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IN THE FIELD

The story beneath the surface

BY BRYN NELSON
STAFF WRITER

Just outside the Earth and Space Sciences building at Stony Brook University, Gilbert Hanson has orchestrated the growth of a curious garden.

From across the campus, the geologist has amassed a growing boulder collection, a demonstration of the glacial forces that shaped Long Island. A dark green diorite boulder was likely carried south from near the Connecticut border, while a quartz-studded neighbor was perhaps a resident of Long Island Sound until the glacier dislodged ancient sediments.

The biggest one of all is now painted brown — which Hanson dislikes — but it still bears the signs of ice-sculpted erosion at one end. Track marks appear where the glacier forced other rocks along its surface.

"You don't have to go anywhere to study geology," Hanson likes to say. "It's right there. You just have to interpret what's available."

Campus terrain

A member of Stony Brook's faculty since 1966, Hanson has seemingly perfected that art by deconstructing the campus down to its geological underpinnings. It helps that much of the university sits on one of the Island's largest glacial souvenirs: a ridge called the Harbor Hill Moraine that formed when the last glacier bore down on the land, pushed up a mound of sediment, then barreled over its self-created obstacle.

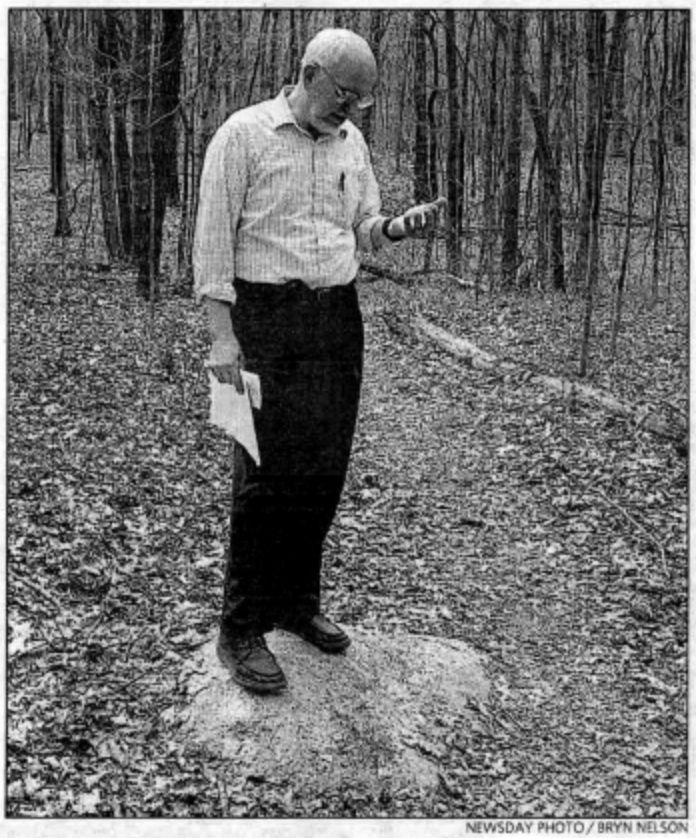
Geology's tools

Like many in his field, Hanson is fascinated by geology's newest tools, such as a digital elevation model of the Island that has revealed long-hidden glacial features. But he also delights in simpler methods. On walks around the 1,100-acre campus, he mentally strips away the structures and identifies the clues left by nature.

"I sort of take the attitude that until I started looking, there was no geology on campus," he says.

These days, geology extends as far as his eyes can see, whether in the form of a well-worn boulder or the sudden rise of a hill. With the help of Hanson and his students, these relics are presenting new research opportunities and finding their way into homespun field guides.

Not far from the boulder garden by the Earth and Space Sciences Building, another little-known geological gem waits by a stream. The streambed follows the ancient route of a tunnel valley where water traveled beneath the glacier. Now, it captures stormwater and leakage from pipes used to cool and heat the campus. By the eroded bank, Hanson digs his hand into 3 feet of exposed reddish-brown earth.



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Stony Brook University geologist Gilbert Hanson at the Ashley Schiff Park Preserve, his favorite campus location.

It's 3 feet of loess, to be exact. This sediment, blown by wind from glacier-exposed mud plains to the north, holds water but drains well, making it incredibly fertile. Some geologists doubted whether Long Island had loess in any significant amount, but research by one of Hanson's students — on the university's soils, no less — proved them wrong.

Hanson's last stop is at one of his favorite spots, the university's Ashley Schiff Park Preserve. Within the park, a trail rises and descends across undulating terrain that the leafless trees have not yet obscured. "If you were this big," and he measures out an inch with his thumb and forefinger, "it would be like you were in the Alleghenies."

One key difference: The park comes courtesy of glacial action, while its big cousin to the west arose from plate tectonics.

At the bottom of a roughly circular dip, Hanson revels in the scenery and explains how huge chunks of ice pushed onto the glacial moraine, then melted, leaving hollows known as kettle holes. Ground-penetrating radar has revealed a folding together of sedimentary layers below this kettle hole, as if they were forced together into a warped layer cake.

This fold-thrust belt — captured on the grainy radar image — provides one more reminder that so much of the campus terrain owes its existence to the power of an ancient glacier. For its identity, though, the land may owe just as much to the passion of a modern interpreter.

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