

Memorial to Edward Leffingwell Troxell 1884-1972

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Edward Leffingwell Troxell died quietly on September 21, 1972, in Winter Park, Florida, his retirement home. He was 88 and active to the day he died. Until his retirement in 1954 he was best known to geologists as a professor and research worker in vertebrate paleontology; as director of the Connecticut Geological and Natural History Survey; and as president for 1947 to 1948 of the Association of American State Geologists. To the public of Connecticut, he was "Mr. Geology."

Edward Troxell was born on April 15, 1884, in Deshler, Nebraska. His parents, Jacob and Evelyn Troxell, following a common practice of the time, were homesteading there long enough to build up the farm, receive title and sell, before moving farther west. By the time Edward was ten the family was in Payson, Utah, where he worked around the farm until at 14 he went, on a year's scholarship, to the Westminster Academy (now a college) in Salt Lake City, remaining there until he left for Northwestern University. He worked his way at the "Collegiate" (Westminster) after his initial scholarship—paper deliveries, motorman on the Salt Lake City cars, and finally a paying ride to Evanston, Illinois, on a cattle car train to Chicago in 1906.

During his final two undergraduate years at Northwestern, before receiving his A.B. degree in mathematics in 1908, Edward had to earn his own way, but he also managed to play class football (and even coach). The year after his graduation, he taught mathematics and coached three sports at the high school in Pratt, Kansas, before returning to Northwestern, this time for an A.M. degree in geology in 1911.

Thus prepared, he won a fellowship for graduate study at Yale University, training in paleontology with Charles Schuchert and Richard Swann Lull. He decided on a thesis subject with Lull; Schuchert and Isaiah Bowman completed his committee. (Professor Lull's lectures to undergraduates aroused much enthusiasm for vertebrate paleontology, but he normally discouraged applicants for Ph.D. degrees with him, since job openings were so scarce. Therefore his "adoption" of Edward Troxell can be seen as a tribute to Edward's potential.) With Lull in 1912, he made his bone collections in the richly diverse lower Pleistocene beds around upper Rock Creek, Briscoe County, Texas.

The resulting Ph.D. dissertation was finally and enthusiastically accepted in 1914, after a year's delay for rewriting a section on the climatic reasons for the extinction of the Rock Creek fauna, at the insistence of Professor Bowman. Characteristically,

Edward made good use of that year: the summer of 1913 he joined the USGS party of Mansfield and Richards in southeastern Idaho, and afterwards had a museum assistantship at Amherst College, where he did his rewriting but also investigated the unios in that collection for Schuchert. The dissertation (in shorter form) was published in 1915 and embodied not only many generic and specific determinations, but made use of a simple new criterion for doing so. As Lull had anticipated, this method of "ratios" (supplementing Osborn's idea of "indices") drew favorable reviews; for example, by L. Joleaud in Volume 1 (1920) of the *Revue de Géologie*.

After receiving his degree in 1914, Edward returned to Rock Creek for the summer, to excavate three more horses before taking up a museum assistantship, for work with W. H. Hobbs and E. C. Case at the University of Michigan. He relinquished this after a year that included the 1915 field season near Harrison, Nebraska, where he excavated a new species of lower Oligocene camel and a *Meshippus*, the latter to be sold to Harvard University. He remained at the museum with Professor Case during 1915 through 1917, but preferred to collect, prepare, and sell specimens on his own, which he could not do under the conditions of his small stipend.

In 1916 he collected in South Dakota, this time in the lower Pliocene beds (which he named the Oak Creek) south of Dallas and close to the Nebraska line. On this expedition his prizes were the earliest one-toed horse, which he named *Pliohippus tullianus*; a rhinoceros that Osborn later named *Peraceras troxelli*; and a complete skeleton of a long-jawed mastodon, *Trilophodon giganteus*, which was sold to the American Museum in New York. A *Protohippus* from the underlying better known Miocene went to the University of Michigan.

With the entry of the United States into World War I in 1917, Edward Troxell enlisted for officer training at Fort Sheridan and was commissioned Captain of Infantry. That October he married Jane Allen Campbell, daughter of Professor Edward D. Campbell, Director of the Chemical Laboratory at the University of Michigan. The couple at once went to Camp Custer, remaining there until Captain Troxell left in July 1918, for battle duty in the Argonne. Following the Armistice, he managed to take a few months of work at the Sorbonne University in Paris, and by July 1919 he was back and demobilized.

That fall he returned to Yale, at first as a research assistant; but in 1920, he was made half-time research associate in paleontology, with the rank of assistant professor, which he held until 1925. His intensive work in the Marsh vertebrate collections, though for only a part of each week, led to most of his shorter publications up through those of 1925 on Cretaceous and Eocene crocodiles. From his close friend at the University of Michigan, Dean Alfred Lloyd, he received a witty reply thanking him for the name of a new subspecies, *typus lloydii*, of the squirrel-sized Oligocene rodent *Ischyromys* from north of Harrison, Nebraska.

During the same years (1920 to 1925), Edward held the half-time appointment of assistant professor at Trinity College in Hartford, Connecticut, commuting from New Haven three days a week. In addition to the usual teaching in the classroom, he and his students planned a self-guiding geologic walking tour around the Trinity campus, with ten explanatory signs at the stops, featuring the cliff of Triassic basalt and the red shales printed with reptile tracks, mud cracks, and ripple marks. This effort was made

for the centennial celebration of the college and published in the special issue of their bulletin in 1923. By coincidence at the same time, William Morris Davis was circularizing 35 cities, on behalf of the AAAS, urging them to do exactly this same sort of thing in their parks. So Edward Troxell's reply came back first, saying that this proposal was not only planned but completed and already popular in the Rocky Ridge Park of Hartford.

In 1923, he was made a Fellow of The Geological Society of America and of the American Association for the Advancement of Science.

He spent the summer field season in the employ of the South Dakota Geological and Natural History Survey, collecting vertebrate fossils from the middle Oligocene beds of the Badlands, which had, in past years, provided many fine specimens for museums elsewhere, but none for South Dakota. The specimens collected by Edward Troxell and his assistant (who stayed only through July) were left in their enclosing rock and stored in Vermillion, with ones of the preceding several years—the Survey could get no money for a preparator. After 35 years, the specimens, still in their wrappings, were moved to the School of Mines Museum in Rapid City for preparation and display.

In 1925 Edward left Yale for full-time at Trinity College—half-time as professor of geology, and half-time as dean; the latter being the first such appointment in the college's history and for three years' duration. There was little enough time for field work; but afterward came the most productive season of all.

A National Research Council grant took him to the Bighorn Basin, Wyoming, with a field assistant and a packer for the summer of 1929. He collected the lower Eocene fauna in the Wasatch beds along the Graybull River, which had been explored by Lull in 1912, probably with Edward en route to his thesis area in Texas. Most of the summer's finds in 1929 were incomplete skeletons of some 25 genera of vertebrates, but a few nearly whole specimens were taken out—several large ungulates, the lemur *Notharctus*, the horse *Eohippus* and, at the end of the season, the huge flightless wading bird *Diatryma*.

In the 1930s, Edward turned from his field work to concentrate on teaching—his own classes, and a semester in 1935 as replacement of the late Dr. Rice at Wesleyan—and on putting geology in the public view with articles. In 1936, after the March flood of the Connecticut River, he was busy with a proposal to mitigate future occurrences by reopening a former course of the river, bypassing the narrows at Middletown. (Instead, the Army Engineers built a large dam south of Brattleboro, Vermont.) His interests ranged widely; it was perhaps in this period that he invented a kind of stone xylophone that he called a petrphone, made of splinters of basalt trimmed to the right notes. In 1940 he was appointed director of Connecticut's Geological and Natural History Survey.

Following the death of its previous director in 1939, the Survey was nearly phased out; but its Board of Commissioners (the governor and the presidents of the universities and colleges) agreed to continue it. Edward Troxell's tenure lasted until his retirement at 70 in 1954. The policies that he followed were not unusual: (1) To finance the publication of bulletins—his predecessor's backlog of manuscripts and those still to come—on the assumption that these were the Survey's most valuable product, and to provide public services. (2) To make more use of Connecticut faculty and graduate students

with theses to do, by providing them with expenses and reasonable assurance of publication. (3) To enter into reciprocal agreements with the U.S. Geological Survey concerning map coverage and strategic minerals work.

For some reason, the character of the Board of Commissioners changed by 1953 from college presidents to noted scientists; but the governor was always a member. For some different reason, the only salaried members of the Survey were the director and his secretary--both half-time.

The policies were carried out as well as funds permitted. Lull revised his bulletin on Triassic life of Connecticut; H. Winchell updated Schairer on minerals of the state; Knopf adapted the work of the late W. G. Foye on the Eastern Highlands; Cameron carried on the work by W. M. Agar in the Western Highlands; and Krynine published on the Triassic sedimentary rocks. In addition, many graduate dissertations were published, several of them as quadrangle studies. A geologic map of Connecticut was well on the way when Edward retired, and was published by his successor, John Lucke.

Other Survey activities included the assembling of study sets of Connecticut minerals and rocks (with brochure) for the public schools. This was Lucke's idea, and the sets were soon in great demand. Then a seismograph was needed, for the only one in the state since 1925 was homemade, but no funds were forthcoming. In 1947, one was donated by Ned G. Begle, a retired interested businessman of Greenwich, and was installed on a concrete pier donated by Trinity College students, in time to record the local 1950 earthquake, as well as many distant shocks.

Edward Troxell retired in 1954 from his professorship and the directorship of the Survey, finally settling with his wife in Winter Park, Florida. Research, formal teaching, and administrative duties were over, but he continued his numerous interests. Being both personable and considerate, in addition to being well informed, he was elected president of the University Club in Winter Park for 1967 to 1968. Being inventive, he had devised a work-saving hospital chair during World War II, when he was a part-time volunteer medical aide and taught Red Cross classes in Hartford.

He might have been incautious, but surely not illogical, in assuming that the art of drawing logical conclusions from the evidence at hand, in the scientific field, could be applied also to identifying of the man Shakespeare from the internal evidence in his plays--the evidence is detailed in a few privately printed booklets and points to De Vere.

The many details given above do not quite convey a balanced picture of Edward Troxell, which follows: He was tall and spare in appearance, courteous in manner, a determined hard worker and athletic by inclination, and he had a strong sense of responsibility to community and country. All this was leavened by a whimsical sense of humor.

BIBLIOGRAPHY OF E. L. TROXELL

- 1914 Unios in the Triassic of Massachusetts: *Am. Jour. Sci.*, 4th ser., v. 38, p. 460-462.
- 1915 The vertebrate fossils of Rock Creek, Texas: *Am. Jour. Sci.*, 4th ser., v. 39, p. 613-638.
 — A fossil ruminant from Rock Creek, Texas: *Am. Jour. Sci.*, 4th ser., v. 40, p. 479-482.
- 1916 Plaster of Paris and the effect of foreign substances: *Am. Jour. Sci.*, 4th ser., v. 41, p. 198-210.
 — An early Pliocene monodactylous horse [abs.]: *Geol. Soc. America Bull.*, v. 27, p. 151-152.
 — Oligocene fossil eggs: *Washington Acad. Sci. Jour.*, v. 6, p. 422-425.
 — An early Pliocene one-toed horse, *Pliohippus lullianus*, sp. nov.: *Am. Jour. Sci.*, 4th ser., v. 42, p. 335-348.
- 1917 An Oligocene camel, *Poebrotherium andersoni*, n. sp.: *Am. Jour. Sci.*, 4th ser., v. 43, p. 381-389.
 — An Oklahoma Pleistocene fauna [abs.]: *Geol. Soc. America Bull.*, v. 28, p. 212-213.
 — Fossil hunting in Texas: *Sci. Monthly*, v. 4, p. 81-89.
- 1920 (Review of) The American diceratheres, by O. A. Peterson: *Am. Jour. Sci.*, 4th ser., v. 50, p. 396-397.
 — A tiny Oligocene artiodactyl, *Hypisodus alacer*, sp. nov.: *Am. Jour. Sci.*, 4th ser., v. 49, p. 391-398.
 — Entelodonts in the Marsh collection: *Am. Jour. Sci.*, 4th ser., v. 50, p. 243-255, 361-386, 431-445.
 — A study of the entelodonts [abs.]: *Geol. Soc. America Bull.*, v. 31, p. 223.
 — Small mammals in the Marsh collection at Yale University: *Geol. Soc. America Bull.*, v. 31, p. 223-224.
- 1921 The American bothriodonts: *Am. Jour. Sci.*, 5th ser., v. 1, p. 325-339.
 — *Paleolagus*, an extinct hare: *Am. Jour. Sci.*, 5th ser., v. 1, p. 340-348.
 — The nature of a species in paleontology and a new kind of type specimen: *Jour. Geology*, v. 29, p. 475-479.
 — New amynodonts in the Marsh collection: *Am. Jour. Sci.*, 5th ser., v. 2, p. 21-34.
 — New species of *Hyracodon*: *Am. Jour. Sci.*, 5th ser., v. 2, p. 34-40.
 — *Caenopus*, the ancestral rhinoceros: *Am. Jour. Sci.*, 5th ser., v. 2, p. 41-51.
 — A study of *Diceratherium* and the diceratheres: *Am. Jour. Sci.*, 5th ser., v. 2, p. 197-208.
- 1922 Oligocene rodents of the genus *Ischyromys*: *Am. Jour. Sci.*, 5th ser., v. 3, p. 123-130.
 — Fossils of the Connecticut Valley [abs.]: *Geol. Soc. America Bull.*, v. 33, p. 209.
 — Relationship of the Great Basin and Great Plains fauna [abs.]: *Geol. Soc. America Bull.*, v. 33, p. 210.
 — The status of *Homogalax*, with two new species: *Am. Jour. Sci.*, 5th ser., v. 3, p. 288-292.
 — *Heleletes* redefined: *Am. Jour. Sci.*, 5th ser., v. 3, p. 365-370.
 — Horned Eocene ungulates: *Am. Jour. Sci.*, 5th ser., v. 4, p. 31-37.
 — The genus *Hyrachyus* and its subgroups: *Am. Jour. Sci.*, 5th ser., v. 4, p. 38-49.
- 1923 *Pauromys perditus*, a small rodent: *Am. Jour. Sci.*, 5th ser., v. 5, p. 155-156.
 — *Diplolophus*, a new genus of rodents: *Am. Jour. Sci.*, 5th ser., v. 5, p. 157-159.
 — (Review of) Die Mastodonten der budapester Sammlungen, by G. Schlesinger: *Am. Jour. Sci.*, 5th ser., v. 5, p. 88-89.
 — The Eocene rodents *Sciuravus* and *Tillomys*: *Am. Jour. Sci.*, 5th ser., v. 5, p. 383-396.
 — The American rhinoceroses and the evolution of *Diceratherium* [abs.]: *Geol. Soc. America Bull.*, v. 34, p. 134.
- 1923 The Apatemyidae: *Am. Jour. Sci.*, 5th ser., v. 5, p. 503-506.
 — A new marsupial (*Herpetotherium marsupium*, Bridger Basin, Wyoming): *Am. Jour. Sci.*, 5th ser., v. 5, p. 507-510.
 — The geology of the Trinity Campus: *Trinity College Bull.*, n. s., v. 20, no. 2.
- 1924 Geological features of city parks: *Science*, n. s., v. 60, p. 308-309.
- 1925 The Bridger crocodiles: *Am. Jour. Sci.*, 5th ser., v. 9, p. 29-72.
 — Eocene crocodiles in Peabody Museum: *Yale Alumni Weekly*, v. 34, p. 537.

- 1925 *Hyposaurus*, a marine crocodylian: *Am. Jour. Sci.*, 5th ser., v. 9, p. 489-514.
 ——— *Thoracosaurus*, a Cretaceous crocodile: *Am. Jour. Sci.*, 5th ser., v. 10, p. 219-233.
 ——— Mechanics of crocodile vertebrae: *Geol. Soc. America Bull.*, v. 36, p. 605-614.
 ——— Fossil logs and nuts of hickory: *Sci. Monthly*, v. 21, p. 570-572.
- 1926 *Smilodectes* or *Notharctus*: *Am. Jour. Sci.*, 5th ser., v. 11, p. 423-428.
- 1929 Collecting in the lower Eocene: *Science*, n. s., v. 70, p. 451.
- 1930 New vertebrates from the Eocene of Wyoming [abs.]: *Pan-Am. Geologist*, v. 53, p. 151.
 ——— Field work in the Big Horn Basin, 1929 [abs.]: *Pan-Am. Geologist*, v. 53, p. 151.
- 1931 *Diatryma*, a colossal heron: *Am. Jour. Sci.*, 5th ser., v. 22, p. 18-34.
- 1936 The thumb of man: *Sci. Monthly*, v. 43, p. 148-150.
- 1937 A skeleton of *Eohippus* [abs.]: *Geol. Soc. America Proc.* 1936, p. 379.
 ——— Flood control in the Connecticut Valley [abs.]: *Geol. Soc. America Proc.* 1936, p. 404.
 ——— A new type of relief map: *Science*, n. s., v. 86, p. 63-64.
- 1938 New skeleton of *Diatryma* [abs.]: *Geol. Soc. America Bull.*, v. 49, p. 1923.
- 1939 The origin of birds, and which came first, the bird or the egg?: *Sci. Monthly*, v. 48, p. 265-267.
- 1941 Eighteenth and nineteenth biennial reports of the Commissioners, 1937-1941: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 62, 16 p.
- 1942 Twentieth biennial report of the Commissioners, 1941-1942: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 66, 19 p.
- 1944 Twenty-first biennial report of the Commissioners, 1943-1944: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 67, 15 p.
- 1946 Geological outlook in Connecticut [abs.]: *Geol. Soc. America Bull.*, v. 57, p. 1286.
- 1947 Twenty-second biennial report of the Commissioners, 1945-1946: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 71, 23 p.
- 1949 Twenty-third biennial report of the Commissioners, 1947-1948: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 72, 16 p.
- 1951 Twenty-fourth biennial report of the Commissioners, 1949-1950: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 72, 24 p.
- 1953 Twenty-fifth biennial report of the Commissioners, 1951-1952: (Connecticut) *State Geol. and Nat. History Survey Bull.*, v. 82, 13 p.