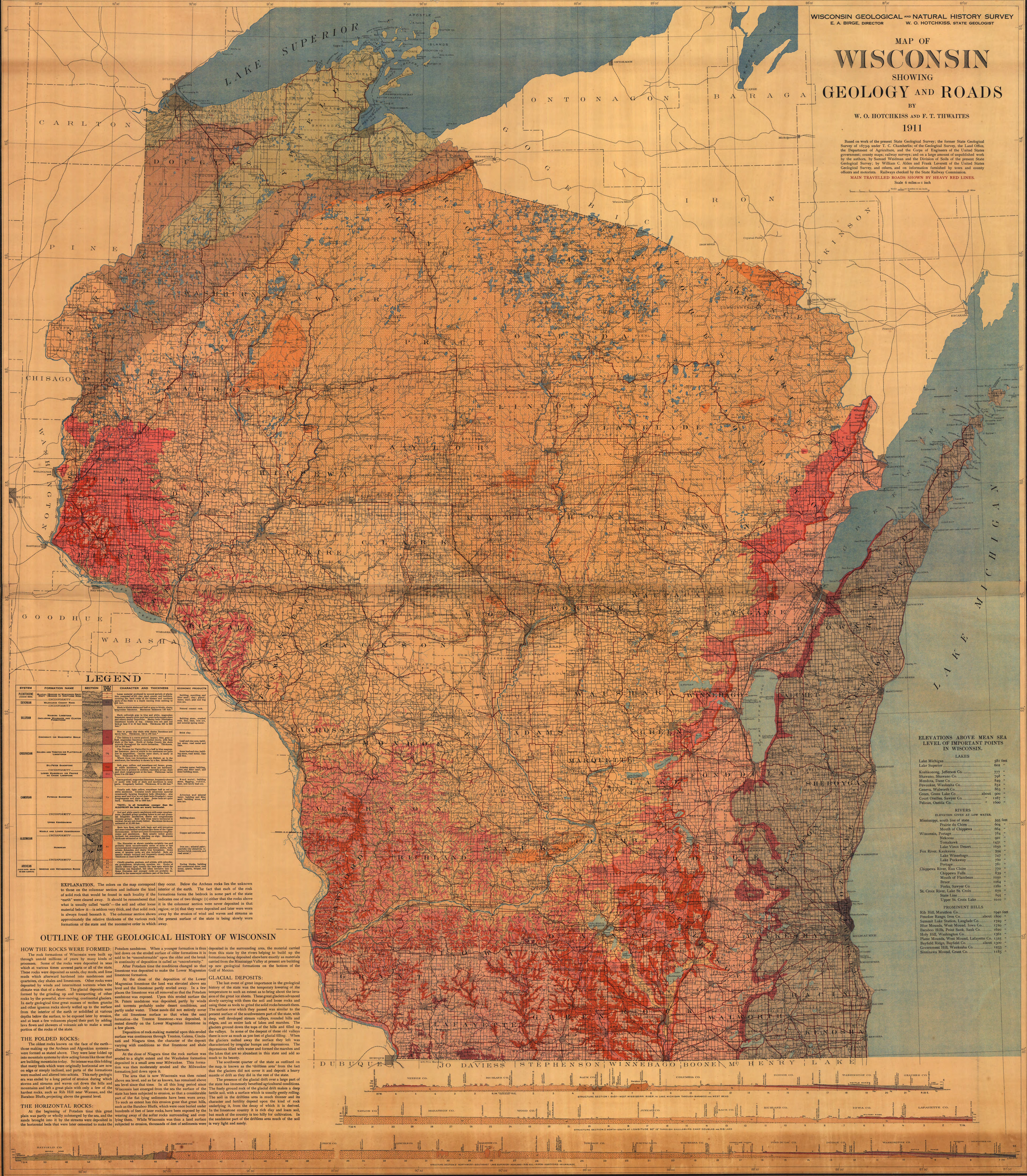


MAP OF WISCONSIN SHOWING GEOLOGY AND ROADS

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Based on work of the present State Geological Survey; the former State Geological Survey of 1873-90 under T. C. Chamberlin; of the Geological Survey, the Land Office, the Department of Agriculture, and the Corps of Engineers of the United States government; county maps; railway surveys; and on a large amount of unpublished work by the authors; by Samuel Weisman and the Division of Soils of the present State Geological Survey; by William C. Allen and Frank Leverett of the United States Geological Survey, and others; and on information furnished by town and county officers and motorists. Railways checked by the State Railway Commission.
MAIN TRAVELLED ROADS SHOWN BY HEAVY RED LINES.
Scale 6 miles = 1 inch



LEGEND

SYSTEM	FORMATION NAME	SECTION	THICKNESS	CHARACTER AND THICKNESS	ECONOMIC PRODUCTS
PLEISTOCENE	GLACIAL DEPOSITS			Loose material, part of which is of glacial origin, deposited in various ways, and in various places, and in various thicknesses, and in various degrees of consolidation, and in various degrees of weathering, and in various degrees of fertility, and in various degrees of color, and in various degrees of texture, and in various degrees of composition, and in various degrees of structure, and in various degrees of appearance, and in various degrees of use.	Gravel, sand, and clay.
DELIAN	MILWAUKEE SANDSTONE			Yellowish sandstone, composed of quartz, feldspar, and mica, and in various degrees of consolidation, and in various degrees of weathering, and in various degrees of fertility, and in various degrees of color, and in various degrees of texture, and in various degrees of composition, and in various degrees of structure, and in various degrees of appearance, and in various degrees of use.	Gravel, sand, and clay.
ILLINOIAN	CHICAGO SANDSTONE			Yellowish sandstone, composed of quartz, feldspar, and mica, and in various degrees of consolidation, and in various degrees of weathering, and in various degrees of fertility, and in various degrees of color, and in various degrees of texture, and in various degrees of composition, and in various degrees of structure, and in various degrees of appearance, and in various degrees of use.	Gravel, sand, and clay.
MISSISSIPPIAN	ST. PETERS SANDSTONE			Yellowish sandstone, composed of quartz, feldspar, and mica, and in various degrees of consolidation, and in various degrees of weathering, and in various degrees of fertility, and in various degrees of color, and in various degrees of texture, and in various degrees of composition, and in various degrees of structure, and in various degrees of appearance, and in various degrees of use.	Gravel, sand, and clay.
PRE-CAMBRIAN	ARCHEAN ROCKS			Various rocks, including granite, gneiss, and schist, and in various degrees of consolidation, and in various degrees of weathering, and in various degrees of fertility, and in various degrees of color, and in various degrees of texture, and in various degrees of composition, and in various degrees of structure, and in various degrees of appearance, and in various degrees of use.	Granite, gneiss, and schist.

EXPLANATION. The colors on the map correspond to those on the legend. Below the Archean rocks lies the unknown of solid rock that would be found in each locality if the formations in some part of the state "earth" were cleared away. It should be remembered that what is usually called "earth"—the soil and other loose material below it—is a section very thick, and that solid rock regions, or (2) that they were deposited and later were worn away by the erosion of wind and waves and streams and approximately the relative thickness of the various rock formations of the state and the successive order in which they were deposited.

OUTLINE OF THE GEOLOGICAL HISTORY OF WISCONSIN

HOW THE ROCKS WERE FORMED: The rock formations of Wisconsin were built up through several millions of years by many kinds of processes. Some of the rocks were deposited in seas which at various times covered parts of all the state. These rocks were deposited as sands, clay muds, and lime marls which afterward hardened into sandstones and shales and limestones. Other rocks were deposited by winds and intermittent torrents when the climate was that of a desert. The glacial deposits were formed by the grinding up and transporting of other rocks by the powerful, slow-moving, continental glaciers in early geological time great masses of molten granite and other igneous rocks slowly welled up to the surface from the interior of the earth or solidified at various depths below the surface, to be exposed later by erosion, and at least a few volcanoes played their part by adding lava flows and showers of volcanic ash to make a small portion of the rocks of the state.

THE FOLDED ROCKS: The oldest rocks known on the face of the earth—those making up the Archean and Algonquin systems—were formed as strata before they were later folded up into mountain systems by slow acting forces like those that are building mountains today. So intense was this folding that many beds which were originally horizontal are now on edge or steeply inclined, and parts of the formations were mashed and altered into schists. This early geology was ended by a long period of erosion during which storms and streams and waves cut down the hills and mountains and left a great plain with only a few of the hardest rocks such as Rib Hill near Wisconsin, and the Baraboo Bluffs, projecting above the general level.

THE HORIZONTAL ROCKS: At the beginning of Potsdam time this great plain was partly or wholly submerged by the sea, and the sands brought into it by the streams were deposited in the horizontal beds that were later concerned to make the

Potsdam sandstone. When a younger formation is laid down on the eroded surface of older formations it is said to be "unconformable" upon the older and the break in continuity of deposition is called an "unconformity." After Potsdam time the conditions changed so that limestone was deposited to make the Lower Magnesian limestone formations.

At the close of the deposition of the Lower Magnesian limestone the land was elevated above sea level and the limestone partly eroded away. In a few places the limestone was all removed so that the Potsdam sandstone was exposed. Upon this eroded surface the St. Peter sandstone was deposited, partly by winds and torrents probably under desert conditions, and partly under water. These sands did not entirely cover the old limestone surface so that when the next formation—the Trenton limestone—was deposited, it rested directly on the Lower Magnesian limestone in a few places.

Deposition of rock-making material upon this eroded surface was continuous through Trenton, Galena, Cincinnati and Niagara time. The character of the deposit varied with conditions so that limestone and shale alternated.

At the close of Niagara time the rock surface was eroded to a slight extent and the Waubesa formation deposited in a small area near Milwaukee. This formation was then moderately eroded and the Milwaukee formation laid down upon it.

The area that is now Wisconsin was then raised above sea level, and as far as known, has remained above sea level since that time. In all this long period since Wisconsin first emerged from the sea the surface of the state has been subjected to erosion, so that a considerable part of the flat lying sediments have been worn away. To such an extent has this erosion gone that great hills, hundreds of feet of later rocks, have been exposed by the wearing away of the softer rocks surrounding and overlying them. While Wisconsin was thus a land surface subjected to erosion, thousands of feet of sediments were

deposited in the surrounding area, the material carried from this state by the rivers helping to build up the formations being deposited elsewhere exactly as materials carried from the Mississippi Valley at present are building up new geological formations on the bottom of the Gulf of Mexico.

GLACIAL DEPOSITS: The last event of great importance in the geological history of the state was the temporary lowering of the temperature to such an extent as to bring about the invasion of the great ice sheets. These great glaciers advanced slowly carrying with them the soil and loose rocks and using these as tools to grind the solid rocks beneath them. The surface over which they passed was similar to the present surface of the southwestern part of the state, with deep, well developed stream valleys, rounded hills and ridges, and an entire lack of lakes and marshes. The glaciers ground down the tops of the hills and filled up the valleys. In some of the deepest of these old valleys there is now as much as 500 feet of glacial filling. When the glaciers melted away the surface they left was characterized by irregular bumps and depressions. The depressions filled with water and formed the marshes and the lakes that are so abundant in this state and add so much to its beauty.

The southwest quarter of the state as outlined on the map, is known as the "driftless area" from the fact that the glaciers did not cover it and deposit a heavy mantle of drift as they did in the rest of the state.

The presence of the glacial drift over a large part of the state has immensely benefited agricultural conditions. The fine ground rock of the glacial drift makes a deep fertile soil, with a surface which is usually gently rolling. The soil in the driftless area is much thinner and its character and fertility depend upon the kind of rock underlying it from the decay of which it is derived. In the limestone country it is rich clay and loam soil, but much of the country is too hilly for cultivation. In the sandstone part of the driftless area much of the soil is very light and sandy.

ELEVATIONS ABOVE MEAN SEA LEVEL OF IMPORTANT POINTS IN WISCONSIN.

LAKES	ELEVATION
Lake Michigan	581 feet
Lake Superior	602 "
Koshongong, Jefferson Co.	777 "
Shavano, Shawano Co.	796 "
Mendota, Dane Co.	840 "
Fewakes, Waushara Co.	851 "
Genoa, Walworth Co.	863 "
Green, Green Lake Co.	900 "
Court Orellia, Sawyer Co.	1287 "
Yelican, Oneida Co.	1600 "

RIVERS	ELEVATION
Mississippi, south line of state	595 feet
Prairie du Chien	666 "
Mouth of Chippewa	784 "
Wisconsin, Portage	795 "
Nedocan	1431 "
Tomahawk	1431 "
Lake View, Desert	1650 "
Fox River, Kaukauna	591 "
Lake Winnebago	747 "
Lake Koshongong	750 "
Portage	781 "
Chippewa River, Eau Claire	770 "
Chippewa Falls	821 "
Mouth of Flambeau	1050 "
Brace	1064 "
Forks, Sawyer Co.	1285 "
St. Croix River, Lake St. Croix	670 "
State Line	595 "
Upper St. Croix Lake	1010 "

PROMINENT HILLS

Rib Hill, Marathon Co.	1940 feet
Powder Range, Iron Co.	1850 "
Summit Lake Station, Langlade Co.	1720 "
Blue Mountain, West Monroe, Iowa Co.	1720 "
Baraboo Hills, Fond Du Lac Co.	1600 "
Holy Hill, Washington Co.	1395 "
Plateau, West Menard, Lafayette Co.	1285 "
Bayfield Ridge, Bayfield Co.	1300 "
Government Hill, Waushara Co.	1185 "
Sinclair Mountain, Grant Co.	1185 "