Ohio's Professional Soil Scientists

2023 Fall Newsletter
Volume 50, Issue 4 Part 2

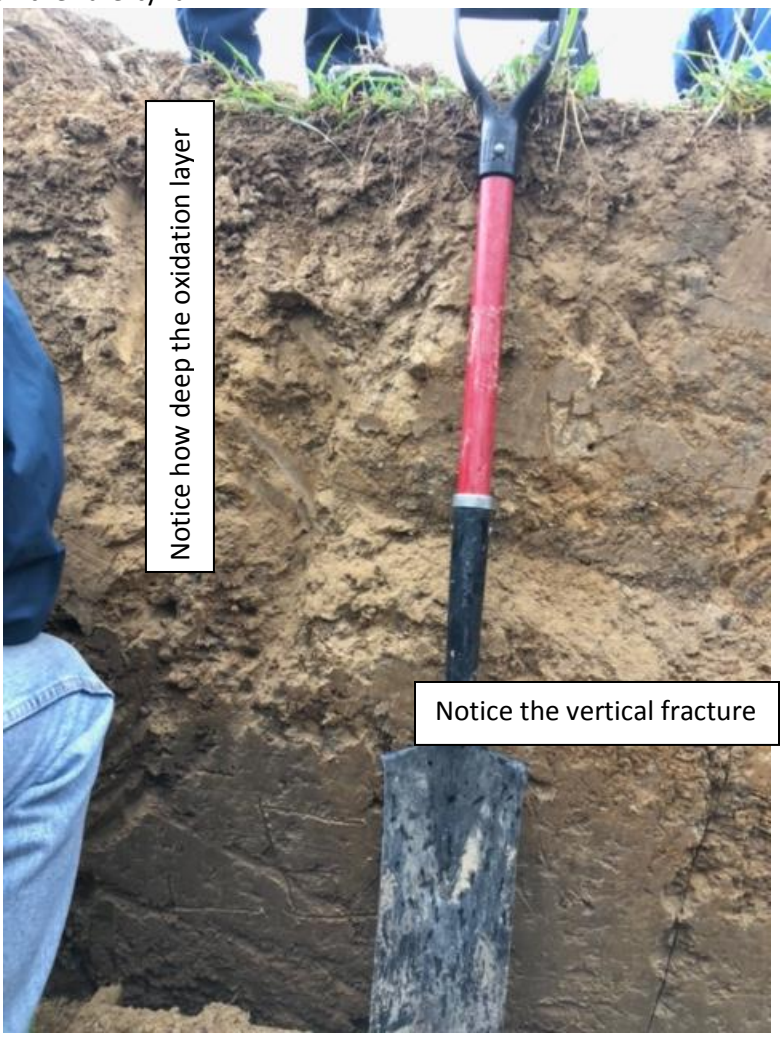
Much to share in this educational edition. Grab a cup of coffee or tea, sit back and enjoy.

Photos from the Fall Field Days

The Pinnebog Core Extraction team, photo from Joe Ringler, onion fields behind them. I don't find that I have a picture of the core. If anyone finds one, I'll print it next newsletter.

Following photos from Anna DeFosset. Linwood Muck soils pit and vibracore at the Research Station. Did anyone notice how much lower the pit site was than the road? Were they even when the road was built and the difference in elevation a function of the degradation of the soil over time? The top of the pit.

The Cardington Pit on the Laferty farm.



Again the vertical fracture, looks like it continues up to the surface and may have been used for roots or a worm burrow

The Soils pits at OSU Mansfield
Pit #1, the Former Crop Field

Pit #1, Former Crop Field

Describers: Joe Ringler, Thomas Doohan, Scott Demyan
Date: May 17th, 2023
PEDON LOCATION: OSU Mansfield Campus. Located in old field.

A -- 0 to 6 cm (0 to 2 in); 10YR 5/4 silt loam, strong very thick platy structure parting to moderate to weak medium to coarse subangular blocky structure; friable; few very coarse and many medium roots; common fine pores; few rock fragments; common fine faint (10YR 5/1) areas of iron depletions and common fine faint (10YR 5/6) masses of iron accumulations; clear smooth boundary.

Ap -- 6 to 21 cm (2 to 8 in); 10YR 5/4 silt loam; moderate medium subangular blocky structure; friable; few fine and few very coarse roots; few medium to coarse pores; about 5% rock fragments; common fine distinct (10YR 6/1) areas of iron depletions and common fine faint (10YR 5/8) masses of iron accumulations; clear abrupt boundary.

Bt1 -- 21 to 32 cm (8 to 13 in); 10YR 5/6 clay loam; moderate medium subangular blocky structure; firm; very few coarse roots; few fine pores; common fine distinct (10YR 6/1) areas of iron depletions and common fine distinct (7.5YR 5/8) masses of iron accumulations; about 10% coarse gravel; clear wavy boundary.

Btx1 -- 32 to 45 cm (13 to 18 in); 7.5YR 5/4 clay loam; moderate medium subangular blocky structure and weak fine to medium platy structure; firm; brittle; few medium roots; few very fine pores; about 25% coarse gravel; many fine distinct (10YR 6/2) areas of iron depletion and many fine distinct (7.5YR 5/6) masses of iron accumulation; few fine black (10YR 2/1) stains (iron and manganese oxide); clear smooth boundary.

Btx2 -- 45 to 76 cm (18 to 30 in); 7.5YR 4/4 clay loam; moderate medium prismatic structure parting to moderate medium platy structure; firm; brittle; very few very fine roots; no pores; about 25% coarse gravel; common fine distinct (10YR 5/1) areas of iron depletion and common fine distinct (7.5YR 5/8) masses of iron accumulation; clear smooth boundary

Btx3 -- 76 to 115 cm (30 to 46 in); 10YR 5/4 clay loam; weak coarse prismatic structure parting to moderate medium platy structure; very few very fine roots; no pores; very firm, brittle; 25% coarse gravel; few fine faint (10YR 5/1) areas of iron depletion and few fine faint (10YR 5/8) masses of iron concentrations.

Soil Pit # 2 Old Forest Lane

Sign Up

Pit #2, Forest travel lane

Describers: Joe Ringler, Thomas Doohan, Scott Demyan
Date: May 17th, 2023

PEDON LOCATION: OSU Mansfield Campus. Located on forest trail/road.

A -- 0 to 7 cm (0 to 2 in); 10YR 4/1 (0-2 cm) and 10YR 4/2 (2-7 cm) silt loam, strong very thick platy structure parting to weak to moderate medium to coarse subangular blocky structure; friable; few medium roots (near bottom of horizon); no pores; few rock fragments; few fine faint (7.5YR 5/4) masses of iron accumulations (2-7 cm); clear smooth boundary.

Ap1 -- 7 to 15 cm (2 to 6 in); 10YR 4/2 silt loam; moderate medium subangular blocky structure; friable; common coarse and common medium roots; very few very fine pores; about 2% rock fragments; clear smooth boundary.

Ap2 -- 15 to 28 cm (6 to 11 in); 10YR 4/3 silt loam; moderate medium subangular blocky structure; friable; few medium roots; very few fine pores; about 2% rock fragments; clear abrupt boundary.

Bt1 -- 28 to 34 cm (11 to 13 in); 10YR 5/6 silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; very few very fine pores; about 5% rock fragments; clear smooth boundary.

Bt2 -- 34 to 62 cm (13 to 24 in); 10YR 5/4 clay loam; moderate medium subangular blocky structure and weak fine to medium platy structure; firm; brittle; very few fine and very few very fine roots; very few very fine pores; about 5% rock fragments; common fine distinct (10YR 6/1) areas of iron depletion and common fine distinct (7.5YR 5/8) masses of iron accumulation; clear wavy boundary.

Btx -- 62 to 103 cm (24 to 41 in); 10YR 5/4 clay loam; moderate medium prismatic structure parting to moderate medium platy structure; firm; brittle; few very fine roots in prism seams, no roots in prism interiors; no pores; about 10% rock fragments; many fine distinct (10YR 5/1) areas of iron depletion and many fine distinct (10YR 5/8) masses of iron accumulation; clear smooth boundary

The Tables that Scott sent us are refusing to copy properly so I will forward you his e-mail with the lab results again.

Susan Rice also took a number of excellent pictures from the first day including videos of the vibracore in action with her iPhone. I am going to try to hang them on the Education section of the AOP web site in the near future.

OSU Mansfield Campus Sugarbush

The evaporation pan

Sugarbush forest with gathering lines

More gathering lines going into the Sugarbush storage house

Kathy's group photo from Friday's lunch

Last stop in Mansfield, the Hudson and Essex Restaurant beer cavern

This was one of the surprise hits of the whole two days. Everyone who visited it was most impressed. The arches and the architecture really drew comments from the group. All the way home Susan and I discussed the construction and debated what it had been before it was a beer cavern. I admit I have a bit of an advantage here because my Irish stone mason Waterhouse ancestors were in Richland County by 1820, not only to homestead a farm in what is now North Bloomfield, Morrow County, but to work in the quarries. The Berea has long been known as an excellent building dimension stone and the finer-grained Waverly facies was considered one of the best grain flour milling stones in the world. Waverly milling stones were imported to Europe and were used in French grain mills. While there were organized larger rock quarries in the area, there were also smaller family quarries, used to cut stone for local building projects. Given the size of the "cellar" and it's location on a cliff face, we suspect it started out life as a small family rock quarry.

But then what? Its hard work to cut out that much stone, just to leave a hole in the ground when you are done. Was it walled off on its open side and incorporated into a basement? There is a channel in the middle of the floor, was that a drainage channel? Did they use it to move groundwater out of the hillside to the outside wall, an early day gravity sump pump if you will? Did they take advantage of the ground water moving through the cavern and use it as a spring house and root cellar to cool and store their foods before refrigeration? The ground water would have been about 55 degrees both winter and summer and the temperature in the enclosed quarry would have been about the same. This was a common practice in other mining and quarrying areas in this country. I'll discuss that later.

When you look at the photos that Susan took, you can see that the upper walls and arched ceiling are small, brick-sized dressed sandstone blocks but the lower walls are simply rough cut and broken sandstone.



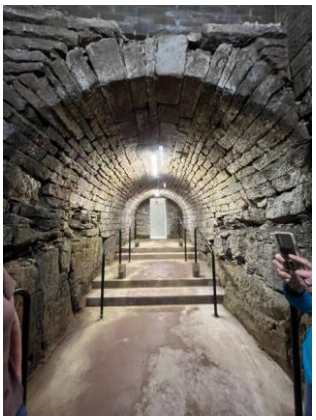
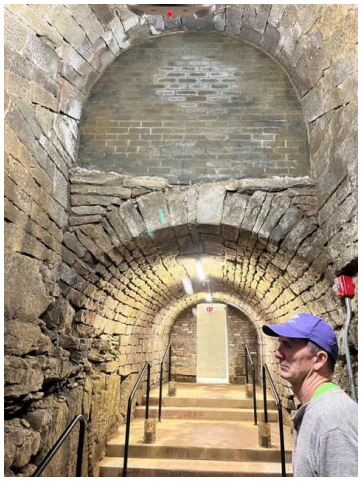
Dressed and fitted sandstone blocks on the upper sidewalls and vaults of the cellar. Note that they are dry fitted and not mortared. Clearly, at some point in time, the "cellar" was converted into a carefully built brewery cellar for aging beer, perhaps for one of the local breweries just down the

hill. Since the existing structure has remained as stable as it is, this speaks well of the masonry skills of the original builders.

But not all of the walls are so beautifully fitted. These photos show the natural rock bedding in the rough quarry walls below the blocks.



The arches of the beer cellar were added later. In this last photo, there appear to be some modern restoration, probably when the cellar was rediscovered.

Today, wine happily ages in part of the cellar while patrons enjoy upscale fixed price dining in another area. Note the emergency exit door that is higher than the floor of the main cavern. This was built to meet the fire code. However, by raising the floor, the restorers may have blocked the natural drainage out of the cellar that would have been there in earlier days.



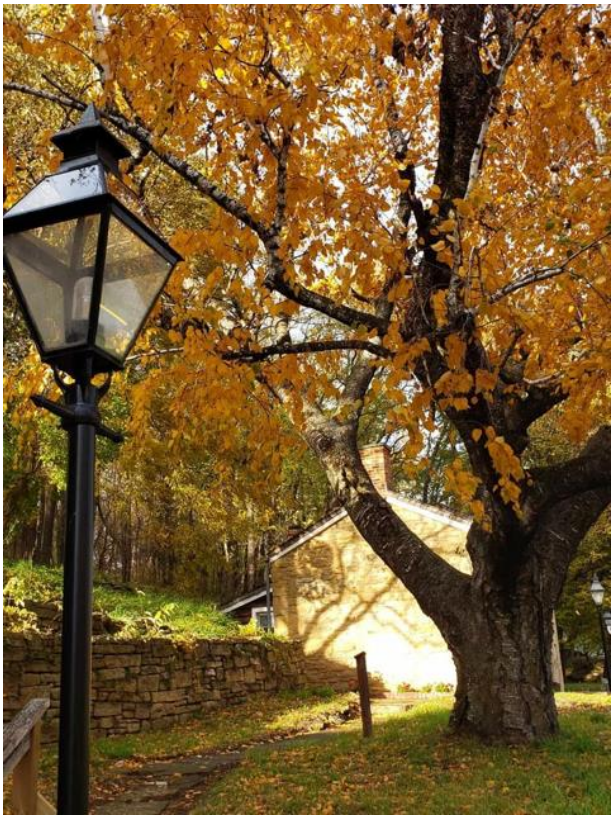
Photos taken during the restoration.

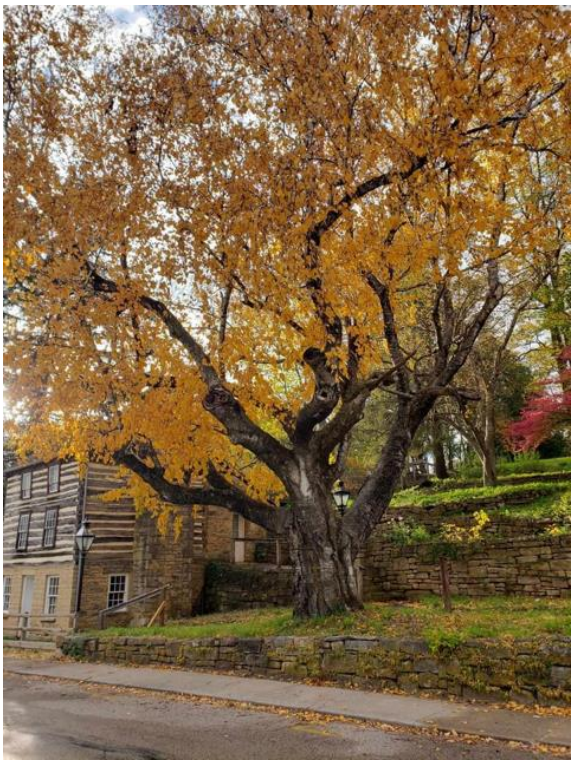



So what are your theories? How do you think this "hole in the ground" evolved? Do you know of other locations in Ohio and beyond where natural caves or dug quarries were later used for different purposes?

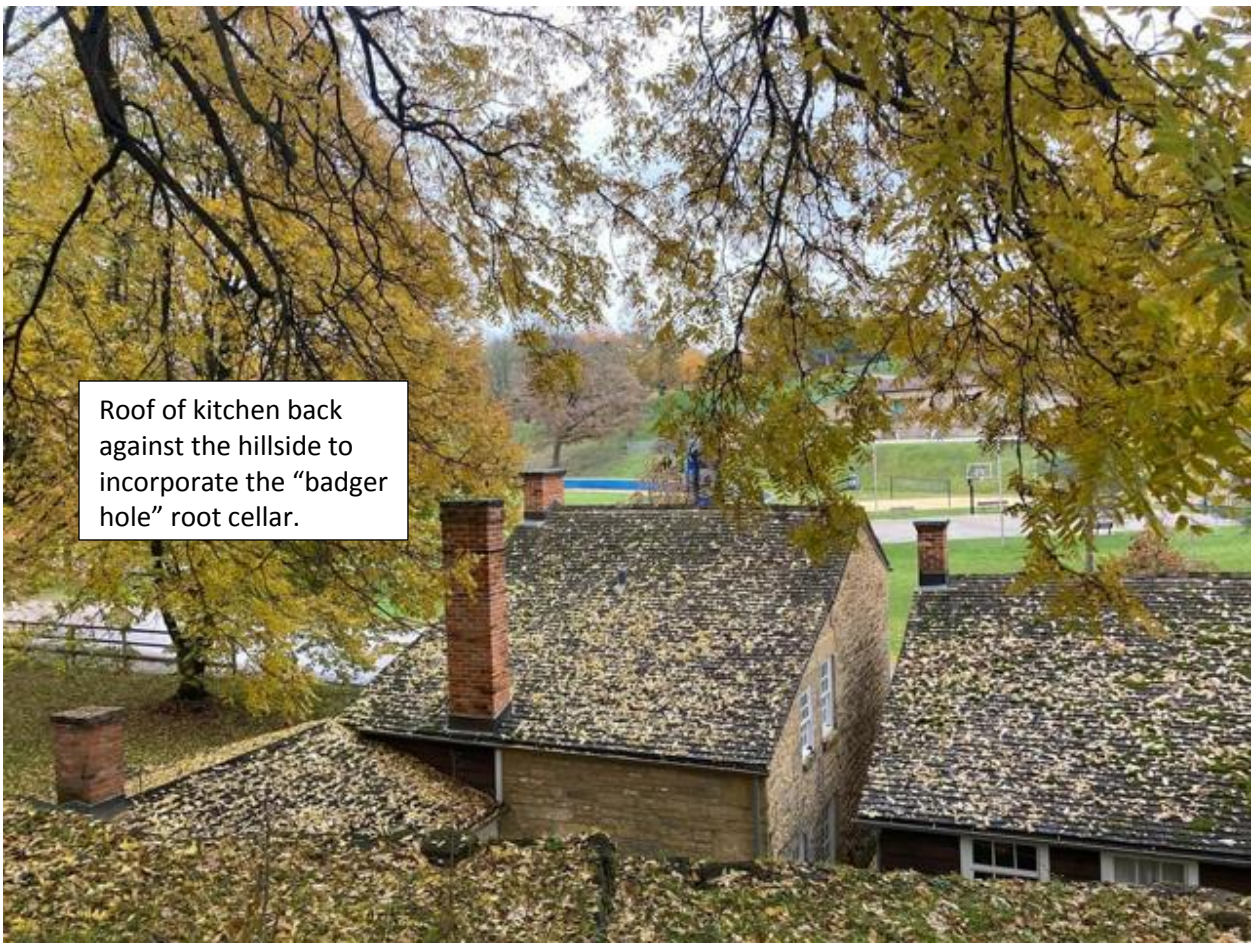
In 1842 my Cornish tin mining family, the Paynters, immigrated to Mineral Point Wisconsin to join the other Cornish miners recruited to mine the lead in the "Driftless area". The lead is a secondary solution deposit in the limestone formations of the four-corner area of Wisconsin, Minnesota, Illinois and Iowa. The town of Galena, Illinois is named for the lead deposits. They were following some of the early, not so skilled miners who had simply hollowed out "badger holes" in the limestone cliffs to remove the lead and had then just moved into the holes as a place to live. All around the area, the hillsides were pocketed with these manmade caves that, like quarries, remained at a constant temperature if enclosed. The Cornishmen, skilled miners and quarrymen (they were already mining tin and copper under the English Channel when Julius Caesar arrived in the "Cassiterite Isles", Cassiterite is the mineral name for tin oxide) were better skilled at building homes for their families. They created lovely structures out of the dressed limestone blocks and logs from the trees that grew in the area. Where they could, they backed the buildings up against the mined out hillsides and constructed root cellars in the old "badger holes". You open the back door of the kitchen and walk right in. Kept food safe and cool before refrigeration.

A collection of those buildings, collectively named Pendarvis, are now owned by the Wisconsin Historical Society. You can learn about the site at https://pendarvis.wisconsinhistory.org. My cousin just recently sent me photos from the site, that show the stone houses and the roof back into the hillside behind the house.





Don't these remind you of old limestone and sandstone farm houses built throughout Ohio in the 1800s?
Kitchen door on the back on the 2nd floor.



Kathy sends a suggestion from our PA neighbors

"It could be useful for someone to create such a manual for Ohio. Anybody need CEU’s, a publication, or a service project? Maybe an OSU professor?" she suggests.

https://www.papss.org/resources/manual-for-soil-investigation/

Link to the *PAPSS Manual for Soil Investigation in Pennsylvania, Version 2.0 (2010)*

Users of the *Manual* are reminded that the content of the Manual is protected by U.S. Copyright laws and respectfully requested to use the following citation:

Losco, R.L., Whitman, C., Drohan, P. and Cronce, R. (editors), 2010. PAPSS Manual for Soil Investigation in Pennsylvania, Version 2.0. Pennsylvania Association of Professional Soil Scientists.

Link to the PAPSS Manual Poster which was presented at the 2009 SSSA Annual Meeting in Pittsburgh

The purpose of this Manual is to summarize accepted practices and methods for soil scientists in Pennsylvania, and to standardize the way soil scientists in the Commonwealth conduct and report soil investigations. This Manual is the result of several years of work and is not intended to be a "how to" guide. In the compilation of this Manual, an attempt was made to utilize existing protocols wherever possible, adapting them as needed to the needs of soil scientists in Pennsylvania. As such, some of the text may seem familiar to some. A great deal of gratitude is directed toward those sources that we utilized.

This Manual discusses the practice of soil science as it relates to conducting site-specific soil investigations. It is primarily useful in determining non-agricultural and non-silvicultural land use management of a site. This Manual is not intended to be the last and final word on any of the topics covered. Recognizing the evolving nature of soil science, this Manual is intended to be a "living, breathing document" subject to regular revision as more information and newer techniques come to light. It is hoped that we have provided the format of a document that will advance along with science and be of use to soil scientists and other professionals for some time to come.

This Manual was compiled by the Pennsylvania Association of Professional Soil Scientists (PAPSS) Manual Committee, which was composed of the following:

- Russell L. Losco
- Christopher Whitman
- Patrick Drohan
- Richard Cronce

Significant contributions were also made by:

- John Chibirka
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- Laurel Mueller
- Catherine Sorace
- Michael Sowers
- Thomas Benusa

We gratefully acknowledge the peer review and suggestions of the following:

- Martin Helmke, Ph.D.
- Walter Grube, Ph.D.

- James “Skip” Bell
- Dave Cremeens

Educational handouts for Legislature Education Day

I can’t get the PDFs to copy correctly. They are created in a series of boxed texts and graphics. I’m going to send them to the group as an individual mailing. Anton Krieger staffs the Buckeye Environmental Network’s Stop Ohio Brine Spreading Task Force. Anton is from Cuyahoga County and another one of his hats is Supervisor, Cuyahoga Soil and Water Conservation District.

This ends Part 2 of the Fall AOP Newsletter

Ignore the extra blank pages, a gift left over from trying to format Scott’s tables which I will also send under separate email.