

4 feet per mile from Blackstone Edge towards the Irish Sea; therefore, when at its maximum the ice-sheet was probably over 2,000 feet above present sea-level in the middle of the Irish Sea in this latitude.

Extensive systems of glacier-lakes and drainage-channels were produced on the retreat of the ice, and for some time the drainage on the west of the Pennines in the Ribble and Irwell basins escaped eastwards into the Yorkshire Calder.

It is probable that the north-western ice arrived in this area later, and disappeared earlier, than the Ribblesdale ice.

Some local fluctuations in the ice-sheet occurred, but there is no evidence for more than one Glacial period.

CORRESPONDENCE.

ROCK-SOIL AND PLANT DISTRIBUTION.

SIR,—Mr. A. R. Horwood, in his article under the above heading in the January number of the *GEOLOGICAL MAGAZINE*, makes certain statements in regard to the distribution of plants, with special reference to Derbyshire, which must be accepted with caution.

To deal only with the fourteen plants which he names as being “so strong [in] their attachment to lime soils and their absence so well marked upon others”, that limestone could be mapped, even if only one or two of them occurred where no exposures were available, I find in Linton’s *Flora of Derbyshire* (1903) that one only (*Galium asperum*) is peculiar to limestone; seven are characteristic of that formation, but not peculiar to it; and the remaining six appear to occur indiscriminately on all the formations in the county.

I happen to live in Derbyshire, in the immediate neighbourhood of Carboniferous Limestone, Limestone Shales, Millstone Grits, and Lower Coal-measures, and, from my own observation, several of Mr. Horwood’s fourteen limestone plants grow frequently on other formations. Specially may be mentioned *Reseda luteola*, *Geranium lucidum*, and *Habenaria viridis*.

As an instance of the difficulty of defining with precision the soil-distribution of plants, I may mention that I have for years regarded *Pteris aquilina* as a limestone-hating plant. Here and there patches of it occur in a limestone district, as in the Via Gellia, near Cromford, but hitherto, with one exception, in all such instances the soil has proved to be either an isolated patch of drift or a clay derived from the decomposition of toadstone. The exception occurred last autumn when, in the same neighbourhood, I observed *Pteris aquilina* growing over an area of, perhaps, half an acre on an undoubted limestone outcrop. Further examination revealed that the soil was derived from the weathering of a *dolomitized* limestone, the chemical composition of which seems to have reconciled the fern to its situation.

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February 10, 1914.