light. Relics of aerial branches also occur, but these are in a state of preservation much less favourable for microscopic study. The tissues in the main roots where in the best condition have been preserved in calcareous material, which permits the employment of high powers of magnification, and the structures are undeformed by pressure, but the aerial stems are preserved in iron pyrites, the opaque crystals of which have quite obliterated the finer details. It would seem that the roots, embedded in the soft mud and readily accessible to the petrifying mineral solutions, had thus had their harder parts preserved from decay and enabled to resist the pressure exerted by the overlying deposits. The aerial branches, on the other hand, shaken from the dead trees were already much decayed and deformed by pressure before the mineral solutions had the opportunity to act. A series of specimens from the locality was exhibited, including microscope sections shown by the aid of the micro-projector.

III.—Liverpool Geological Society.

April 11, 1916.—J. H. Milton, Esq., F.G.S., F.L.S., President, in the Chair.

The following paper was read :—

"Notes on some Ferruginous Nodules in the Permo-Triassic Sandstones of South-West Lancashire." By T. A. Jones.

The author first described some small hard spheroidal concretions found last year during trench digging at Knowsley Park, presumably in Lower Soft Bunter Sandstone. They consisted of sand-grains embedded in a dark-brown cement of hydrated ferric oxide, which in volume was at least equal to the detrital material. The cores of the concretions were lighter in colour and less perfectly cemented than the outer shell. A striking feature was the large quantity of secondary silica present.

The so-called 'sulphur-balls' found in large numbers in colliery borings at Wigan and St. Helens in soft sandstone overlying the Coal-measures were then described. These consist of well-rounded grains of quartz and quartzite cemented by iron pyrites or marcasite. The most interesting and significant feature characterizing them is the presence of small knots of grains cemented by calcite. Tiny fragments of calcite also occur attached to the detrital grains, or lie isolated in the ferric sulphide. A gradual replacement of an earlier calcareous cement by ferric sulphide has therefore taken place, and this without disturbing the stratification of the sand-grains which is clearly visible across the nodules. A brief discussion of the origin of the iron cementing material in the sandstones followed.

CORRESPONDENCE.

THOUSAND FOOT PLATFORM IN ARRAN.

Sir,—Dr. F. Mort, in his paper on "Glacial Erosion in N. Arran" (abstract Trans. Geol. Soc. Glas., vol. xv, p. 415), calls attention to

a 'platform' at 1,000 feet above sea-level. In my paper on the Arran Granite (Trans. Geol. Soc. Glas., vol. x, p. 216) I notice the immense denudation that had taken place in Arran when the sea worked at 600 to 1,300 feet above present sea-level, and give sections. I also note the fact that all the glens (with one notable exception) occur in synclines of the granite slabs, and all the mountains have the slabs arranged as anticlines or quaquaversal dips (with one exception). I have also shown by a diagram that the slabs dip all round the granite area (which is nearly circular) at from 15° to 45° *towards* the slate, and give what I consider to be an explanation of these features. I also note the principal glacial phenomena, the thickness and quality of the Boulder Drift, moraines, etc., and how the drift had been carried *all round the granite area* on to the slate. I may say here that I saw no boulders foreign to the island on the granitic area, which is about 41 square miles. I do not, of course, suppose that all the immense denudation noted above took place during the Glacial Period—probably only a very small part of it. It is my firm opinion that the slate partly filled what are now the valleys at one time, and being more easily denuded than the granite this gave the original direction to the valleys or glens. In other papers I have shown that there is no Arran Granite in Ayrshire, except small bits along the shore which may have been brought as ballast.

J. Smith.

Dykes, Dalry, Ayrshire.
May 6, 1916.

OBITUARY.

LIEUT. R. L. VALENTINE,

7th Battalion Royal Dublin Fusiliers, Geologist on the Geological Survey of Ireland.

Born April 16, 1890. Died April 30, 1916.

Lieut. R. L. Valentine, of the 7th Battalion Royal Dublin Fusiliers, who died from wounds in France on April 30, 1916, was born on April 16, 1890, at Portora School, near Enniskillen, where his father was classical master. He was educated at the High School, Dublin, and gained a scholarship in the Royal College of Science for Ireland, receiving the Associateship of the College in 1912. He especially devoted himself to natural history and geology, and was engaged on a research in 1913–14 as to the horizon of the lowest Avonian strata at Hook Head, co. Wexford. He obtained by competition the post of Geologist on the Geological Survey of Ireland, and completed the Civil Service qualifying examination while in military training at the outbreak of the War. He gave high promise of becoming prominent amongst scientific men in Ireland, and his unfailing cheerfulness and readiness of resource endeared him to those who looked forward to working with him as a colleague.

G. A. J. C.