

bearing of about NNE. and SSW., having a similar bearing to the 'Crag and Tail' and the 'Dressed Hummocks.' They are only slightly deflected while passing over hills some nearly 2,000 feet high, and seem to have been made by the movement of the Field, or *Nappes*, of ice that covered this country before the *Boulder-drift Period*.

The *Secondary Striæ* always coincide with the fall of the ground, nearly every valley having a different system: they as often run across the 'Crag and Tail' and 'Dressed Hummocks,' as not. They cut the Primary Striæ and often obliterate them, and are sometimes accompanied by grooves; but this is not often the case. They seem to have been formed when the Ice-sheet, or *Nappes*, was finally breaking up and sliding down the various hills and valleys.

I have observed *Primary* and *Secondary Striæ* in the following localities:—In the Valley of Galway, from Atheney to Golam Head; in the valley between the Burren Mountain, to Clare, and Slieve Aughta, from Gort to near Ennis; in the Ballynahinch Valley, from Oughterard to near Clifton; in the valley in which Lough Corrib is now situated, from Maum to Kylebeg; in the valley now occupied by the Killeries; and in the various small valleys that occur among the hills in Jar-Connaught (christened by the English, Connemara)—nearly every one of which has its own system of Secondary Striæ. They can also be well observed on the eastern slopes of Slieve Bawn (which rises as a 'Crag and Tail' in the plain about ten miles west of Longford), where the Primary Striæ bear with the lie of the hill, while the Secondary Striæ run down its slopes. That in none of the places that I have mentioned are the Striæ due to local glaciation, is proved by their occurring under the *Boulder-drift*.

J. HENRY KINAHAN.

OUGHTERARD, IRELAND: Aug. 19, 1865.

DISCOVERY OF ERECT STEMS OF FOSSIL TREES IN TRAPPEAN
ASH IN ARRAN.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—The occurrence of beds of stratified trappean ash resting upon fossiliferous strata is not uncommon in the Coal-measures of the West of Scotland; but very rarely such beds are found to enclose organic remains, and hitherto, so far as I am aware, no beds have been found in situations where they can be studied and explored systematically.

The north-eastern shores of Arran, exhibiting beautiful sections of the Carboniferous series, have been surveyed and described by various eminent geologists, and on their authority the beds of volcanic origin interstratified with the coal, shale, and sandstone of the series have been invariably accepted as either intercalated, or intrusive, trap-beds, 'trap-dikes,' or 'outbursts of trap;' nor is it easy, on a mere cursory survey, to ascribe any other character to them.

A prolonged stay during the summer on these interesting shores has, however, enabled me to study these beds more minutely, and, on closer examination, the great majority of them are found to consist

of purely volcanic ash—mostly of a clearly sedimentary origin—reposing upon thin seams of coal and shale, and enclosing a considerable number of fossil plants in a beautiful state of preservation.

Up to the present time, I have accurately surveyed a distance of only about 400 feet along the shore; and within this comparatively narrow area are found no less than ten distinct beds of trappean ash.

Trunks of trees, 18 to 24 inches in diameter, and 2 to 3 feet in height, standing erect upon the original beds of thin coal and shale upon which they grew, and covered by layers of ash 2 to 3 feet in thickness, are found regularly dispersed over the area; while the ash overlying them, in which they are embedded, contains numerous branches, from 4 inches in diameter down to the minutest dimensions, some of the impressions displaying an almost feathery foliage, as though suddenly covered up before the vegetation had had time to decay or become water-worn. The larger branches remain perfectly round, and show the pith in an admirable state of preservation; and the cellular tissue, filled up with mineral matter, is plainly visible to the naked eye.

The specimens of the smaller branches thus far obtained indicate the genera *Lepidodendron* and *Halonia*; but I have had no opportunity as yet of having them examined microscopically. As far as can be determined by a simple botanical glass, the structure is very similar to the sections of *Lepidodendron*, &c. figured and described by Mr. Binney in the 'Quarterly Journal of the Geological Society' for January 1862.

The whole of the beds belong to the Lower Carboniferous series underlying the Producta-limestones, and there are indications of beds of a similar character both above and below those described. The mineralogical character of the beds is highly interesting, and has been examined jointly with me by my friend and colleague, Mr. John Young, of the Hunterian Museum. A joint paper on the subject will be laid by us before the Geological Society of Glasgow at an early date: meanwhile, if you think the announcement of the discovery of fossil plants under the circumstances stated may be interesting to your geological readers generally, the above details are quite at your service, and I remain, dear Sir,

Yours very truly, E. A. WÜNSCH,

ANDERSONIAN UNIVERSITY BUILDINGS,
GLASGOW: *Sept.* 9, 1865.

V. P. Geol. Soc., Glasgow.

NOTE ON THE ANALYSIS OF A DEPOSIT CONTAINING
SULPHATE OF BARYTA.

To the Editor of the GEOLOGICAL MAGAZINE.

SIR,—At a late meeting of the Glasgow Geological Society, Mr. Thomson exhibited a compact mass which had been deposited in a pipe, apparently a square wooden one, used for conveying water from Harton Pit, near South Shields, which is about 200 fathoms deep.

The deposit is a hard, compact, light-brown mass, with dark-brown streaks running through it. The portion shown was about