

AREAL GEOLOGY OF PUTNAM COUNTY INDIANA AS
INDICATED BY THE SOIL SURVEY

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Many facts of geological significance are recorded in the soil survey map and report of Putnam¹ County, Indiana. The present paper suggests interpretations which may be made of these and other related facts.

The soil map is in some degree a topographic map because soil types characteristically occur on certain slopes. For example, Vigo and Delmar soils occupy flattish and undissected places, Gibson and Fincastle are on gentle slopes while Cincinnati and Russell soils occur on rolling land from which areas of "slope phases" are mapped out where it is too steep for ordinary farming. Each type is so described in the report that land forms may be visualized by noting size and relative position of soil type areas on the map.

The topographic correlations, as well as direct statements and inferences which may be drawn from the report give some physiographic information. For example, Genesee and Holly soils indicate the first bottom lands. Fox, Elk and Homer soils reveal "second bottoms," terraces and glacial lakes while many other types belong to the uplands. An area of Bellefontaine soil locates an esker found northeast of Fillmore.

Loessial deposits practically identical to those in Gibson² and Knox³ counties are indicated by areas of Princeton soils.

The pattern of soil types shows in great detail a line of change which may be considered to be the boundary between the Illinoian till and the younger drift of the area. This line was very carefully worked out on the basis of depth and thoroughness of weathering and leaching. Cincinnati, Gibson and Vigo soils show the distribution of Illinoian till while Russell, Fincastle, Delmar and Brookston are characteristic of the "Wisconsin." Since the Illinoian is weathered to nearly twice the depth of the younger drift there must have been a great time interval between them.

The Parke soils may merely reflect the presence of light textured Illinoian drift but they are so deeply and thoroughly weathered that the possibility of pre-Illinoian age is suggested.

In the course of the soil survey of Wayne⁴ County (1923) differences were observed as to depth to carbonates and degree of weathering in certain groups of soils. It was stated⁵ that the soil evidence indicated no important change of age in northern Wayne County along the morainic belt commonly accepted as the outer border^{6,7} of the second⁸ Wisconsin substage, but that the weathering differences do suggest a great difference in age of the drift on either side of a line cutting off the southwestern portion of Wayne County from the rest of that area. Soil surveys of Putnam, Rush,³ Decatur, Jennings³ and Vermilion³ counties have traced out this boundary which has also been roughly located by miscellaneous observations in Bartholomew, Montgomery and Warren counties. These studies find expression in the Indiana State Soil Map⁹. In soil region G on this soil map the key soils are more silty in the upper layers and about twice as deep to carbonates as are the soils in comparable locations in soil region E. In soil survey circles we have regarded soil region G as the true region of the "Early Wisconsin."

The silty surface layers of the soils usually have been considered to be thoroughly weathered till although the possibility of loessial deposits has also been kept in mind. In Vermilion County three or four feet of smooth loess-like silt seems to mantle most but not all of the uplands. Glacial pebbles are quite commonly found on the surface.



Fig. 1.

At the annual meeting of the American Soil Survey Association in November, 1929, Dr. George F. Kay¹⁰ State Geologist of Iowa described the weathered zone of the Iowan drift in Iowa in such terms that the writer was moved to ask if anyone had reported Iowan drift in Indiana. Apparently this has not been done. The close similarity between depths and degree of weathering in the Iowan drift of Iowa and the conditions found in soil region G of Indiana make a correlation seem possible if not probable.

The existence of an Iowan glacial period and its proper correlation have been a subject of debate in geological circles¹⁰. Leverett's recent map⁸ shows the Iowan drift only in Iowa and Minnesota and also indicates five substages of the Wisconsin. Judging by depths to carbonates soil region G, which roughly corresponds to Leverett's substage one of the Wisconsin, might be correlated with the Iowan of Iowa. Soil region E, corresponding somewhat to Leverett's second substage in Indiana, correlates with the Wisconsin of Iowa which is indicated as belonging to the fourth substage. Soil region F of Indiana corresponds somewhat to Leverett's substage three in this State.

As it is hardly the privilege or duty of a soil surveyor to study such geological questions exhaustively these interpretations may never be carried beyond their present tentative stage although observations made in the course of future soil surveys will doubtless throw more light on some of these questions.

REFERENCES

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6. Leverett, Frank, Monograph LIII, Plate VI, U.S.G.S.
7. Malott, C. A., Handbook of Indiana Geology, Plate III, p. 106.
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10. Statements on Iowa conditions are based on talk, correspondence and publication of Dr. George F. Kay.

