GUIDE LEAFLET

GEOLOGICAL SCIENCE FIELD TRIP

Sponsored by
ILLINOIS STATE GEOLOGICAL SURVEY

EDINBURG AREA

Sangamon and Christian Counties
Taylorville and Divernon Quadrangles

Leaders
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HOST: Edinburg High School
EDINBURG GEOLOGICAL SCIENCE FIELD TRIP

Glacial History of Illinois

A knowledge of Illinois glacial history and the glacial deposits is necessary for full appreciation of many points of geologic interest in the Edinburg area. The following summary is a brief introduction to these subjects and should be read before the field trip begins.

Thousands of years ago much of northern North America was covered by huge glaciers. These glaciers, which advanced from centers in eastern and central Canada, developed when the mean annual temperatures were a few degrees lower than they are now, and the winter snows did not completely melt during the summers. After many years a sheet of ice accumulated that was so thick its weight caused it to flow outward, carrying with it the soil and rocks on which it rested and over which it moved.

The Pleistocene Epoch or "Great Ice Age" began about one million years ago and ended about five thousand years ago. During this epoch, there were four major stages of glaciation, each followed by a long interglacial stage characterized by climatic conditions much as they are today.

The oldest glacial stage is the Nebraskan, named after the state of Nebraska where extensive Nebraskan deposits are buried beneath the younger glacial deposits. In Illinois the Nebraskan deposits are also buried. A warm climatic interval, called the Aftonian (interglacial) Stage, followed the retreat of the Nebraskan glacier.

The next glacial climate produced the Kansan glacier which left thick deposits of fine rock materials and outwash sand and gravel in Illinois when it melted away. The Kansan Stage was followed by the Yarmouthian (interglacial) Stage. During this stage erosion carved valleys and hills, and soils were formed in the Kansan deposits.

The third glacial stage, the Illinoian, is particularly important to the residents of Illinois. It covered 80 percent of the state, reaching southward to Carbondale and Harrisburg. After several thousand years, a warm stage caused the Illinoian ice sheet to melt. During this warm stage, the Sangamonian, the upper part of the deposits left by the glacier was weathered and soil developed, as in the preceding Yarmouthian interval. These ancient Sangamonian soils resemble present-day soils in color, texture, and depth, suggesting that the climate during interglacial times was similar to our present climate.

The last and most recent glacial stage in Illinois was the Wisconsinan, which began about 70,000 years ago. The Wisconsinan comprised three major glacial advances—the Altonian, the Woodfordian, and the Valderan. Little is known about the extent of the Altonian glacier, as its deposits were overridden by later glaciers, except in northern Illinois. The Woodfordian glacier advanced southward from the Lake Michigan basin to the present sites of Shelbyville, Decatur, Charleston, and Peoria. The Valderan glacier reached its maximum extent near Milwaukee, Wisconsin, and did not enter Illinois.

When the glaciers melted, they released the rock materials they had picked up as they advanced. These materials are called "glacial drift." Some of the glacial drift was washed out with the meltwaters. The coarsest material carried
Figure 1 - Map showing maximum extent of the several glacial advances in Illinois (from Circular 347).
by the meltwater was deposited nearest the ice front, and the finer material was carried farther away, with the finest clay possibly carried all the way to the ocean. Where the outwash material was spread widely along the front of the glacier, it formed an outwash plain. Where the outwash was restricted to the stream valleys, it formed valley train deposits.

Glacial drift deposited directly by the ice is called till. It consists of a mixture of all kinds and sizes of rock fragments. As the Wisconsinan glacier retreated, the ice withdrawals and readvances created a complex sequence of till deposits in northeastern Illinois, the most outstanding of which are end moraines. More than 50 successive end moraines were formed by the Wisconsinan glacier in Illinois alone. The major ones are shown on the accompanying glacial map of Northeastern Illinois.

An end moraine is an accumulation of drift at the ice margin when the rate of advance and the rate of melting of a glacier are essentially in balance. As more and more rock debris is brought to the edge of the glacier, it piles up and forms a ridge.

The surface relief of end moraines is generally greater than that of the surrounding area and is referred to as swell-and-swale or knob-and-kettle topography. At some places there are large gaps in the moraines where subglacial streams presumably carried away most of the drift. The flatter areas behind end moraines are called ground moraines or till plains.

At times, especially in the fall and winter, the meltwaters subsided, exposing the valley trains. The wind picked up silt and fine sand from these surfaces and deposited these materials on the bluffs and uplands to form deposits of loess. Loess mantles most of Illinois. Near the large river valleys it may be as much as 60 to 80 feet thick. It thins away from the valleys.

The importance of the Pleistocene Epoch is emphasized by the rich soils formed from the glacial deposits and by the abundant deposits of sand and gravel. The state would not have these valuable resources if the glaciers had not invaded Illinois.

**Itinerary**

0.0 0.0 Assemble at southeast corner of Edinburg High School. Proceed south on Campbell Street.

0.2 0.2 Turn right on Franklin Street. STOP. Cross Rt. 29 and the B & O Railroad.

0.4 0.6 Continue into the country.

0.6 1.2 Turn left (south). The upland surface here is the Illinoian till plain. The till is comparatively thin here, and much of the topography reflects the Pennsylvanian bedrock surface. As we approach the South Fork of the Sangamon River, the topography becomes more rugged. Note the loess covered hill and the exposure of till on the left.

2.2 3.4 On the right, note the steep character of the valley walls along the South Fork of the Sangamon River. Also note the very flat nature of the Pleistocene alluvial terrace.
0.4  3.8 Cross South Fork of the Sangamon River.

0.2  4.0 Bear left. Continue on blacktop road.

1.0  5.0 Continue ahead on blacktop road.

0.4  5.4 Passing the pumping station for the Kinkaid oil pool, which was discovered in 1955. Note the oil wells on both sides of the road. The oil is produced from Devonian sandy dolomite at a depth of 1782 feet and from Silurian limestone at a depth of 1874 feet. Combined production from both pay zones was 142,000 barrels of oil in 1962.

0.6  6.0 The broad, flat, expansive terrain on the left is the Sangamon River terrace. Note the numerous oil wells on this terrace.

0.3  6.3 Enter city limits of Bulpitt.

0.1  6.4 Turn right (west) on Rt. 104. This was the location of Peabody Mine No. 7. Several thousand acres of the Herrin No. 6 Coal were extracted from this mine.

1.0  7.4 Descend from upland into valley of Clear Creek.

0.1  7.5 Cross Clear Creek.

0.3  7.8 Note the old Peabody Mine No. 8 on the left at Tovey Station.

0.4  8.2 We have again ascended to the Illinoian (Jacksonville) till plain. The upland surface, which is unusually flat for a drift plain, is characteristic of areas underlain by Jacksonville drift (see Figures 1 & 2).

2.2 10.4 On the right you see the site of the Commonwealth Edison, Kinkaid Power Station, Units 1 and 2.

0.4 10.8 Turn right off Rt. 104. CAUTION. Railroad crossing, Chicago and Illinois Midland Railroad.

0.1 10.9 Turn right. Enter grounds of Peabody Mine No. 10.

0.3 11.2 Engineering office of the Peabody No. 10 Mine.

0.3 11.5 The air compressors which are used for air-blasting the coal after it has been thoroughly undercut are housed in the shed on the right.

0.4 11.9 Stop 1, Peabody Coal Mine No. 10. Park on left side of driveway. After returning to your cars follow the lead car around the circle back towards the east and out of the mine area.

The Peabody No. 10 Mine is the largest single-shaft underground coal mine in the world. The mine is a slope mine with the main shaft, along which men and materials enter and leave the mine, inclined to the coal bed.

The mine, which began production in 1951, produces 23,000 tons of coal daily and approximately 5½ million tons annually. The coal is produced from the Herrin No. 6 Coal of the Brereton Cyclothem at a depth of 357 feet. The Herrin No. 6 Coal averages 7 feet in thickness in this area, and represents a vast total
Figure 2 - Time-space diagram of glacial tills, sands, and silts in Illinois (excluding outwash gravels, alluvium, and dune sands). The schematic diagram is plotted from north to south but includes the deposits throughout the east-west width of the state. The time scale in the Wisconsinan is based on radio-carbon dates by the Washington Laboratory of the U. S. Geological Survey; the pre-Wisconsinan time scale is relative only (from Circular 347).
reserve of coal, about 12,500 tons per acre. Approximately 3.5 acres of coal are mined each day in two working shifts. Of course, the underground mining method does not permit total recovery, and only about 50% of the total tonnage can be extracted.

The majority of the coal is used to generate electric power at generating plants throughout the Midwest. The coal is shipped by rail and river barge. Northeast of the No. 10 Mine the Commonwealth Edison Company is building a new power plant. This new plant reflects the current trend to locate power plants near the fuel source and to transport the electricity by high capacity transmission lines to the areas of consumption. The No. 10 Mine will supply all of the coal to be used at this plant. Most of the electric energy will be consumed in the Chicago area.

The bedrock underlying the Edinburg area is of Pennsylvanian age (about 280,000,000 years old). The Pennsylvanian rocks contain all of Illinois' minable coal beds, whose minable reserves are estimated to be 137 billion tons.

In addition to the coals, there are many different types of sedimentary rocks in the Penn. System. In Illinois, coals are commonly overlain by black sheety shale ("roof slate") followed by limestone with marine fossils. The limestone is usually overlain by gray shale also containing marine fossils. Beneath the coal there is an underclay, in turn sometimes underlain by limestone or shale, then sandstone.

This type of rhythmic succession of different kinds of strata is repeated in much the same sequence some 50 times where the Pennsylvanian rocks are thickest. Each rhythmic succession of Pennsylvanian rocks is called a cyclothem. An attached sheet shows an ideally complete cyclothem, but seldom do we find all the units present.

The thickness of the Pennsylvanian System and individual cyclothems varies greatly from place to place. An example of this is the interval between the Colchester (No. 2) coal and the base of the Pennsylvanian. This interval averages about 125 feet in western Illinois, while in the southeastern part of the state this part of the Pennsylvanian column is represented by about 1200 feet of strata. Although deposition started relatively early in Pennsylvanian time in western Illinois, it either proceeded very slowly or was interrupted frequently by intervals when no sediments were deposited.

There is no area in the world today that has conditions exactly like those which existed during "Coal Measures" time. The many different rock types in the Pennsylvanian System indicate that many rapid and repeated changes of environment took place. At that time, rivers were bringing sediments from the north and east, possibly from as far away as the present Atlantic coast and the region south of the Hudson Bay. The midwest was a low, flat swampy area lying just a little above sea level, but subject to frequent marine invasions as the land rose or sank or the sea level raised or lowered.

That these conditions existed is evident from the nature of the sediments. Many of the shales, limestones, and ironstones above the coals contain marine fossils. The coals are believed to have formed in broad fresh-water marshes somewhat like the present-day Dismal Swamp of Virginia. Most of the sandstones, conglomerates, underclays, underclay limestones, and some shales probably accumulated in fresh-water environments such as river valleys, lagoons, or lowland plains.
The plants and trees that grew in "Coal Measures" time were very luxuriant. In the jungle-like growths, the plants most common were huge tree ferns that had fronds five or six feet long and grew to a height of more than 50 feet. Along with them were seed ferns, now extinct; giant scouring rushes; and large trees, which grew to heights of 100 feet or more.

The large trees we find preserved in the coals do not have growth rings. The luxuriant growth and lack of growth rings probably indicates that the climate that prevailed at this time was warm and without seasonal change. As the plants fell into the swampy waters, they were partially preserved, buried by later sediments and converted into coal.

At stops 4 and 6 we will see Pennsylvanian limestones deposited at a time when the sea inundated the area and brought with it the sea life which is preserved as fossils.

1.1 13.0 Leaving grounds of Peabody Mine No. 10. Turn left.

0.1 13.1 Cross Chicago and Illinois Midland Railroad. STOP. CAUTION. Turn left on Rt. 104.

0.9 14.0 On the left you see the large waste pile from the Peabody Mine No. 10. Loess is used to cover these waste deposits. This practice reduces the chances for accidental firing and spontaneous combustion.

1.0 15.0 Turn right (north) off Rt. 104. Continue ahead on blacktop road.

1.5 16.5 Jog right, then left. Continue ahead (north) on blacktop road.

2.2 18.7 The flat, featureless topography here is the Jacksonville Till Plain.

3.1 21.8 STOP. Intersection at New City. Continue ahead (north).

1.4 23.2 Stop 2. Discussion of the New City Section.

Nearly all of Illinois is covered by thin surficial deposits of glacial loess which consists principally of silt with subordinate amounts of sand or clay. The loess deposits exposed here in the New City Section are Wisconsinan in age, deposited during the times of advance and retreat of the Wisconsinan glacier in Illinois. The Wisconsinan glacier never reached the Edinburg area, but the loess deposits record its influence outside of the glaciated region.

The upper loess in this exposure, called the Peoria Loess, was deposited during Woodfordian time. The loess at this outcrop is leached of carbonates and has a buff brown color that is typical of the Peoria Loess wherever it is exposed. Behind the Wisconsinan terminal moraine, the Peoria Loess is divided into two loess units, the Morton Loess and the Richland Loess (Fig. 1). The Morton Loess lies below the Shelbyville till and is equivalent to the lower part of the Peoria Loess. The Richland Loess, which is equivalent to the upper part of the Peoria Loess, lies above the Shelbyville till and younger tills. Deposition of the Peoria Loess was continuous with no intervals of weathering, so that here on the Illinoian drift plain the Morton and Richland Loesses cannot be differentiated.
Underlying the Peoria Loess is the Roxana Silt, which was deposited during Altonian time. The Roxana is also leached and is typically chocolate-brown in color. There was a time interval of about 6000 years between the deposition of the Roxana Silt and the Peoria Loess so that a sharp contact sometimes exists between them. The Roxana Silt is strongly leached, and a weak soil zone is sometimes found at the top of the deposit. In some places in Illinois this soil zone is marked by dark brown peaty silt, woody material, and humus. The weathering interval during which the soil was formed was the Farmdalian Substage, which represents a period of major withdrawal of the Wisconsinan glacier in Illinois. Below the Roxana Silt is the pre-Wisconsinan Sangamon Soil developed in the Illinoian drift.

Geologists generally agree that the loess deposits in Illinois are eolian in origin and are genetically related to the major Pleistocene meltwater channels (Fig. 3). During the Pleistocene Epoch the prevailing westerly winds blew sand, silt, and clay from the floodplains of the valley trains and deposited these materials on the bluffs and uplands adjacent to the valleys. The finest silt and clay was carried eastward and deposited as a thin blanket of loess across most of the state. Most of the loess deposition probably occurred during the fall and early winter when the meltwaters from the glaciers had subsided, exposing the floodplain sediments and permitting them to dry. The loess deposits of the
Figure 3 - Locations and names of major rivers that were sources of loess during Altonian time (from Circular 334).
Edinburg area were derived from the valley trains of the Illinois and Mississippi Rivers. The loess is thicker on the east bluffs of these rivers than on the west, and toward the east the loess becomes progressively thinner, until in eastern Illinois it is only a thin film barely recognizable in the soils.

0.1 23.3 Descending from the upland to the Sangamon River terrace.

0.1 23.4 Cross bridge over South Fork Sangamon River.

0.2 23.6 Driving across terrace. On the right note the steep valley wall and the dissected character of the upland surface adjacent to it.

1.0 24.6 Ascending the north valley wall of the South Fork Sangamon River.

0.6 25.2 SLOW. X-intersection. Turn left (northwest).

0.6 25.8 Again crossing the extremely flat Illinoian till plain.

0.7 26.5 Oil well on the left.

0.2 26.7 Turn right. Continue ahead (north).

0.3 27.0 Pumping oil well on the left. Note the flaming gas flare. On both sides of the road there are storage tank batteries.

0.3 27.3 Bear left and continue ahead (northwest).

0.7 28.0 Bear right. Continue ahead (north).

0.7 28.7 T-road. Turn left. Note the Pleistocene terrace on the right side of the road.

0.3 29.0 Cross South Fork Sangamon River. Note the incised character of the stream valley.

0.2 29.2 Turn sharply left. Continue ahead (south).

1.7 30.9 Y-intersection. Continue ahead. Lake Springfield on the right.

0.5 31.4 Turn right into Lake Park Picnic Area. Stop 3. Lunch. Discussion of Lake Springfield.

When it was decided in 1928 to build a surface reservoir for the city of Springfield, three locations were considered as main dam sites. One was on the Sangamon River at Peabody, a second was on the South Fork at Rochester, and a third was on Sugar Creek two miles east of Mildred. The geology of the three proposed dam sites was the most important factor in selecting the best location for the dam. The Sugar Creek site was finally selected when test borings of the valley sediments showed the valley bottom of Sugar Creek to be the most favorable of the three on which to build a dam. The Peabody site was rejected because the thick sand and gravel deposits in the Sangamon River valley bottom would have caused serious seepage problems. The Rochester site was rejected because the valley bottom contained thick sediments of sand, silt and clay that would have caused foundation problems.
The test borings showed that the Sugar Creek valley bottom consisted of about 40 feet of silt resting on Pennsylvanian sandstone. Penetration tests showed that the silt had a bearing strength that was satisfactory for a dam foundation, while the sandstone would make an excellent natural base for the spillway. To complete the reservoir two dams were required, one across Sugar Creek, another on the east side across a low spot in the divide between Sugar Creek and South Fork. The completed lake had an initial storage capacity of 20 billion gallons which in the 36 years since then has been reduced to about 18 billion gallons by silting. At the present rate of silting, the ultimate life of the reservoir will be approximately 300 years.

0.1 31.5 Leave Lake Park. Turn Right. Continue ahead on East Lake Park Drive.

1.4 32.9 Turn left at Y-intersection. Continue ahead (south).

1.1 34.0 On the left is the Brunk residence, constructed of the limestone which we will see at the next stop. The house is more than 125 years old.

0.1 34.1 Turn left (east) on blacktop road. The terrain becomes more rugged due to erosion by tributaries of Horse Creek.

0.3 34.4 Descend the steep valley slope of Horse Creek.

0.1 34.5 Stop 4. The Brunk Quarry. Park car beside road and walk down dirt road on left. Turn left and cross barbed wire fence to enter quarry. PLEASE DO NOT DAMAGE THE FENCE NOR MOLEST THE LIVESTOCK.

The rock that was quarried here is a sandy dolomite which was used principally as roadstone. However, because of its slabby character the rock split to suitable thicknesses for use as a building stone. The Brunk residence which we passed ½ mile west of the quarry was built using this limestone. Limestone from this quarry was also used in the fourth Capitol building which was built in Springfield in 1837. This building is now the Sangamon County Court House.

In the summer of 1942 the quarry was operated by the WPA. At that time the rock was used as roadstone and as building stone for the abutments under many of the bridges that are still in use in the Edinburg area.

The limestone exposed here is the Pennsylvanian Shoal Creek Limestone Member of the Bond Formation. It was deposited in a shallow sea that spread across Illinois about 280,000,000 years ago. A joint pattern consisting of two intersecting sets of joints can be seen on the upper surface of the limestone in the west side of the quarry. Close inspection also reveals numerous scratches and gouges in the limestone. These scratches are called glacial striations. The striations were made by the Illinoian glacier which passed over the Edinburg area about 180,000 years ago. The trend of the striations indicates that the ice was moving southwesterly.

Above the limestone, which contains abundant marine fossils, there is an excellent exposure of Pleistocene glacial drift. The geological section exposed here is as follows:
WISCONSINIAN STAGE
1. Peoria Loess, massive, buff-brown, leached; gray-brown podsolic surface soil

SANGAMONIAN STAGE
2. Sangamon Soil, developed in Illinoian till; A-zone absent; B-zone is blocky, dark reddish-brown clayey silt, iron and manganese pellets, chert pebbles grading downward to reddish-brown till, leached, iron and manganese stain in upper part

ILLINOIAN STAGE
3. Illinoian till, oxidized in upper part, grading downward to gray, pebbly till
4. Pennsylvanian Shoal Creek Limestone Member, tan to reddish-brown sandy, coarse-grained, dolomitic limestone, slabby, fossiliferous; about one foot below top there is a distinct zone of crinoidal fragments

Although gastropods, pelecypods, crinoids, and brachiopods can be collected in the Shoal Creek, the brachiopods are most abundant. A partial list of these brachiopods is given below:

Beecheria bordens
Choanites granulifer
Composita subtilita
Crurithyris planoconvexa
Derbya crassa
Juresania nebrascensis
Linoproductus prattenianus
Marginifera splendens
Phricodothyris perplexa
Neospirifer cameratus
Wellerella tetraedra
Wellerella osagensis

0.1 34.6 Cross bridge over Horse Creek.
0.2 34.8 Ascend east valley wall of Horse Creek.
0.2 35.0 On the left note the flat terrace of Horse Creek.
0.7 35.7 On the left is an upper terrace level of Horse Creek. Ascend to Illinoian upland surface.
0.2 35.9 Stop 5. Accretion-gley overlying Illinoian (glacial) till.

The layer of gray material exposed here consists of gray, compact, slightly humic (organic) clay. The clay overlies gray, pebbly Illinoian till and is in turn overlain by several feet of buff loess. The clay is noncalcareous and contains small rounded quartz pebbles. When dry the clay is hard and blocky, but when wet it is very sticky and plastic. The clay is always some shade of gray and may exhibit slight stratification. Similar clay deposits occur in numerous places on the Illinoian till plain in the Edinburg area.
Dr. G. F. Kay first studied similar clay deposits in Iowa which he called "gumbotil." Kay regarded this clayey material as the end product of in place weathering of the underlying glacial till. Therefore he considered it to represent decomposed glacial till comprised of the weathering products and resistant constituents of the original unweathered till.

Recent studies by geologists at the Illinois Geological Survey indicate that these bodies of clayey material are not the end product of intensive in place weathering, but rather represent comparatively unweathered materials that have slowly accumulated in low, undrained depressions on the Illinoian till plain. This material, called accretion-gley, is a deposit of sheet wash derived largely from the adjacent slightly higher areas of the till plain. Proof that it is not intensely weathered as was originally thought is the presence of abundant feldspars and other easily decomposed silicate minerals. Because these relatively unstable minerals are easily destroyed or altered by chemical weathering, their presence in the accretion-gley is used by Survey geologists to distinguish accretion-gley from weathering profiles developed in place. The term gumbotil is no longer used as a scientific term by the Illinois Geological Survey.

0.1 36.0 Turn right. Continue ahead (south).
0.2 36.2 Turn left. Continue ahead (east).
0.4 36.6 T-road. Turn right. Continue ahead (south).
0.2 36.8 Turn left. Continue ahead (east).
0.5 37.3 Turn right. Continue ahead (south).
0.1 37.4 Stop 6. New City Oil Field, Producing Oil Well.

Recently numerous new oil fields have been discovered in southeastern Sangamon and northwestern Christian counties. In general these pools are small, but numerous enough to make oil exploration active in the area. This is one of the wells in the New City pool. The pool was discovered in 1954 in Silurian dolomite at a depth of 1704 feet. In 1962, 2000 barrels of oil were produced; a total of 56,000 barrels has been produced since its discovery.

Two pay zones, Silurian dolomite and Devonian sandstone, have thus far been discovered in the New City area. The depth of these zones varies slightly from place to place, but in the New City area the Silurian is about 1730 feet below the surface. The productive Devonian sandstone beds are a few tens of feet above the Silurian. The oil traps in these rock units are stratigraphic traps which are the result of differential porosity in the rock. Figure 4 shows the three principal kinds of oil traps in Illinois.

0.2 37.6 Bear right.
0.4 38.0 The rugged topography here is due to stream erosion dissecting the Illinoian upland.
0.7 38.7 STOP. Turn left (east) on blacktop road. T-road intersection.
0.5 39.2 STOP. New City intersection. Turn right. Continue ahead (south).
4.1 43.3 Jog right, then left. Continue ahead (south) on blacktop road.
Figure 4 - Crustal structures influencing oil accumulation in Illinois.
1.6 44.9 STOP. Turn left (east) on Rt. 104.
0.3 45.2 Cross bridge over Clear Creek.
4.8 50.0 Bridge over Clear Creek.
0.8 50.8 Enter Bulpitt.
0.3 51.1 Turn left (north) in center of Bulpitt.
2.4 53.5 Proceed straight ahead to the Y-intersection.
0.1 53.6 Turn sharply left.
0.1 53.7 Turn right at intersection.
0.2 53.9 Enter Edinburg Quarry. Stop 7.

This recently abandoned quarry produced agricultural limestone and roadstone from the Pennsylvanian Bond and Modesto Formations. Two marine limestones were quarried. The pinkish-gray limestone exposed at the edge of the quarry is the Shoal Creek Limestone Member, the same rock unit we saw in the Brunk Quarry. Below it, but presently submerged, is the Macoupin Limestone Member. A thin shale zone containing platy, black shale occurs between the limestones. The limestones are fossiliferous, but good specimens are hard to find. Fair specimens can be collected in the waste piles along the south edge of the quarry.

An exposure of Pleistocene drift can be seen above the Shoal Creek Limestone.

**Wisconsinan Stage**

1. Peoria Loess, buff, massive; thin brunizem soil at the top 10'

**Illinoian Stage**

2. Buffalo Hart outwash, sand, very fine, silty, buff to red, laminated 4'
   gravel, medium to coarse 1'
   interbedded gravelly sand and silt grading downward to interbedded brown silt and red silty clay; individual clay beds \( \frac{1}{4} \) to 1" thick and laminated 3'

3. Jacksonville till, compact, hard, gray, stony till 5'

4. Pennsylvanian Shoal Creek Limestone Member.

Three substages, the Liman, the Jacksonville, and the Buffalo Hart, have been recognized in the Illinoian glacial deposits beyond the limits of Wisconsinan glaciation in Illinois (Fig. 1). The Edinburg Quarry is located just outside of the boundary of the Buffalo Hart Moraine, and the till exposed here belongs to the
Jacksonville Substage. The stratified outwash immediately above the till was deposited by meltwaters from the Buffalo Hart glacier, which advanced to within a mile or so east of here. The thin zone of interstratified silt and clay may have been deposited in a small lake formed by ponded water in front of the Buffalo Hart glacier.

END OF TRIP

References


Shale, gray, sandy at top; contains marine fossils and ironstone concretions, especially in lower part.

Limestone; contains marine fossils.

Shale, black, hard, laminated; contains large spheroidal concretions and marine fossils.

Limestone; contains marine fossils.

Shale, gray; pyritic nodules and ironstone concretions common at base; plant fossils locally common at base; marine fossils rare.

Coal; locally contains clay or shale partings.

Underclay, mostly medium to light gray except dark gray at top; upper part noncalcareous, lower part calcareous.

Limestone, argillaceous; occurs in nodules or discontinuous beds; usually nonfossiliferous.

Shale, gray, sandy.

Sandstone, fine-grained, micaceous, and siltstone, argillaceous; variable from massive to thin-bedded; usually with an uneven lower surface.

AN IDEALLY COMPLETE CYCLOTHEM

(Reprinted from Fig. 42, Bulletin No. 66, Geology and Mineral Resources of the Marseilles, Ottawa, and Streator Quadrangles, by H. B. Willman and J. Norman Payne)
GLACIAL MAP OF NORTHEASTERN ILLINOIS

GEORGE E. EKBLAW

Revised 1960
GEOLOGIC MAP OF ILLINOIS
showing
BEDROCK BELOW
THE GLACIAL DRIFT
1961

KEY

Tertiary
(Pliocene omitted)

Cretaceous

Pennsylvanian
(Above No. 6 Coal)

Pennsylvanian
(Below No. 6 Coal)

Mississippian
(Upper)

Mississippian
(Middle and Lower)

Devonian

Silurian and Devonian

Silurian

Complex faulted area

F- Fault

MILES

0 5 10 20 30 40 50