

# THE LAKES AND RIVERS OF MICHIGAN

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From "Michigan—the Land of Plenty."  
 This state of Michigan comprises two great peninsulas situated on the waters of Lakes Superior, Michigan and Erie, and about 200 islands, including Isle Royale near the north end of Lake Superior and the historic and beautiful island of Mackinac in the straits of Mackinac. It has an area of about 130,000 square miles. Situated in the heart of the continent, holding within its borders 5,000 sparkling inland lakes surrounded by the waters of the Great Lakes which are the greatest inland waterways in the world, with a coast-line of more than 1,400 miles indented with bays and harbors and fringed with islands, Michigan enjoys remarkable commercial and climatic advantages. The commercial advantages are reflected in the fringe of important manufacturing and shipping centers along the lake shores, and the climatic advantages are reflected in the diversified character of its agricultural pursuits, as well as by the hundreds of thousands of summer residents and visitors who are welcomed from the less enjoyable summer climates of other states and countries.

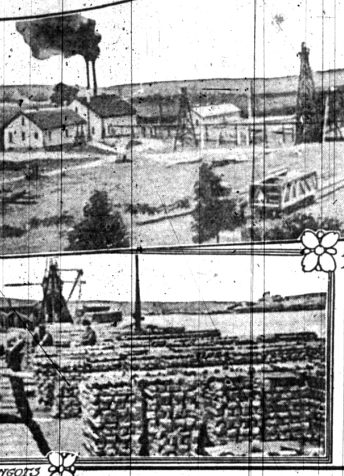
The surface of Michigan presents a great variety of forms, most of which have their origin in geologic processes which were attendant on the advance and retreat (some 10,000 to 20,000 years ago) of the last great continental glacier which covered the central continent as far south as the Ohio river. The retreat of the continental glacier was not only for the Great Lakes themselves, and hence our insular climate, but also for the character and diversity of our land forms, the configuration of our coast lines, and our many and varied types of soil. The flat lands or plains which extend from the southeast corner of the state northward a fringe belt around the "Thumb," occupying all of the lower part of the ancient bottoms of the ancestral Great Lakes. With the exception of these flat lands, and other similar but smaller tracts, the surface of the state is ruggedly rolling, the undulating hills and belts and irregular tracts of hills. The elevation of the surface rises rather gradually from the lakes inland. The higher lands in the Saginaw valley, extending from Saginaw bay via Grand river to Lake Michigan, into a northern highland and a southern highland. The northern highland is an elevated tract of country reaching from Oscego, Montmorency and Alcona counties southwest into Lake, Newaygo and Mecosta counties. The elevation of this tract ranges from 100 to 1,100 feet above Lake level, or 1,700 feet above the sea. The southeastern highland consists of a much lower and nearly parallel tract extending from southern Huron county south through Branch and Hillsdale counties into Indiana and Ohio. Most of this area is from 200 to 600 feet above Lake Huron, the highest portions lying in Hillsdale and Oakland counties, and reaching a maximum 1,287 feet to over 1,300 feet above sea level.

A rise of 120 feet of the waters of Lakes Huron and Michigan would completely inundate Lake Michigan with a strait miles wide, and 50 feet deep. The "natives," from a vicinity north of Grand Rapids, northeast near Lake Huron, would become a large island, and numerous smaller ones around its shores. A broad peninsula, tapering to the northeast, would extend from Indiana and northwestern Ohio into Tuscola and Sanilac counties. Within this peninsula, 400 feet of the southeastern highland would become merely a group of islands, with one large one in Oakland and another in Jackson, Hillsdale and Branch counties.

The Upper Peninsula has a higher western portion, rugged and rocky in many localities, and a much lower and less rugged and rocky eastern one. The height of the western portion of the western portion, ranges from 1,000 to 1,200 feet above the lake, or 1,500 to 1,800 feet above sea level, but the rock knobs and hills of the north a few hundred feet above Lake Michigan. In the state, 2,023 feet is in the Porcupine mountains in Ontonagon county. The eastern portion has a general elevation of only about 250 feet above the lake, and the highest point is only a little over 400 feet above Lake Michigan. Like Lower Michigan, the Upper Peninsula is cut across by a prominent valley, the bed of a former glacial river, running south from the Saginaw on the northern shore, to White Fish River and Little Bay de Noc. Here the level of Lake Superior raised 130 feet its waters would flow through this old valley into Michigan.

The state is drained by a number of important rivers. Many of these streams have been of incalculable value as mediums of transportation of logs to the lumber camps, and in determining the location of some of the most important cities of the state. In the future they are destined to furnish an increasing amount of electric power for transmission to villages, industrial centers, and even to the farms. The Raisin, Huron, Saginaw and AuSable are the most important ones of the eastern slope of the Lower Peninsula, and the Muskegon, Kalamazoo and St. Joseph of the western. The Huron and AuSable, rising in the interior highlands, afford a large amount of water power. The Saginaw, the largest river of the peninsula, has its mouth at Saginaw, the center of one of the richest agricultural and manufacturing districts of the state, and the Grand, a tributary of the Saginaw, where water power has been extensively developed.

In the Upper Peninsula the rivers are in general shorter and more rapid, having steeper grades. The Menominee, the longest river, forming for a great part of its length the boundary between Michigan and Wisconsin. The numerous falls and rapids throughout its course are being rapidly developed for power. The other important rivers are the Escanaba, White Fish, Manistique, Carp, Pine, Totaquemen, Sturgeon and Ontonagon.



COPPER MINES ON DOCK AND HOUGHTON



BALTIMORE, A TYPICAL MICHIGAN COPPER MINING

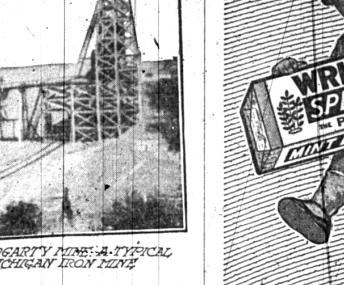
Under the limitations of space imposed in this article it will be impossible to give even a brief description of the various types of soil which occur in Michigan. I shall therefore confine my remarks on this subject to a brief statement regarding the proper use of the general soil maps of Michigan issued by the (Immigration and Naturalization Service).

These soil maps are the expression of an effort to present the results of a careful and systematic study of the soil conditions of Michigan. It is known by everyone who has any slight familiarity with soils that maps which show details of soil composition and texture are essential and in the very nature of the case cannot be made. There is no limitation of subdivisions that might be made were soils to be classified on the basis of slight differences in physical and chemical composition. On a single section of land there may be found one, two, six, or a dozen different kinds of soil, depending on the degree of dissection and the degree of importance attached to minor variations in character. On the soil maps referred to above there are shown in color and symbol 11 types and subtypes of soil. It is believed that this degree of subdivision expresses admirably the general facts. The character and relations of these types and subtypes may be readily understood and the number is not so great as to be confusing to the general reader or layman.

While a single small area of land may show wide variations in soil character, the number of soils occurring in a state above on the importance attached to slight variations in character, it is not less true that the same area may have a great predominance of soil of a particular character and composition, and the general soil conditions in such an area could be properly represented on a small-scale map by a single color or symbol. The colors and symbols on the maps express dominance in various areas covered by them of a particular soil of the general character set forth in the legend and not the entire expanse of soil of the same character. It is believed that it should be understood that no attempt has been made to measure general fertility of the soil, or the capacity of the soil formations or particular crops, as expressed on a soil map. Particular kinds of soil under certain combinations of the above factors will grow excellent crops of particular kinds when other crops will fail wholly or partially. In these days of specialized farming practically every kind of soil can be managed in such a manner as to grow the most profitable crops. It is the soil management factor in crop growing of importance equivalent to that of the soil itself.

to that of the soil itself. Vast areas of good agricultural land, mainly in the northern part of the state, await settlement and development. Prospective purchasers of land and prospective settlers should be guided mainly by accurate information regarding local conditions, personal knowledge of the particular description of land of which purchase is considered, and it should be imprudent that no map and no amount of printed matter can take the place of a personal examination of the land on the ground.

The state of Michigan has a claim to a distinctive position in each of the leading industries of the nation, viz., agriculture, manufacturing, mining and lumbering. Michigan has been known since the early days of the mining state since far back in the early forties and fifties when she began to produce copper and iron. The development of her great copper and iron resources, and today no other state produces such a quantity of these minerals. Michigan's part in the mining state rests mainly on her vast deposits of copper and iron ore, she produced in addition a large number of other mineral products, among the more important of which are coal, gypsum, clay, marl, limestone, glass, whetstones and synthetics, gem stones and silver. Prior to 1896 a considerable amount of gypsum was produced from quartz veins in the vicinity of Ishpeming. Michigan produces small quantities of oil and gas. Many of the farmers in the southeastern part of the state are engaged in the production of sufficient natural gas from shallow borings for domestic purposes. It is the belief of many geologists that Michigan may in time become an important producer of oil and gas.



FORGARTY MAMA—A TYPICAL MICHIGAN MOTHER



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## "Chew it after every meal"

Two Natives. The Nervous Candidate. A young man to follow an introduction with a girl. A young man to follow an introduction with a girl. A young man to follow an introduction with a girl.

Time Didn't Matter. A prominent lawyer tells this tale of the hills of Kentucky. He had been in Jackson during the hearing of a big land case, and after the strain of several weeks in the courtroom he had decided to take a trip up in the mountains and enjoy the quieting influences of the hills. He traveled the paths and narrow mountain roads till he found himself, at the end of several days' journey, about forty or fifty miles from the railroad. It was about noon, the lawyer judged, for his watch had run down and he could not be exact. But in the midst of this deep-contemplation the lawyer came upon an old dairy sitting upon a bowlder longside the road.

"What time have you?" he asked of the old lady. "Well, suh, boss, the old watch says she's about ten minutes to twelve," was the reply. "Is that sun time or railroad time?" again questioned the lawyer. "What difference does that make? One or another as fer from here as the other!"—Louisville Times.

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Murphy's Dilemma. They met on the high road and shook hands. "Shure, Pat," said Murphy, "betin's a shockin' bad hair you got." "Shure, Murphy," said Pat. "But why?" "Ye know Costigan?" "Troth I do!" "Well," said Murphy, "he bet me sixpence to a shilling that I couldn't swallow an egg without breaking the shell in the regular way and they are aboildin' it!" "And did ye lose the bet?" asked Pat. "Ye, Pat. I wun it," replied Murphy. "Then phew's allin' yer!" "Shure, it's the egg that's allin' me," groaned Murphy. "If I jump about I'll break it and cut me, if I eat it ach wid the shell, an' if I kape quiet I'll haff an' I'll haff a Shanghai rooster scratchin' me inside!"—Hearst.

Waterproof Matches. Hint for companies and dining parties. Many of you have encountered the annoying experience of finding yourselves miles from a store and in the regular way said they are absolutely protected from dampness.

Explained. Coffer (complacently)—Ah, Bobby, I am glad to see your photograph in your sister's frame on the mantel. Bobby—Well, she had the rough sketch to get it in, over Tom's head, so she came.

That Knife-Like Pain Have you a lame back, aching day or night? Do you feel sharp pains after working? Are the kidneys sore? Is there aching in the back? Do you have headaches, backaches, rheumatic pains, etc.? If so, you need Doan's Kidney Pills—The medicine recommended by so many people in this locality. Read the experience that follows:

A Michigan Case. I am a farmer, and I have a lame back, aching day or night. I have been using Doan's Kidney Pills for some time, and I feel much better. I can now do my work, and I am able to go to the store. I am very much pleased with the results. I have no more pain, and I feel much stronger. I am sure that Doan's Kidney Pills are the best medicine for my condition. I have recommended them to my neighbors, and they are all very much pleased with the results. I am sure that Doan's Kidney Pills are the best medicine for my condition. I have recommended them to my neighbors, and they are all very much pleased with the results.

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