidæ) incorporated into the Macrouran Decapods of the Coal period. Thus the Podophthalma (stalk-eyed Crustacea), which exist now and in Oolitic times as *three* distinct suborders, were apparently represented in earlier post-Carboniferous times by two and in Carboniferous times by only *one* order. In point of fact, it is amongst these earlier individual forms of Arthropods that we should naturally expect to find those more generalized characters which occur in several distinct types only at a much later period in geological time.

I dedicate this little crab to Mr. Linsdall Richardson, who has devoted so much time to the unravelling of the stratigraphy of the Inferior Oolite of the South Cotteswolds of the Bath–Doulting district.