

## ABANDONED CHANNELS IN RANDOLPH AND DELAWARE COUNTIES, INDIANA.

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Extending across the massive moraine which trends east and west through southern Randolph and Delaware counties and northern Wayne and Henry counties are four broad valleys which were lines of discharge from the melting ice of the Wisconsin glacier. This moraine, which belongs to the Bloomington morainic system, needs a local name, and in this paper it is called the Mt. Summit Moraine, after the village in Henry County which stands on its crest near the place where it bends to the southwest. The northern section of each of these abandoned channels holds a small stream which flows northward. The southern portion holds a stream which flows to the south. The divide in each valley is a broad, muck swamp. (Fig. 1.)

Starting from the east, the first channel is that occupied by the headwaters of Greenville Creek and Nolands Fork. The swampy divide lies just east of Crete, a small village on the Peoria Division of the Big Four Railroad. It can be well seen from the highway that runs through Arba, Crete, and Spartanburg. The second channel lies east of Modoc another village on this railroad. The east-west highway passing through Modoc and Lynn crosses this channel near the southern edge of the broad, swampy divide. South from this swamp flows a small stream called West River, a tributary of West White River. The third channel lies east of Losantville. A small tributary of West Whitewater occupies the southern part of this valley, while the northern part is occupied by Little White River. The fourth, and largest of these glacial channels extends from the vicinity of Muncie to Newcastle. In the northern part of this valley now flows Buck Creek, a tributary of West White River. The Southern part is traversed by one of the headwaters of Blue River (East White River). A tributary glacial channel coming in from the southeastern corner of Delaware County joins the main glacial channel (Buck Creek-Blue River Valley) at a point about two miles south of the Delaware-Henry County line. Prairie Creek occupies most of the length of this old channel.

A probable line of discharge of glacial waters lies about three miles west of the eastern-most channel. The northern part is occupied by the headwaters of West White River and the southern part by Greens Fork, a tributary of West Whitewater. The divide, however, is not in a well-defined channel and therefore it has been thought best not to consider it with the other four lines of glacial outflow which are so well defined.

A. J. Phinney, M.D., in his geological reports recognized these valleys as lines of discharge of glacial waters. Writing of these valleys in his *Geology of Randolph County*<sup>1</sup>, he says:

"The streams which occupy these broad valleys could never have excavated them; in fact, until ditches were cut, they had not even made a channel for themselves. They evidently mark the course of

<sup>1</sup> Phinney, 12th Ann. Rept., Ind. Dept. Geology and Natural Hist. p. 180.

"Proc. 38th Meeting, 1922 (1923)."

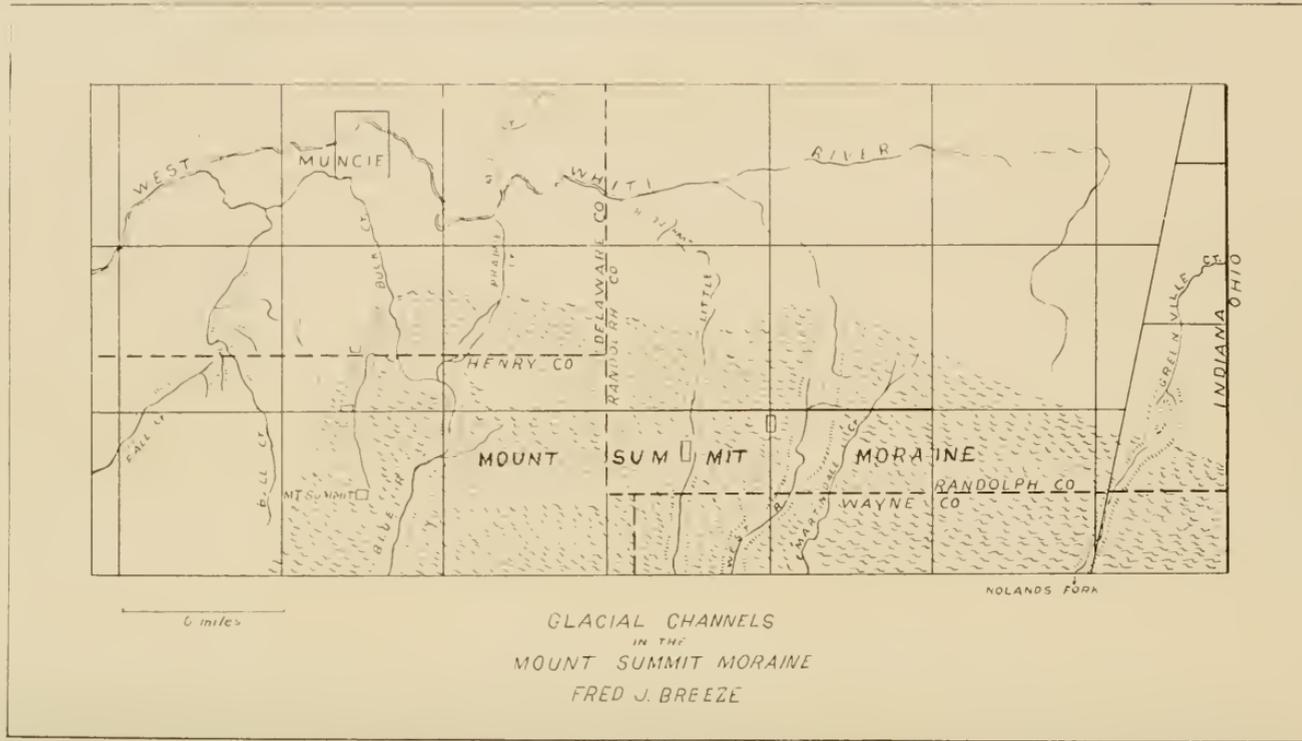


Fig. 1. Glacial Channels in the Mount Summit Moraine.

glacial rivers flowing from the northeast to the valley of the Ohio or the ocean."

Phinney<sup>2</sup> in describing the upper part of the glacial valley, which extends from near Selma, Delaware County, to the main glacial valley in which Buck Creek and Blue River now flow, says:

"Just west of Selma where crossed by the Bee Line Railroad it was deep enough and treacherous enough to swallow up their embankment when first built. This channel extends southwestward across the valley of White River and to the east of New Burlington into Henry County. Near the county line the channel, now called prairie, is filled up sufficiently to cause the water of Prairie Creek to flow northward to White River."

Arthur E. Taylor in *A Soil Survey of Randolph, Wayne, Henry, Rush, Fayette, Union and Franklin Counties*<sup>3</sup> in describing the Buck Creek-Blue River Valley, says:

"A very interesting problem in stream piracy was noted by the writer in the northern part of Prairie Township (Henry County), but time did not permit him to work it out in detail. \* \* \* Blue River once entered Henry County two and a half miles east of Luray and drained a considerable area in southern Delaware County. Subsequently Buck Creek, with a lower channel, kept working its head back towards Blue River, and finally, at a point one mile south of the Delaware line, captured it, conveying the water in a northwesterly direction to the White River. Blue River was left as a small creek which was entirely too small to keep the old river channel open. \* \* \* A marshy condition began to develop, and a large amount of vegetation accumulated in the presence of water, which is seen today in the muck beds and the dark Wabash silt loam and Wabash loam soils that cover the surface."

The continuity of the Buck Creek-Blue River Valley is not due to stream piracy. The whole valley gives evidence of having been excavated by a large stream flowing southward. The only piracy is that of the channel.

In many moraines are shallow gaps which served as spillways for the water from the melting ice, but the floors of these gaps are far above the level of the bordering plains on the outer and inner sides of the morainic ridges. These four abandoned channels are unusual in that their floors have been excavated down to the level of the bordering plains. It seems that they served as glacial channels for a considerable time after the ice had retreated from the inner slope of the Mt. Summit Moraine.

The large terraces along East White River in Henry and lower counties and along the streams of the Whitewater system, as well as the extensive gravel plains in Wayne County are a measure of the enormous volumes of glacial floods that poured through these channels.

<sup>2</sup> Phinney, Henry County and Portions of Randolph, Wayne, and Delaware: 15th Ann. Rept., Ind. Dept. Geology and Natural Hist.

<sup>3</sup> Taylor, A. E., 34th Ann. Rept., Ind. Dept. of Geology and Natural Resources, pp. 74, 75.

The land north of the Mt. Summit Moraine slopes to the west and the present drainage is in that direction. After the ice retreated north from this moraine in Randolph and Delaware counties, a dam, presumably a part of the ice sheet, still lay to the west and southwest. When this dam of ice melted away a lower outlet was opened up and these four valleys leading southward ceased to carry water from the melting ice.

After these valleys were abandoned by glacial waters, they received only the run off from short, transverse tributaries flowing from adjacent areas of the moraine. The small volume of water spreading out over the broad valley floors was unable to keep the channels open; and alluvial fans spreading out across the valleys soon converted the valley floors into a series of shallow basins in which thick beds of peat and muck accumulated. In time the postglacial streams to the south of the moraine worked back by headward erosion into these swampy areas, while tributaries of West White River, cutting back southward, came into them from the north.

Natural drainage was so poorly developed that it was necessary to dig large ditches to convert these swampy tracts into productive lands. Today these areas of rich black soil yield heavy crops of corn.

A striking feature of the broad belt of muck land which has been reclaimed by the dredging of Buck Creek and Blue River is the large amount of buried wood in it. In places farmers have dug up cords of wood closely resembling red cedar and used it for fuel. Large pieces may still be found just beneath the plow soil. Samples of this wood collected by State Forester Deam and the writer are in the State Museum at Indianapolis.

Southwest of Muncie is a valley which seems to have been excavated by a single stream, although at present two streams occupy it. In the northern part is Bell Creek which flows north into Buck Creek. In the southern part is Fall Creek. Between the two there is a portion of the old valley which is not cut by a stream channel. It is a broad swampy divide. The tributaries of these two streams (not well shown on the map), when studied in reference to the old valley, present some striking features. Since this old valley lies wholly on the northwest, or inner, side of the moraine it is merely mentioned here. It will be described in a future paper.