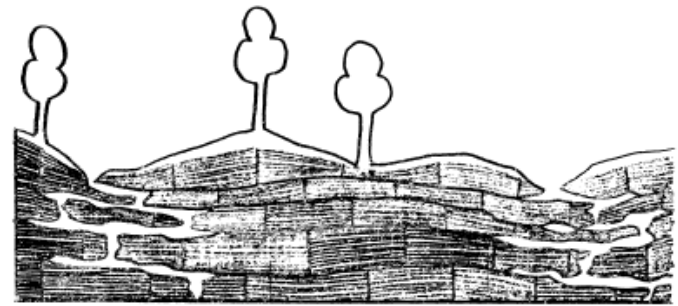
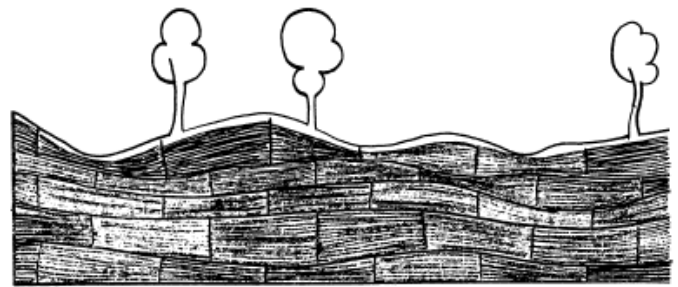


when it reaches limestone it is ready to dissolve the rock.



SOMETHING ABOUT CAVES in MICHIGAN

by

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How caves and sinks are formed.

Limestone is a rock made of layers upon layers (or strata) of lime muds and shells deposited in ancient seas. Water was squeezed out or evaporated from the muds and they became rock. This compaction caused vertical cracks, or joints, in the layers. Some of the limestones are ancient buried coral reefs and are porous. So that water entering the cracks and pores has a large surface to work upon to dissolve. Slowly water works down a crack in the limestone dissolving the rock and making the crack wider, it spreads in the horizontal cracks, or bedding planes, dissolving as it seeps along, and in time the openings are large enough to be caves and galleries connecting them. Large and numerous caves connected with galleries of great or unknown extent are called caverns. Some large caverns have been made by water from warm underground springs.

In many caves the roof blocks of limestone are eroded or are loosened and fall to the cave floor so that in time the thin unsupported roof falls in and a sink hole results. Water seeks the lowest level, so rivers are in caves and caverns, and flow underground in the horizontal cracks in limestones.

In her eternal changing of the earth Nature by cracking,

DO WE HAVE CAVES IN MICHIGAN? Probably. Do we have caverns in Michigan? Perhaps. Like the Mammoth Cave in Kentucky? Who knows? The spelunkers, speleologists, the cave explorers will need to sift the surface indications and explore.

What are the indications? Caves and caverns are excavations, made by nature in rock below the surface of the land. Water is the agent, the tool used. Rocks can be dissolved by slightly acid water but limestones, dolomites and gypsum can be dissolved most readily. Rain water falling through the air takes up carbon dioxide and becomes slightly acid. As it percolates through the soil it becomes more acid so that if and

cutting, carving, dissolving, makes holes in rock and then proceeds to fill them. In limestone rocks most of the filling material is the principal mineral of the lime muds, calcite.

Slowly evaporating lime-saturated water deposits crystals of calcite and of some other minerals in smaller amounts in the cracks of the rock making veins of crystal. The water that drips through a crack deposits a ring of calcite around the opening. As it continues to drip ring after ring is deposited building a cylindrical conical deposit from the roof of the cave or cavern. This is a stalactite. Water that drops from the building stalactite splashes to the floor, there evaporates, deposits its mineral, and builds up a mound called a stalagmite.

When stalactite and stalagmite meet a column is formed. In many caves stalactites forming along a joint build a curtain or drapery-like mass of crystal pendant from the cavern roof. The fantastic and beautiful formations of caves and caverns are the monuments of moving water, which first dissolved limestone and/or gypsum rock, then evaporated and redeposited the minerals in crystal form, leaving many impurities to give color.

Not all caves are in limestone. Many have been carved in the rocks along the sea or Great Lakes coast by the pounding and undercutting of wave tossed rocks on cliffed shores. Along Lake Superior caves or recesses have been cut in the sandstones of the Pictured Rocks, some in the cliffed shores of the black rocks north of Marquette. But these caves have wide entrances and are not deeply recessed in the rock nor are their floors much if at all below lake level. On Mackinac Island several caves were made by the higher-level ancestral Great Lakes pounding on the limestone shores and cliffs and eating into the cracks of the limestones of the islands.

But what about the speleologists dream of caves in Michigan? Several of the rock bowls that are in the foundations of Michigan are limestones and/or dolomites. Where they come to the surface (under glacial drift in most areas) is shown on the map.

Early settlers in Monroe County reported curious underground rumblings especially in the spring and after heavy rains and they found many rock openings into which surface water swirled like a whirlpool into underground passageways in the limestone. In his field notes for October, 1838, Bela Hubbard, Geologist, on the first Geological Survey describes many sink holes in Whiteford Township. Ottawa Lake in a large "sink" was then nearly dry, other sinks were also dry, although ordinarily nearly filled with water. Hubbard wrote "These "sink" derive their name from the reputed fact of their becoming a collect for the neighboring waters which are here absorbed. They are said to have no outlets. . . . When the larger sink is filled with water a whirlpool may be observed of sufficient force to draw in rails thrown from a distance which disappear into some cavity below . . ."

Many rock wells in the county when deepened lost all

water by opening of communication with underground channels. Big Sink and Little Sink in the south half of Sec. 2, Whiteford Township, have been filled with water and are one lake in the spring, but cornfields in the fall when the water drained downward. Perhaps the water was held up in the spring by an ice plug. Fish come up Halfway Creek and inhabit the lakes for a time." Do they return underground to Lake Erie? Many sinks known to the early settlers in the county are now plugged and filled making valuable truck farm land. Caves they knew are now sinks and quarrying has destroyed other caves as well as sinks. Probably a series of underground caves and connecting galleries of no great dimensions underly this part of Monroe County.

In 1860 Alexander Winchell reported finding sinkholes along the north line of Bay County. He stated the sinks were caused by solution of the gypsum beds in the area and caving of the overlying thin limestone.

In 1869 Newton Winchell, brother of State Geologist Alexander Winchell, in field notes describes Sunken Lake in Sec. 32, T33N, R6E, Presque Isle County. At that time the North Branch (of Thunder Bay River) entered the lake from the north and at the time of high water "flowed out a little east of midway" but for most of the year the lake had no surface outlet "the water entirely disappearing at the west end of the lake under a ledge of limestone, entering about 85 feet below the level of the surrounding country and in the deepest part of the lake bed." Lumbermen threw tons of logs, brush, rock, dirt into the mouth of the subterranean passage to prevent escape and later built a dam to divert the river from Sunken Lake so that logs might be floated.

Most of the bed rock of northern Alpena, northern Mount Morency, and northern Otsego and Cheboygan counties is limestone with a thin covering of glacial drift. In this area are shallow and deep sinks and deep circular lakes, such as the Devils Soup Bowl in Otsego.

Many sinks are reported in the northern townships of Alpena County. Many are from forty to seventy feet deep. Two of them are but five feet apart. The wide depression northward from Lachine is a huge shallow sink several miles wide. Parts of Long Lake basin probably originated as several united sinks into which an underground river probably flows. In 1876 Karl Rominger, then State Geologist, noted a peculiar phenomena at the outlet of Long Lake. A peculiar 3-armed lake-filled basin probably formed by solution and settling along joint cracks, was named Devils Lake. "In spring and early summer the outflow from Long Lake is large and then Devils Lake depression becomes a lake and its overflow passes into Lake Huron via Long Lake Creek. But in the late summer when Long Lake is low, Devils Lake becomes dry and the Long Lake outlet is a funnel shaped depression in the south area leading to an underground channel to Lake Huron." The deep parts of El Cajon or Misery Bay over which the water never freezes is a sink 76 feet deep. The springs bubbling into it may be outlet from Long Lake. The cliffs at the head of Misery Bay are the walls of an ancient sink hole.

The Little Ocqueoc River in Presque Isle County flows, part of its distance underground. Once it was an entirely "Disappearing River," but now the roof of much of its underground tunnel has fallen in so that the river can be seen or heard beneath the blocks of limestone. The Shoepac Lake area of southwestern Presque Isle County is a famous area of sink holes. Shoepac Lake is 18- to 20-feet deep but 500 feet from its eastern shore is a sink 120 feet deep, with no water in it and tall pine trees growing on the floor and sides of the sink, 90 feet below the level of the water in the lake. This dry sink is one of five alined eastward. A few years ago Shoepac was enlarged when a new adjoining sink was formed, on its eastern shore by the in-falling of a cave roof.

Much of the bedrock of the eastern half of the Northern Peninsula is limestone. In his report for 1901 State Geologist, A. E. Lane, wrote "On Sec. 16 T44N, R7W . . . is an interesting group of caves . . . I visited them in August, 1901, . . . Not far from the southeast corner the trail passes between some small sinks, which are the entrance to several hundred feet of cave, low and flat, in general not over two or three feet high but with a channel six to eight feet deep cut in beautiful meanders which slightly increase the size of the loop as they cut down and are barely wide enough for a man to walk in them. The stream finally falls by a cascade into a larger and picturesque sink hole about 30 feet deep in which no outlet could be found . . . About one third of a mile north and a mile west the trail passes over a couple of sinks. The larger one to the west and under the road showing a fine portal to a larger cave." These caves and sinks disappeared when their encircling walls and roof were destroyed in cutting the Fiborn Quarry.

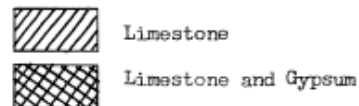
East of Trout Lake fire tower in Chippewa County a flat area of several acres extent has many small circular depressions, one to four or six feet wide and separated a few feet from each other. Some are fox dens, none have been explored at depth. One of the largest depressions has become a sink into which a small stream, locally called Chipmunk Creek, flows from the southwest, and disappears under a ledge of limestone. It emerges from the limestone nearly a mile further north and as Biscuit Creek becomes a tributary to the Pine River system. This area is a miniature of the Karst Plateau east of the Adriatic Sea and its topography is known as karst topography.

Farther west in Palm Brooks Park in Schoolcraft County beautiful Kitchitikipi, (Big Spring) is in a large waterfilled sink 300' by 175' in dimension. Its inlet is underground from the north. Water entering the lakes from the north flows underground and bubbles out in Big Spring. The "sandy" bottom of the spring is a mass of sand and microscopic entire or broken pearly shells of some underground members of the snail family. This sink may have been caused by solution of gypsum beds in the underlying limestone.

Such until now are the records of Michigan caves. A few years ago schoolboys in Alpena reported playing in "caves" west of Long Lake. The caves were found to be

everwidening cracks in the limestone in Sec. 6 T32N, R8E, Alpena Township. The owner of the property stated that the cracks at first were large enough for a chicken to fall in, but by 1950 they were wide enough for a heifer to fall in and so deep that snow and ice did not melt from them until late summer and a man could go down 11 to 20 feet below the surface.

Not until the summer of 1957 did the spelunkers dream come true under Walter Grocholski's farm, Section 28, in Presque Isle Township. Presque Isle County when Arthur Poch of Rogers City with his brother Lyman, and friend Ted Crawford, had the courage to be lowered deep into one of the mysterious cracks. He reported that at about 40 feet depth he entered a real cave 150 to 200 feet in diameter complete with stalactites and stalagmites, a trickling stream and a waterfall. Is it the beginning of a Michigan Mammoth Cave? Will its thin roof cave in and form another huge sink hole? It's virgin territory for the speleologist.



Outcrop areas of Limestone Formations.