

1914

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Recommended Citation

Tilton, John L. (1914) "An Area of Wisconsin Drift Further South in Polk County, Iowa, Than Hitherto Recognized," *Proceedings of the Iowa Academy of Science*, 21(1), 219-220.

Available at: <https://scholarworks.uni.edu/pias/vol21/iss1/32>

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AN AREA OF WISCONSIN DRIFT FURTHER SOUTH IN POLK COUNTY, IOWA, THAN HITHERTO RECOGNIZED.

JOHN L. TILTON.

It is commonly understood that the Raccoon river, where it flows through Des Moines, lies just south of the southern limit of the Wisconsin drift sheet¹ in Iowa. North of this river the upland of Wisconsin drift presents the character of a youthful ground moraine, marked by gentle sags and swells, with undrained depressions here and there, fea-

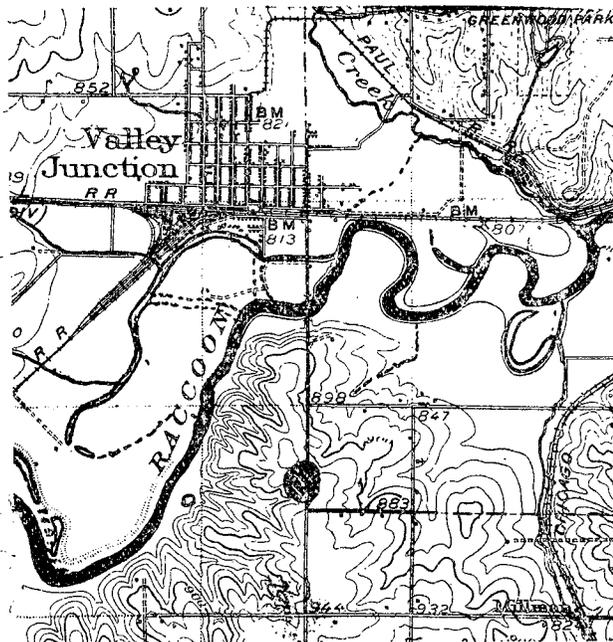


Fig. 8.—Sections 14 and 23 (township 78 north, range 25 west) south of Valley Junction. The area of Wisconsin drift is crosslined. (Topography taken from Des Moines Sheet).

tures that are conspicuous even in so short a distance as that from Des Moines to Ankeny. South of Raccoon river the level of the old Kansan drift plain is still marked by the level of the upland; but the land is well dissected by erosion and the upland in the area of Kansan drift is thoroughly drained by the numerous ramifying ravines. These contrasts are evident, even within the area of a single topographic sheet, that of the Des Moines quadrangle.

¹H. F. Bain, Geology of Polk county, Iowa Geological Survey, Vol. 7, 1896, page 269. References to other reports are given on page 268; and an excellent description of the physiographic areas on pages 268-273.

In both of the years in which the Des Moines sheet has been included in the list for study at Simpson College the members of the class have called attention to an area mapped as an undrained swale in the upland about a mile and a half south of Valley Junction, in the region ordinarily considered a part of the Kansan drift area. It was to determine whether this representation on the map correctly recorded natural conditions or artificial conditions that a trip was recently made to examine the area.²

The swale itself is 250 feet north and south and nearly as wide east and west, shallow, with highway built through the eastern portion of it. Though it lies in the narrow portion of the upland, it is clearly a natural, undrained marsh, as typical of youthful Wisconsin topography as any swale elsewhere in the county.

Nothing but surface muck and soil are visible in the immediate vicinity of the swale, no boulder clay being there evident. To the south ravines from both east and west extend up into the upland and thoroughly drain it. A few rods to the west and northwest the ravines are cut deep into Kansan drift with its characteristic boulders and cobbles of greenstone, quartzite (mostly white), and of dark and light colored granite with surface weathered. These cobbles and boulders are especially numerous in the deeper portions of the second ravine to the northwest, which heads near the swale. The evidence of Kansan drift extends from about eight feet below the level of the swale to the edge of the low ground along the river, below which, of course, nothing is exposed. To the east the erosional topography is of a similar character, but boulders are not so conspicuous. A quarter of a mile to the north of the swale the drift by the roadside contains small pebbles of dark and light chert at about the upper level of the Kansan drift found in ravines near by to the west. Still further north along the brow of the hill eight feet of loess over three feet (exposed) of stratified sand are cut through in grading the road down to the bridge. The upper portion is typical loess in structure (slightly laminated), yellowish gray in color, almost non-fossiliferous. Fortunately, one perfect shell was found (a large *Succinea*), one portion of another shell of the same kind, and a few small fragments. The loess extends up into the soil, with no drift between. The base of the stratified sand is not exposed at present, but Kansan drift is found near by to the west.

Even though no Wisconsin boulder-bearing clay is evident around the swale, this little area on the upland is unmistakably a portion of the Wisconsin topography separated from that north of Valley Junction by the valley of Raccoon river, and deserving to be so recognized in maps of the drift sheets. The present extent of this small area is not over about an eighth of a mile in all directions from the swale. It apparently extends a little further to the east than in the other directions.

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²The writer was accompanied by Mr. Theodore Saur and Mr. Lee Butler, students, who assisted in the examination of the region.