

## Mystery Mound

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A newspaper clipping (Indianapolis Star) reads as follows:—

**“FARM GROWN HIGHER, RICHER; IT'S ALL RIGHT WITH HENRY.**

Hammond, Ind. Nov. 17, 1948. Henry Huppenthal's farm . . . just grows and grows. Agricultural phenomenon . . . 25,000 square yards of earth has bulged 15 feet higher . . . rich black earth . . . produce more than 110 bushels of corn to the acre . . . growing last 10 years . . . continuous eruptions . . . excellent texture . . . believes an eruption of the earth's core . . . geologists say underground stream . . . apparently pushes the rich soil upward . . . chemical analysis has shown the raised soil is silt loam . . . excellent content of organic matter . . . nitrogen, phosphorous and hydrogen have been found high.

That story is retold in several other clippings November 18 and 19 and is illustrated with photos, one of which is an impressive picture of the mound looking much higher than a man beside it (Figure 1). The points are much the same, with some little rewording and additions. Some phrases are “five acres . . . would swallow tractor . . . swells actively . . . rich black earth has been thrown atop the clay . . . large cracks appear frequently . . . soil blister . . . unable to fill hump . . . only recently the bulge reached phenomenal proportions . . . no explanations have been given by geological experts . . . overflowing underground stream may be responsible . . . soil is black and sticky . . . the overflow, however is plowed onto adjoining fields . . . yielded up to 110 bushels.”

No information is available about what “geological experts” may have seen or considered this mound, or who who may have made any chemical analyses mentioned above.

Apparently some enquiries were made at Purdue when the story first appeared and newspaper clippings dated November 18, 19, 22, 23 and 24 printed statements attributed to administrative officers somewhat as follows:— “PURDUE EXPERTS EXPLAIN BULGING SOIL PHENOMENON . . . eruption was easy because the earth is soft and loose muck land . . . land lies over old swamp . . . organic matter preserved by water . . . pushed to top by pressure . . . interesting but not spectacular . . . similar bulges . . . in northern Indiana muck areas . . . a case of a farmer getting to rob some land that hadn't been robbed before.”

On November 18th T. R. Johnston, Purdue publicity department, asked the writer to visit the mound for first hand information. The area was visited, borings were made in the mound and surrounding flat, samples were taken and brought in for laboratory examination. The Purdue News Service release of November 20 contained the following phrases:— “growth of new land . . . toned down . . . muck land

. . . an acre or two actually growing higher, in part from water from a spring which carries a heavy content of lime . . . deposit of marl in the soil for many years has helped in expansion . . . drainage of porous muck land around it . . . caused land to settle . . . makes rise even more apparent . . . formation not unusual . . . no land marks to show actual rate of rise . . . muck nine feet deep . . . at edge of rise, and 18 feet deep in the center of the rise . . . brought back soil samples . . . will make tests . . . before finally making up . . . mind."

The News Service must have released another report on the sample analyses, and also the fact that the mound was found on an aerial photo taken in 1938 where it appeared to be as large as it was in 1948.

Nine clippings from different Indiana newspapers from Nov. 22 to Nov. 26 carried that later story in varying detail and emphasis on the points. Individuality also was shown in headings, such as:— "Scientist explains land rise," "Hump of land is mainly water," "Spring seepage credited for county phenomenon," "Soil Expert says hummock a sponge," "Scientific explanation given on soil eruption." It is interesting to note that some papers published the "original" Purdue story on the mound two days *after* other papers published the second story based on the examination of the mound and samples. *Time* asked for facts on the mound and decided the matter was not news-worthy, but the story is known to have reached Texas papers. Mary E. Bostwick finally buried it with a garbled, nicely told tale which in part went as follows:— "CEDAR LAKE 'ERUPTION' JUST ORDINARY DIRT . . . For a while there up at Cedar Lake they thought they had something in the same class with the volcano Paricutin that blew up in a Mexican farmer's face a few years ago . . . black loam began breaking through the clay topsoil, making an enormous bulge . . . it was hailed as 'an eruption of the earth's core'. . . Sorry, folks, but it's just muck being pushed through the surface by the pressure of one or more underground streams. . . . The authority for this statement is John Layden . . . 'there's nothing very phenomenal in that,' said Layden. So there goes the 'magic soil from the earth's core' and the sightseers and rubbernecks might as well go home."

The established facts about this "Mystery Mound" are as follows:—

**Location:** Lake county, Indiana. In section 30 SE $\frac{1}{4}$  NE $\frac{1}{4}$ , R9W, T34N; about  $\frac{1}{4}$  miles west of a N-S road and  $\frac{5}{16}$  mile south of an east-west road leading west to Brunswick.  $1\frac{1}{2}$  miles west of Cook and U. S. 41.

**Dimensions:** About 210 feet long (east and west); about 80-85 feet wide at maximum; less than 10 feet elevation above the surrounding flat (at highest point). Area about  $\frac{1}{3}$  acre.

**Shape:** Like a giant loaf of rye bread. Estimated volume 70,000 to 100,000 cubic feet.

**Depths to mineral substratum:** About 18 feet in center and 15 feet in east, south and west ends of mound; 9 feet outside east end and 15 feet about 100 feet west of the mound in the main flat. The muck flat becomes rapidly shallower

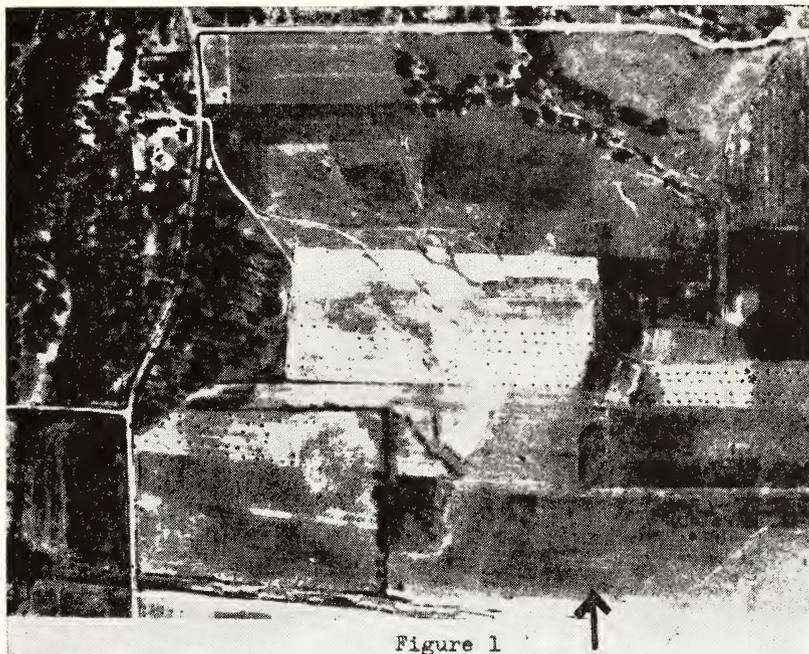


Figure 1. Aerial photograph—1938—showing mound in lower right hand portion of the picture.

nearer the mineral land lying 100 to 200 feet to the east of the mound.

**Geological setting:** In extensive muck area; formed in old glacial channel passing south through the Valparaiso moraine; from  $\frac{1}{4}$  to  $\frac{1}{2}$  mile wide; West Creek valley; calcareous glacial till uplands on the north and east with small glacial gravel bench on east.

**Water conditions:** The main valley probably had high enough water levels to support aquatic vegetation and build up muck levels reaching from the mineral substratum, or bottom of the channel, to an elevation the same or perhaps a little higher than the present level of the general muck bed. The valley has been ditched and drained enough to permit cultivation of the flat which doubtless has caused some subsidence of the drained area.

**Nature of the muck:** The main body of muck seemed to be the kind normal to most northern Indiana marshes, being the remains of reeds, sedges, grasses etc., which are usually 70 to 80% organic (combustible on a dry matter basis) and fairly well decomposed and black in the upper layers but may be more brown, fibrous and undecomposed in lower layers.

Examination of the samples: The samples were taken in the center of the mound representing layers 0-9; 9-20; 20-35; 35-50 and 75-85 inches.

These samples did not seem as much decomposed as usual in upper layers.

There was no attempt to keep them at field moisture so they might have dried a little before reaching the laboratory.

The examination included:—

1. Drying to determine moisture content.
2. Igniting to determine loss on ignition of the dry matter.
3. Determining the acid neutralizing value of the dry matter to estimate the calcium carbonate equivalent.
4. Mineral ash was figured by subtracting the sum of organic matter and calcium carbonate from the total dry matter.

Percentages were calculated from the basic data, and are shown by graphs.

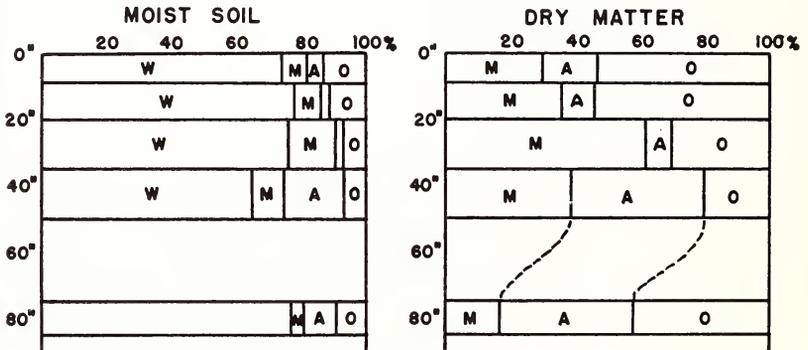


Figure 2

Figure 2. Composition of Muck samples from Mystery Mound.

w = water in moist sample.

o = organic, by loss on ignition.

m = marl, figured from acid neutralizing value of ash after ignition.

a = ash, after subtracting marl.

Discussion of the evidence:

There is little doubt that there were "springs" under or near the mound area in the bottom of the swale but they could hardly be called "underground streams." Also it does not seem reasonable that any water pressures existed which could force any soil upward. Certainly no material from below has forced up through the surface soils, as any "pressures" could not be confined by the open meshes of plant remains but the spring waters could spread out in all directions. The body of mucky soil in the whole valley must have been built up from the remains of vegetation grown on the surface and added to the top. Part of it decayed away but part would remain. Wet muck swells up, but shrinks on drying.

The basic difference in the site factors of the mound and the surrounding flat must have been in the water supply. The difference was hardly in the amount of water as the muck flat must have had ample supply to saturate the land and to grow as large vegetation as on the mound. The difference probably was in the water composition. The water of the flat must have been mostly from rainfall, although some ground water from springs was added, as at this place. Rain is little more than pure water but the ground water contains considerable dissolved materials. It is not likely that the ground water contained any excessive amounts of nutrients such as nitrogen, phosphorus and potash which might stimulate extra growth at the mound site. Perhaps there was enough potash in the ground water to correct the potash deficiency common in mucks.

However the surrounding glacial drift has a high content of lime—perhaps ranging from 15 to 50% in different places. Water passing through the earth usually contains considerable carbon dioxide derived from decaying organic matter of the upper soil horizons and the carbonic acid thus formed readily converts some of the less soluble calcium carbonate into the more soluble bicarbonate until the ground water becomes more or less saturated. When that ground water entered the swale at the mound site it would tend to displace the relatively pure rain water which had saturated the earth. Some of the limy ground water would tend to rise towards the surface of the ground by capillarity and part of it would be lost by evaporation and transpiration by plants leaving behind the dissolved materials. Some of the solutes would enter into the composition of the plants and part might be precipitated by concentration of the solution. In the case of the lime the escape of carbon dioxide into the air near the surface would cause the reconversion of soluble bicarbonate into the less soluble carbonate which would form "spring water marl." At the mound site very fine, white grains of such marl were observed in seepy places and in the muck samples (Figure 2).

Marl derived from chara is common in muck land areas and considerable amounts of spring water marl are often found elsewhere, but in both cases the materials are usually in deposits or strata rather definitely separated from the other layers of materials. The unique feature of the mound site is that the marl is well distributed throughout the mucky soil and is not there as separate layers. Apparently this distribution of the marl lends some support to the organic materials so that they do not sink down to the general level of the land but have been able to gradually build up on their own residues under the influence of a constant source of high lime waters.

Ordinary mucks contain no free carbonates and are even slightly acid in most cases. Moist mound muck has about 10% marl, which is from 30 to 60% of the dry matter. The marl content is much less at the bottom of the profile, indicating that the concentration in ground water is not so high but that the marl is accumulated in the upper layers. Conversely it is seen that the organic content of this mound muck ranges from about 20 to 50% in contrast to 70 or 80% (dry basis) in normal mucks.

While it is true that some bumps of muck have been observed elsewhere, the writer has never seen or heard of any which are comparable, in size or in elevation above a flat, to this "mystery mound" and he does not know of any other report of well distributed marl content. It really is a remarkable phenomenon.

A somewhat comparable condition was observed in Japan where a level marsh land seemed to have had considerable deposits through the years of fine volcanic ash which was well distributed in the soil, because vegetation seemed to have continued to grow during the period. At any rate soil samples which were taken of that soft, wet material did not shrink on drying as mucks normally do, but seemed to be supported in form by the fine ash content.

It may be noted that the "Mystery Mound" is nothing like the "Hoch Moor" or high bogs of northern regions which grow and build up high above the surrounding lands due to the structure of the sphagnum moss vegetation which enable the mass to hold water like a sponge. Such peat has high water content in the field, with very low ash, and very high organic content of the dry matter. It is very acid.

The final opinion of the writer is that the mound probably required a long time to develop, but it is a unique occurrence in size and composition, which is well worth recognition and a place in the records of this Indiana Academy of Science.