

On Sections in the Lias exposed in two Quarries at Barrington.

THE erection of the new farm-house and the block of six cottages and other buildings at Barrington Court by Col. A. Arthur Lyle led to the reopening of the long disused Barrington "quar," and the opening of a new one on the west side of Shelway Lane in the same strata. A selection of ammonites collected from the two openings and from the exposure at the water-works, by officers of the Geological Survey, were exhibited at the Annual Meeting by Prebendary Hamlet. These fossils had been tentatively named by Mr. S. S. Buckman, whose fuller study of them and of other specimens from these localities will be published later. The clays and limestones of the Upper Lias had proved to be highly fossiliferous, providing an opportunity for detailed zonal collecting by the Survey officials, who obtained upwards of 1000 specimens of ammonites.

The writer is indebted to Mr. J. Pringle, of the Geological Survey, for furnishing the account of the strata given below, as well as for some additional notes; also to the Director of that institution for permission to make use of this information and for the loan of the fossils.

UPPER LIAS.

AT THE WATER-WORKS.		ft. ins.
Bed.	Surface soil	0 6
32	Rusty-brown sand with indurated calcareous sandstone, seen to	6 0
31	Pale grey earthy limestone with thin grey clay parting in middle. Unfossiliferous, 10ins. to	1 0

Bed.		ft.	ins.
30	Pale grey clays becoming sandy near top, with two or three layers of calcareous nodules. Unfossiliferous	1	0
29	Compact dark grey limestone, varying in thickness from 3 to	0	7
28	Dark bluish-grey clay with several irregular layers of calcareous nodules. Highly fossiliferous	1	8
27	Pale grey massive limestone in two bands separated by a thin film of grey clay. Limestone jointed: joints filled with clay from overlying bed, about	2	0

AT BARRINGTON "QUAR."

(Next below 12ins. of soil with débris of limestone).

26	Thin grey limestones (3 or 4) with thin grey clays between each band. In part of section two limestones unite and form one bed. The bottom band of limestone is bluish-grey in colour	1	3
25	Grey clay with thin bands of grey limestone	1	0
24	Pale grey limestone, split into 4 bands by thin grey clayey films	1	3
23	Conspicuous band of reddish-brown clay, with two pinkish-grey clayey limestones (each 2ins. thick) at top and bottom. Highly fossiliferous	0	7
22	Whitish clayey limestone, somewhat nodular	1	0
21	Olive-grey clay with <i>Crania</i> = <i>Crania</i> clays of Moore (<i>Proc. Som. Arch. & N.H. Soc.</i> , XIII, ii, 133), 4 to	0	6
20	Pinkish-tinged grey clayey limestone: constant throughout section, 4 to	0	5
19	Brownish-tinged grey clays full of <i>Ammonites</i> , with a layer of large <i>Harpoceratids</i> in middle, 7 to	0	9
18	Whitish-grey limestone, constant throughout section ..	0	3
17	Bluish-grey clay	0	3
16	Compact olive-grey blotchy limestone, fairly constant in section. No fossils	0	2
15	Pinkish-grey clay with small phosphatic nodules	0	3
14	Compact olive-grey blotchy clayey limestone. No fossils	0	2
13	Pale brown marly clay, 3 to	0	4
12	Compact olive-grey clayey limestone, constant in section. No fossils	0	2
11	Bluish-grey marly clay. 4 to	0	5
10	Compact olive-grey clayey limestone	0	2
9	Bluish-grey marly clay with a few small phosphatic nodules, 4 to	0	5
8	Compact bluish-grey limestone, constant throughout section, 3 to	0	4
7	Bluish-grey marly clay with numerous small phosphatic nodules. <i>Rhynchonella bouchari</i> zone of Moore, 6 to	0	8
6	Bluish-grey compact blotchy limestone, fairly constant in section, 2 to	0	3
5	Light brown laminated clay, 4 to	0	6

Bed.	ft. ins.
4 Pinkish-grey earthy limestone, inconstant in thickness, occurring in the form of irregular flat nodules at a constant level. Moore's "Saurian and fish zone," 0 to	0 3
3 Light greenish-brown clays, well laminated near top = <i>Leptaena</i> clays of Moore (<i>Proc. Som. Arch. & N.H. Soc.</i> , XIII, ii, 132). At a height of 12ins. from base a conspicuous band of iron-stained clay, $\frac{1}{2}$ in. thick in constant section	2 0
2 Dingy pale grey earthy limestone with <i>Dactyloceras</i> spp. = Top bed of Moore's Middle Lias, bed of Ilminster section,	2 to 0 5
1 Dirty greenish-buff soft sandy marl, full of large <i>Belemnites</i> and <i>Dactyloceras</i> spp.,	6 to 0 8

MIDDLE LIAS.

2 Earthy ironshot limestone, bluish-grey when fresh. Limestone traversed by numerous wide vertical joints, lined with stalagmite carbonate of lime. Highly fossiliferous	7 0
1 Yellow and brown micaceous laminated sands, few fossils—seen to	1 6

The strata in the new quarry is greatly disturbed and disarranged. A river bed, perhaps of Pleistocene age, is exposed.

A complete study of the fossils from these pits will afford much help in correlating the Upper Lias deposits of the neighbourhood with those of Oxfordshire and other midland counties. In the meantime, the collecting has shown that characteristic fossils of the Upper Lias are present in the two thin beds forming the top of Moore's Middle Lias; and further, it now becomes possible to place the *Leptaena*-beds of Moore in their definite position within a stratigraphical scale based on ammonite-classification (*Proc.*, XIII, ii, 132). The *Rhynchonella bouchardi* zone of Moore, rather higher in the sequence, has yielded numerous fine specimens of the genus *Harpocera-toides*, and as a result, Mr. Buckman may find it practicable to establish a new zonal unit. Still higher occurs Moore's *Crania moorei* clay, which appears to fall within the *falci-ferum*-zone of Mr. Buckman. It may be possible to give in a later volume a 'section' and the results of further study.

The opening of these quarries has provided a unique opportunity to study afresh the local Liassic deposits made classic by the well known researches of Charles Moore.

In January, 1921, Mr. D. M. S. Watson, D.Sc., Professor of Zoology and Comparative Anatomy in London University, at the invitation of Dr. Harold Downes, paid a visit to these quarries, and in a letter after his visit he said :—

“ Altogether it is a most magnificent section and if it proves possible to divide the *falcifer* zone most valuable.” . . .

“ In the first limestone above the fish bed [No. 4] there is an ammonite, *Harpoceratoides*, which is usually very rare, and the exact age of which has never previously been fixed.” . . .

“ The black clay under the sands [Bed 28] is the *striatulus* zone with typical specimens of that ammonite and others, including one, *Hammatoceras*, which is a Mediterranean (Italian and Greek) type which has scarcely ever been found in England before.” In Bed 23 was found an ammonite new in species and genus.