

rest of its course there is no evidence of the existence of glacial drift; but on the contrary some evidence that there is no drift in the depression, for solid rock is seen close to the stream at 100 yards north of the narrow-gauge railway; and still further north the valley is cumbered with large angular blocks consisting entirely of diabase, which have fallen from the cliffs above. There is no drift, for were there any we should find stones of many different sorts, and many of them would be rounded. So Mr. Marr's drift-filled gorge 350 feet deep is a mere figment of the imagination. I must also remark that judging from the shape of the ground Llyn Cwellyn is probably a great deal more than 50 feet deep.

As to the peaty watershed near Pitts Head, it matters nothing whether it is "composed of an alluvial deposit" or not, for the solid rock comes to the day in so many places that the superficial covering is evidently merely a thin skin.

On the next page the authors say "the bed of the Colwyn runs over drift until within a short distance of Beddgelert." I am sorry to be obliged to contradict the writers, but the above statement is incorrect. Neither the Colwyn nor its bed runs over drift immediately south of Pitts Head watershed, for solid rock is seen in the bed of the river at Pont Caer-gors and at several other places for more than 550 yards down-stream, at which distance the river actually runs in a rocky gorge. The eastern side of the Colwyn valley is formed of solid rock, not only throughout the whole of this distance, but for much further south. A low bank of drift forms the western margin of the river immediately south of Pont Caer-gors. This drift obviously lies as a tablecloth on a gently sloping surface of rock which comes to the day 300 yards west of the bridge. No drift-buried gorge is possible here. The upshot is that Messrs. Marr and Adie, in their hurry to escape from a rock basin, have invented an impossible gorge to carry the water of Llyn Cwellyn across a mountain range whose lowest point is 650 feet above the sea, that is, 186 feet above the present level of the lake. This is a brilliant effort of the imagination, though hardly of the scientific sort, but it does not come near that of the old Welsh, who imagined an underground connection between Llyn Cwellyn and the Llanberis lakes to account for the existence of char in both.

IV.—NOTE ON A CRUSTACEAN *MESODROMILITES BIRLEYI*, GEN. ET SP. NOV., FROM THE GAULT OF FOLKESTONE, KENT.

By HENRY WOODWARD, LL.D., F.R.S., F.G.S., etc.

ONE of the results incidental to the meeting of the British Association for the Advancement of Science at Dover in September last was a visit paid to Folkestone by the members of Section C (Geology). Among the ladies present was Miss Caroline Birley, well known both as a traveller and for the deep interest which she has always taken in palæontological research; she is also the owner of an excellent private museum of minerals and fossils,

mostly collected by herself. Miss Birley was fortunate in obtaining from Mr. J. Griffiths, the resident geological collector, a small but well-preserved carapace of a Gault Crustacean, believed at the moment to be the usual *Necrocarcinus Bechei* (Deslongsch., sp.), a form about as abundant in that locality as the *Palaeocorystes Stokesii* (Mantell, sp.). The specimen, enlarged twice natural size, is clearly depicted in the accompanying illustration in the text.



Mesodromilites Birleyi, gen. et sp. nov.

Gault: Folkestone. *a*, dorsal aspect; *b*, profile of same specimen. Drawn twice the natural size. The original specimen is in the possession of Miss Caroline Birley.

A more careful examination of the original convinced me that I was in error in referring this Crustacean to *N. Bechei*, or indeed to any species of *Necrocarcinus*; and after a lengthened search for an analogue I was compelled to believe it to be a new form, a thing well-nigh incredible in a formation like the Gault of Folkestone, which has been 'the happy hunting-ground' for so many generations of London and provincial geologists, and a spot dear to the name of J. Griffiths, who for the past fifty years or more has been the sole collector and geological guide of Folkestone Cliffs.

The figures give both the dorsal and lateral aspect of the carapace, and show it to be one-fourth longer than broad, very tumid in the centre, having three pairs of rounded sub-central tubercles (three on either side of a median dorsal line), with a central tubercle placed on the posterior metacardiac region. Two rather curved and elongated tubercles occur on the surface of the test outside the hindmost pair of sub-central tubercles and midway between them and the lateral margins of the carapace, just over the posterior branchial region. Five somewhat prominent tubercles

mark each lateral margin, the hindmost and most prominent pair being situated on a transverse V-shaped ridge and furrow, which cuts off the posterior fifth of the carapace, and meeting in the centre, where it is marked by the single median posterior tubercle already referred to.¹ The three succeeding pairs of marginal tubercles are about equal in size, and the front pair forms the outer angle of the orbital fossa. The rostrum is subdivided or notched in the centre, having a λ -shaped groove running down it, the base of which is directed forwards, and the diverging points reaching to the first pair of sub-central tubercles which mark the gastric region. The orbits are large and well defined. No nuchal furrow is visible. The carapace is not in the least crushed or distorted, and the surface is well preserved.

Differences and Affinities.—A careful comparison of our Brachyuran with the various species from the Gault and Greensand affords but little assistance in the specific determination of the specimen. In *Necrocarcinus*, when the rostrum is preserved it is not notched or bifurcated, but pointed in the centre; the median line of the carapace is not simple, but divided into distinct gastric and cardiac regions, and an anterior nuchal furrow can be traced; the carapace is broader than long; the marginal tubercles are not prominent, and the posterior or metabranchial furrow is absent.

Turning to *Dromilites* from the London Clay, one is at once struck by many points of resemblance. The carapace (as in our Gault fossil) is longer than broad, is very tumid, the rostrum is bifurcated, there is a median furrow, the tubercles are arranged in pairs; four pairs of marginal tubercles are present, the posterior metabranchial furrow is also seen; the orbits are large and conspicuous.

Unfortunately the other ventral aspect of the carapace is wanting in the Gault fossil.

Prof. Bell ("Fossil Malacostracous Crustacea of Great Britain," Mon. Pal. Soc. : Part ii, 'Crustacea of the Gault and Greensand,' 1862, p. v) remarks:—"The Crustacea of the strata below the Chalk . . . present several remarkable peculiarities in their forms and affinities. One of the most interesting of these is the existence of analogous or, so to speak, representative species in these beds and in the London Clay" (see part i of same Mon., 'Crustacea of the London Clay,' op. cit., 1857, pls. v and vi). "In some cases this representation is shown in their specific distinction, with the most perfect generic identity, as in the case of *Hoploparia*, of which we have already seen two very distinct species in the later formation, and we have now described no fewer than six species in the earlier deposits. In no instance do any of these locally separated individuals belong respectively to the same species; in every one the specific distinctness is unambiguous, but the generic relation to each other is no less so. Another case of nearly similar import occurs in the anomalous family Dromiadae; the *Homolopsis* of the Greensand

¹ This line may be defined as the 'metabranchial furrow,' and is seen in *Plagiopthalmus oviformis* from the Greensand of Wilts, and in *Dromilites* from the London Clay.

being represented in the London Clay by two species of *Dromilites*, a very nearly allied form.”

The addition of another new species, apparently related to this family in the Gault, is extremely interesting as exemplifying the close family similarity, but very clear specific and (I venture to think) in this case even generic distinctness from its congeners. It is hoped that before long other examples may be obtained, offering fuller details of its structure; meantime I publish this interesting little Crustacean, giving it the name of *Mesodromilites* to define its older geological position and also its probable relationship to *Dromilites* of the London Clay, with the specific name of *Birleyi*, in honour of Miss Caroline Birley, to whom I am indebted for the opportunity of describing this new Gault crab.

NOTICES OF MEMOIRS.

I.—THE RED COLOUR OF THE SALT LAKES IN THE WADI NATROUN. By J. DEWITZ.¹

IN an article published in the *Zoolog. Anzeiger*² I have given a report on the biology of the Natron Valley, the Wadi Natroun, in the Libyan desert, about 170 kilometers from Cairo. It seems that my remarks concerning the red colour of the water of the salt lakes of the valley have interested readers of the article. I therefore wish to add here some researches I was able to make on the same subject owing to the kindness of Mr. Prochaska, head of the chemical survey of the soda company.

When I came to the Natron Valley the red water of the lakes excited at once my curiosity, and I tried to ascertain the reason for the redness of the liquid. Most people to whom I spoke about the matter told me that *Artemia* lives in the lakes, and that the red colour of this Crustacean is communicated to the water. During my stay in the Wadi the *Artemia salina* was not to be seen, the animal appearing only at certain periods of the year. It is impossible to believe that the coloured mass of these small creatures is sufficient to stain such immense quantities of water as the Wadi Natroun lakes. These lakes, about fourteen in number, lie rather close to each other and extend over a space of about 40 kilometers.

No number of *Artemia salina* would be great enough to give the water the deep purple colour which it has. If there were frogs in the lakes and those frogs were red, and someone should say that the red colour of the water came from the red colour of the Amphibia, this explanation, I think, would not be much inferior to the *Artemia* theory. Besides *Artemia*, there are other red animals in the lakes. I obtained, for example, a red culicid larva. This shows that animals living in the water may take the colour from it, and not the water from the red animals. Finally, *Artemia salina* disappears in

¹ Reprinted from *Science*, n.s., vol. x (1899), No. 240, pp. 146, 147.

² “Das Wadi Natroun in der libyschen Wüste und seine niedern Thiere,” Bd. xxii (1899), pp. 53–61.