EXCURSION TO HERTFORD AND WARE.

SATURDAY, 16TH MAY, 1885.

*(In association with the Herefordshire Natural History Society.)**Director :* JOHN HOPKINSON, F.L.S., F.G.S.*(Report by THE DIRECTOR.)*

The last occasion on which the Association visited the neighbourhood of Hertford and Ware was on the 16th of June, 1878, when the Members had the advantage of the presence of Professor Morris. Then, as now, the Excursion was held in conjunction with the Herefordshire Natural History Society. On the present occasion the Members of the two societies arrived at Hertford station in two detachments, the first at twelve o'clock, the second at one. The first section visited Hertford Castle, examining the old ruins and the "Castle Mound" by the side of the River Lea, and then walked through the chestnut avenue in All Saints' churchyard, and from there, through Ball's Park, to Mr. Lines' brickfields near Rush Green. The second section came direct to these brickfields by the London Road, the united party numbering between 30 and 40.

The beds exposed at these brickfields and in an old chalk-pit near them, consist of a small portion of the Upper Chalk, with a very irregular surface, due to its unequal chemical dissolution; the usual layer of flints, with some flint-pebbles in sand; a very variable series of sands and clays, representing the Woolwich and Reading beds; the basement-bed of the London Clay, with part of the London Clay itself; and, above these stratified deposits, an irregular bed of pebble-gravel, filling up depressions in the London Clay. (See Fig. 1.)

From a point where all these beds, except the Chalk and its surface-layer of flints, could be seen, the Director gave a brief description of them, prefacing his remarks with some general observations on the London Tertiary Basin.

"It may," he said, "be well to explain that the term 'basin' is here used as a convenient expression for a series of beds originally deposited horizontally, and subsequently let down in the centre by the sinking of the subjacent strata. The London Basin, therefore, is not a hollow in the Chalk in which the Tertiary Beds were deposited, in which event the surface of the Chalk would be curved and the Tertiaries would be horizontal; but it is a series of strata, the members of which are conformable to, or parallel with, each other, and

have only a very slight curvature caused by a folding or waving of the strata, which occurred after, and probably soon after, the deposition of the Eocene or Lower Tertiary beds. The same movement which caused a slight sinking of the Chalk and Tertiaries under London probably caused the slight elevation of the Wealden dome in the Kentish area, or that may have been of earlier date,

Fig. 1.—General Section at Mr. Lines' Brickyard (George's Farm), near Rush Green, 1 mile E.S.E. of Hertford.

taking place during, instead of after, the Eocene period. It must not, however, be inferred that the Chalk, after its quiet deposition by organic agencies in an ocean-bed, remained submerged throughout its extent until the lowest Tertiary beds, the Thanet Sands, were deposited upon it, for a considerable area of it, at least, was probably for some time dry land, rising from the bed of the ocean, and being subjected to denuding agencies, such as rain and rivers, similar to those now existing. In this neighbourhood there is evidence of a large amount of chalk having been washed away, and of the flints having been washed out of it, broken up, rolled into pebbles, and dispersed over wide areas, before it sank altogether beneath the ocean. The Thanet Sands are absent here, but they are largely developed south and east of London, and extend northwards to the borders of Essex and Suffolk, and possibly almost into Hertfordshire, north of Bishop's Stortford. The higher beds of the Upper Chalk are also absent, and it is therefore probable that the Chalk was for a longer period dry land here, and on the north-western margin of the London Basin generally, than on the south-eastern margin, either from its greater elevation or later depression, being therefore subjected to denudation for a greater length of time. The character of the next succeeding deposits here seen, the Woolwich and Reading Beds, bears out this hypothesis, for they are more fluviatile or estuarine than they are to the south-east, where they repose on the marine Thanet Sands. The lower and main portion of the Reading Beds here exposed consists of false-bedded sand, showing that it was exposed to strong currents, and therefore furnishing additional evidence of the proximity of land."

The section was then compared bed by bed with Mr. Whitaker's description of it as it appeared in 1869.* (Fig. 1.) With the exception of a slight difference in the thickness of the highest beds of the Reading Series, the only alteration since then appeared to be that there is now a continuous section from the London Clay downwards, the "smaller pits" mentioned by him being merged into one large pit communicating with that in which the London Clay is exposed. Very different it appears to have been in 1854, when examined by Professor Prestwich, who gave the following section :—†

* Whitaker, 'Mem. Geol. Surv.,' Vol. iv, p. 227, fig. 58.

† 'Quart. Journ. Geol. Soc.,' Vol. x, p. 92.

						Feet.
		Mixed clay and gravel	...	...	...	1
BASEMENT-BED	{	Brown sandy clay, laminated with tougher clay, containing casts of <i>Panopæa</i> , &c....	...	...	...	6
OF THE		Flint-pebbles in clay	...	...	...	0½
LONDON CLAY.	{	Light greenish sand	...	...	...	4
		White or ash-coloured sand	...	...	...	6
WOOLWICH	{	Light yellow sands...	...	...	...	4
AND		Light-coloured mottled red and grey clays	...	...	...	10?
READING	{	Yellow sand with patches of <i>Ostrea Bellovacina</i> in places at its base	...	...	...	6?
SERIES.		Green-coated flints	...	...	...	1
CHALK.						

In the basement-bed of the London Clay have been found *Panopæa intermedia*, *Pectunculus plumsteadiensis*, undetermined species of *Cardium*, *Astarte* (?), *Fusus*, and *Ostrea*, and teeth of *Lamna*.*

After some time had been devoted to an examination of this section, the party left the brickfield, and walked, by way of Rush Green and the picturesque "Walnut-tree Walk," to a large chalk-pit on Amwell Hill, and from there to Amwell Magna, or Great Amwell (*Emmewell*, or Emma's Well, of Domesday Book), where a powerful spring rises from the Chalk, augmenting the water of the New River. Here the Director gave an outline of the history of the New River Company, from the proposition of Sir Hugh Myddleton in 1609 to bring a stream of water from Amwell and Chadwell to Islington at his own expense, to the present day. The work was completed in 1613, one half of the expense (about £8,610) having been paid by the Crown, but the Company was not formed until 1619, and for 20 years after that no dividend was paid. Now, however, the 72 shares are worth about £1,000 per annum each. The interest attaching to Amwell from its association with Izaak Walton, who made it the scene of his first lesson in angling, was also referred to, and the importance of its position as the site of a British encampment (recently demolished) was pointed out.

On leaving Amwell, the New River and Lea Navigation, which here flow through a wide flat of river-gravel, were crossed by the bridges, and the River Ash by a ferry, the party being taken across in four detachments. Easneye Park Wood was then entered, Mr.

* Prestwich, 'Quart. Journ. Geol. Soc.,' Vol. vi, p. 271.

T. Fowell Buxton here meeting the members and conducting them to his residence, Easneye House, where they were most hospitably entertained. After refreshment had been partaken of, Mr. Buxton's collection of rocks and fossils was inspected, and his extensive gardens and conservatories were visited. Mr. Buxton's palatial residence is beautifully situated in the midst of a wood, on a hill overlooking the valley of the Lea, a portion of the wood having been cleared for the house and gardens. The bluebell being in full flower, on every side extended a carpet of blue, relieved here and there by clumps of the white narcissus.

On leaving the house a route was taken through Easneye Park to where it overlooks the valley of the Ash, and the party proceeded across this valley, by Widbury Hill, where some small chalk-pits were seen, and further on boulder-clay in gravel, to Ware. The extensive brickfields between Ware and Ware Park were then crossed, but there was not time to examine the brick-earth beds, nor the gravel-pits adjoining them on the hill-side to the north, which are of sufficient interest to be visited on some future occasion. Ware Park was then entered, and its fine old avenue traversed, Hertford station being reached in time for the 6.50 train. The distance walked was about twelve miles.

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