

Rugby), Long Itchington, Harbury, and Upper Goldicot, near Ettington (near Stratford).

Mr. H. B. Woodward is the only author who has recorded any details of the Church-Lawford section.<sup>1</sup> He observed the *Cidaris*-Shales resting upon "greenish-grey marl, 5 to 8 feet" thick, and these in turn upon the red and green marls of the Keuper. He stated that it is noteworthy that the *Pteria-contorta*-Shales "are not represented at this locality", and elsewhere adds<sup>2</sup> "nor in the Rugby well, and they are poorly represented in other parts of Warwickshire".

J. M. Wilson recorded the details of the well-sinking<sup>3</sup> referred to by Mr. Woodward. Mr. Woodward's conclusion that the Black Shales are absent from beneath Rugby depends upon the identification of 10 feet of 'hard light stone', which rests upon 'red clay', that is, Keuper Marls. Mr. Woodward regards this 'hard light stone' as White Lias.<sup>4</sup> I am inclined to follow J. M. Wilson, who considered the 12-foot bed of limestone reached at a depth of from 390 to 402 feet from the surface that subdivision, and Wilson's "dark and brown clays [58 feet]" and "black clay [20 feet]" the equivalents of the Cotham and Westbury Beds of the Rhætic. The 'hard light stone', according to this view, would be Tea-green Marl (Keuper).

In times past the White Lias was frequently exposed in the neighbourhood of Church Lawford, and a number of fossils have been recorded.<sup>5</sup> But now all the small lime-works have been closed, and the only place at which I noticed traces of White Lias was at the locality called 'Bath', near Kings Newnham. Here there are a great number of old kilns, mainly constructed of White Lias that was doubtless obtained from the workings. The pieces of rock built into the kiln walls are, except for what must have been the top-bed, scantily-fossiliferous. This top-bed is very ferruginous, extremely rich in specimens of *Pseudomonotis*, and has a waterworn and bored upper surface. Thence northwards to the county-boundary the solid rocks are hidden by drift.

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## NOTICES OF MEMOIRS.

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I.—A REMARKABLE SARSEN OR GREYWETHER.<sup>6</sup> By A. IRVING, D.Sc., B.A.<sup>7</sup>

**W**ITHOUT desiring to add to the existing plethora of literature on these rocks the author thinks that this sarsen is worth special notice. It was discovered last winter in digging a grave in the

<sup>1</sup> *The Jurassic Rocks of Britain—The Lias*, etc., pp. 151, 162.

<sup>2</sup> Horizontal Section (Geol. Surv.), Sheet 140, and Explanation, 1891, p. 10.

<sup>3</sup> Report Rugby Sch. Nat. Hist. Soc., 1868, pp. 41-2 and plate.

<sup>4</sup> *The Jurassic Rocks of Britain—The Lias*, etc., p. 165.

<sup>5</sup> E. Cleminshaw, Report Rugby Sch. Nat. Hist. Soc., 1867, p. 32; *ibid.*, 1868, p. 43; T. B. Oldham & G. Jones, *ibid.*, 1877, p. 48; T. B. Oldham, *ibid.*, pp. 49-54.

<sup>6</sup> A popular account of this block was given by the author in the *Herts and Essex Observer*, January 7, 1911.

<sup>7</sup> Read before Section C (Geology), British Association, Portsmouth, September, 1911.

Bishop's Stortford Town Cemetery, about 7 feet from the surface in the principal Boulder-clay of the district, the equivalent of the Chalky Boulder-clay of the Eastern Counties.

The block is fairly angular, approximately a cube. On one side the fracture of the bed is fairly fresh; the opposite side is slightly hollowed, as if by the long-continued current action of a shingly stream. For the greater part of its thickness it is a true sarsen; towards the base a few flint pebbles are scattered through it; the upper surface passes into a true 'puddingstone' (an agglutinated mass of flint pebbles), the matrix of which is lithologically the same as, and continuous with, the material of the sarsen. About the middle of the upper side the agglutinated mass of pebbles fills a small gully in the quondam sand of the sarsen. A subordinate alternation of the true sarsen structure with the pebble-bed structure is seen in the largest examples of puddingstone perhaps in the county.<sup>1</sup> A striking lithological feature of this specimen is the distribution in it of numerous small angular bleached fragments of flint. Its dimensions are 30 × 20 × 18 inches, and its weight not less than half a ton. No trace of glacial striations has been detected on it.

The author refers to his former work on the genesis and distribution of sarsens.<sup>2</sup> While recognizing their common occurrence in the Lower Eocenes, and even in the sands of the Neocomian, he regards those of the interior of the London Basin as the wreckage of a younger formation (late Eocene or Oligocene), possibly the stratigraphical freshwater equivalents of the *Stettiner Sandstein* of North Germany<sup>3</sup> and the *Grès de Fontainebleau*<sup>4</sup> of the Paris Basin. Agglutinated portions of the Bagshot Pebble Beds in situ, with similar siliceous cementation, are known to occur;<sup>5</sup> there is good evidence of the quondam extension of the younger beds of the Bagshot Series (including the pebble beds) over Herts and Essex; and the author points to this recently unearthened rock-mass as tending to clinch the view advocated by him for years past—that the sarsens and the Herts 'puddingstone' are remnants of one and the same *younger* Eocene (or Oligocene) formation.<sup>6</sup> He considers the latest treatment of the subject by the late Professor T. Rupert Jones, F.R.S., and the more recent treatment of it by H. B. Woodward, F.R.S.,<sup>7</sup> inadequate.

<sup>1</sup> Seen in the grounds of G. E. Pritchett, Esq., F.S.A., Oak Hall, Bishop's Stortford.

<sup>2</sup> P.G.A., viii, No. 3, 1883, where critical reference is made to the views of the late Professor John Phillips, F.R.S., of Oxford.

<sup>3</sup> H. Credner, *Geologie* (Leipzig), 10th ed., pp. 692 ff.

<sup>4</sup> S. Meunier, *Les causes actuelles en Géologie*, p. 289; Credner, op. cit., p. 683.

<sup>5</sup> A. Irving, P.G.A., xv, pp. 196, 236, February, 1898.

<sup>6</sup> A. Irving, "High Level Plateau Gravels, etc.": *GEOL. MAG.*, No. 484, October, 1904.

<sup>7</sup> *The Geology of the London District* (Mem. Geol. Surv., 1909).