EXTRA: Pioneers of Ohio Geology: Jane Louise Forsyth, "Queen of the Pleistocene"

by Melinda Higley

March 13, 2019 —The landscape of northern and western Ohio is primarily a product of the Pleistocene Epoch (2.6 million to 11,700 years ago), a period of repeated glaciations that left behind a complicated array of sediments and landforms. Geologists have worked for years to interpret the sedimentary evidence of glaciations in Ohio. But Jane L. Forsyth, known as "the Queen of the Pleistocene," raised the bar for her many contributions to our knowledge of Pleistocene geology.

Jane L. Forsyth at her desk at the Ohio Geological Survey in April 1957. Photo taken by Fletcher W. Twitty and provided courtesy of the ODNR Division of Geological Survey.

Forsyth was born and raised in Hanover, New Hampshire, where her father, Chester H. Forsyth, exposed her to the natural world through hikes and observations. Knowing from an early age that she wanted to be a student of the natural sciences, Forsyth received her bachelor's degree in geology from Smith College (1943) and her master's degree from the University of Cincinnati (1946). After teaching for several years, she earned a doctorate from The Ohio State University in 1956.

Forsyth's first major discovery, and the subject of her 1956 dissertation, was an ancient soil sandwiched between layers of glacial sediment in a railroad outcrop near Sidney, Ohio. Using radiocarbon dating on wood preserved in the soil layer, she discovered that the soil formed between 40,000 to 22,000 years ago. She hypothesized that the glaciers were absent from Ohio during that period, allowing time for the soil to develop. The age of the "Sidney Geosol," as it is now called, was reexamined with modern radiocarbon methods and Forsyth's fundamental conclusions remain unchanged (Lowell et al., 2018). The ancient soil was evidence that glaciers advanced and retreated multiple times in Ohio during the Pleistocene, and Forsyth's discovery launched a prolonged effort by geologists to understand the regional distribution and timing of glacial events.

Jane L. Forsyth standing in a borrow pit of Maumee III beach ridge in Sandusky County while leading a field trip called "Cruising the Columbus Cuesta" in 1983. Photo taken by Merrianne Hackathorn and provided courtesy of the ODNR Division of Geological Survey.

From 1955 to 1965, Forsyth worked at the ODNR Division of Geological Survey where she mapped and studied all aspects of Ohio glacial geology. She amassed detailed data and knowledge of glacial geology in several counties and co-authored the first Glacial Map of Ohio, published in 1961. Following her work at the Survey, Forsyth became the first female geology professor at Bowling Green State University, despite the lack of opportunities given to female academics during this time. In this role, Forsyth expanded public knowledge about the Ohio geologic landscape by publishing and teaching prolifically. Through field trips (her preferred teaching method) Forsyth taught others how to study and interpret the natural landscape.

Forsyth pushed the study of Ohio geology in new directions throughout her career. She explored the

connections between sediment patterns, biodiversity, soils, and glacial processes. While mapping glacial sediments from around the state, she observed that vegetation patterns followed the soil type, which led to the concept that vegetation patterns were an important indicator of the geology. She also published information explaining the connections between glacial landscapes and environmental problems like flooding and waste disposal — some of the earliest publications of the field now known as environmental geology.

Forsyth was a dynamic scientist and educator. It is fitting that a full-fee scholarship at Bowling Green State University honors her legacy. As one of Ohio's preeminent scientists, she made important discoveries about Ohio Pleistocene geology and authored over 100 scientific papers, popular articles, and abstracts. Her work continues to inspire efforts to piece together the complicated events of Ohio glacial geology.

Further Reading

Stuckey, R. L., 2003, Linking Ohio Geology and Botany Papers by Jane L. Forsyth. Columbus: RLS Creations.

Forsyth, J.L., 1965, A revised glacial map of Knox, Licking, and Fairfield Counties, Ohio: Ohio Department of Natural Resources, Division of Geological Survey, one sheet, 8½ x 11 inches, 1965. Free.

Forsyth, J.L., 1961, Dating Ohio's Glaciers: Ohio Department of Natural Resources, Division of Geological Survey, Information Circular, 30(10).

Goldthwait, Richard P., George W. White, Jane L. Forsyth, 1961, Glacial Map of Ohio. 1:500,000. Miscellaneous Geological Investigations Map I-316: U.S. Geological Survey.

References Cited

Forsyth, J. L., 1959, The beach ridges of Northern Ohio: Ohio Department of Natural Resources, Information Circular, 25(10).

Forsyth, J. L., 1965, Age of the buried soil in the Sidney, Ohio area: American Journal of Science, 263, p. 571–597.

Forsyth, J. L., 1968, The use of vegetation as a tool in the mapping glacial geology-a challenge. Quaternary of Illinois: University of Illinois College of Agriculture, Special Publication, 14, p. 56–60.

Forsyth, J. L., 1973, Ohio Geology. [northwest Ohio environmental geology]: Ohio Academy, 26(1), p. 7.

Forsyth, J. L., 1990, Geology's roles in landfill site selection in Ohio: Ohio Journal of Environmental Health, 40(6), p. 7–8.

Forsyth, J. L., and La Rocque, A.,1956, Age of the buried soil at Sidney, Ohio (Abstract): Geological Society of America Bulletin, 67(12), p. 1696.

The Blade, 2006, Geologist was BGSU's 'Queen of Pleistocene': The Blade, last accessed

March 4,2019 at < https://www.toledoblade.com/Deaths/2006/09/22/Geologist-was-BGSU-s-Queen-of-Pleistocene.html?abnpageversion=evoke>.

Lowell, T. V., Pair, D., and Larson, G., 2018), Age of the Sidney Geosol revisited. In B. B. Curry & A. E. Kehew (Eds.), Quaternary Glaciation of the Great Lakes Region: Process, Landforms, Sediments, and Chronology: Geological Society of America Special Paper 530 p. 27–37.

Stuckey, R. L., 2003, Linking Ohio Geology and Botany Papers by Jane L. Forsyth. Columbus: RLS Creations.