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THE SCHOOL QUARTERLY

A Magazine Devoted To Education

Easter Number

[MARCH, 1912]



Let me live in a house by the side of the road
Where the race of men go by—
The men who are good and the men who are bad,
As good and as bad as I.
I would not sit in the scorner's seat,
Or hurl the cynic's ban;
Let me live in a house by the side of the road
And be a friend to man.

—SAM WALTER FOSS.

PUBLISHED QUARTERLY BY THE
GREEN LAKE COUNTY TRAINING SCHOOL

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That you WILL "salt down" a certain amount of money
each month.

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That you WILL get one of those Savings Books at

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The School Quarterly

Ten Cents a Year.

Entered at the Postoffice at Berlin Wisconsin, as Second Class Mail Matter.

VOL. III.

BERLIN, WIS.

NO. 2.

TRAINING SCHOOL.

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FROM THE COUNTY SUPERINTENDENT.

The final diploma examination will be held in the several school districts on May 16 and 17, 1912. Teachers who have pupils to take this examination must notify this office before May 5.

Every teacher in the county should be at Green Lake May 24 to attend the County Graduation Exercises. Have your school represented in the spelling and arithmetic contests. See the December Quarterly for directions concerning this work. This will be an inspiration to the children and will be worth your effort in getting them out. Be sure to get the graduates out. A part of the forenoon will be devoted to a teachers' institute.

On May 24th in the forenoon there will be an athletic contest for pupils of the country schools. Here are some of them: Boys under 12—60-yard dash, a potato race, and standing, broad jump. Boys over 12 years of age—60-yard dash, running high jump, relay race, 160 yards, standing broad jump. Girls under 12 years of age—40-yard dash, baseball throw, potato race. Girls over 12 years of age—50-yard dash, baseball throw, potato race. Prizes will be given the winners. Boost this part of the program. Get out at recess, measure off a track, and get the pupils to practicing. Have some of your pupils present at this contest.

The supplement to this number of the Quarterly gives the list of prizes offered by the Berlin Fair. Don't forget to encourage the children to prepare some work for this exhibit.

Our county colors are Purple and Gold. With a large vote, and with red and white a close second, the purple and gold combination won out. Remember these colors in preparing for May 24th.

Teachers' examination will be held as follows: Green Lake on March 20 and 21, Princeton on March 22 and 23, Kingston on March 25 and 26, and Markesan on March 27 and 28.

SKETCH OF THE GEOLOGICAL HISTORY OF GREEN LAKE COUNTY, WISCONSIN.*

By Wm. C. Alden, Ph. D.

U. S. Geological Survey, Washington, D. C.

INTRODUCTION.

It is very interesting to go back to the time of Joliet and Marquette and follow their canoe as it traverses the winding course of Fox River through Green Lake County. Tales of the early explorations and later history appeal to all of us. We have here at our hand, however, an historical record which goes far back of the time of Marquette and Joliet, back beyond the coming of the red men, beyond even the origin of plants and animals of the kinds that now inhabit the region. This is the story of the rocks and hills, of the lakes and running streams.

In so short a sketch one can give only the barest outline of a history which covers long ages. We will not attempt to go back to the very beginning when our earth was formed and sent spinning on its way around the sun, but we will start with a time when the oldest of the rocks exposed within the county were the tops of hills rising above a great plain. You must wipe out of your mental picture of the country all the hills and valleys, lakes and streams, railroads, farms, and villages, with which you are familiar, just as you would clean off your slate for a new lesson.

ARCHEAN TIME.

Hills of Igneous Rock.—We have, to start with, a great plain with hills rising here and there above it. So ancient is this land that, as far as any one yet knows, no plants or animals lived upon it. In fig. 5 is shown the top of one of these old hills. It is the hill of rock on the south side of Lake Puckaway, one and one-half miles southwest of the village of Marquette. (Fig. 1.) At that time the hill was several hundred feet higher than now, but it has since been covered by much other material. This was later partially removed, and again debris was dumped upon it, so that now we see only the top of this hill of rock which is of the Archean age.

A second one of these features is the hill of similar rock which is being quarried in the eastern part of Berlin. Here again, the boring of wells in the vicinity shows that were the later deposits removed the hill would be much higher than now. A third ancient hill is Pine Bluff, three miles east of Neshkoro, in the northwestern part of the town of Seneca. A fourth is being quarried away at Utley, seven miles southeast of Green Lake. Another may be seen at the granite quarry at Montello. Others occur not far north of Neshkoro near Red Granite in southern Waushara County, and still others southwest of Lake Puckaway, in the southern part of Marquette County and the northern part of Columbia County.

The rock composing these hills is different from that found anywhere else in Green Lake County. It is known as **igneous** rock because originally it was so hot as to be melted. When it cooled crystals of different minerals formed in the molten mass like sugar in thick, cooling syrup. These grew larger until the whole formed a solid mass of rock from which later the hills and plain were carved. The rock of these hills is of different kinds, known to geologists as **granite**, **rhyolite**, and **porphyry**, but by many people all are called granite.

A large part of the north-central portion of Wisconsin is underlain by igneous rock of the same general character as that composing these Archean hills of Green Lake County. It is one of the oldest parts of the North American continent.

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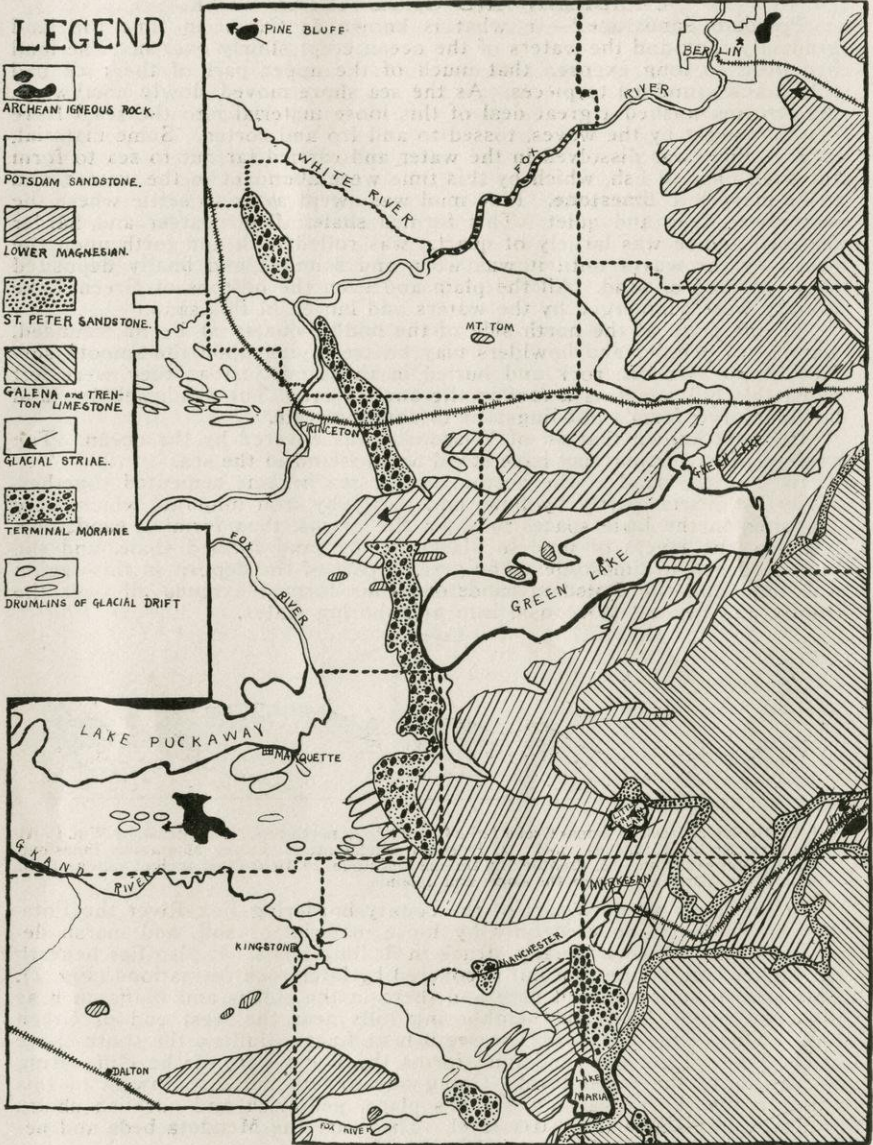


FIG. 1. Geological map of Green Lake County. (Drawn by Mr. Packard from data furnished by Dr. Alden.)

CAMBRIAN AND ORODVICIAN TIME.

Potsdam Sandstone.*—In what is known as Cambrian time the land gradually sank and the waters of the ocean crept slowly over it. The land had been so long exposed that much of the upper part of the rock had rotted and crumbled to pieces. As the sea shore moved slowly northward, the streams washed a great deal of this loose material into the sea. Here it was caught by the waves, tossed to and fro and sorted. Some material, such as lime, was dissolved in the water and carried far out to sea to form the shell of shell fish, which by this time were abundant in the waters, and to be made into **limestone**. Fine mud was swept away to settle where the water was deep and quiet. This formed **shale**. The coarser and harder material, which was largely of quartz, was rolled back and forth upon the beach by the waves until it was worn and rounded and finally deposited as a vast bed of sand. All the plain and even the hilltops of Green Lake County were submerged by the waters and buried in this sand.

At one point at the north side of the middle quarry at Berlin, rounded, waterworn pebbles and boulders may be seen lying upon the smooth surface of the Archean rock and buried in the sand, just as they were left when this hill stood as a reef in the ancient sea. The sand, pebbles, and boulders now form a puddingstone or **conglomerate**.

It is not known that all of Wisconsin was covered by the ocean. The north-central portion may have stood as an island in the sea.

In time the sand at the bottom of the sea became cemented together, partly by quartz, partly by lime, and partly by iron minerals which were deposited in the little spaces between the grains, thus forming **sandstone**. So, also, the layers of mud in places in the sand formed shale, and the lime hardened to limestone. The greater part of the deposit in this region was sand and the **Potsdam sandstone** thus formed extends all over the county and beyond Wisconsin into neighboring states.

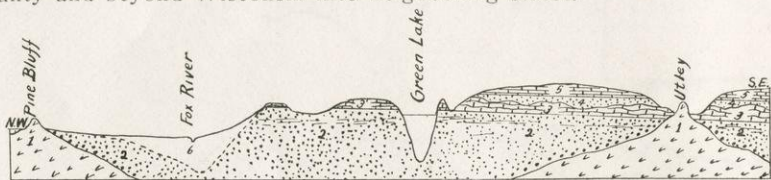


FIG 2. Geological section across Green Lake County from northwest to southeast, by Wm. C. Alden. 1 Archean igneous rock. 2. Potsdam sandstone. 3. Lower Magoesian limestone. 4. St. Peter sandstone. 5. Trenton and Galena limestone. 6. Drift-filled ancient valley of the Fox River. Drift also covers the slopes and uplands.

In the lower western part of the county bordering Fox River the Potsdam sandstone is covered only by loose material or soil, and marsh deposits, and is the rock usually struck in drilling wells. It also lies beneath the higher land to the east but is covered by later rock formations (Fig. 2). This sandstone is exposed here and there in the slopes and bluffs such as those on Sugar Loaf and neighboring hills near the west end of Green Lake. One of the best places to see it is at Lucas Bluff on the south shore of the lake. Here the sandstone forms the lower part of the cliff, rising 30 feet above the water level. Going one to two miles southwest of this point to the shore near Mr. Runal's place, yellowish and purplish shales gradually rise above the water level. These are the **Mendota beds** and below them is more sandstone of the same formation.

The city well at the waterworks in the southern part of Berlin was drilled through 60 feet of loose material, or drift, and 440 feet of Potsdam sandstone before it reached the granitic rock. In the hill at the quarry one-half mile to the northeast, this latter rock rises about 150 feet above the curb of this well. From this relation we see that before the sandstone was deposited the granitic hill must have been about 650 feet high. Inasmuch

*The names of the several rock formations are those in use by the Wisconsin Geologic and Natural History Survey

as the sand was deposited over the uneven surface of what was formerly land, there is said to be an **unconformity** between the Potsdam sandstone and the Archean granitic rocks.

The sandstones, shales and limestones being composed of sediments deposited in the sea waters are **sedimentary formations**. Occasionally pieces, impressions, or casts of the plants and of the shells of animals which lived in the sea are found in the rocks. These remains of ancient living forms are known as **fossils**. Such are said to have been found in the sandstone which lies on the slopes of the Archean hill at Berlin. They are, however, rarely seen in the sandstone in this county.

Lower Magnesian Limestone.—Following the deposition of the Potsdam sandstone a great bed of magnesian limestone was deposited. This has been known as the **Lower Magnesian limestone**. It now underlies all the upland area of the county and small patches form caps on some of the separate hills, as on Mt. Tom in Ste. Marie township and Mt. Moriah in the town of Kingston. From the general relations and from the occurrence of these small patches on the hilltops and others farther west, it is evident that this limestone, when originally deposited, extended all over Green Lake County and probably some distance farther northwest.

The period of limestone formation was finally brought to a close by an elevation of the region such that part of the bottom of the ocean became land and the sea waters drained off. As the land gradually rose above the sea, rain fell upon its surface. This filled the hollows and ran down the slopes. Rivulets flowed together into brooks and the brooks united to form rivers. As the water rushed along, loosened particles of rock were swept away and little channels were eroded. The channels were enlarged until they became **valleys** and finally broadened into **plains** as the higher lands were worn away. The material thus obtained was borne onward to be deposited again in the sea. Thus the surface of the new-made land came **in time to be marked by hills and valleys** similar to those we now see. In consequence of this wearing away of the rock the Lower Magnesian limestone varies considerably in thickness from point to point. Its greatest thickness is about 150 feet.

St. Peter Sandstone.—After a long interval, during which this work was being done by the streams, the land in this region again sank slowly beneath the sea and a second great deposit of sand was made, filling the valleys and covering the hilltops. As a result of this there is an **unconformity** between the Lower Magnesian limestone and the overlying sandstone, which is known as **St. Peter sandstone**. The latter also varies much in thickness. In places but a thin layer of sand lies on top of the ancient Magnesian hills, while in the valleys a short distance away there may be as much as 100 feet or more of sandstone.

Although this sandstone, like the older formations, probably originally extended over all of Green Lake County, it is now found only in the eastern part, where it is covered by a later limestone. The best exposure is at Mitchell's Glen, one-half mile southeast of the east end of Green Lake. At this place the sandstone is 100 feet thick. Here a little stream plunging down over the edge of the limestone at the top of the bluff has carved a beautiful little glen out of the soft sandstone. It is also exposed in ravines cutting the bluff which extends northeast toward Ripon. One of these near Ripon, Arcade Glen, gives another good exposure. A short distance northeast of Mitchell's Glen the uneven surface of the lower limestone comes up nearly to the bottom of the upper limestone, almost pinching out the sandstone. This relation may also be seen in the west side of Ceresco Valley, near Ripon. Southwest of Mitchell's Glen the sandstone is not again exposed until one reaches Little Green Lake. These variable relations may also be seen at intervals in the slopes of Grand River Valley in the Manchester and Mackford townships.

Trenton and Galena Limestones.—Overlying the St. Peter sandstone

beneath the higher parts of the upland in the eastern townships are the Trenton and Galena limestones, in places reaching a thickness of 150 feet or more. The latter is not well exposed in this county. The Trenton may be seen in quarries and natural exposures at many places at and near the top of the bluff which extends southwestward from the vicinity of Ripon in the vicinity of Little Green Lake and in the slopes of Grand River Valley in the southeastern part of the county. Not infrequently fossil remains of animals which lived in the sea during Trenton time may be found in this limestone.

LATER ORDOVICIAN AND SILURIAN TIME.

Deposits Later Removed.—The Galena limestone is the last of the hard rock formations now remaining within the limits of Green Lake County. From studies of the relations of deposits found in counties farther south and east it is probable that this region was submerged beneath the sea for a very long time after the deposition of the Galena limestone. Two later rock formations probably originally extended west over this county. These are the Cincinnati shale, formed from a deposit of 200-300 feet of bluish and greenish mud, and the Niagara limestone. The edges of these formations compose the bluff on the east side of Lake Winnebago, which extends thence north and south for some distance. Between these formations in places is the bed of iron ore which is mined near Iron Ridge in eastern Dodge County.

It is not known that the sea covered this region including Green Lake County all of the time till the close of the deposition of the Niagara limestone. There probably were intervals during which land was raised and the water drawn off, and it is not known that this part of the country was ever again submerged after the close of the Silurian period.

LONG INTERVAL OF EROSION.

Sculpturing the Surface of the Land.—Of the vast interval of time which elapsed between the Silurian period and the deposition of the loose material or drift which is spread over all the hard rock formations of the county, we have no record except that of the destruction of the deposits previously made.

As has been stated, it is probable that all these formations from the Potsdam sandstone to the Niagara limestone originally extended over all of Green Lake County. If such was the case, it is evident that many hundreds of feet have been removed from this county, more from the lower areas and less from the higher parts. A well drilled at the village of Elmore in the southeastern part of Fond du Lac County, where a large part of the original thickness of the several formations yet remains, is reported to have passed through the following deposits:

Log of Mr. Ulrich Legler's Well, Elmore, Wisconsin.

	Feet.
Clay	50
Niagara limestone	300
Cincinnati shale	140
Galena and Trenton limestone.....	210
St. Peter sandstone.....	102
Lower Magnesian limestone.....	240
Potsdam sandstone	206
Granite at bottom of well.....	0

Total 1,248

At the point where it was penetrated by the Berlin city well there is yet 440 feet of Potsdam sandstone overlying the granite. Judging from the height at which remnants of sandstone occur on the Archean rock near

the Berlin quarries, at least 200 feet of sandstone has been removed, so that if we suppose the several rock formations above the Potsdam to have been as thick throughout Green Lake County as they are at Elmore, there is good ground for saying that from above the lowlands along Fox River as much as 1,000 to 1,200 feet of rock has been removed. From the higher parts where more of the rock remains less has been taken away. Fig. 2 illustrates the relations of the rock formations of the county and of the parts which have disappeared.

The removal of this great thickness of limestone, shale and sandstone was accomplished by the dissolving power of water and by the eroding and transporting power of running streams, and the material removed was swept on down the valleys and deposited in the sea to form the foundations of neighboring parts of the country. The large amount of material removed is in itself evidence that the time required was very long.

The amount of material is even greater than now appears from the relative elevations of different parts of the county, because some of the valleys which were eroded have since been partly filled with sand, gravel and clay. A well at the Chicago Club house on the north side of Lake Puckaway was drilled through 330 feet of sand and clay filling without reaching the bottom of the old valley which was cut in the rock and which underlies Lake Puckaway.

If all the sand, gravel and clay were removed down to the top of the solid rock, we would probably find a deep valley where are now the marshy flats along Fox River. We would also find that Green Lake, Rush Lake, and the stream between lie in what was a deep tributary of Fox River Valley. Green Lake itself is 247 feet deep in the deepest part and wells between Green and Rush Lakes show that there is much filling in the valley.

THE GLACIAL PERIOD.

The Formation of the Ice Sheet—The processes of cutting away the Wisconsin land by the streams and of carrying the sand and mud away to deposit in the sea was finally interrupted. A change in the climate occurred. The general temperature became somewhat colder, possibly the winters became longer and the summers shorter. At any rate, so much snow fell during the winters that it was not melted away during the summer time. Year after year the snow kept piling up and as it became thick the lower parts of the deposit solidified to ice. This continued hundreds and thousands of years, until nearly all the northern half of the North American continent was covered with a great sheet of ice such as now covers Greenland (Fig. 3).

Where snow and ice accumulate thus as **glaciers** in high mountain valleys, or as an **ice cap** spreading over plateaus and plains, a sort of flowing motion is set up in the ice. As shown in Fig. 3, there were three centers from which the ice moved outward. One was in the mountains of western Canada; one was on the Keewatin plateau west of Hudson Bay, and the third was on the Labrador peninsula.

From the last two the ice spread southward into the northern part of the area of the United States about to the line marked by the Ohio and Missouri Rivers.

Glacial and Interglacial Stages.—We cannot in this short article tell all the history of the great ice age. Only a bare outline can be given. Evidence has been found showing that the great ice sheet invaded this country at least four or five times. Each stage of glacial advance was followed by a warmer stage during which the ice melted away, new soils were developed, and vegetation grew on the surface of the land. When the climate again became cold, the ice readvanced and the soils and plants were partly destroyed and partly buried in the drift material carried by the ice. Occasionally in drilling wells beds of vegetal material such as leaves, peat or

wood are encountered buried deep in the drift. Mr. H. F. Wilkie informed the writer that when a well was drilled at his place east of Green Lake a bed of black vegetal material containing leaves was encountered beneath 100 feet of clayey drift. Very likely this is part of one of the old interglacial soils or forest beds. So far as we know, no Indian relics, such as stone axes or arrowheads, have ever been found in or under the drift buried in such a way as to show that Indians were here during either the colder or the warmer stages of the glacial period.

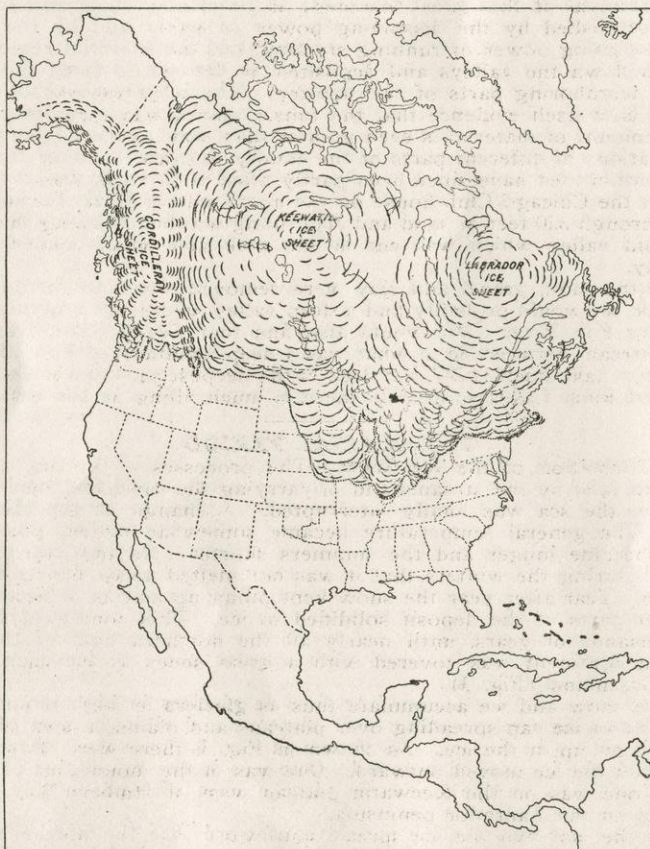


FIG. 3. Map showing the area covered by the great ice sheets of the Glacial Period in North America (U. S. Geological Survey).

Advance of the Glacial Lobes.—At the last, or **Wisconsin stage** of glaciation, the ice moved westward through the Lake Superior basin and south through Minnesota into Iowa. One great lobe of ice also moved south along the Lake Michigan basin. A smaller lobe advanced along the broad trough in which lie Green Bay and Lake Winnebago, and spread over much of the eastern part of Wisconsin in the direction shown by the arrows in Fig. 4.

Green Lake County lies in the western half of the area covered by this **Green Bay glacier**, so that the ice which crossed this county was moving in

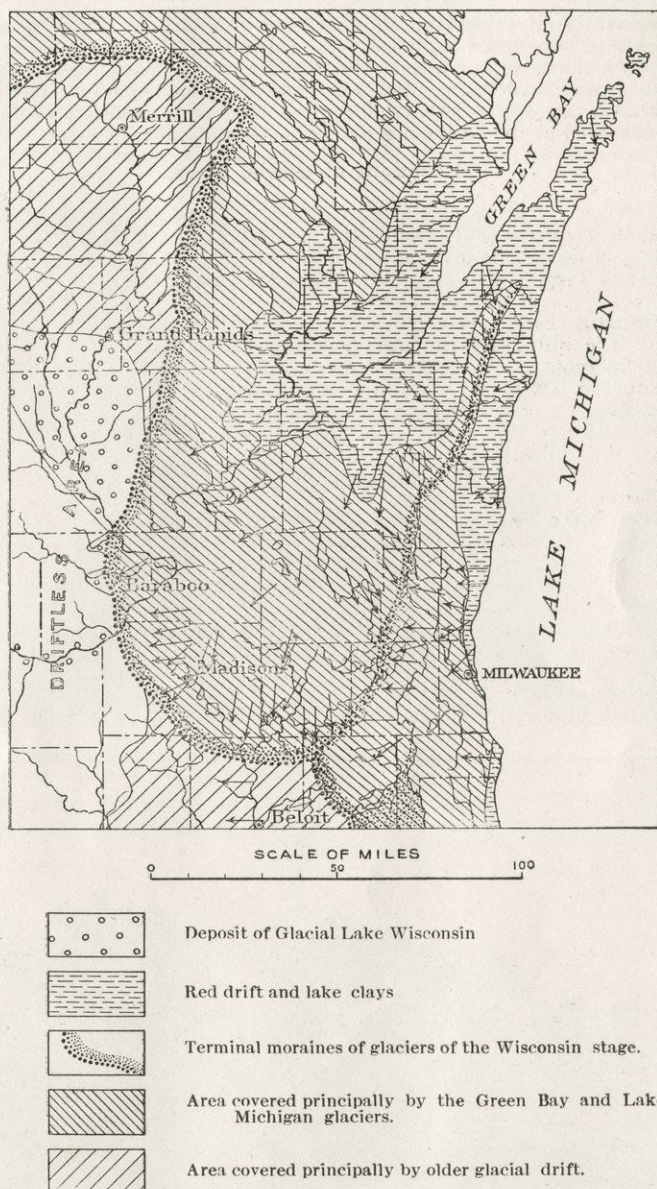


FIG. 4. Glacial Map of Eastern Wisconsin.—By Wm. C. Alden. [Arrows show the direction of the ice movement. Data principally from "Wisconsin Geological Survey"].

a general westerly direction. This ice at its greatest was probably a thousand feet or more in thickness.

Glacial Striae.—As the glacier moved forward, clay, sand, gravel and boulders were frozen in the bottom of the ice and carried along. The rock-

shod ice was something like an enormous flexible file which ground away the rock and smoothed, polished and scratched the surface over which it moved. At many places where the surface of the hard, solid rock has recently been uncovered one may see these glacial markings. The scratches, or **glacial striae**, show in what direction the ice was moving. Such striae have been seen at the following places in Green Lake County:

Locations of Glacial Striae.

	Direction of Ice Movement.
1. Berlin Twp. In gully beside the road at a point about 1¼ miles east and 1¼ miles south of Berlin quarries	S. 163° W.
2. Seneca Twp. On Pine Bluff, 3½ miles east of Neshkoro	S. 69° to 73° W.
3. Princeton Twp. At a point in the road near the top of the hill 2½ miles east and 1¼ miles south of Princeton	S. 75° W.
4. Brooklyn Twp. At a point in the road south of the railway, 1 mile north and 2 miles east of Dartford..	S. 46° to 65° W.
5. At a point in the road 1 mile farther northeast, north of the railway.....	S. 48° W.
6. In creek bed a short distance below the outlet of Mitchell's Glen	Due West
7. Green Lake Twp. At Chas. Clavon's quarry near the road east of Little Green Lake.....	S. 60° W.
8. At the road corner up slope to north.....	S. 67° W.
9. In road on slope south of east end of Little Green Lake	S. 63° W.
10. At old quarry near top of slope 1 mile southeast of Little Green Lake.....	S. 69° W.
11. Top of slope north of Utley.....	S. 32° W.
12. Marquette Twp. On top of the ledges near the quarry 1½ miles southwest of the village.....	S. 90° to 123° W.

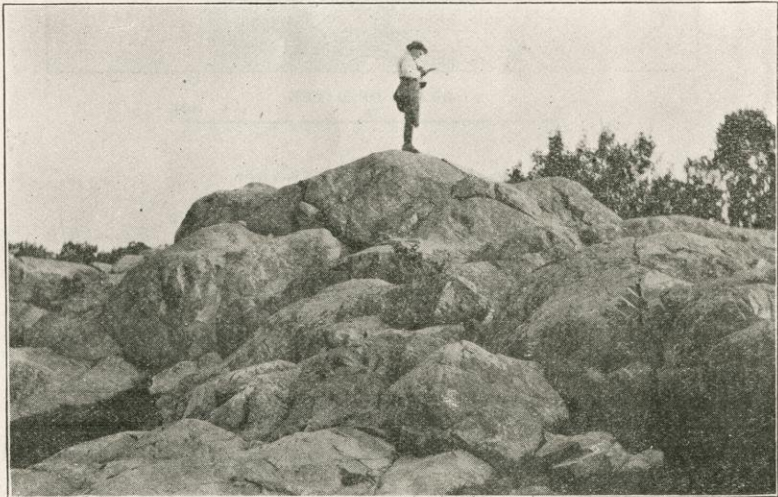


FIG. 5 Crest of the hill of igneous rock southeast of Marquette, showing the glacially smoothed surface. (Photo by Wm. C Alden).

Perhaps the best exhibition of the effects of such work by the glaciers is on the Archean ledges southwest of Marquette. Here the tops are so smoothly rounded (Fig. 5) and polished that one can scarcely stand upon them. The surfaces are marked by striae and by crescent-shaped gouges known as "chatter marks" (Fig. 6). In making the latter, the pebbles held by the moving ice as graving tools probably jumped or chattered as does a crayon when held perpendicularly by one end and pushed chattering across a blackboard.

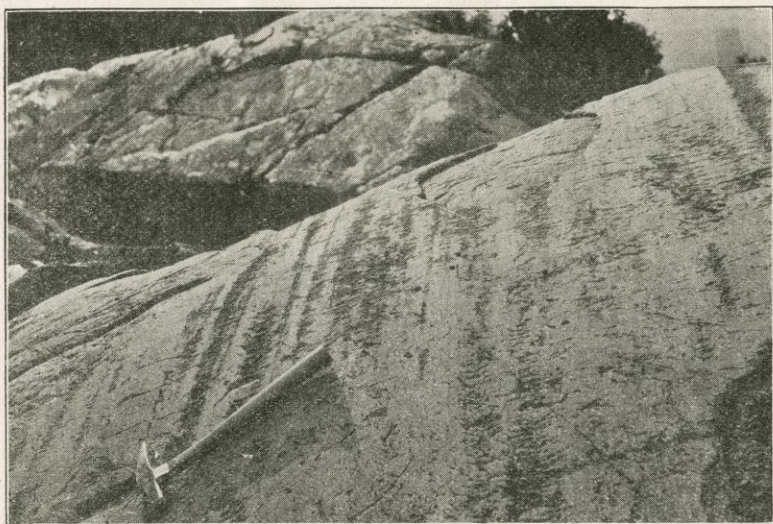


FIG. 6. Glaciated surface of the igneous rock at the hill southwest of Marquette, showing glacial striae and chattermarks. (Photo by Wm. C. Alden).

The Terminal Moraine.—The ice traversing Green Lake County during the last or Wisconsin stage of glaciation continued westward across Marquette County to the eastern part of Adams County. Here, along the west side of the Green Bay glacier, the motion became less until the rate of melting equaled the rate of advance. Being melted as fast as it pushed ahead, the edge of the ice sheet lay for a long time nearly in the same position. As the ice melted, the **drift**, that is the dirt and stones in the ice, was left and gradually piled up into a ridge known as the **terminal moraine**. This is the range of wooded hills extending northward from a point a few miles east of Kilbourn (Fig. 3). Going southward across Wisconsin River and the Baraboo Bluffs, this moraine may be followed in a gradually curving course as it swings eastward, marking the limits of the glacier which ended north of Janesville.

Glacial Lake Wisconsin.—Wisconsin River, being blocked by the ice near Kilbourn, flooded much of the flat country west of the moraine and formed a large lake. When the climate again became warmer the ice was melted back eastward, the lake was drained, and Wisconsin River flowed in its present course.

Ground Moraine.—Drift which lodged beneath glacier while it was yet advancing composes the **ground moraine**. In places the surface of this was fluted into parallel ridges by the moving ice and hills of drift were molded into smoothly rounded forms known as **drumlins** (Fig. 7). Some of these may be seen south of Lake Puckaway and some less well shaped occur west of Princeton and south of Manchester.

Recessional Moraines.—As the climate became warmer toward the end

of the long glacial winter, the west front of the glacier was gradually melted back to the eastward across the county, and as the ice melted all the drift in it was left spread over the surface of the ground. It appears that at times the rate of melting and the rate of advance of the ice became so nearly balanced that the glacial front halted or moved back and forth over a narrow belt, so that a moraine like that in Adams County, but smaller, was formed. Sometimes such are called **recessional moraines**, since they mark stages in the recession of the glacial margin.

There is a very good example of one of these moraines formed when the ice front had retreated so far that it extended diagonally from north



FIG. 7. Side view of the Green Bay glacier. [Photo by Wm. C. Alden].

to south across Green Lake County (Fig. 1). The moraine cannot be traced all the way across the area, but is well developed east of Princeton, west of Green Lake and north of Lake Maria. When such a moraine is being formed the drift dropped at the front of a glacier is piled and pushed up into hillocks and ridges and many great blocks of ice become buried in the debris. Later, when these melt away, the dirt settles and hollows or **kettle holes** are formed. The surface of a terminal moraine is thus apt to be very uneven (Fig. 8).

The big ridge near the bend of the river between two and three miles northeast of Princeton is part of this moraine. From this a belt marked by humps and hollows extends southeastward across the railroad to the big rock ridge. Going southward across the rock ridge, the road to Manchester follows the top of the moraine southward for five miles. The moraine here is a ridge of drift varying in width from eighty rods to one mile, and lying between Green Lake on the east and the big marsh which borders Fox River and the head of Lake Puckaway on the west. In places the abundance of humps and hollows, or knolls and kettleholes, makes the surface very uneven.

Origin of Green and Puckaway Lakes.—It is this great dam of drift which blocks the ancient valley cut in the rock and encloses the basin of

Green Lake. The top of this morainal dam stands 275 to 300 feet higher than the lowest part of the bottom of Green Lake. This is a very good example of the formation of a lake by the blocking of a river valley with a glacial moraine.

Lake Puckaway and the marshes bordering it are due to similar blocking of the old valley by morainal deposits in the vicinity of Montello. A part of the latter moraine extends from the big bend of Fox River, four miles southwest, westward to Montello. As the ice front was retreating eastward, the moraine near Montello was formed first, while the glacier covered Green Lake County with its front at the moraine near Montello. The water from the melting ice escaped across the lowlands to Wisconsin River. When the rate of melting increased so that the front of the glacier retreated to the position of the moraine west of Green Lake, the water continued to flow to Wisconsin River. Much drift had been deposited in the ancient valley and much more mud was washed out from the ice at this time and settled in the water. This continued also when the ice was melted back along Fox River Valley from the Green Lake moraine, so that the valley was nearly filled and Lake Puckaway, which lies in the unfilled part of the basin, is very shallow.

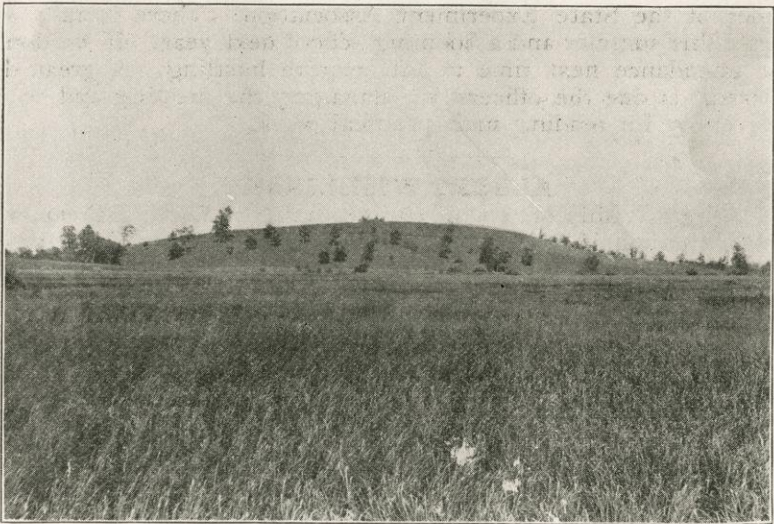


FIG. 8. Knolled and pitted surface of a terminal moraine of the Green Bay Glacier. (Photo by Wm. C. Alden.)

Most of the water from the melting of the ice which filled the valley extending northeast from the head of Green Lake to Rush Lake escaped down the valley of Puchyan River to Fox River, instead of cutting an outlet through the moraine west of Green Lake. As a result of this the basin of Green Lake was left filled with water rather than drift, although considerable mud and sand were deposited at the east end.

Fox River and the Close of the Glacial Period.—The Glacial Period may be said to have ended in Green Lake County when the ice had been melted back northeastward beyond the limits of the county. It was a long time after that, however, before the broad trough in which lie Lake Winnebago and Green Bay was free from the ice so that the water could flow into Lake Michigan. As long as Fox River Valley was blocked by the glacier the water was pounded and forced to flow southwestward along this valley

and across the lowland to Wisconsin River near the place where the city of Portage now stands. When at length the melting of the ice opened an outlet to Lake Michigan the water began to flow the other way and the present stage of Fox River began. In the meantime the smaller streams began to flow, marsh plants began to appear on the wet lowlands, trees grew on the slopes and grass on the uplands, and the country took on the appearance which it had when the first white settlers came into the region.

FARM SCHOOL.

A Farm School of one week was held at the Training School this year, beginning February 26. There was a school for women in connection with the school for men. The enrollment of last year was fifty and this year it was a hundred. The work was Soils, Feeds, Drainage, Judging Dairy Cattle, Rope Work, Cooking, and Textiles. The interest of those attending could not be greater. There were ninety-five at the banquet in the G. A. R. Hall Saturday noon. Prof. R. A. Moore was present and organized a County Order of the State Experiment Association. There is talk of a picnic this summer and a booming school next year. If we double the attendance next time it will require hustling. A great deal of credit is due the officers for managing the meeting and to the University for sending such practical work.

ALBERT WISHLINSKY.

Albert Wishlinsky, who was teaching in North Dakota, took sick with typhoid fever. He became so bad his brother went out to bring him home. He is now better but is yet confined to his bed.

THE FIRING LINE.

This interesting department is greatly cut down for this issue. Keep sending in the letters and we shall try after this to give a more extended report.

Anna Kearns, Kingston, No. 5: Box social March 11, \$31.50.

Lizzie Wislinsky, Strong's Prairie: Well-furnished school, 21 pupils.

Della Jordan, Waushara County: Box social, \$7.35.

Florine Smith, Manchester, No. 2: Box social, \$20.15. Good program.

Martha Hoffman, Mecan, No. 8: Box social, \$21.40. Good program.

Edna Jones, Kingston, No. 12: February 29, box social, \$9.30. Fine program.

PICTURES.

We have a large number of pictures framed ready to go to rural schools. We secured a special rate on framing which enables us to sell the large pictures at two dollars.

GEOLOGY OF OUR COUNTY.

Our Quarterly this time is mostly taken by an account of the geology of our county. For some time we have been working towards a textbook containing facts about our county. It is to contain four parts, viz.: Nature Work, History, Business, and Education. You can help push this work in many ways. Use this article with your children and with the older people in the community. Remember that it takes much work and expense to publish this information. If you take no interest it is done in vain and future work along this line must be discontinued. Do your best and we shall do our best. If we all should do our best we could make our county known all over the country as it has a right to be known. Let us begin now.

NEW SUBSCRIBERS.

Since the December Quarterly we have received the following subscriptions: Berlin—Lark Betry, H. C. Truesdell, Mabel Vince, Peter Hundt, Bernice Janes, Etta Michaels. Markesan—James Goodell, Henry Spitzer, Henry Siewert, Wm. Blow, Robert Page, Lura King, Wm. F. Salzwedel, W. A. Salzwedel, Margaret McDevitt, Ida Sommers, August Welke, Erna Salzwedel, Grace Seeliger, Nellie Summerfield, Lillie Buchholz, Mrs. Allie Kerley, Herman Garlow, Will Bernhagen, John C. Fenske. Green Lake—Dr. G. E. Baldwin, Mildred Davis, Fred Jaquith, Ella N. Meyer, Gust Schram, Della Borst, Gertrude Spencer. Rush Lake—H. A. Connolly, Helen Flanagan, A. C. Diedrich. Red Granite—John Rabbitt, W. L. Buelow, Marie Terrill, Mayme Roach. Princeton—H. A. Page, Martha Hoffman, Julius Hebbe, August F. Steinke, Maud Fellows, Leon Shurpit, Mrs. Henry Hoffman. Ripon—Margaret Winter, Herman Naatz. Fairwater—D. L. Smith, August Belau. Strong's Prairie—Lizzie Wislinsky. Madison—Emma Buchholz. Kingston—Hazel Jenkins, Clara Buchholz, Anna Kearns. Glenwood, Ill.—Mrs. Ed. Cooper. Peebles—Prof. M. J. Wolff.

PENMANSHIP.

The winners in the penmanship contest are Grace Seeliger and Nellie Markofski. We show you a sample of their work. Prizes will be sent them. Who will be the winners next time?

Edith Jacobs recently resigned to marry Mr. Toll. Bernice Janes was elected to fill the vacancy. This is the first graduate of our school to get married. The Quarterly adds congratulations.

Thirteen members of the class of 1911 have each contributed a dollar to purchase a memorial for the school. Mr. Packard is importing from Germany a large picture of "Pestalozzi Among the Children". Those contributing are: Davis, Fellows, Jordan, King, Kintz, Kintz, Lynch, McDevitt, McDevitt, Shields, Terrill, Winter, and Wislinski.

Mr. Packard will teach during the summer in the State Normal School in Oshkosh.

CALENDAR.

Spring Term begins April 15th.

Commencement on June 21st.

Summer Term and Fall Quarter combined begin August 19th.

County Superintendent Kelley has sent directions for testing seed corn to all of the teachers in the county. Seed corn is the worst this year ever known. Some seed that looked good has not tested over fifty per cent. It is estimated that every ear of poor seed corn planted makes a loss to the farmer of four dollars. It is an easy matter this spring to save (call it "make" if you wish to) a hundred dollars a day testing corn.

One of the many good things growing out of the Farm School is that it has made it easier for the farmers themselves to come up to our school. Two meetings of the Green Lake County Order have been held in the building, and the farmers are beginning to feel at home, which is as it should be. This school is for them exclusively, and it is their right and their duty to visit it often and to help and be helped.

JOKES AND CHOKES.

One of our girls received a letter with x's at the bottom. She had the letter almost worn out when Mr. Packard explained in Composition class that some writers use x's for periods.

Teacher: "How do you endorse a note?"

Student: "I turn it over and endorse it."

A pupil in the Fifth Grade called the encyclopedia as the torpedo.

Teacher: "Tell about the rainfall in South America."

Marie: "The rainfall is very wet in the northeastern part."

Mr. Owen—"What cloud hung over New England at this time?"

Esther—"A thunder cloud."

Teacher—"After the Kansas-Nebraska Bill did the people rush into Kansas?"

Student—"Well, kind of a slow rush."

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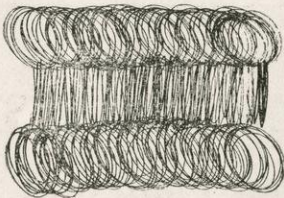
College as well as Normal Courses for next year.

For Bulletin, address

State Normal School, Oshkosh, Wisconsin

NEW TRAINING SCHOOL INSTRUCTOR.

This is the picture of the new instructor at the Training School. Principal Olman of Princeton resigned to become postmaster, and Mr. Owen wished to take his place. The Board released him and elected Clay D. Lambertson, Principal of the Port Edwards, in his place. Prof. Lambertson was graduated from the Grand Rapids High School, and attended the Wood County Training School. After teaching in the rural schools he attended the Milwaukee Normal School where he was graduated in 1907. He supervised the rural schools in a township in Forest County for two years. He then became principal at Port Edwards where he has been for the last three years. He is married and has one son.

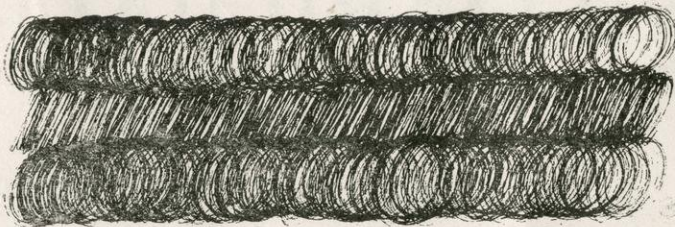


Nellie Markofski age 9

PENMANSHIP,

The prize-winners this quarter in penmanship are: first, Grace Seeliger of Markesan with Miss Hazel Jenkins as teacher; and second, Nellie Markofski with Miss Gladys McClelland as teacher. Appropriate awards will be sent each of them. Now get busy and prepare some excellent work for the June Quarterly.

Hazel Jenkins. Teacher



Grace Seeliger age 12

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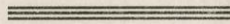
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