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John Seward

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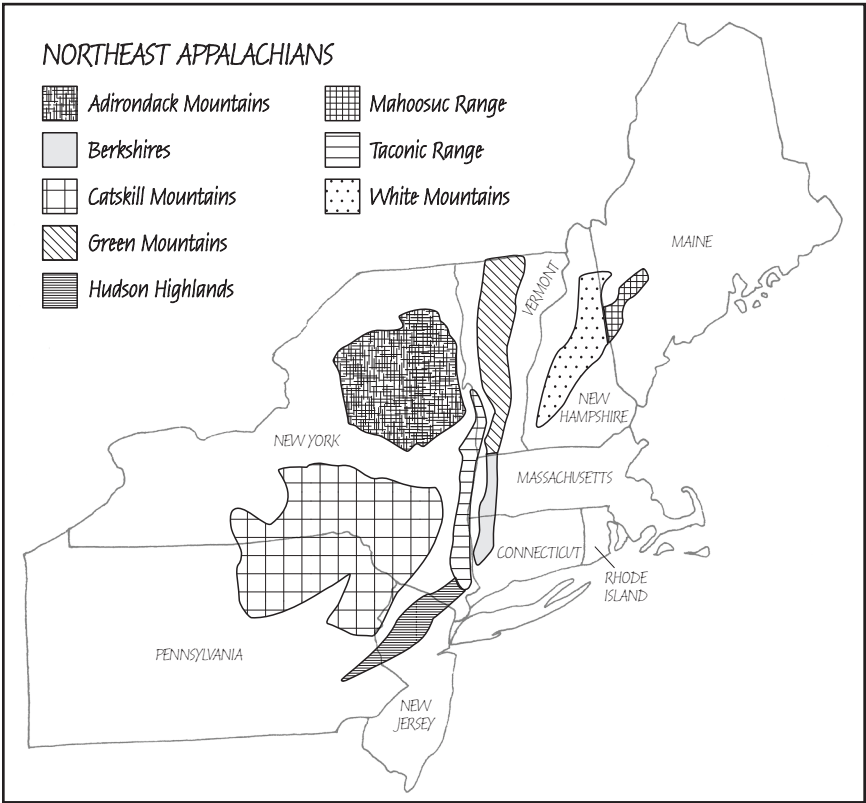
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The Taconic Controversy

What forces make a range?

John Seward



THE SNOW FALLING INTERMITTENTLY THROUGHOUT THE AFTERNOON grew steadier as night began to fall. On the last day of 1974, a friend and I spent several hours wearing wooden cross-country skis while ascending part of the Taconic Mountains to Berry Pond. At about 2,000 feet, this pond is doubtless the highest body of water in Massachusetts's Pittsfield State Forest.

Near the pond's edge, we arranged a tripod from dead branches and hung a small tarp as a pyramid from its apex. The previous night's camp at the foot of the mountain was under a clear sky and a big moon. But it had been miserably cold and full of suffering as a sharp breeze infiltrated the tarp's lower edges. This time, we carefully banked snow to seal our shelter, closing off its entryway with a poncho lashed to the tripod.

The festive yet unappetizing meal was of brown rice and canned reindeer meatballs (culled from an import store) washed down with a modest amount of rum. We retired before midnight to comfortable sleeping. In the morning, we raced through the newly fallen snow along Lulu Brook and down toward Pittsfield.

The Taconic Range runs for nearly 100 miles along the western border of New England. My personal, episodic engagement with these mountains had long ago taken on the character of a nostalgic and private mythology. In this, U.S. Geological Survey maps have been my Gilgamesh, my Bhagavad Gita. But I only recently learned the Taconic Mountains are at the center of a classic debate in American geology. That is, did the mountains form their own range or were they part of another?

In certain details, it turns out this scientific Taconic history veers closer to the operatic than toward science and might easily be chalked up to additional Taconic mythologies.

In this account, however, I stick narrowly to facts: Among these mountains, beginning in the 1840s, scientists held a series of key debates over conflicting notions of the earth's structure, according to Paul Karabinos, a geologist at Williams College who studies the origins of the Taconic Range. Especially in the nineteenth century, these debates had "given rise to a controversy unequaled in the annals of American geology," wrote George P. Merrill, a curator at what was then called the United States National Museum, in 1906.

Today the Taconics' origin is explained through the theory of plate tectonics. Plate tectonics emerged in the 1960s from seismic data gathered from monitoring nuclear explosions and from paleomagnetic surveys of ocean

The northern Appalachian Mountains include several distinct ranges that are geologically different. ABIGAIL COYLE/APPALACHIAN MOUNTAIN CLUB

beds. The range probably formed about 470 million years ago, when primordial volcanic islands at the edge of a plate smashed into proto-North America. (Earth is about 4.54 billion years old.)

The Taconics are often imprecisely lumped with the Berkshires and Green Mountains, both of which lie a few miles to the east. Landmarks include the highest point in Massachusetts, Mount Greylock (3,491 feet), with its war memorial and the rustic Bascom Lodge built in the 1930s by the Works Progress Administration. Henry David Thoreau visited the summit in 1844. Herman Melville dedicated his novel *Pierre* “To Greylock’s Most Excellent Majesty,” and Nathaniel Hawthorne wrote memorably of its nighttime slopes in his tale of sin called “Ethan Brand.”

Greylock was a lodestar of the Alpine Club of Williamstown, a briefly active precursor of the 1876 Appalachian Mountain Club. The Appalachian Trail traverses Greylock, while nearby the 37-mile Taconic Crest Trail runs along the New York border ending near North Pownal in Vermont. Beyond this, the Taconics culminate in the 3,852-foot Equinox Mountain towering over Manchester, Vermont.

Toward the southern end of this range and easily seen from Greylock’s summit, Mount Everett (2,625 feet) and Bear Mountain in Connecticut (2,323 feet) sit on the edge of a dramatic escarpment above the Housatonic Valley. This peak dominates the 60-square-mile massif centered on the southwestern corner of Massachusetts, an area mapmakers sometimes label the South Taconics. At least until the twentieth century, Mount Everett was widely and affectionately known as “The Dome,” or “Dome of the Taconics.” But today it’s called the more prosaic name Massachusetts state geologist Edward Hitchcock officially bestowed in 1839 for then-governor Edward Everett.

Franklin D. Roosevelt hoped that a park could be built during work to build a parkway through the Taconics. Robert Caro wrote in his 1974 book *The Power Broker: Robert Moses and the Fall of New York* (Knopf) that Roosevelt “was particularly enthusiastic about a plan to have New York State build a tri-state park, in cooperation with Massachusetts and Connecticut at the juncture of those three states.” This would have been a vast, tri-state park. At the time, FDR had just begun four years as chairman of the newly formed Taconic State Park Commission of New York.

The interstate park project died when Roosevelt resigned over a dispute with parks official Robert Moses, who insistently blocked Roosevelt’s plan to obtain a patronage job on the commission for his political aide, Louis Howe. Moses completed the Taconic State Parkway, the road, in 1954.



Bear Mountain at the southern end of the Taconics rises above the Housatonic Valley.

CHRISTINE WOODSIDE

Because of the failure of the tri-state park, the mostly wild South Taconics are today a hodgepodge of state and private lands, including more than 4,000 acres owned since 1922 by the private Mount Riga Incorporated. This area is traversed by the Appalachian Trail and home to Northwest Camp, a cabin built in 1951 by the AMC Connecticut Chapter.¹

¹ For more about AMC's Northwest Camp, which people can rent on certain weekends, see <https://www.outdoors.org/community/volunteer-led-camps-and-cabins/connecticut-and-new-york/northwest-camp/>.

At separate times during the long years of the Taconic controversy, both Hitchcock and his son, the geologist Charles H. Hitchcock, weighed in on some of its skirmishes. But Charles Hitchcock is best remembered for establishing a year-round scientific summit station on Mount Washington in 1870, which operated continuously for 22 years. (The current observatory opened in 1932.) He was head of the New Hampshire Geological Survey and also a founding member of the Appalachian Mountain Club, serving as its councilor of topography and explorations.

THE CONTEMPORARY U.S. GEOLOGICAL SURVEY IDENTIFIES MOUNT EVERETT as part of the Taconic Allochthon. An allochthon is a structure or mass of rock that has arrived from its original site and is shoved into place by low-angle thrusting.² Mount Everett is mostly metagraywacke, a metamorphosed sandstone with “a distinctive pin-striped appearance.” The entire region also includes beds of Stockbridge marble, part of a ridge of marble running from Connecticut to Vermont and associated with small limestone caverns. The caverns are beautiful bat havens scattered throughout the Taconics.

The scientific debate on the Taconic Range during its first half-century centered on competing theories of the age of the rocks and their related regional systems. The second phase, settled in the 1960s after many decades, concerned whether the rocks had formed in their current location as an “autochthon” or were thrust into place from elsewhere as a discrete allochthon. By the 1980s, science turned to tectonic theory to explain the allochthon’s origin.

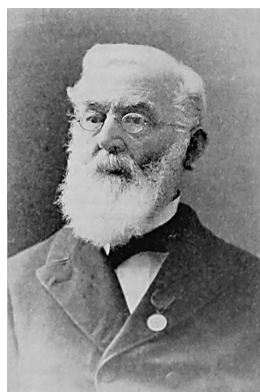
“For a long time, the Taconic Mountains were a geological puzzle,” according to Chet and Maureen Raymo’s comprehensive summary of New England geology, *Written in Stone* (second edition, 2001, Black Dome Press). “The rocks in those ridges did not seem consistent with their surroundings.”

Heated conflict flared from this matter during much of the nineteenth century, highlighted by an 1851 libel trial that pitted two geologists against one another: the irascible James Hall (1811–1898), backed by a big slice of the nation’s scientific establishment, against the well-regarded Ebenezer Emmons (1799–1863). Emmons was forced to resign from his long career in the region because of the perceived disgrace of his trial testimony.

That marked the end of a long relationship that had begun in 1832, when Emmons lent \$4,000 to his young student Hall for tuition and other

² Low-angle thrusting is a fault in the earth in which one mass of rock pushes over another at a gentle incline.

expenses at what is now Rensselaer Polytechnic Institute in Troy, New York. Hall never repaid that loan, according to his 1921 biographer, former assistant and successor as New York State paleontologist, John M. Clarke. Whatever the nature of Hall's and Emmons's early relationship, "they were two very unlike qualities," writes Clarke. "Emmons was nervous and sensitive, Hall determined and headstrong."



Ebenezer Emmons (at left) first proposed the Taconic System as a separate range. His former student James Hall vehemently disagreed. WIKIMEDIA COMMONS

In 1837 the two geologists together made the first recorded ascent of New York's highest point, Mount Marcy, during a state-sponsored expedition. As chief of the New York Geological Survey's Adirondack region, Emmons led the eight-member 1837 expedition and named the peak after his boss, Governor William Learned Marcy.

Emmons had been an obstetrician for 15 years before turning to geology, teaching at both Williams College and Rensselaer. A pious New England Calvinist from the Berkshire hill country, Emmons was also described as "of a cheerful and playful disposition," according his intellectual protégé in later life, Jules Marcou (1824–1898).

Even before the Marcy expedition, Hall had embarked on a long and much-acclaimed career as paleontologist and geologist. But Hall became "legendary for paranoiac outbursts," according to Robert H. Dott, in a 2005 biographical essay for the National Academy of Sciences.

"Hall's assistants learned more from him than just paleontology, for they also experienced a strong, egotistical, and irascible personality," Dott wrote. "Besides throwing vituperative verbal daggers, he sometimes brandished menacingly either a stout cane or even a shotgun kept at the ready near his desk."

Emmons frequently traversed the Taconics in the 40-mile trek between colleges in Williamstown and Troy. In 1841, he proposed the existence of a system of strata there not previously identified—"to be called the Taconic

System—separate from any component of what he and his survey colleagues had recently established as the New York System. Emmons soon bolstered this theory with key fossil discoveries on Bald Mountain, in New York near the Battenkill River.

But almost immediately, the state geologist for the zone that included the Taconics, William W. Mather (lineal descendant of the colonial Rev. Cotton Mather), rejected Emmons's Taconic System. Hall supported Mather and maintained the rocks were simply part of the New York System.

“From this seemingly minor disagreement arose the controversy which lasted for the remainder of the century, and affected the lives and careers of every prominent geologist in the United States,” according to a 1978 study titled “The Great Taconic Controversy” (Cecil J. Schneer, *Isis*, 69, no. 2: 173–191).

Things irretrievably blew up a few years later, when Hall encountered a newly published regional geology chart in an Albany office, where it awaited state approval for use in schoolroom instruction. Hall politely asked to borrow the chart and, according to his 1920s biographer Clarke, then “burst out in a torrent of denunciation and invective over the impudent document and made his way out of the office with the chart tucked under his arm.”

A schoolmaster named James T. Foster, from nearby Greenbush, New York, had produced the chart. Foster was not a geologist and, apart from admirable aesthetics, his chart's classroom value according to mid-nineteenth century standards is hard to measure. Significantly, Hall had already nurtured the idea of producing such a chart himself, for sale to public schools.

Hall marshaled support for his protest from the then-eminent Harvard scientist Louis Agassiz (1807–1873). Albany newspapers printed unpleasant letters in which Agassiz called Foster's chart “a monstrous map full of false and antiquated views,” and “a disgrace to American geologists if they were not to protest against it!” Foster filed libel lawsuits against Agassiz and Hall, suing them for \$20,000 and \$40,000, respectively.

Press attention focused on the role of Swiss American Agassiz, “a national possession, known and honored by all of intellectual America,” Clarke gushed in his tome. Although still recognized today for breakthroughs in glaciology and ice age theory, Agassiz's reputation is marred by his extensive writings on white supremacy.

But meanwhile, Foster shipped the first edition of his chart on an overnight boat to Manhattan from Albany for distribution to schools. Hearing of this, Hall booked himself on the same boat, and the charts never arrived.

“The only logical deduction is that Hall threw the entire edition into the Hudson River,” Clarke writes.

Preparing for the Agassiz libel trial, the hapless Foster tried to bolster his case by obtaining advice on geology from Emmons. The term *Taconic System* was then inserted into the chart, along with the line “Corrected by Professor Emmons and W. W. Mather, New York State Geologists.” Mather immediately disclaimed any involvement.

The 1851 Albany jury trial degenerated from Agassiz’s defense against Foster’s libel charges “to an open assault upon Emmons” and his Taconic System, according to Clarke. Emmons withered on the witness stand under questioning from lawyers carefully coached by Hall.

Foster lost his libel case against Agassiz and then dropped charges against Hall, who proceeded to produce and sell a chart of his own. Emmons, disgraced among colleagues, soon left New York to become state geologist of North Carolina, where he spent the last years of life extending his theories to southern mountains.

Parenthetically, Emmons endorsed abolition until his peaceful death in North Carolina during the Civil War; Hall, a so-called copperhead, rooted for the Confederacy to its end from his Albany perch.

Enemies made during the trial “were enemies for life, and echoes of the trial did not ebb away with the life of its participants,” Clarke writes. Marcou helped nurse the grudge. Over a long career as a prominent geologist, Marcou, like Agassiz a Swiss American, stirred the pot and marshaled important allies with his barbed science monographs and squabbles in favor of Emmons’s Taconic System. As late as 1892, Marcou accused Hall of slowing the progress of American geology, and he thought Emmons had been treated unfairly over his Taconic System theory.

Historically parallel with the Taconic Controversy, British geologists were split for 40 years over the “Murchison–Sedgwick Controversy.” This comparatively sedate dispute over the Silurian System versus the Cambrian System in the borderland area of Wales was settled by a peaceful compromise in 1879.

By the time Hall and Marcou died, both in 1898, the very concept of the Taconic System had become increasingly subsumed by refinements. William H. Hobbs, later a renowned twentieth-century authority on Greenland, did extensive fieldwork on the South Taconic massif for two seasons at ages 25 and 26. “Each of the numerous peaks was ascended,” Hobbs wrote in his 1893 USGS report on the area. The now largely forgotten work is notable for its terse disavowal: “No mention will be made of the Taconic Controversy.”

Emmons and Hall are now both entombed amid the elegant Victorian monuments of Albany Rural Cemetery, seen as a backdrop in the gloomy 1988 film called *Ironweed*. Other denizens of this burying ground include the obscure U.S. President Chester A. Arthur, 34 members of Congress, 8 presidential cabinet members, 5 New York State governors, and a large assortment of Albany mayors.

In a 21st-century view, Emmons and Hall “were both partly right and partly wrong,” wrote the late Donald W. Fisher in his 2006 book *The Rise and Fall of the Taconic Mountains* (Black Dome Press). Emmons’s key evidence, his disputed fossil work near the Battenkill River, was impressively correct, according to Fisher, who was a New York State paleontologist emeritus.

THE TACONICS’ ORIGIN SCIENCE HIT A NEW PHASE IN 1909, WHEN GERMAN American geologist Rudolph Ruedemann (1864–1956) proposed that the rocks had moved into place as an allochthon via large-scale thrusting from many miles to the east. Ruedemann became the third New York State paleontologist, succeeding Clarke (who had succeeded Hall) after many years as his assistant.

In a series of sometimes-dueling research reports, geologists debated this theory for the next half-century. Especially from the 1930s onward, “the ‘to be or not to be’ of the Taconic allochthon became a bone of contention,” according to an unpublished historical account from about 1990 by Charles Merguerian of Hofstra University.

The debate ended with a positive outcome in 1967, when the Chinese-born E-an Zen (1928–2014) introduced what he called a “new paradigm” with a USGS monograph titled “Time and Space Relations in the Taconic Allochthon.” By carefully documenting a pattern of faults in the region, Zen proved conclusively that the rock masses of the Taconics had traveled to their current position rather than originating as the stationary autochthon envisioned by many scientists of the day.

Much later in his life, Zen looked back at his eureka moment on a wild Taconic mountainside: “What exhilaration! To discover what was on the ground, for the first time ever, despite all the big-name geologists prior to that! About an hour’s work was lost in silent gloating, but it was fun.”

Leading up to his *Time and Space* monograph, Zen had already produced a 100-page annotation in 1964 of all of the Taconics’ published geological nomenclature—nearly 90 separate terms. Zen’s baroquely beautiful “Geologic Map of the Bashbish Quadrangle” of the South Taconics appeared in

1966 with an accompanying treatise and equal credit for the monumental amount of work for geologist Joseph H. Hartshorn of the University of Massachusetts (1923–2008).

Zen believed—at least initially—that the allochthon originated as a series of “gravity slides”—large slabs of sediment slowly gliding westward for dozens of miles down alpine-scale slopes of the primordial and partly submarine Green Mountains and Berkshires. But Zen’s last work on the subject, in 1981, left that question aside: “The nature and date of the uplift is unknown.”

This final report focused instead on geochemistry specifically at various places in the South Taconics. Using equations, he inferred the temperature and pressure at which rocks of the allochthon were metamorphosed into their present state. The data offered clues about the depth at which the materials were formed.

Currently accepted theory no longer credits gravity slides as the origin of the Taconic Allochthon, according to Karabinos of Williams College. Geologists now see microplates, called *terranes*, in the origins of the Taconic Range. “One-third of present North America consists of foreign terranes that formed elsewhere and have been welded onto the North American plate,” wrote Fisher, who served from 1955 to 1982 in the post originally held by James Hall. Fisher subsequently operated Fisher’s O.K. Rock Shop in Kinderhook, New York, until his 2012 death at age 90.



In 1967, E-an Zen documented faults in the Taconics to conclude that the range had traveled to its current position from elsewhere. UNITED STATES GEOLOGICAL SURVEY

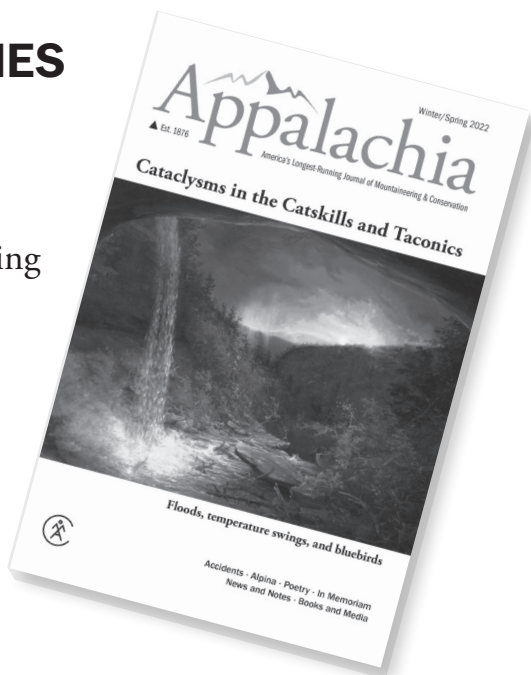
JOHN SEWARD was a member of the Appalachian Mountain Club’s New York Climbing Committee for several years in the 2000s. His writing has appeared in the *Wall Street Journal*, *Sea Kayaker* magazine, and many regional newspapers.

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