This article was downloaded by: [University of Exeter]

On: 18 March 2015, At: 19:11

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK

Journal of Geography

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rjog20>

The Driftless Area of Minnesota, A Geographic Unit

Charles C. Colby ^a

^a George Peabody College for Teachers, Nashville, Tenn. Formerly of State Normal School, Winona, Minn.

Published online: 24 Jun 2008.

To cite this article: Charles C. Colby (1916) The Driftless Area of Minnesota, A Geographic Unit, Journal of Geography, 14:6, 165-167, DOI: [10.1080/00221341608986874](https://doi.org/10.1080/00221341608986874)

To link to this article: <http://dx.doi.org/10.1080/00221341608986874>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

by a heavy mantle of glacial drift. In the southwestern portion of this area is a small plateau rising 500 feet above the adjacent upland, the transition from one level to the other, although gradual, is comparatively well defined. This higher plateau extending from Minnesota into the Dakotas, is known as the "Coteau des Prairies." Two other slightly elevated regions in this area mark the topography. One of these is in Mower County, where it forms a flat dome from which the surface slopes gradually in all directions. It rises about 1400 feet above sea level or 200 to 300 feet above the general level of the area. The other elevated region is the morainic area of central Minnesota. Between these three elevated areas there are three troughlike depressions whose axes slope away from the highest elevation in the southwest toward the lowest depressions in the northeast.

MINNESOTA

THE DRIFTLESS AREA OF MINNESOTA, A GEOGRAPHIC UNIT

By Charles C. Colby

George Peabody College for Teachers, Nashville, Tenn.

Formerly of State Normal School, Winona, Minn.

DESCRIPTION OF THE DRIFTLESS AREA

AN area of approximately 2500 square miles in the southeastern part of Minnesota has conditions of topography, drainage, and soil so different from the rest of the state that it forms a geographic unit. It is a part of the well known unglaciated or driftless area in southwestern Wisconsin, northwestern Illinois, and northeastern Iowa. In Minnesota, the driftless area borders the Mississippi River and is drained by the Root, Whitewater, and Zumbro rivers. It includes all of Houston and Winona counties, and adjacent sections in Fillmore, Olmsted, Wabasha and Goodhue counties.

The driftless area in Minnesota is a region of horizontally bedded shales, sandstones, and limestones dissected to topographic maturity. Here the bed rock, which in most of southern Minnesota is buried beneath a thick deposit of glacial drift, outcrops in the slopes of the valleys. Economically the most important rock is a thick bed of limestone which outcrops in the upper portion of the bluffs along the Mississippi. It is quarried in many places and is one of the materials most used in building basements, bridges, roads, and wing dams in the river.

Topographically this area is divided into an upland and a lowland province. The upland, which is about 1200 feet above sea level, has in its western portion a comparatively level undissected surface, while to the east it is so much dissected by the tributaries of the Mississippi that it exists only as flat topped spurs between the valleys. Such valleys are from 350 to 450 feet below the upland and form a lowland section. In their upper reaches they are narrow, steep sided, and V-shaped. Their lower, wider sections have

more gentle slopes and on their floors there are wide, flat-topped alluvial terraces which rise from 30 to 60 feet above the flood plains of the streams.

INFLUENCE UPON ECONOMIC DEVELOPMENT

The dissected surface of the driftless area has influenced its economic development in many ways. For instance, in this area there is a smaller percentage of land actually in cultivation than in adjacent glaciated sections. This is due primarily to the large amount of land on the slopes of the valleys which is too steep to cultivate. The location of roads and railroads is a second example. On the undissected parts of the upland the roads, except for minor deviations due to small hills or limestone sinks, are built directly between points or on the section lines. In the dissected section they follow the tops of the ridges, converging at the heads of valleys down which they lead to important points in the lowland. Road building is a simple matter on the flat topped terraces but on the flood plains much expensive grading, filling, and bridging is required.

Drainage in this area is active. Because of steep slopes and the absence of lakes and swamps the rivers flood rapidly after heavy rains. On the upland much of the run-off is cared for by sink holes leading to under ground drainage channels. Some of this water collects underground in streams which appear in the valleys as springs of steady flow which supply the drinking water for farm or village. The large number and steady flow of such springs tend to give the streams a uniform volume throughout the year which is of much importance to numerous small grist mills located along their courses.

Because the upper horizons of the bed rock in this area are pervious sandstones and limestones and because of the number and depth of the valleys the permanent water table is far below the surface of the upland. For this reason surface wells on it go dry in periods of drought, which means that the farmers must drive wells from 250 to 400 feet deep in order to have an adequate supply of drinking water.

The flow of water in many of the smaller valleys is intermittent. Their beds and those of the upper reaches of most of the valleys are strewn with boulders brought down during heavy rains. Where the steep slopes of such valleys are not protected by trees and grass and especially where stock has been allowed to graze over them, the soil has been washed away, leaving gullied areas or acres of bare bed rock. Some of the farmers are checking such erosion by practicing contour plowing, by planting the slopes in grass or shrubs, and by building a series of brush or rock dams to decrease the gradient of the valley.

The drainage on the floor of the valley of the Mississippi contrasts with that of the rest of this area. On it are so many sloughs, cut-offs, ponds, and lakes that the river has a semi-braided character. This means that it is impossible to cross it except at points where roads have been built. Consequently, in the early days when Minnesota depended on the river for a com-

mercial outlet, villages developed at every point where the main channel of the river swings near enough to the side of its valley to furnish a landing place accessible to the back country. The location of Winona, the fourth city in size in Minnesota, is an example. It was located at the point where the main channel of the Mississippi impinges on the lower end of Wabasha Prairie which is a large alluvial terrace. This terrace is situated so that the trade from six valleys and a large part of the upland found its outlet to the river at Winona.

AGRICULTURAL RELATIONSHIPS

The driftless area has a variety of soils. Over most of the upland there is a rich, dark colored, fine grained loam derived from the loess which mantles the uplands bordering this section of the Mississippi River. Where the loess is absent the soils are residual, being derived from the underlying sandstone or limestone. Near the border of the drift the soil is modified in some places by thin deposits of sandy outwash gravels. These different soils vary in fertility, which in part explains the variety in crop yields and farm values found within short distances.

The crops grown on the upland are typical for much of southern Minnesota. Barley, oats, and corn are the cereals of largest acreage. They are grown in some plan of rotation with wheat, rye, and forage crops. Stock for market is raised on most farms and much butter is made in local creameries. Such farming, in a climate like that of Minnesota, demands large, well built barns and heavy, expensive machinery.

In the valleys, soils and farm conditions are somewhat different. The soils of the alluvial terraces vary from heavy clay to light sandy loams. Valley farmers grow less cereals than upland farmers. This is due in part to the fact that on most valley farms the areas suited to growing cereals is limited and that the conditions necessary for stock raising are present. In the spring, pasture is furnished on sun-warmed valley slopes and later in the season, during the drought of summer, on the flood plains. In addition springs and streams furnish abundant water for the stock.

Fruits and vegetables also are important products on many valley farms. They grow well on the light alluvial loams of the terraces and in many parts of the valleys they are afforded protection from drifting snows, and excessive freezing and thawing. About the larger valley towns like Winona, Red Wing, Lake City, and Wabasha, there are many small truck farms whose products supply the local demands and in addition are shipped to other sections of the state.