

PRE-ILLINOIAN GLACIATION IN SOUTHEASTERN OHIO

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This paper is not intended to prove pre-Illinoian glaciation in southeastern Ohio, but to present certain data that bear on the problem. These data, if taken with other known and published information, may eventually prove a greater extent of glaciation than heretofore recognized. Major purposes of the paper are to stimulate others to look for additional evidence and to encourage discussion.

Many isolated glacial erratics in northern and eastern Kentucky, beyond the Illinoian ice border, are generally recognized as evidence of pre-Illinoian glaciation. Two of the boulders are large. One at 720 feet elevation is estimated to weigh 3 tons, and the other at 925 feet elevation is estimated to have weighed 16 tons before it was blasted into fragments (1). The smaller pebbles and cobbles weighed from a few ounces up to 3 pounds (2). They probably mark the southern extension of a pre-Illinoian ice lobe, which occupied southern Ohio and northern Kentucky, the tentative boundary of which has been drawn by Jillson (2).

In southeastern Ohio erratic boulders have been described by Patton and Hicks (3). Many large cobbles several inches in diameter have been found southwest of Cambridge, Ohio, by C. H. Moses of Muskingum College at New Concord, and he continues to discover additional cobbles each year in the same area.

The writer has observed and collected rounded and subangular cobbles and pebbles of local rock and a few foreign cobbles of rotted rock at elevations from about 1000 to 1040 feet elevation. These occur in many localities within the Muskingum Valley, as: 5 miles northwest of New Philadelphia, near Winfield, 6 miles south of New Philadelphia, 10 miles east of New Philadelphia, and 10 miles north of Cambridge. The shape and composition of the rocks indicate that they have been transported, but examination of the sites excludes transportation by man. All erratics are at elevations too high to allow ice rafting as an explanation of their positions.

No pre-Illinoian glacial till has been found in Ohio. It is to be expected that erosion during the long interval of time since the retreat of the first ice sheet would remove the early till. It is quite probable that such has been accomplished, leaving scattered erratics as remnants of the till. Old till, deeply leached, with a thickness of 35 feet is found in northern Kentucky south of Cincinnati.

High-level cobbles have been found at 990 and 1020 feet elevation near Chester, W. Va., by Frank Leverett (4) and Paul Kuegle. Leverett also found gravel at an elevation of 1020 feet east of Freedom, Pa. The writer visited both locations in company with Paul Kuegle and John Chase, and found additional samples. The granite pebbles are deeply decayed. The granite cobble, about 8 inches in diameter found near Chester by Leverett and Kuegle, has a deep rind of weathering extending over an inch inward from the outside surface. The elevation, location, and deep weathering of the cobbles indicate deposition during a pre-Illinoian glaciation. Leverett (4) has described outwash deposits along the Allegheny and upper Ohio Rivers as far south as Bellaire, Ohio, as due to a pre-Illinoian ice sheet. Drainage was across the col at New Martinsville, W. Va., but the former drainage was resumed after the ice sheet retreated.

The cutting through of the major preglacial divide at Killbuck and Port Washington, and the reversal of northward drainage are results of pre-Illinoian glaciation, and prove that this early ice sheet entered northeastern Ohio. It may very probably have extended far into southeastern Ohio as well.

It is suggested, therefore, for the purposes of discussion and for stimulation of a renewed search for evidence, that a pre-Illinoian ice front extended from eastern Kentucky in a northerly direction across eastern Ohio. This boundary would then unite with the boundary of pre-Illinoian ice along the Allegheny River between Franklin and Warren in western Pennsylvania, as described by Leverett (4).

Leverett gives the age of the pre-Illinoian till in western Pennsylvania as equivalent to the Jerseyan till of the eastern United States, which is generally correlated with the Nebraskan of the central United States. The pre-Illinoian ice sheet of Ohio was probably Nebraskan.

REFERENCES

- (1) **Jillson, Willard R.** Glaciation in Eastern Kentucky. *Pan-Amer. Geol.* 42: 125-132, 1924.
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 - (3) **Patton, L. T., and Hicks, Clifford.** Notes on the occurrence of glacial material beyond the border of drift in Muskingum County, Ohio. *Ohio Jour. of Sc.*, 25: 98-00, 1925.
 - (4) **Leverett, Frank.** Glacial deposits outside the Wisconsin terminal moraine in western Pennsylvania. *Pa. Geol. Surv., 4th Ser., Bull. G-7: 94-103, 1934.*
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