

Cartographic drafting by
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EXPLANATION

RECENT
al Stream alluvium

PLEISTOCENE

WISCONSIN

- Wl Lake deposits
- Wog Outwash terraces
- Woh - Greenville Terrace
- Woh - Vanatta Terrace (high terrace)
- Woc - Ulica Terrace (low terrace)
- Woc - low-level out terrace
- Wt - undifferentiated Wisconsin terrace
- Wt - terrace cut into rock
- Wk Kames
- We End moraines
- Wg Ground moraine

ILLINOIAN

- Il Lake deposits
- Io - outwash terrace
- Iok - local kame terrace
- I - undifferentiated Illinoian terrace
- Ik Kames
- Ie End moraines
- Ig Ground moraine

SYMBOLS

- U Unglaciated areas
- Crestlines of end moraines
- Line marking boundary of Wisconsin or Illinoian deposits
- Line marking soil boundary within area of Wisconsin deposits
- Position of pre-Wisconsin or pre-Illinoian divide
- Contours drawn on bedrock surface. Contour interval 100 feet
- ⊗ Gravel pit

GLACIAL GEOLOGY

Licking County is located in central Ohio, just east of Columbus. Newark is the county seat. The county is drained by the Newark River and its tributaries, which flow eastward into the Muskingum drainage. Glacial deposits are present throughout most of the county. These deposits are of both Wisconsin and Illinoian age and were formed along the western edge of the Scioto Lobe of the glacier. As a result, both glacial boundaries are oriented north-south, with the unglaciated portion of the county to the east. Deposits of sand and gravel from kame hills (fillings of glacial crevasses) and flat-topped outwash terraces (gravel washed out beyond the glacial margin). Local soil deposits representing lacustrine or lake-water accumulations are present. Glacial till composes broad, smooth-surfaced ground moraine and hummocky belts of end moraine, each belt identifying a separate retreatal position of the glacial margin. Because of the high bedrock hills of central and eastern Licking County, end moraines there are strongly eroded and the glacial cover is generally quite thin. In such areas, the distinction between end moraine and bedrock hills is commonly difficult to make, the most useful basis for separation was found to be the presence of hummocky constructional topography.

TILLS

The distinction between the Wisconsin and Illinoian tills is based on their distribution and the nature of the soils developed in them. Wisconsin till soils generally belong to the Alexandria group of soils and are 2 to 3 feet deep. Illinoian till soils are generally in the Fallsburg group and are 6 to 7 feet deep. In the southern part of Licking Township, just northeast of Buckeye Lake, there are some soils which, though they are 6 to 7 feet deep, look much more like deeper, more weathered Alexandria soils. It is possible that the till in which these soils were developed is "early" Wisconsin and might correlate with the Knox Lake Till of Knox County (Forsyth, 1961), but because no soil break was observed east of this area and because all previous workers (White, 1939; Nicholas Holway, 1940; and communication, 1966; and Ralph Meeker, oral communication, 1966) have called this till Illinoian, it is so designated on the map. All other Wisconsin deposits in Licking County are of "late" Wisconsin age. A heavy line representing a subordinate soil boundary is shown cutting north-south across the middle of the area of "late" Wisconsin till. The difference in the soil on either side of this line is not great. The variation along a single side of the line is commonly greater than that across the line. However, since the contrast in soil at any one place along the line is everywhere reasonably sharp, this line is taken to represent the terminal position reached by a major readvance of the Wisconsin glacier during its retreat. Locally this readvance produced an end moraine elsewhere. The boundary is marked only by a change in soils and a subtle topographic contrast. This relationship is seen even where the younger drift overlaps the western edge of the older Johnsons Moraine. Because this line of soil change correlates with the Centerburg-Mt. Liberty soils break to the north in Knox County (Forsyth, 1961), the younger till is here called Centerburg and the older Mt. Liberty. This soil line also appears to correlate with the Miami (6A-Miami) soil line of southwestern Ohio (Forsyth, 1965).

TERRACES

Gravel outwash terraces of both Wisconsin and Illinoian age are present in the county. Terraces along the valleys of the Licking River and its main tributaries were studied by Jones (1959), whose mapping, with minor modifications, appears on this map. Illinoian outwash, in the valleys of the Licking River, Bushy Fork in Perry Township, and Wilkins Run in Mary Ann Township, forms flat extensive plains of sand and gravel, whose eastern edges slope steeply down into the valleys. Illinoian outwash also forms the higher level on the north side of the Licking valley between Newark and Hanover. Because this outwash is not present on the south side of the valley, it is likely that it actually represents a kame terrace, formed while a tongue of occupied meltwater of the Licking valley. This interpretation is supported by somewhat irregular surface on this deposit and the presence, locally, of a significant amount of till. Two levels of Wisconsin constructional terraces are recognized: a higher Vanatta Terrace and a lower Ulica Terrace (Jones, 1959). In addition, lower, cut terraces are present in most places. Contrary to Jones' original mapping, the Vanatta Terrace is now recognized along the entire valley along St. Louis and is generally of poorer quality than that to the west, apparently because of the larger amounts of detrital debris which are available present in it, presumably derived from the adjacent bedrock hills. Part of it was excavated from time to time in the area of Lickingville. Ground water occurs in relatively abundant amounts in the gravels filling the deep buried valleys and also in minor amounts throughout the glacialized part of the county (Dove, 1960). Also significant among the county's natural resources are the rich productive soils developed in the glacial tills of western Licking County.

MINERAL RESOURCES

The most important mineral resource among the glacial materials of Licking County is sand and gravel. There are more than a dozen pits of this type in the county. The Vanatta Terrace which, despite a sill one to three feet across, appears to contain a better quality of gravel than is found in the lower terraces. The gravel that occurs in this terrace east of Greenville is generally of poorer quality than that to the west, apparently because of the larger amounts of detrital debris which are available present in it, presumably derived from the adjacent bedrock hills. Part of it was excavated from time to time in the area of Lickingville. Ground water occurs in relatively abundant amounts in the gravels filling the deep buried valleys and also in minor amounts throughout the glacialized part of the county (Dove, 1960). Also significant among the county's natural resources are the rich productive soils developed in the glacial tills of western Licking County.

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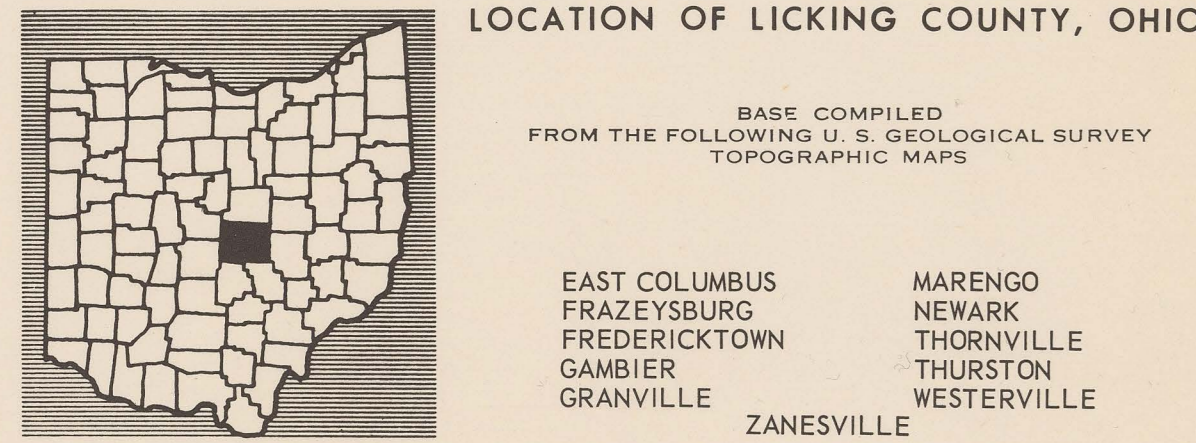
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GLACIAL MAP
OF
LICKING COUNTY, OHIO

BY
JANE L. FORSYTH

REPORT OF INVESTIGATIONS NO. 59

STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL SURVEY
Ralph J. Bernhagen, Chief



LOCATION OF LICKING COUNTY, OHIO

BASE COMPILED FROM THE FOLLOWING U. S. GEOLOGICAL SURVEY TOPOGRAPHIC MAPS

- EAST COLUMBUS
- FRAZEYSBURG
- FREDERICKTOWN
- GAMBIER
- GRANVILLE
- MARENGO
- NEWARK
- THORNTONVILLE
- THURSTON
- ZANESVILLE
- WESTERVILLE