

GLACIAL ORIGIN OF BEAVER CREEK, BOONE COUNTY.¹

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A considerable part of the north portion of Boone County, Illinois, comprises the basin of Beaver Creek, which flows south and southwest to join Kishwaukee River about four miles west of Belvidere. The course of Beaver Creek is roughly parallel to that of Piscasaw Creek a few miles farther east.

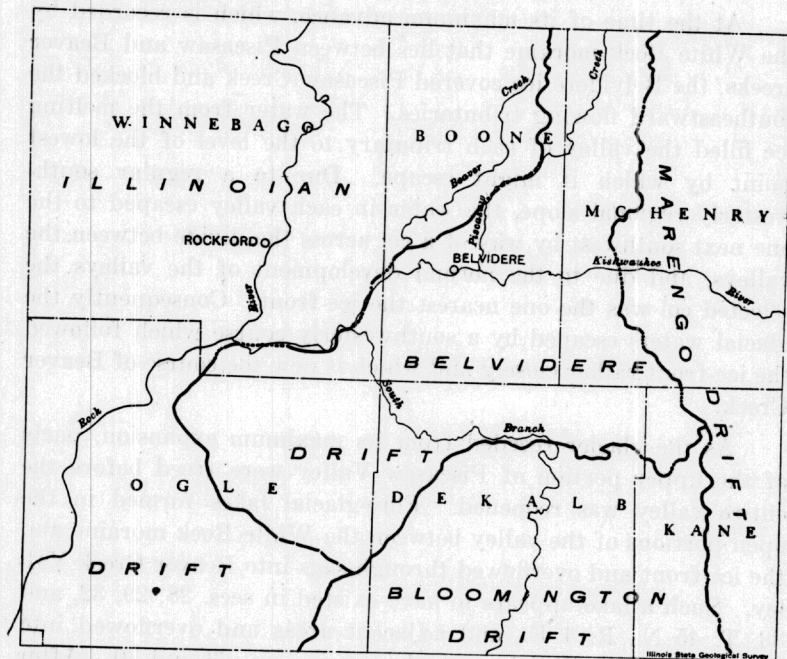


FIG. 1.—Outline map of central northern Illinois showing relations of Belvidere and adjacent drifts. (After Leighton.)

It has been recently demonstrated² that the glacial drift on the northwest side of Beaver Creek is Illinoian in age and that most of the drift on the southeast side, designated as Belvidere drift of early Wisconsin age, is much younger. Thus Beaver Creek practically demarcates the boundary between the older Illinoian drift and the younger Belvidere drift north of Belvi-

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² Leighton, M. M., The differentiation of the drift sheets of northwestern Illinois: Jour. Geol., vol. 31, pp. 265-276, 1923.

dere. The Belvidere drift was deposited from a northwestward lobate protrusion of the Michigan lobe of the Wisconsin glacier at a time that is believed to have been contemporaneous with the deposition of the Champaign moraine.

It has been stated that "the protrusion of the Belvidere ice-lobe from the main Michigan lobe blocked the valley of Piscasaw Creek and diverted its waters temporarily westward across the divide into Beaver Creek."³ It now appears that there was not only an actual temporary diversion of Piscasaw Creek but that an entirely new line of drainage was formed at that time and now remains as the valley of Beaver Creek.

At the time of its maximum advance, which is recorded by the White Rock moraine that lies between Piscasaw and Beaver creeks, the Belvidere ice covered Piscasaw Creek and blocked the southeastward flowing tributaries. The water from the melting ice filled the valley of each tributary to the level of the lowest point by which it might escape. Due to a regular southwesterly regional slope, the water in each valley escaped to the one next southwest by way of a col across the divide between the valleys, and due to the normal development of the valleys the selected col was the one nearest the ice-front. Consequently the glacial waters escaped by a southwesterly course which followed the ice-front rather closely and which is now the course of Beaver Creek.

As the glacier receded from its maximum expansion, parts of the upper portion of Piscasaw Valley were freed before the entire valley was reopened. Fore-glacial lakes formed in the open portions of the valley between the White Rock moraine and the ice-front and overflowed through sags into Beaver Creek Valley. Such a lake appears to have existed in secs. 28, 29, 32, and 33, T. 45 N., R. 4 E., and adjacent areas and overflowed into Beaver Creek Valley through the sag in secs. 29 and 30. After the Belvidere ice had receded so far that the whole Piscasaw Valley was again open, the morainic deposits in the lower portions of the former tributaries were so thick and the interfluvies between the tributaries had been so deeply incised by glacial Beaver Creek that the tributaries could not rejoin Piscasaw Creek but remained permanently diverted into a new course now known as Beaver Creek. The following physiographic features are due to and are evidence of this diversion.

³ Idem, p. 276.

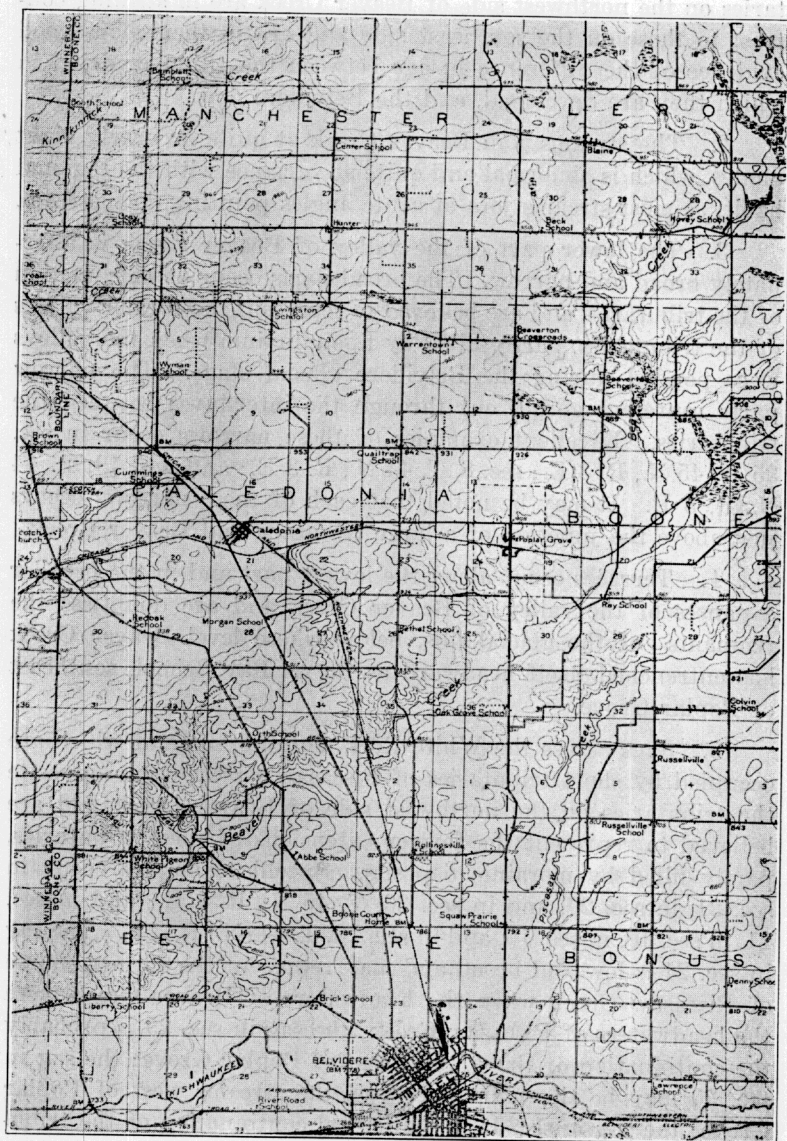


FIG. 2—Reproduction of a portion of the topographic map of Belvidere quadrangle showing the physiographic features discussed.

1. The large number and the considerable length of the streams and the size and development of the valleys of the tributaries on the northwest side of Beaver Creek are in striking contrast to those on the southeast side and are in themselves good evidence of the difference in age between the Illinoian drift, in which they are developed, and the Belvidere drift.

2. The streams join Beaver Creek at quite or nearly right angles, which is abnormal and quite at variance with the regional habit, as most streams join at acute angles pointing downstream.

3. The lower part of the valley of Beaver Creek is alternately broad and narrow. The broad parts occur at the junction of the tributaries and are believed to represent the former valleys of the tributaries, partly filled by fine alluvium when the valleys were ponded during the Belvidere glacial stage. The narrow parts represent gorges cut through the interfluves between the tributaries. Excellent examples of these narrows occur in sec. 35, T. 45 N., R. 3 E.; sec. 8, T. 44 N., R. 3 E.; and sec. 19, T. 44 N., R. 3 E. It may be noted that each of these narrows occurs just above the junction of a large tributary and Beaver Creek.

4. Terraces occur along the lowest part and in the broader expanses of the valley of Beaver Creek and are doubtless the remnants of the glacial fills, below whose level Beaver Creek has entrenched itself headward as far as Ray School, southeast of Poplar Grove.

5. Sags across the White Rock moraine, some of which are occupied by short tributaries of Piscasaw Creek, occur opposite the tributaries on the northwest side of Beaver Creek and are believed to represent the former extensions of these tributaries, partly filled by morainic deposits. Specific examples occur in sec. 21, in sec. 29, and in sec. 30, T. 45 N., R. 4 E.; and in sec. 11, in sec. 10, in sec. 16, and in sec. 20, T. 44, N., R. 3 E. The sag in sec. 21 is low and broad and may represent the former course of Piscasaw Creek when the headwaters of Beaver Creek were the headwaters of Piscasaw Creek; the sag in sec. 29 is probably the continuation of the streams east of Poplar Grove; the sag in sec. 30 may be the continuation of the streams west of Poplar Grove; the sag in sec. 11 is the logical continuation of the tributary followed by Northwestern Railway; the sag in sec. 10 may be the former course of the tributary which now joins Mosquito Creek; and either the sag in sec. 16 or that in sec. 20 may be the former course of pre-Belvidere Mosquito Creek.

6. The marshy flats along the headwaters of Beaver Creek are probably fills of fine glacial outwash from the Belvidere ice, which have not yet been drained or entrenched by headward development of Beaver Creek.

7. Low broad cols across sec. 13 and across the south edge of secs. 35 and 36, T. 46 N., R. 3 E., are probably temporary spillways by which some of the water from the melting Belvidere glacier escaped westward instead of down glacial Beaver Creek.

8. The tributary of Mosquito Creek in sec. 8, T. 44 N., R. 3 E., was apparently diverted from a southward course across the southeast corner of sec. 5. This diversion was probably accomplished when the valley was first blocked by the Belvidere glacier and filled with the water from the melting ice.