olivines in the section it contains magnetite along its cleavage cracks and curved fissures. Magnetite is freely disseminated throughout the rock. With a high power crowds of colourless acicular microlites, perhaps apatite, come into view. A little calcite, showing aggregate polarization, is present as a secondary product. No distinct interstitial matter can be detected, and indeed the rock appears to be a holocrystalline dolerite. A porphyritic structure is imparted to the rock by large crystals of felspar, the rectangular sections of which may measure as much as 8 mm. $\times$ 2 mm. This felspar shows sharply-defined twin lamellation, and in some sections there are two sets of lamellæ approximately at right angles to each other, thus suggesting that the plagioclase is twinned on both the pericline and albite types. From its high extinction-angles, reaching 40°, it is probably a basic felspar near to anorthite.

VII. *Dolerite from Wady es Shiek.*

A medium-grained, dark-brown rock, much altered, and weathering with a yellow rusty surface. It presents in thin section a dense network of plagioclase in rather thick rectangular sections, with an average size of 1 $\times$ 0.25 mm. They inclose dark greenish-brown granular matter, so disposed in some cases as to give a zonal appearance to the sections. Augite occurs in crystalline grains and granular aggregates. The space between the felspars is largely occupied by serpentinous matter, and much of the substance which at first sight looks like interstitial matter is probably a product of alteration. Magnetite is abundant, and scales of red oxide of iron are scattered through the rock. Crowds of minute acicular microlites become visible with a high power.

A re-examination of the diabase, No. 12 in the Appendix, shows that all the quartz is of secondary origin, and hence the rock is simply a diabase with quartz, and not a quartz-diabase. With reference to the felsite, No. 10, it should have been stated that the description applied only to the particular thin section under examination.

I am greatly indebted to Mr. J. J. H. Teall, M.A., F.G.S., and to Mr. T. Davies, F.G.S., for having examined with me some of the sections described in these notes.

VI.—ON THE MICROZOA FOUND IN SOME JURASSIC ROCKS OF ENGLAND.

By Professor T. RUPERT JONES, F.R.S., AND C. D. SHERBORN, Esq.

IN the GEOLOGICAL MAGAZINE, Dec. II. Vol. II. 1875, p. 308, is a list of some English Jurassic Foraminifera, a large number of species being there noted as occurring in these rocks. We have lately received, by the friendly courtesy of the Rev. H. H. Winwood, F.G.S., and Horace B. Woodward, Esq., F.G.S., thirteen specimens of the Jurassic rocks from the south-west of England. One of these has yielded a most important series of Ostracoda. Whilst preparing a special monograph, we hasten to offer some preliminary notes on these interesting Jurassic Microzoa, at present merely noting the

genera, in descending order of strata, and deferring the specific nomenclature for a subsequent opportunity.

1. "Kimmeridge Clay, near Coulston, Wilts." H. B. W.

A mottled (blue and yellow-brown) clay, very stiff and greasy to the touch. Residuum, after washing, a very little, fine, subangular sand, with minute woody fibres. Microzoa rare and very small, of a brown colour and with a sandy appearance. The *Foraminifera* are *Trochammina incerta*; *T.*, sp. near *oligogyra*, Hantken; and another near *gordialis*; *Marginulina* = *Cristellaria Zitteli*, Schwager; *Cristellaria* sp.; *Nonionina*, sp.; *Orbulina neojurensis*, Karrer; and a three-chambered *Globigerina*. These minute fossils are beautifully preserved. No Ostracoda were found.

2. "Clay at the base of the Lower Greensand and on the top of the Corallian; Seend, Wilts. Most likely Kimmeridge Clay." H. B. W.

A pale-grey clay (when dry).

This specimen was washed completely away, leaving neither Microzoa nor sand.

3. "Clay above Iron-ore deposit; Westbury Ironworks, S. of Station. ? Kimmeridge Clay." Rev. H. H. W.

A stiff, mottled, blue clay, with numerous very small, rounded, shining, black concretions.

This left a very small, but rich, residuum of Foraminifera, having a very characteristic Jurassic facies. Amongst the forms are *Lingulina carinata*, var. (this is an oval *Nodosarina*, and, although the mouth appears to be a circle of radiating fissures, we think it should be regarded as more Linguline than *Nodosarina* in character); *Nodosaria*, sp. near *nitidula* (Gümbel, 'Streitberger Schwamm lager'); *Dentalina communis*; *Planularia reticulata*; *P. pauperata*, narrow, broad, and thin varieties; *Vaginulina cristellarioides*; *V. orthonota*; *V. angustissima*; *V. harpa*, and two others (the first four are figured by Reuss in his 'Norddeutschen Hils und Gault'); *Cristellaria rotulata* with three varieties leading into the next "species," *Cristellaria crepidula*; and *Haplophragmium Canariense*.

These forms are well preserved. No Ostracoda were found.

4. "Yellow Fullers-earth Clay; Midford." Rev. H. H. W. and H. B. W.

This and the following clay are described by Horace B. Woodward in his "Geology of England and Wales" (p. 182) as "a sandy clay, which is described by Mr. Bristow as usually of a greenish-brown or greenish-grey colour, sometimes blue. It is opaque, soft, dull, with a greasy feel, and an earthy fracture." The specimens sent were of a yellow-brown colour.

From the specimen of yellow clay we obtained only two species of Foraminifera, *Cristellaria crepidula* and *Vaginulina legumen*, var.

It is richer, however, in Entomostraca, five species of *Cythere*; two of *Cytherideis*; three of *Cytherella*; and one of *Bairdia*, rewarding our search.

5. "Blue Fullers-Earth; Midford." Rev. H. H. W. and H. B. W.

An indigo-blue clay, drying bluish-grey, extremely rich in Microzoa, especially Ostracoda. It is rather singular that this most

remarkable deposit of Entomostraca has not been noticed before. We have mounted and arranged upwards of three hundred individuals of more than fifty species already, and look for a much larger number before we close our work. The majority of the species were obtained from little more than one pound weight of material. Foraminifera are much scarcer, but there is the same proportionate abundance between the two groups as in the yellow-brown clay above described. A few fragments of shells also occurred, but too imperfect for identification; also ossicles of *Pentacrinus*, and a few broken minute spines of *Echinoderms*.

The Foraminifera include a subcarinate variety of *Cristellaria rotulata*, near to one figured by Jones and Parker (Q.J.G.S. vol. xvi. 1860, pl. xx. f. 43); *Cristellaria crepidula*; *Vaginulina legumen*; *Planularia*, sp. near *reticulata*, Cornuel; *Nodosaria lineolata*, Reuss, and *Fronicularia peregrina*, Reuss ('Bohm. Kreide'); and a simple four-rayed star, like the "*Siderolina*-like forms" figured by Gümbel from the "Streitberger Schwamm lager" in "Jahresh. Ver. nat. Württ. 1862, Jahrg. 18, p. 235, pl. iv. f. 19. This little specimen has been shown to Dr. Hinde, who thinks that, although calcareous, it is most likely a modified dermal spicule of a hexactinellid Sponge.

The Entomostraca represent, provisionally, thirty-four species of *Cythere*; three of *Cytherideis*; three of *Cytheridea*; five of *Cytherella*; six of *Bairdia*, also *Cytherura*, *Pontocypris*, *Macrocypris*, and possibly *Aglaila* and *Argillœcia*.

The examination of these forms is affording us very great pleasure, being, though exceedingly small, very finely preserved and perfect. It is interesting to note, that we identify some ten of them as occurring amongst those figured from the Richmond Well in Q.J.G.S. vol. xl. pl. xxxiv.

6. "Loamy beds in Hinton Sand, Forest-marble; Charterhouse-Hinton, Somerset." H.B.W.

A light-brown loam with small "clay galls." This leaves after washing a residuum of fine, subangular, quartzose sand. After careful search we found some extremely small Foraminifera and one Ostracod:—*Cristellaria crepidula*; *Marginulina glabra*; and a valve of *Cythere*.

7. "Bradford Clay; Bradford. This is the clean clay immediately overlying the fossil-bed." H.B.W.

A light-brown clay, which, on washing, left a few waterworn Entomostraca and two much waterworn Foraminifera. The latter are *Cristellaria crepidula* and *Vaginulina legumen*; and the former are three varieties of *Cythere*.

8. "Bradford, No. 1. Near Canal. *Locus classicus*." Rev. H.H.W.
No Microzoa found on examination.

9. Bradford, No. 2. Near Bradford. Little higher in position than No. 1." Rev. H.H.W. No Microzoa.

10. "Oxfordian; Upper Studley, Trowbridge. Probably Kella-ways Rock." H.B.W.

Dark greenish-brown, friable sandstone of subangular quartzose sand, with calcareous cement. No Microzoa found.

11. "Oxford Clay; Bromham Brickyard. South of Sandridge Hills, between Melksham and Devizes." H.B.W.

A few fragments of shells, but no Microzoa, were found.

12. "Oxford Clay; Upper Studley, Trowbridge." H.B.W.

Very pale, yellowish-grey, sandy clay, yielding after washing, about 50 per cent. of extremely fine, white, subangular, quartzose sand. No Microzoa.

13. "Oxford Clay; Southwick, Trowbridge." H.B.W.

Like No. 12, leaving, after washing, the same remarkably fine, white sand, and presenting no trace of Microzoa.

NOTE.—Beside the Jurassic specimens we have one from the Cretaceous series of the same district, namely:—"Clay seam in Lower Greensand; Seend." H.B.W.

A ferruginous sandy clay; bound together in places by the iron and forming "pan."

By washing, this specimen yielded abundance of subangular sand, with a little mica.

No Microzoa were met with.

NOTICES OF MEMOIRS.

I.—*M. DOLLO* ON THE EVOLUTION OF THE TEETH OF HERBIVOROUS DINOSAURIA.

ALL palæontologists who are interested in the marvellous reptilian life of the Secondary epoch owe a debt of gratitude to *M. Dollo* of the Royal Museum of Brussels for the ability and care with which he has elucidated the structure and affinity of the unrivalled collection of Dinosaurian and other reptilian remains preserved in that Museum. One of the most interesting of his

DIAGRAM A.—FIG. 1. Tooth of *Morosaurus*. FIG. 2. of *Scelidosaurus*. FIG. 3. of *Hadrosaurus*.