A Pleistocene Section Near Greencastle, Indiana

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General—Stripping at a limestone quarry in the NW¼ NW¼ sec. 29, T. 14 N., R. 4 W., 1½ miles southwest of Greencastle in Putnam County has revealed an unusual Pleistocene section for the area. The location is near the boundary of the Wisconsin drift where it thins out over Illinoian drift. The two drift sheets are here separated by a silt (loess) interval, averaging several feet thick. In the upper part of the silt interval are small gastropods and wood fragments.

Silt (loess)—Between the two tills is 5 feet of buff to gray silt. The upper two feet is slightly oxidized and slightly calcareous with scattered woody fragments and small gastropod shells near the top. A few small frosted quartz sand grains are scattered in the silt. The lower three feet is gray, noncalcareous, tightly compacted silt. The sand content is higher than in the silt above. The lower contact of the silt with the Illinoian till is well defined by the oxidized gumbotil line. The upper contact between the silt and the Wisconsin till where iron-stained banding is prominent, is less regular and somewhat undulating.

Buried Fossil Wood—In the upper 12 inches of the silt are scattered accumulations of wood and peaty fragments. The wood consists of logs, branches, and roots? up to 6 inches in diameter. A few leaf impressions are in the peaty silt. Some of the specimens are conifers, probably species of spruce. Sections of the wood viewed under the microscope reveal tracheids common to conifers. Though the wood is confined to a definite horizon, no particular orientation of the logs is apparent. Dating by the radiocarbon method has established the age of the wood as 19,500 ± 800 years (1).

Fossil Molluscs—The fossil wood layer near the top of the loess carries a land gastropod fauna. The fossil gastropods are localized and not plentiful, but the fragile white shells can easily be seen with the naked eye. A few have been reworked in the lower several inches of the Wisconsin till, but the main layer is closely associated with the wood zone. Hardy species that can withstand considerable change and variation predominate in the gastropod fauna. One of the most common is *Hendersonia*, a gastropod that normally lives in a climate similar to or colder than that of west-central Indiana (2).

The following species are present:

Cionella lubrica
Discus shimeki
Hendersonia occulta
Stenotrema leai
Succinia avara
Succinea groversoni

Correlation—Below the silt are several feet of iron-stained blocky leached gumbotil and till. Locally calcium carbonate concretions are near

the base of the till which rests on the Aux Vases? shale at the top of the quarry rock. Small pebbles of quartz, chert, and igneous rocks are found sparingly in the lowest till. There is some doubt as to the age of the gumbotil, but it is here interpreted as a weathered soil zone at the top of the Illinoian till. The age of the wood (19,500 ± 800 years) in the silt above the gumbotil indicates that the silt interval is Iowan or Late Farmdale age. Farmdale equivalents are not surely recognized in this section, for Farmdale wood samples are dated near 24,000 years old (3).

PLEISTOCENE SECTION, 1½ miles southwest of Greencastle, Indiana, near east wall of a limestone quarry, NW¼ NW¼ sec. 29, T. 14N., R. 4 W., Putnam County.

	Ft.	In.
Wisconsin Stage		
14. Soil, stripped	2	
13. Till, buff, leached; rocks sparse in upper part; iron-stained at base, leached	5	2
12. Till, buff, slightly calcareous	1	8
11. Till, buff, very calcareous	1	7
10. Till, gray, moderately stony, calcareous; a few small gastropods at base	3	4
9. Silt (loess), gray with iron-stained laminae slightly calcareous; scattered small gastropods which include *Succinea avara*, *Hendersonia occulta*	0	9
8. Silt (loess), gray to dark gray, wood of conifers with limbs and roots up to 6 inches in diameter; a few small scattered gastropods, slightly carcareous	1	0
7. Silt (loess), gray, small leaves and twigs, noncalcareous	0	3
6. Silt (loess), dark gray, wood fragments up to 4 inches in diameter, some near charcoal, noncalcareous	0	6
5. Silt (loess), gray, dense	1	0
4. Silt, some clay and sand with a few small pebbles, gray above becoming buff downward, a few carbon specks near top, noncalcareous	1	0
Illinoian Stage		
3. Weathered soil (gumbotil), blocky, leached, iron-stained	3	0
2. Calcareous concretion line	0	3
Mississippian Period		
Chester Series		
Aux Vases? formation		
1. Shale, gray with blue-green cast, thin bedded, noncalcareous, overlying cavernous Ste. Genevieve limestone	7	0
Top of quarry		

Literature Cited

1. RUBIN, MEYER. 1954. Laboratory report, U.S.G.S.
2. WAYNE, W. J. 1954. Personal communication.
3. SUESS, H. E. 1954. U. S. Geological Survey radiocarbon dates I. Science, vol. 120, p. 470.