EARTH SCIENCE FIELD TRIP

GUIDE LEAFLET

DALLAS CITY AREA

HANCOCK COUNTY

LOMAX AND LAHARPE QUADRANGLES

Leader

GEORGE M. WILSON

ILLINOIS STATE GEOLOGICAL SURVEY, URBANA

October 6, 1956

GUIDE LEAFLET NO. 56E

HOST: LAHARPE HIGH SCHOOL
DALLAS CITY FIELD TRIP
October 6, 1956

<table>
<thead>
<tr>
<th>Distance</th>
<th>Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>0.5</td>
<td>1.7</td>
</tr>
<tr>
<td>0.3</td>
<td>2.0</td>
</tr>
<tr>
<td>0.3</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Line up cars on west side of LaHarpe High School.
Stop - Intersection - Highway 9

Turn left (east) and right (south)

Caution Railroad Crossing!!
Caution Railroad Crossing!!

Slow, turn left (east)

Caution, side road enters from left

STOP 1. Pennsylvanian-Mississippian unconformity.

Beneath the alluvium is the lowest portion of the Pennsylvanian in this section, the Babylon cyclothem, which lies upon the Salem formation of Mississippian age. The Pennsylvanian beds lie irregularly upon and not parallel to the underlying Mississippian.

A cyclothem is a sequence of beds which is repeated many times in the Pennsylvanian system. An ideal cyclothem is shown on one of the pages in the appendix.

The section here is as follows:

<table>
<thead>
<tr>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ft.</td>
</tr>
<tr>
<td>In.</td>
</tr>
</tbody>
</table>

Recent alluvium
Pope Creek Cyclothem
Sandstone, stained brown, thin-bedded, micaceous

Babylon Cyclothem
Underclay, light gray, yellow, purplish
Limonite, micaceous, irregular upper and lower surface
Sandstone, light gray, fine, clean, thinly and irregularly laminated
Shale, greenish and stained brown, may be in part residual
Limestone, light gray, dense, hard, irregular upper surface, with rounded sand grains

The clay in the Babylon Cyclothem has been used in the manufacture of brick and tile. Clays that are found below the horizon of the No. 2 coal are often refractory.
The contact between Mississippian rocks (here the Salem formation) and the overlying Pennsylvanian represent a time lapse that included the late portion of the Lower Mississippian and all of the Upper Mississippian. It might represent as much as 30 million years. This Mississippian formation in western Illinois resembles the building stone of southern Indiana. In Southern Illinois it is an oil-producing zone. Return to the cars.

0.8 3.1 Continue ahead, turn left (north)
0.5 3.6 Turn left (west)
0.3 3.9 Turn right (north)
0.5 4.4 Turn left (west)
0.3 4.7 Turn right (north). Caution Railroad Crossing!!
0.3 5.1 Stop, Route 9, turn left (west)
0.3 5.4 Slow, turn right (north)
0.7 6.4 Turn right (east) and follow winding road
0.9 7.3 Turn right (east)
1.0 8.3 Turn left (north)
0.3 8.4 STOP 2. Buried soil

The section here is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ft.</td>
</tr>
<tr>
<td>Surface soil</td>
<td></td>
</tr>
<tr>
<td>Loess, brown</td>
<td></td>
</tr>
<tr>
<td>Loess, gray</td>
<td></td>
</tr>
<tr>
<td>Silt, gray, with small quartz pebbles</td>
<td></td>
</tr>
<tr>
<td>Soil, black, humic, with quartz and chert fragments</td>
<td></td>
</tr>
</tbody>
</table>

During Pleistocene time four separate periods of glaciation altered the surface of Illinois. The first three glaciers left deposits of till in this region, and during the fourth period of glaciation the mantle of loess covered this area.

Look at your map and note the parallelism between the streams. It is thought that as the Illinoian glacier wasted away, cracks or crevasses developed in its surface, and the streams that flowed in the cracks were superimposed upon the earth. At the next stop we will see Illinoian till. The black soil here buried is of Sangamon age, the interglacial time between the Illinoian and the Wisconsin.

The loess here was formed during the Wisconsin stage of glaciation. This loess is finely divided silty material called rock flour.
Melt waters from the glaciers deposited the rock flour on the Mississippi floodplain. Wind picked up the silt and fine sand from the valley flats and deposited them on the bluffs and the prairie uplands. The loess is thickest near the bluffs and thins away from the valley.

In the erosion cycle this region can be referred to as late youth. The uplands have a flat area between the streams and are relatively uneroded. The valleys as you will note when you cross the next stream, the LaMoine Creek, are wide with rather gentle valley slopes or walls. The streams are entrenched only a few feet and meander across the valleys.

Return to cars.

0.2 8.6 Turn right (east)
1.0 9.6 Slow, cross roads, turn left (north)
0.7 10.3 Note gravelly Illinoian till on right.
0.3 11.3 Slow, turn left
0.5 11.8 STOP 3. Illinoian drift profile.

In order that we may learn of the nature of the Illinoian drift in this area the following section was chosen:

<table>
<thead>
<tr>
<th>Wisconsin</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil, gray, humic, derived from loess</td>
<td>8 Ft.</td>
</tr>
<tr>
<td>Loess, brown</td>
<td>2</td>
</tr>
<tr>
<td>Loess, light gray</td>
<td>3</td>
</tr>
<tr>
<td>Illinoian till</td>
<td></td>
</tr>
<tr>
<td>Till, brown, pebbly</td>
<td>6</td>
</tr>
<tr>
<td>Till, gray, with irregular gravel lenses</td>
<td>10</td>
</tr>
</tbody>
</table>

We see here a cross section of Illinoian drift-plain or till-plain. The materials deposited here represent a retreating ice front, where the rate of melting equalled the rate of advance. The resulting deposit is called a moraine.

1.3 13.1 Note the profile in the loess on the right.
0.3 13.4 Caution, T-roa d north
0.8 14.2 Stop, Route 94, continue ahead
2.1 16.3 Caution, railroad Crossing
0.1 16.4 Caution, cross roads.
1.0 17.4 Slow, turn right (north)
1.1 18.5 Slow, turn left (west)
STOP 4. Gittings Mound

This topographic feature is a buried bedrock mound, which is thought to be a remnant of an old peneplain. A peneplain is a land surface worn down by erosion to a condition of low relief or nearly to a plain. From this vantage point we can see a wide expanse of the dissected Illinoian till plain.

0.7 19.6 Slow, at T-road east, turn right (north)
0.5 20.1 Slow, turn left (west)
2.5 22.6 Slow, T-road north, continue ahead
1.7 24.3 Slow, turn right. Note the great thickness of coarse loess in the hill behind the house.
0.6 24.9 Slow, note the Mississippian shale and limestone on the left of the bridge.
1.2 26.1 Slow, at underpass, turn left.
0.2 26.3 STOP 5. LUNCH
Return to cars, turn right
0.1 26.4 Stop, Route 96, turn right.
0.2 26.6 Turn right.
3.5 30.1 Follow gravel road, slow, turn left (north)
0.7 30.8 Slow, note the peculiar manner of headward erosion in loess in the gully on the left.
0.8 31.6 Slow, note the thickness of loess in the road cut on the right and left.

STOP 6. The section here is as follows:

Wisconsin loess
Loessal soil
Loess, gray
Silt, cross-bedded, fine, dipping southeast, with numerous gastropods
Covered interval
Illinoian till
Till, pebbly
Mississippian System, Burlington Formation
Limestone, light gray-white, coarsely crystalline, with an occasional cherty band

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Ft.</th>
<th>In.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin loess</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Loessal soil</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Loess, gray</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Silt, cross-bedded, fine, dipping southeast, with numerous gastropods</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>Covered interval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illinoian till</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Till, pebbly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mississippian System, Burlington Formation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limestone, light gray-white, coarsely crystalline, with an occasional cherty band</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Burlington limestone is coarsely crystalline and has variable amounts of chert. In some areas it is dolomitic. The limestone is rather soluble. Fossils are commonly found in solution surfaces.
Stylolites are rather common. Differential solution under pressure of the overlying beds and interpenetration of adjacent beds are important factors in their development.

At the tops and bottoms of the stylolite columns, there are accumulations of greenish clay residue from solution of the limestone. The glacial till here is presumed to be Illinoian, although older drift has been identified in this vicinity.

At the foot of this hill (at the crossroads) is a late Wisconsin terrace referred to as the Mankato glaciation in the upper Mississippi Valley. Return to the cars.

0.2 31.8 Slow, cross roads, turn right (east)

0.2 32.0 Caution, narrow, rough bridge.

0.5 32.7 Caution, narrow, rough bridge.

1.0 33.7 Caution, cross roads, turn left (north)

1.0 34.7 Note height of loess in cut.

0.2 34.9 Note glacial till in ditch on the right.

0.3 35.2 Stop, Route 96 in Lomax, turn left (southwest)
The Tazewell terrace lies at an elevation of 560 feet, approximately ½ mile east of Lomax, and developed when the Mississippi flow was restricted by the narrows at Keokuk.

0.8 36.0 At edge of Late Wisconsin, Mankato terrace.

2.4 38.4 STOP 7. Moore's Quarry

The section here is as follows:

**Mississippian System, Burlington Formation**

Cherty residue
Limestone, light gray, coarsely crystalline, virtually a coquina (shell bed)
Limestone, light gray, coarsely crystalline, with an occasional chert nodule

The Burlington here is similar to that seen in Stop 6 except for the Pleistocene stratigraphic relations. Return to cars and proceed towards Dallas City.

1.9 40.3 STOP 8. Olson Bros. Quarry in the Burlington formation.

The section for the Pleistocene deposits in the east portion of the quarry is as follows:

**Illinoian drift**

Soil, humic
Till, reddish, gravelly, tends to be laminated
In a channel in the top of the bedrock is found:

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
<td>6-12</td>
</tr>
<tr>
<td>Kame in drift</td>
<td></td>
</tr>
<tr>
<td>Fragmentary soil</td>
<td></td>
</tr>
<tr>
<td>Irregularly laminated gray till with only quartz pebbles, contains fossil wood</td>
<td>3</td>
</tr>
<tr>
<td>Sandy gray and brown till with igneous pebbles</td>
<td>2</td>
</tr>
<tr>
<td>Reddish limestone residue</td>
<td>1</td>
</tr>
</tbody>
</table>

The section in the west end of the Olson Quarry is as follows:

<table>
<thead>
<tr>
<th>Deposit Type</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin deposits</td>
<td></td>
</tr>
<tr>
<td>Soil developed on loess</td>
<td>3</td>
</tr>
<tr>
<td>Loess</td>
<td>30</td>
</tr>
<tr>
<td>Illinoian deposits</td>
<td></td>
</tr>
<tr>
<td>Gray humic soil</td>
<td>0-6</td>
</tr>
<tr>
<td>Till, light tan</td>
<td>3</td>
</tr>
<tr>
<td>Till, reddish brown</td>
<td>12</td>
</tr>
<tr>
<td>Mississippian</td>
<td></td>
</tr>
<tr>
<td>Limestone, thin and thick bedded, with shale partings</td>
<td>14</td>
</tr>
<tr>
<td>Shale, greenish gray, fine, well laminated</td>
<td>3</td>
</tr>
<tr>
<td>Limestone in floor of quarry</td>
<td></td>
</tr>
</tbody>
</table>

A wide variety of fossils is to be found at this locality - especially crinoids, brachiopods, corals, and bryozoa.

Adios! See you on October 20 in Thebes where we will look at rocks twice as old as the Mississippian!

GEOLOGIC HISTORY

Paleozoic History

The oldest rock outcrops in this area are the Burlington limestone of Mississippian age. This system of rocks gives Illinois much quarry stone and most of its oil production.

From information obtained from tests drilled for water and oil we know that the Devonian, Silurian, and Ordovician rocks lie at depth. We have but scant knowledge concerning the Cambrian system of rocks in this region.

The Mississippian rocks exposed in this area are of marine origin, as shown by the wealth of fossil remains. The Warsaw-Keokuk formations are rather thin bedded and have shaly laminations. The Burlington limestone in this region is cherty.

Many hundreds of feet of Mississippian strata were deposited and stripped away before the deposition of the Pennsylvanian beds.
From the few outcrops of Pennsylvanian to be found in this region it is to be assumed that at one time a considerably greater area in western Illinois was covered by "Coal Measures" rocks. Obviously the pre-Pennsylvanian surface was rather irregular and a variety of sediments are preserved in this surface.

Mesozoic and Cenozoic History

Since the end of Pennsylvanian time it is thought that there have been no marine waters covering this portion of Illinois. In the great expanse of time from the Pennsylvanian to the end of the Cenozoic it is thought that this has been a land area subjected to the action of wind, and rain. The advance of the Pleistocene glaciers found a rather rugged topographic surface in Illinois, probably similar to the hill country found in Jo Daviess County. Between the end of the Pennsylvanian and the Pleistocene virtually all of the Pennsylvanian sediments had been removed by erosion and considerable inroads had been made into the underlying Mississippian in some areas.

With the coming of the Pleistocene many of the streams were diverted, such as the Mississippi, which originally flowed from the Rock Island region southeastward to enter the Illinois at the "Bend" near Hennepin.

Glacial History

In the Pleistocene Period (or "Great Ice Age"), North America experienced four successive glacial invasions, each separated by long intervals of mild climate. Of these four invasions, the earliest, the Nebraskan, may have reached the LaHarpe-Dallas City area, but definite evidence is lacking. The second, or Kanann invasion, moving down from the region west of Hudson Bay, extended across our area and southeast beyond Pittsfield.

When the Kanann ice sheet melted away, it left beyond its glacial drift, rock and debris which mantled the surface and concealed the bedrock. There followed a long interglacial interval (the Yarmouth Stage), which left its record in the form of old soils and weathered zones on and in the Kanann glacial drift. From the amount of weathering and leaching that affected the Kanann drift, the length of the Yarmouth Interglacial Stage is estimated at from 200,000 to 300,000 years.

The Yarmouth Interglacial Stage was terminated by the advance of a new glacier, this time coming from the northeast, from a center of accumulation east of Hudson Bay. This Illinoian Ice Sheet is well named, for not only did it cover nearly all of Illinois, but its western termination coincides closely with the western boundary of the State. At Warsaw, we are within four or five miles of the western limit of Illinoian glaciation, which here extended a few miles into Iowa.

After several scores of thousands of years, climatic conditions caused the melting away of the Illinoian Ice Sheet. During this warm stage, the upper part of the Illinoian till was weathered and soil developed, just as in the case of the preceding Yarmouth Interval. However, this action did not take place to the degree it did during the Yarmouth, so that the post-Illinoian (Sangamon) interval is estimated to have lasted only about 150,000 years.

The Sangamon Interval was brought to a close by the fourth and final readvance of the glaciers. This Wisconsin Ice Sheet never reached the LaHarpe-Dallas City area, although it threatened it, first from the northwest, later from the northeast. It left its mark on the region, nevertheless. The Mississippi and other streams were choked with sediment washed out from the ice fronts that stood to the north, west, and east. The frigid blasts that whipped across these broad sand and mud flats caused violent dust storms. The dust accumulated on the uplands and covered the Illinoian drift and Sangamon soils with a thick layer of loess. This sappy loess, over most of the upland, grades into the soil of the present day.
Glacial history of the Mississippi River. - At the beginning of, or early in the history of the Great Ice Age, there was no great master stream flowing along the course of the present Mississippi River in the area. The ancestral Mississippi river left its channel above Rock Island and swung eastward as far as Hennepin, below which its course approximated that of the present Illinois River.

But when the Illinoian Glacier moved down from the northeast it blocked the Mississippi between Savanna and Fulton and forced it to turn westward around the ice lobe. The river then had to cut a new course west even of its present one west of the present river. Then when the great ice dam melted away, the river found a short cut and abandoned that portion of its old channel which lies between Cordova in the north and Keokuk in the south.
**Time Table of Pleistocene Glaciation**  
*(after M. M. Leighton and H. B. Willman, 1950)*

<table>
<thead>
<tr>
<th>Stages</th>
<th>Sub-stages</th>
<th>Nature of Deposits</th>
<th>Special Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent</td>
<td></td>
<td>Soil, infant to youthful profile of weathering, lake and river deposits, dunes, peat.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Late Mankato</td>
<td>Fluvial deposition - Mississippi, Illinois, and Ohio river valleys; dune sand, some loess deposits along Mississippi River Valley; and deposits in Lake Chicago.</td>
<td>Lake Agassiz Torrent eroded Late Mankato deposits</td>
</tr>
<tr>
<td></td>
<td>Early Mankato</td>
<td></td>
<td>Lake Duluth Torrent eroded Early Mankato deposits</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>Cary</td>
<td>Drift, loess, dunes, beginning of deposits in Lake Chicago</td>
<td>Forest bed, Two Creeks, Wisconsin</td>
</tr>
<tr>
<td>(4th glacial)</td>
<td>Tazewell</td>
<td>Drift, loess, dunes, lake deposits.</td>
<td>Kankakee and Lake Maumee Torrents</td>
</tr>
<tr>
<td></td>
<td>Iowan</td>
<td>Drift, loess, dunes</td>
<td>Fox River Torrent Westward diversion of Mississippi River into Iowa by Tazewell ice lobe</td>
</tr>
<tr>
<td></td>
<td>Farmdale</td>
<td>Loess (in advance of glaciation)</td>
<td></td>
</tr>
<tr>
<td>Sangamon</td>
<td></td>
<td>Soil, mature profile of weathering, alluvium, peat</td>
<td></td>
</tr>
<tr>
<td>(3rd interglacial)</td>
<td>Buffalo Hart</td>
<td>Drift</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jacksonville</td>
<td>Drift</td>
<td></td>
</tr>
<tr>
<td>Illinoisan</td>
<td>Payson</td>
<td>Drift</td>
<td></td>
</tr>
<tr>
<td>(3rd glacial)</td>
<td>(terminal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loveland</td>
<td>Loess (in advance of glaciation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Pro-Ill.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yarmouth</td>
<td></td>
<td>Soil, mature profile of weathering, alluvium, peat</td>
<td></td>
</tr>
<tr>
<td>(2nd interglacial)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kansan</td>
<td></td>
<td>Drift</td>
<td></td>
</tr>
<tr>
<td>(2nd glacial)</td>
<td></td>
<td>Loess</td>
<td></td>
</tr>
<tr>
<td>Aftonian</td>
<td></td>
<td>Soil, mature profile of weathering, alluvium, peat</td>
<td></td>
</tr>
<tr>
<td>(1st interglacial)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nebraskan</td>
<td></td>
<td>Drift</td>
<td></td>
</tr>
<tr>
<td>(1st glacial)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### GENERALIZED GEOLOGIC COLUMN
**FOR THE LAHARPE-DALLAS CITY AREA**

<table>
<thead>
<tr>
<th>ERAS</th>
<th>PERIODS</th>
<th>EPOCHS</th>
<th>FORMATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cenozoic</strong></td>
<td>Quarternary</td>
<td>Pleistocene</td>
<td>(See detailed Time Table of Pleistocene).</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>Pliocene</td>
<td>Stream gravels</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Miocene</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oligocene</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Eocene</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paleocene</td>
<td></td>
</tr>
<tr>
<td><strong>Mesozoic</strong></td>
<td>Cretaceous</td>
<td></td>
<td>Present in extreme southern Illinois only</td>
</tr>
<tr>
<td></td>
<td>Jurassic</td>
<td></td>
<td>Not present in Illinois</td>
</tr>
<tr>
<td></td>
<td>Triassic</td>
<td></td>
<td>Not present in Illinois</td>
</tr>
<tr>
<td></td>
<td>Permian</td>
<td></td>
<td>Not present in Illinois</td>
</tr>
<tr>
<td></td>
<td>Pennsylvanian</td>
<td></td>
<td>Sandstones, siltstones, shales, clays, and coal beds</td>
</tr>
<tr>
<td></td>
<td>Mississippian</td>
<td>Chester</td>
<td>Not present in LaHarpe-Dallas City area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iowa</td>
<td>Salem limestone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Warsaw limestone and shale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Keokuk limestone and shale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Burlington limestone - cherty</td>
</tr>
<tr>
<td><strong>Paleozoic</strong></td>
<td>Devonian</td>
<td></td>
<td>Limestone and sandstone in deep wells</td>
</tr>
<tr>
<td></td>
<td>Silurian</td>
<td></td>
<td>Limestone and dolomite in deep wells</td>
</tr>
<tr>
<td></td>
<td>Ordovician</td>
<td></td>
<td>Shales, limestone, and sandstones, in deep wells</td>
</tr>
<tr>
<td></td>
<td>Cambrian</td>
<td></td>
<td>Dolomites in deep wells</td>
</tr>
</tbody>
</table>

**Proterozoic**

**Archeozoic**

Referred to as "Pre-Cambrian" time
PHYSIOGRAPHIC DIVISIONS OF ILLINOIS

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 ("Niggerheads") 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)
COMMON TYPES of ILLINOIS FOSSILS

GRAPTOLITE
Cup coral
Lithostroton
CORALS
Honeycomb coral

CYSTOID
Fenestella

CRINOID
PENTREMITE

LINGULA
Orbicoloidea
Spiriferoid
Productoid
Pentameroid

BRACHIOPODS

Archimedes
Branching

BRYOZOA

Composita

Plate 1
COMMON TYPES of ILLINOIS FOSSILS

PELECYPODS

- "Clam"
- "Scallop"

- High-spired
- Low-spired

CEPHALOPODS

- Straight cone
- Curved cone
- Coiled cone (Nautilus)
- Flat-spired

OSTRACODS

- Bumastus
- Calymene (coiled)
- Calymene (flat) (greatly enlarged)

GASTROPODS

TRILOBITES

[Images of various fossil types]