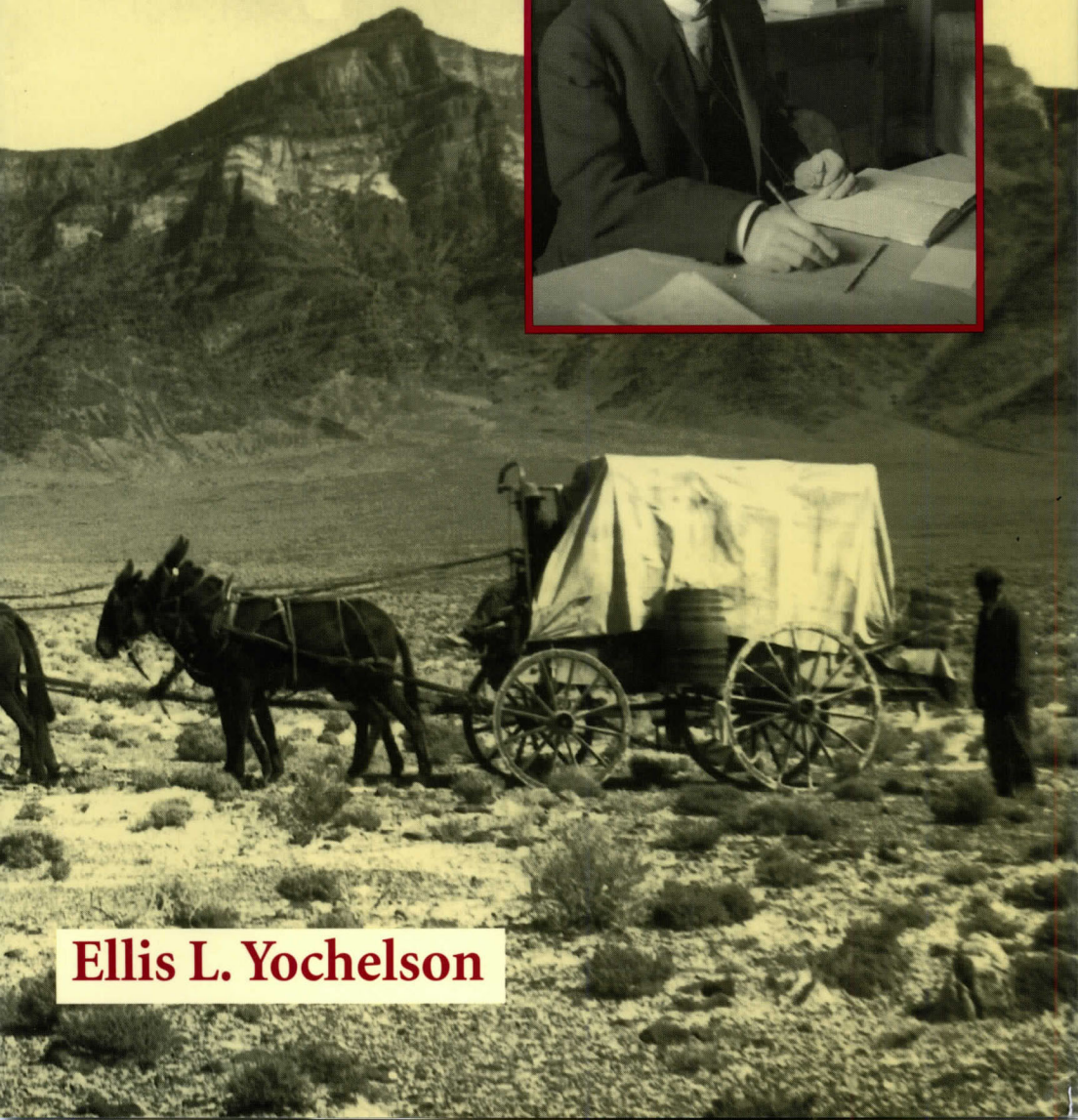
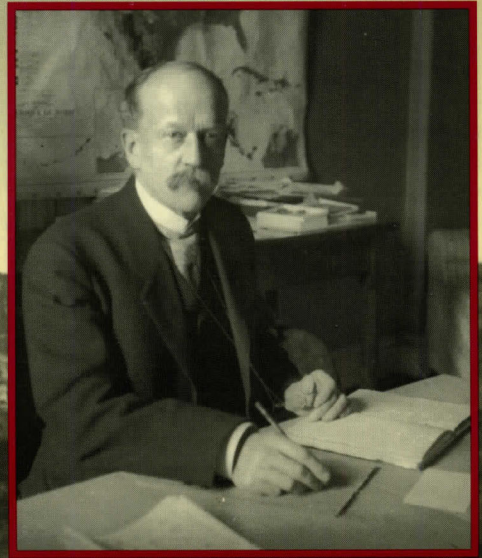
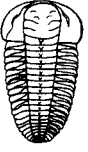


Charles Doolittle Walcott, Paleontologist



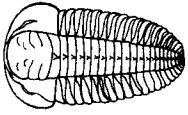
Ellis L. Yochelson



Charles Doolittle Walcott,
Paleontologist

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Charles Doolittle Walcott,



Paleontologist

Ellis L. Yochelson

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To my wife, Sally—

consummate cook, conscientious critic, caring companion.

(Many years ago, the late J. B. Knight stated that the only intelligent thing I had ever done was to marry Sally.)

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Preface and Acknowledgments

DESPITE THE RAGING STORM, the tall, new bridegroom struggled, with the fishermen crew by his side, to reach the elusive island, but alas in vain.” It is possible to write in such a fashion and, rarely, there are even occasions for which this particular literary style is appropriate. An account of the life of Charles Doolittle Walcott is not one of them. Walcott wrote plainly and to the point, eschewed superlatives, and never used words such as *eschew*.

The opening sentence could be used to describe an 1888 incident in his career. Walcott would not have cared much for that, either, for in his view one should start at the beginning of a subject and proceed in logical order. If he were reading it, he would want to know who the man was and what brought him to that particular place.

By current standards, Walcott’s story is peaceful, containing neither sex nor violence. Many of his written comments appear anachronistic in this cynical age, yet when he indulged in sentimentality, he meant it. Walcott was not a boy wonder but a late bloomer. Though he was not born poor, the first third of his life resembles a Horatio Alger story, not that anyone reads that author anymore. When Walcott became an important government official, he undertook additional administrative initiatives simply because there were things to be done that he was sure would benefit the country. Though scandal might spark greater reader interest, there was none accompanying his efforts. Walcott is almost too good to be true, but true he was. He may be viewed as the quintessential workaholic, both in administration and with his beloved fossils.

Walcott kept a diary and each day jotted a few lines; to do so requires discipline. The diary was important; it allowed him to keep thoughts in order as to what was significant that day and document his time so as to later compose monthly and annual reports. Some of his endeavors, not otherwise recognized in his many publications and official accounts, are mentioned in the diary; on the other hand, some of his actions and honors are missing. The diary was a private document, and its entries provide insight on his feelings as well as chron-

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icle events. His punctuation and random capitalization improved a little through life, though his handwriting got a little worse; I resisted the impulse to add commas or periods, change & to “and,” modify capitalization or otherwise tinker with his writing. Where the spelling is particularly worrisome, a “[sic]” is included; rarely, bracketed material is added for clarification.

Dates in parenthesis in the text refer to quoted diary entries. Time was important to Walcott; he frequently recorded when meetings began and ended and when he started or arrived from a trip. There was never enough time to do all he wanted to do, which may account for his preoccupation with hours and minutes. The older Walcott became, the greater his concern with time became.

Publications not directly quoted are cited by author and year; those quoted include the page numbers. Although the reference list suggests every Walcott paper is mentioned, that is not so; a more complete listing, still lacking a few items, was published (Yochelson 1967). Letters and other unpublished sources are numbered in sequence for each chapter. Repositories of that material are noted; consider the excellent biography of Walcott’s friend F. C. Cottrell (Cameron 1952), which does not indicate where any material quoted was obtained.

This text more or less follows a chronology. If there is a great literary style or impressive quotes to remember, they are Walcott’s words, not mine. Accordingly, an appropriate question for a reader to ask is why bother to read this work rather than just reading Walcott’s publications?

Walcott’s story as a scientist highlights the importance of fossils in the study of geology and in one aspect marks the high-water mark of American paleontology. His administrative efforts document development of a number of government organizations, and a few private ones. He was a dedicated federal employee and a proper family man, a role model if you will. Even now, I cannot understand how he was able to conduct so much basic research in the midst of so many other activities.

This is also a story of an era in America which has passed and will never return. Walcott went from the days of candles, through whale oil lamps, kerosene lanterns, and gaslight, to incandescent bulbs. He went from walking to work, to wagons and buggies, to steam autos, and finally, to internal combustion engines. His travels were in the heyday of trains and river boats, but he later played a role in making aviation into an industry. Throughout it all, he was a geologist and paleontologist performing fieldwork and writing descriptions in virtually the same way they are still done today.

Geologists tend to view paleontologists as a necessary evil, seldom as equals. I consider myself both paleontologist and geologist and hope therefore



I understand what Walcott was doing and why he was doing it. My particular interest is in long dead snails rather than in trilobites, but that is “close enough for government work.” Because I was employed by the U.S. Geological Survey, with offices in the Smithsonian Institution, United States National Museum, I have some understanding of the two organizations most closely associated with Walcott’s career.

Originally, Walcott was a poorly known figure to me, pictured in a textbook as a bald-headed man who had described some fossils. There are biographies of Clarence King, first director of the Geological Survey, and of John Wesley Powell, the second director. Nine decades after their deaths these men continue to provoke interest. There has not been a biography of the third director, who made the policies of both King and Powell really work. Not until Gould’s (1989) *Wonderful Life* was Walcott exposed to “the intelligent layman,” and that author’s portrayal of him was neither complete nor, in my estimate, accurate.

I can date my interest in Walcott precisely. In 1959, my mentor, the late J. Brooks Knight, gave me five hundred dollars, an enormous sum for a government employee at GS-9 grade married with three small children, to attend the International Zoological Congress in London. It was my first time overseas and in the major leagues. To my amazement, Sir C. J. Stubblefield, director of the Geological Survey of Great Britain, invited me, Mr. Nobody, to his office for a glass of sherry. Alcohol on government property was another eye-opener for a beginning federal scientist.

Dr. Stubblefield showed me a picture of a fossil in a Walcott paper and asked my opinion of a particular morphologic feature. I knew Walcott’s one-line explanation was wrong and voiced my view, even though I had not seen the specimen. Upon my return to Washington, I examined the fossil and wrote a paper. As often happens, my interpretation of it was also wrong.

Meanwhile, I became interested in a man who could make such a strange remark and illustrate a specimen from British Columbia in a publication on fossils from China. I spoke to the very few people around the National Museum who had joined the staff before Walcott’s death in 1927. Among them was Alexander Wetmore, long retired as sixth secretary of the Smithsonian Institution, but then still very active in the Division of Birds.

To my surprise, six months after we spoke, Dr. Wetmore asked me to write Walcott’s biographical memoir for the National Academy of Sciences. Shortly after Walcott’s death in 1927, this memoir had been assigned to David White, who suffered a stroke. Then, four other academicians gathered comments about Walcott, but no one put them together; writing by committee seldom works.

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Next, the Second World War came along and the memoir was pushed aside. Dr. Wetmore was home secretary of the academy from 1951–55 but could not find anyone to prepare a manuscript. He had been employed by Walcott, and having this memoir written was a matter of honor. By now as a GS-11, I was not entirely a Mr. Nobody, but even though my interpretations of dead snails were sometimes accepted, it was obvious I would never be a member of the National Academy of Sciences. Writing a biographical memoir for that group would be difficult. Three years later, I completed it, depending largely on obituaries and short biographies prepared at the time of Walcott's death. The memoir (Yochelson 1967) was judged adequate and even got a favorable nod in a review. It was clear to me, however, that more should be done to document Walcott's career.

For the next two decades, I did this and that professionally for the Geological Survey. Whenever possible, I searched for letters outside of Washington or spoke to geologists about areas where Walcott had worked. Early in this period, I visited Trenton Falls, New York; a local historian, the late Howard Thomas, gave invaluable advice that if one wants to write, one should sit down and write. Good advice is seldom taken, and for years I talked of writing a Walcott biography.

A year into retirement, it finally occurred to me that I should either write a biography or stop talking about it. After false starts, I finally settled down for five years; for three more years, the manuscript was running me. Completing it was a duty, in the Walcottian sense of duty, to bring his efforts to public attention. In so doing, I have invaded his privacy, but he was a human being, not a cardboard figure, and one has to understand a person to comprehend why they did what they did.

No one does anything alone, especially in sciences and humanities, for there is a foundation provided by the past. It is therefore incumbent upon me to acknowledge institutions which assisted me in this endeavor. Walcott was an extremely organized man in his scientific writing, but his letters are scattered over many miles. Some letters cited may be duplicated in the Smithsonian Archives, but his handwritten letters and personal notes from the field are one of a kind.

I do not know the names of all librarians and archivists who assisted. Some places I visited; others were queried by mail. All responded cordially to my requests. I collected a large number of letters and I had my perspectives broadened. Bless both librarians and archivists, persons of different temperament and outlook, but in common having a spirit of cooperation and enthusiasm for any researcher who crossed their paths.



Alphabetically below are institutions contacted; from some of the sources, unpublished material has been quoted, and these have all kindly granted permission to publish: American Museum of Natural History, New York; American Philosophical Society, Philadelphia; Amherst College, Amherst, Massachusetts; British Museum of Natural History (now Natural History Museum), London; Brown University, Providence, Rhode Island; Canadian Pacific Archives, Toronto; Case-Western Reserve University, Cleveland; Cleveland Museum of Natural History, Cleveland; Columbia University, New York; Cornell University, Ithaca; Field Museum of Natural History, Chicago; Geological Society of America, Boulder, Colorado; Geological Society of London, London; Geological Survey of Japan, Iburski; Hamilton College, Clinton, New York; Herkimer County Historical Society, Herkimer, New York; Huntington Library, Pasadena, California; George Washington University, Washington, D.C.; The Johns Hopkins University, Baltimore; Middlebury College, Middlebury, Connecticut; Munson-Williams-Proctor Institute, Utica, New York; Museum of Comparative Zoology, Cambridge, Massachusetts; McGill University, Montreal; Minnesota Historical Society, Minneapolis; National Archives of Canada, Ottawa; New Brunswick Museum of Natural History, St. John; Narodni Muzeum, Prague; New York Public Library, New York; New York State Library and State Archives, Albany; Ohio Historical Society, Columbus; Ohio State University, Columbus; Paleontologisk Museum, Oslo; Peabody Museum, Salem, Massachusetts; Provincial Archives of Newfoundland and Labrador, St. John's; Princeton University, Princeton; Royal Ontario Museum, Toronto; San Diego Society of Natural History, San Diego; Stanford University, Palo Alto, California; State Historical Society of Wisconsin, Madison; Syracuse University, Syracuse, New York; University of Alabama, Tuscaloosa; University of Adelaide, Adelaide, Australia; University of Birmingham, Birmingham, England; University of Cambridge, Cambridge, England; University of Edinburgh, Edinburgh, Scotland; University of Maryland, College Park; University of Iowa, Iowa City; University of Michigan, Ann Arbor; University of Minnesota, Minneapolis; University of Pennsylvania, Philadelphia; University of Pittsburgh, Pittsburgh; University of Rochester, Rochester; University of Wisconsin, Madison; Utica Public Library, Utica, New York; Vassar College, Poughkeepsie, New York; Wisconsin Historical Society, Madison; Yale University, New Haven.

Anyone with a modicum of geographic knowledge will note that only one place listed above is in Washington, D.C. A general rule in geologic mapping is to start farthest from camp and map toward that spot, so that as the season

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progresses and one tires, the distance to travel each day is shorter. It is a good rule for this kind of investigation. I made many local visits but concentrated on these during the later stages of writing.

Places consulted near the city of my birth include the National Library of Medicine, Bethesda, Maryland, and the U.S. Geological Survey Library, Reston, Virginia. An adjunct of the latter, unknown to many, is the photographic collection in Denver. Walcott was second or third only to G. K. Gilbert in the total number of pictures he took which are preserved in this library, and some are artistic gems as well as scientifically useful. Personnel in the USGS who were personal friends obtained Walcott's official Civil Service records from the National Archives and Records Service office in St. Louis; I did not ask how.

In Washington, I saw the Daughters of the American Revolution and the Sons. The National Geographic Society and the Washington Academy of Sciences produced nuggets of information. The Cosmos Club unfortunately had discarded old records, but the University Club knew of Walcott and even had his picture on the wall. The Carnegie Institution of Washington Archives are marvelous, though it better to visit after summer heat has left the city. The National Parks and Conservation Association and the National Forestry Association were friendly. The Columbia Historical Society and the Washingtoniana Collection of the Martin Luther King Jr. Library, like all other places, are staffed with helpful people. The National Academy of Sciences allowed me to examine their files with a minimum amount of fuss.

The National Archives and Records Service was just across the street. Even better, the Museum of Natural History Library was a block away, and inside the building. As an indication of how long ago I began and my snail-like pace, I may have been the first person granted permission to use a word processor in the Manuscript Division of the Library of Congress. As a former U.S. government employee, I am biased, but my judgment is that federal archivists and librarians are as skilled and helpful as those in academia, state governments, or private institutions. It is the custom nowadays to war on the Civil Service, yet the civil servants keep the country running, and in the limited part of the government I knew, I never met a federal scientist who was not busy and productive.

The main depository for Walcott's papers is the Archives of the Smithsonian Institution in the old Arts and Industries Building. I was in so often to read Walcott's diaries and Walcott's letters there was joking about providing me an



office. To all of the archives staff, the only way I can repay their unremitting assistance is to do the best job of writing that I can. Without meaning to slight others, both living and dead, who aided my search, I am particularly indebted to William Cox and James Steed.

In naming people who have contributed to my understanding there will be sins of omission. If I listed all who advised or assisted, willingly or unknowingly, the list would probably be twenty pages long, even with titles and addresses eliminated. A few of the persons in Canada who helped me understand Walcott and his work: the late Thomas Bolton, Ottawa; Desmond Collins, Toronto; William Fritz, Ottawa; and Randall Miller, St. John. For decades, the late Gunnar Henningsmoen, Oslo; Adrian Rushton, Nottingham; and Harry Whittington, Cambridge answered my questions.

How to craft history has to be learned like any other craft. Methodology, outlook, and tricks of the trade were provided by many willing to guide an aficionado. Some of these people are: Michele Aldrich, Janice Goldblum, Pamala Henson, Alan Leviton, Clifford Nelson, Dove Menkes, Steven Pyne, Mary Rabbitt, Nathan Reingold, and Marc Rothenberg. The casual contact in one library who suggested I use a mirror to read through the back of an otherwise illegible letterbook copy is an example of the kind of debt that I cannot repay.

Many, many geologists and paleontologists in the United States deserve to be mentioned, but again, I must limit the list: Stanley Beus, Sedona, Arizona; William Breed, Flagstaff, Arizona; Frederick Collier, Cambridge, Massachusetts; Dr. G. A. Cooper—a role model for all paleontologists—Raleigh, North Carolina; Barry Doolan, Burlington, Vermont; Robert Dott, Madison, Wisconsin; Donald Fisher, Kinderhook, New York; Charles Hunt, Salt Lake City, Utah; Robert Milici, Reston, Virginia; Clements Nelson, Bishop, California; Allison Palmer, Boulder, Colorado; Keith Rigby, Provo, Utah; Richard Robison, Lawrence, Kansas; Reuben Ross, Wheatridge, Colorado; Thomas Whiteley, Rochester, New York; Don Winston, Missoula, Montana; and Hatten Yoder, Silver Spring, Maryland.

There are others to thank, absent for many years. These include two former secretaries of the Smithsonian, Charles Abbot and Alexander Wetmore, and Alphonzo Jones, Walcott's chauffeur. Ray Bassler, U.S. National Museum; Carl Dunbar, Yale University; Benjamin Howell, Princeton University; Waldo Schmitt, U.S. National Museum; Howard Thomas, Trenton Falls; and John

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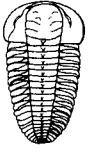
Wells, Cornell University all helped illuminate the man and his research. Preston Cloud gave me a position with the Geological Survey in 1952 which allowed me to pursue official duties and to grow as a paleontologist, but which also laid the basis for my hobby.

I never met Walcott's daughter, Helen Walcott Younger, but she kindly answered a letter shortly before her death. Her husband, the late Cole Younger, found twenty years of missing diaries and donated them to the Smithsonian Archives. Erin Younger, of Seattle, granddaughter of Helen, has been a recent correspondent. I had the opportunity to meet Sidney Walcott, his second son. For years Mr. Walcott sent me photographs, family papers, and letters crammed with information; this material, intermixed with my own, is in the Smithsonian Archives.

Sooner or later inspiration begins to flag. Fortunately, the American Philosophical Society had the faith in me to provide a travel grant in 1993. James D. Aitken, Geological Survey of Canada, retired, expanded my horizons in Alberta and British Columbia, and provided insight into pack horses, camp cooking, and a host of other practical matters, along with a running lecture on geology. This rejuvenation provided final incentive to complete the manuscript.

A manuscript is not a book. I knew too much about Walcott and wanted the world to know it all. Fortunately, John T. Hubbell, at the Kent State University Press, saw nuggets of merit amidst loads of verbiage. At a late stage, three good friends, who also are perceptive critics saved me from myself—a trite expression, but there is no better. Tom Dutro, Al Leviton, and especially Michele Aldrich (with Mark) helped provide a better biography.

To summarize, Walcott was an important unknown figure, surely an oxymoron, but to pursue the comment would involve more convolutions than are in Umberto Eco's *Foucault's Pendulum*. Charles Doolittle Walcott was good man; I hope I have provided the good account that he deserves.



Charles Doolittle Walcott,
Paleontologist

1

The Beginning: Ancestors and Motivations in Mid-Nineteenth-Century New York (1850–1871)

History happens after you die. It's the life lived by the dead.

—Richard Cohen, 1993

THIS STORY could begin in 1850 at New York Mills, New York, the last Sunday in March, time of day no longer known. However, no one is born as a clean slate, for heredity and environment affect both newborn and growing child. One American stereotype is the WASP—white, Anglo-Saxon Protestant—noted in literature ranging from one-line bad jokes to learned treatises. New England is the natural WASP habitat, but this Empire State descendant qualified for the appellation in temperament and physical appearance. Logic dictates that Walcott's story mention the westward migration of his ancestors.

Although “Walcott” is not “Smith” or “Wright,” the name is an ancient English one, combining *weald* and *cot*, a cottage in a wooded country; it may have come from *wald*, for “wood.” In southern England, a dozen places are named Walcott in one form of spelling or another. Earliest family records in the New World are not clear, but about 1636 William Walcott of Devonshire came to Salem Village, Massachusetts Bay Colony, and married Alice Ingersoll (A. S. Walcott 1925). He did not fit the Puritan mold, with results that included one public whipping; authorities forced him to leave in 1647. Jonathan Walcott, probably born in 1639, was among the children left as the first generation in North America. He served in King Phillip's War against the French and Indians; a decade later, Salem Village formed its own militia troop, led by Captain Jonathan Walcott.

The captain had two wives in sequence and seven children by each. Salem Village was the site of public accusation run mad in the witch trials and executions.

Charles Doolittle Walcott, Paleontologist



A daughter of Jonathan's was an accuser, as was Ann Putnam, Jonathan's niece, who repented her part in the terrible affair. "Mary Walcott, 16 at the time, was one of the group of teen-age girls who would scream and cry and even go into convulsions claiming they were being attacked by invisible witches."¹ This hysteria may be the only public scandal that ever touched the Walcott family. However, William, born in 1691 or 1692, had a different mother than Mary; he was the fourth of seven children born by the captain's second wife.

William moved to Attleboro, Massachusetts, and thence to Cumberland, Rhode Island, to become a prosperous farmer, "trusted and respected" by neighbors. The eighth of his nine children, Benjamin, was born in 1729. Like his father, he was a good, solid farmer, of no remarkable distinction, though he may have started a foundry during the Revolutionary War. Benjamin begot ten children, the oldest Benjamin Stuart, born in 1755.

Stuart served in the Revolutionary War, of course for the Continental army. After being mustered out, he invented a nail-making machine and subsequently became involved in a fulling mill, wherein cloth is cleaned and thickened; Fuller's earth is a special clay used in fulling cloth. This activity gave rise to a cotton yarn mill in Rhode Island. Benjamin Stuart became wealthy, though late in his life business went sour. Before that, in 1785, he sired his first born, another Benjamin Stuart.

This Benjamin Stuart left New England and moved to Oneida County, New York. Utica, on the site of old Fort Schuyler in the Mohawk Valley, was growing rapidly, for the Revolutionary War brought the demise of Mohawk Indians, who had dominated the region; new settlers moved to the valley in droves. Benjamin Stuart and his father owned what was possibly the first yarn and knitting mill in New York (Wager 1896, 628–32). Cheap water power and cheap labor were available, and within a few years the Erie Canal provided excellent transportation to Albany. Benjamin was plant superintendent and very good at the business, for after some years he owned a whole series of mills at New York Mills, New York, just to the west of Utica. His first wife, Irene Doolittle, bore seven children before she died; Grandmother Judith, his second wife, had another five.

Of the seven, the second was William Dexter, the fourth was Charles Doolittle, and the seventh, another Benjamin, who moved to New York City rather than going into the family business. The daughters provided many cousins, but mostly they moved away with their husbands and do not enter the mainstream of the story. Other family members did well; Walcott, Iowa, is named after



Benjamin's brother William, who helped organize the Chicago and Rock Island Railway. Charles Doolittle Walcott, the subject of this account, had cousins scattered over the countryside; he was cordial to all but close with few.

Charles Doolittle Walcott, the father, born September 14, 1818, spent his maturity as a partner with his father and five-year-older brother, William; Charles was in charge of the upper mill. In 1840, he married Mary Lane of New York City and sired five children; she survived him by many years, dying in Utica in 1897. The oldest child, Mary Josephine, was born in 1842. She lived with her mother and, as became a spinster lady, devoted herself to charity and other good works; after her mother died, Josie moved to Washington to be near her youngest brother, dying in that city in 1908. Ellis Pitcher was born two years after Josie; following the Civil War, New York was too cramped and he moved to Minnesota, dying in Wisconsin some time during the First World War. William Lane was born in 1846; he also left New York after the war and died out of state before he was twenty-seven. Another infant died at birth in 1848.

Charles Doolittle Walcott, the son, was born March 31, 1850; apparently he was a sickly child and received considerable attention from his mother and sister Josie. Less than two and a half years after his birth, Walcott's namesake father died, on September 15, 1852. Even by the standards of that day, his life was short. He had gone to Florida to help cure his illness, probably tuberculosis. "It is supposed that two thousand persons attended the funeral of the lamented Mr. Walcott. Hundreds followed his remains to the grave" (Kirk 1852, 32).

Size of the funeral, erection of a family tomb, and printing of the sermon indicate just how prominent the Walcott family was in the community. Grandfather Benjamin was so wealthy that he retired in 1856 to travel in Europe and the Holy Land, the mills then being run by Uncle William. Benjamin contributed liberally to local charities and the Presbyterian Church, willing money for a new building; one can attend the Walcott Presbyterian Church in New York Mills. He endowed a professorship of Christian morals at Hamilton College, at that time a Congregational Presbyterian institution. The college is in Clinton, New York, a few miles south of Utica, far enough from any city that theology students would not be led into temptation. Uncle William, until his death in 1890, followed in his father's footsteps as a contributor to the church. He was also a trustee of Hamilton College and gave a further endowment.

If one draws anything from this account, it is that nowhere was there any indication of academic or scientific pursuits, even among more distant relatives.

Charles Doolittle Walcott, Paleontologist



Granted that rich families have opportunity for more cultural pursuits than poor ones, the Walcotts were of the business community, not the intelligentsia. On the maternal side, in Utica, Doolittle relatives were nearly as prominent in business. In 1866, President Johnson and General Grant visited grandfather Charles Doolittle.

Nothing is known of the early years of little Charles, but one may guess that widow Walcott and her young brood could have moved in with grandparents. Such an arrangement could be expected of Grandfather Benjamin, a pillar of the community, who had room in his Grecian revival mansion. Before Charles was eight, city directories show that the family lived in Utica, at 50 Fayette Street. It was a short distance move, and New York Mills is now a suburb of Utica.

The reason for this move given in obituaries is that Charles could attend a good school, but there might have been more to the matter. Sister Josie may not have been thought to need proper education, but the two older brothers could have profited from more cultured Utica. When Grandfather Benjamin retired and Uncle William became head of the extended family, there may have been house shuffling and no more room for widow Walcott. She had money from her husband's estate, but was definitely a poor relation. Charles apparently adored his grandfather; there is good evidence he had difficulties with Uncle William.

Under occupation, the Utica city directory lists Mary Lane Walcott as "widow." A wealth of symbolism is wrapped up in that word, as used in pre-Civil War society. Except for the fact that the family was never in want, she would have been classed as part of the genteel poor, not expected, or permitted, to do anything except exist. Widow Walcott had a growing daughter, two teenage sons, and a small child to contend with when she left New York Mills. Three moves in the first three years suggest she had difficulty adjusting to Utica. Later, she boarded at a hotel and moved several more times. When the boys left, she gave up any pretense of homemaking and lived with Josie in a hotel.

Walcott began schooling in Utica at eight and ended it at eighteen. "He was sent first to a select school at the corner of Genesee and Hopper streets kept by Miss Webb, but he disagreed with the teacher and left it three times. After that he went to the public school in Blandina Street, where he remained three years. Later he attended the Advanced School and Academy, but did not graduate."² The first academy building burned in 1865, and when it reopened in 1867 on Academy Street, the school had a principal and three assistants. The school year of three terms was forty weeks long. Instruction was probably adequate, rather than outstanding. Nothing is known of Walcott's grades.



When school was out, the boys of Utica lived a sort of outdoors existence. Charlie had two older brothers to tag after when they roamed. Woods and swamps were near the city, and while the Mohawk River was not the Mississippi, it was still fairly impressive for a lad. One could hunt relics of Indians driven from the Mohawk Valley not too many years earlier. If all else failed, looking at barge traffic on the Erie Canal, north of town, brought with it the notion of travel.

The great American geologist James Dwight Dana grew up in Utica before joining Yale University and was already famous from his work on the United States Exploring Expedition (1838–1842) of Lt. Charles Wilkes. Utica had a natural history tradition, and being curious about nature was a respectable pursuit for young minds. The twelve-year-old Utica boy, G. H. Williams, who later founded the geology department at Johns Hopkins University, wrote: “I am getting together a cabinet now in which I have got the minerals Uncle George had in his cabinet, a slab from Ninevah Uncle Fred sent etc. Last Saturday Willie Abbott and I went up to Sulphur Springs to dig for trilobites. I got some heads and an Athosorus we took two hammers and a small crowbar” (in T. Williams 1896, 30–31).

Walcott’s interest in the natural world came early: “As a boy he took considerable interest in the study of natural history, and with David S. Foster he made a collection of birds eggs which was later destroyed. The next year he tried collecting butterflies”³; had butterflies or eggs been as sturdy as stones, Walcott might have ended up as a zoologist. “At 7 years of age he was already a collector of natural objects that attract the attention of the country boy, and at 13 the curiosity aroused by some fossils he found started him on the way to the study of local geology” (Smith 1927, 1).

Another obituary mentions his meeting Colonel E. Jewett, a geologist and the third curator of the New York State Cabinet, an early term for a museum. Hammer handles protruding from a basket caught the boy’s eye, and from there it was an easy step for Jewett to show him fossils. In later years, Jewett lived in Utica, and Walcott often called on him.

A family story is that Walcott begged for a trilobite for his birthday and one brother bought a specimen. He received permission to clean it by soaking overnight in water, but in the morning had only a jumble of pieces which a local collector had glued together. An annual report of the United States National Museum mentions receipt of a fossil collection from the Hurlburt family. “The elder Mr. Hurlburt was a distant relative of Dr. Charles D. Walcott and encour-

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aged his start in paleontological field work many years ago” (Bassler 1936, 48). Ed Hurlburt was a boyhood friend, but not a relative, and they were classmates at the Utica Academy.

To Charles, the Civil War must have been a terrible jolt in an otherwise tranquil life. Uncle William was too old to fight, but various cousins went off to war and one did not return. Grandfather Benjamin donated the cost of a river steamer to the Union; he died in January 1862, before serious battles began. Brother Ellis left Norwich University in 1862, just after his eighteenth birthday, and enlisted in the cavalry for four months. In 1864, he reenlisted in the artillery for a year.

The growing Charlie Walcott expanded his horizons. “During the war, a red-haired boy from Utica came to work on Rust’s farm for the summer” (Thomas 1951, 127). A third-hand report from an old resident puts Walcott on the Rust farm, near Trenton Falls, at age eleven. It makes sense that the boy could help a farmer, with so many young men away fighting for the Union. It makes equally good sense that widow Walcott would take some of her brood out of Utica when local politics engendered by the Civil War boiled over; it might also have been a good idea to take young Charles away while Grandfather Benjamin was ailing.

To give the overall setting, the ancient hard rocks of the Adirondack Mountains form the principal feature of the northeastern corner of New York State, rising above the average elevation of the state. South of the massif is the Mohawk Valley, the Mohawk River running from Oneida Lake eastward to Albany. The Erie Canal parallels the Mohawk River for part of its route.

All of New York was glaciated, with resultant disruption of drainage and development of a large number of swamps along the valley floor. This aided canal diggers, for dirt is easier to move than rock, but the swamps formed outstanding homes for mosquitoes. In summer, the Mohawk Valley is hot, humid, and unpleasant.

Once spring rains are over, it is easy to go north across the Mohawk River and up the long steep slope of Deerfield Hill, on the southwestern flank of the Adirondacks. Trenton Falls, on West Canada Creek, is only fourteen miles from Utica. With the opening of the first segment of the Black River & Utica Railroad in 1855, travel to that hamlet was easy.

It is difficult to imagine that for half a century this was a stop on the Grand Tour—Saratoga Springs, Trenton Falls, Niagara Falls—having one of the nation’s finest resorts. Thousands of tourists came to Trenton Falls from all over the country and Europe. In 1863, Secretary of War Stanton met diplomats of



seven foreign countries at Trenton Falls and persuaded them not to recognize the rebellion in the South. The falls were minuscule compared to Niagara Falls, but engendered a fair amount of prose, poetry, and art (Schweizer 1989).

Geology in this part of New York is fairly straightforward. At the western edge of the Adirondacks and proceeding straight south, strata are nearly flat lying, the country rising to the Pennsylvania border in series of wide, low escarpments, which are progressively younger. "Oneida County affords an excellent field for the study of the Paleozoic series of rocks" (Brigham 1888, 17). It is the best place in the state to see more kinds of sedimentary rocks in the shortest distance. Along the Mohawk River and for a considerable distance to the south in the broad valley, the rocks are mostly soft shales and layering is not obvious. Close to the Adirondacks, the rocks are no longer nearly flat lying, but are inclined a few degrees toward the south.

Because of superposition, the rocks north of Deerfield Hill are older than those in the river valley. Further, they are all limestone, a harder rock than the shales of the valley. Because of glaciation few natural outcrops occur, with one notable exception. West Canada Creek, rising in the Adirondacks, cuts through the limestone layers as it travels southwest to join the Mohawk River at Herkimer, New York, fifteen miles east of Utica. West Canada Creek flows vigorously and must have carried a phenomenal amount of water when the glaciers melted. It is an ideal place to see layer piled upon layer. As a consequence of small vertical breaks, blocks of rock have moved differentially, thereby in part causing the series of falls along the stream. The scenery in the gorge is spectacular and is deserving of at least some of the elaborate nineteenth-century touristic prose.

Limestones are a characteristic deposit of warm, shallow seas, areas where marine organisms are abundant today. Living conditions were similar in the past, and the lime-depositing seas of this area swarmed with organisms. Although the physical environment was comparable, the biological material of the past was strikingly different. The organic remains in the ancient limestone strata along West Canada Creek do not resemble shells a modern-day beachcomber can collect. The fossils of the Trenton Limestone, as it is called, are somewhat different than those of the Utica Shale, partly because that interval of rock is slightly older, but mainly because the environment of deposition of a limestone is not the same as that of a shale.

By the time of the Civil War, Trenton Falls had been settled for about half a century. A veteran of the Revolutionary War, Abel Rust moved in 1818 from Kent, Connecticut, to Russia Township, on the eastern side of West Canada Creek

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(Rust 1891). Early real estate developers, like their descendants, glamorized by giving exotic names to townships, areas of six square miles; Norway and Poland are near Russia. In many respects, the city of Canton, New York, on the north side of the Adirondacks, is as distant from Canton, China, as is possible, but it is an example of this use of the exotic in advertising.

Almost overnight settlers determined that dairying, not plowing, was the only way to farm in limestone country. Every gourmet is familiar with Herkimer County sharp cheese. West Canada Creek forms the boundary between Oneida and Herkimer Counties. If one is given to sociological approaches, the creek separated the tourist milieu in the Trenton Falls resorts from the life of the farmers. The Rust farm was in "Russia across the creek," but the creek was not a hard line like the wrong side of the railroad tracks in a city, for some farm families took in summer boarders to supplement their income.

Though limestone was impossible to plow, it formed a key part of the local economy as a natural building material. Every farmer had a small quarry for house and barn foundations, and occasionally for selling stone. At one time at least eight active quarries were on the eastern side of the creek. Abel Rust is remembered as the first in the area to build a lime kiln to manufacture quicklime for mortar.

Dairying is a more predictable way of farming than, say, raising vegetables, and allowed occasional moments to pursue other work. Quarrying of stone in those days was hand work and could be stopped at any point to go milk the herd. The locals moved from barnyard to stoneyard, with visits to the woodyard for firewood and logs. Within the great thickness of limestone exposed were subtle differences in the ability of various layers to break where desired. Successful farmers were able to distinguish good quarry stone from bad, but good or bad, the fossils almost fell out of the rocks. They were a phenomenon of nature that could not be ignored by men swinging sledge hammers.

Rock formation names are derived from geographic localities. The Trenton Limestone is now considered by geologists as a major division, a group, and has been subdivided into a number of formations and these into members (Kay 1943). The Coburg Formation includes two divisions, the lower being the Rust Member. It is named after Rust farm, not Abel Rust, but keeps the name of the old quarryman-farmer from being lost.

Although work was hard, some of the farmers were thrifty and lived a fairly good life. Winters were long and quite cold, giving time to read and to specu-



late on the differences in the rocks layers and the fossils. Everyone had a few fossil and mineral specimens in the parlor as conversation pieces. The New York farmer wanted to know about nature because of his close association with the environment and his need to understand it. Partly to satisfy this desire, in 1836, the state started a natural history survey which continues to this day.

As early as the first quarter of the nineteenth century, the fossils of Trenton Falls were well known. Descriptions of them and the excitement of fossil collecting were used as an added inducement to attract tourists. Truly, it is exciting to break open a rock and find a shell inside. Even more exciting is to find a trilobite. To the untrained eye, many fossils resemble modern sea shells, but trilobites have real character. They consist of a head, a central part of numerous segments, and a tail. The only living thing which approaches them in general shape is a sowbug or a lobster. Trilobites look like creatures from a long distant past.

Even today many people collect fossils, and during the nineteenth century such collecting had elements of a craze. In 1849, a New Yorker wrote: "The little lingula [shell] of the Potsdam would interest me more, could I but have one, than the splendid *I. gigas* [trilobite]—though polished by the hand of old Rust to boot!"⁴ One has to know a lot about paleontology to get the full flavor of the joke, but there is no question that Trenton fossils were long known and envied by collectors throughout the state.

Abel Rust died in 1842 at the age of ninety-three. The "old Rust" reference could have been to him, or to his son Hiram, born in 1794. Like Walcott's father, Hiram was a seventh-generation immigrant. He is listed in the family genealogy as "farmer and geologist"; people had their priorities right in those days.

Hiram married Mary Taylor of Russia in 1820, and they had eight children. These are mentioned to set the scene in the Rust household. The oldest, a daughter, died when she was twenty-six. Cecelia, born in 1823, was the family old maid. The third child, a boy died at age fifteen. William Palmer Rust, born October 2, 1826, was the family mainstay and remained a bachelor. Brother Abel was killed at the battle of Petersburg; another brother died at eleven. Cynthia, born in 1837, married but returned to the family house when her husband joined the 117th Regiment of New York State Volunteers; he was killed at Richmond, Virginia, in 1864. Lura Ann Rust was born April 6, 1843. To round out the family, the children of the widow Cynthia were Clarence, born in 1857, and young Jessie, the last girl, who arrived in 1861.

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Like his father, Hiram, William Rust is listed in the family genealogy as farmer and geologist. Father and son sold fossils to Michael Moore, proprietor of the most famous resort at Trenton Falls. William was known as the greatest local collector and had the finest cabinet of trilobites in the state.

William's farm was 172 acres, which meant there were always chores to be done, and even a young lad could do something useful. Family life in the Rust house seemed warm to the boarders. William was twenty-four years older than young Walcott, just about the age of the father he did not have; the word "surrogate" comes immediately to mind.

Walcott came into the limestones of Trenton Falls and fell in love with the fossils. He soaked up all that William could show and tell him about these forms and quickly learned which fossils characterized which layers. Later he recounted:

In a small drift block of sandstone which I found in 1867 on the road between Trenton and Trenton Falls, Oneida County, New York, there is an unusual apparent association of Upper Cambrian (Hoyt limestone) and Ordovician (Aylmer sandstone, Chazy) fossils. . . . When as a boy I found the rounded block of sandstone referred to I broke out all the fossils possible, as at the time I was well acquainted with the Trenton limestone fauna, and the fossils in the block were all strangers to me, . . . The following winter I endeavored to locate the stratigraphic position of the trilobites, but could not, further than they were of pre-Trenton age. (Walcott 1916, 254)

This was an extremely sophisticated observation for a beginner.

Teenage Walcott ended schooling in 1868. The next logical step would have been college, but that never occurred. This is a lapse hard to explain, for the family could afford the cost, even if it meant borrowing from Uncle William; brother Ellis had begun advanced studies before the Civil War. As with all professions, geologists gossip. Reverend A. Brigham, for many years a distinguished geographer at Colgate University, grew up next door to the William Walcott family. He mentioned to a student, who in turn passed along the story, that the family decided early Charles Walcott should go into the ministry. The Hamilton College chair may have been set up to insure a sinecure for the sickly, fatherless youngster. One can almost picture a Victorian melodrama with Uncle William insisting on the ministry or nothing and Nephew Charles responding with geology or nothing.

There was more attraction to the Rust farm than fossils. If the seventeen-year-old Walcott was driving a wagon for William Rust in 1867, the twenty-four-year-old Lura would have been at hand every day, and, to rush ahead, they married.



She was a grown woman a year younger than his sister, but was not his sister. Ancillary to love was family life during the summers at Trenton Falls, along with the opportunity for a young man to develop his muscles. Compare this to boarding in a Utica hotel, talking day after day to Mother and Sister, and college to study for the ministry.

In March 1868, O. C. Marsh, the first professor of paleontology in America, a position his uncle bought for him in 1866 by establishing a chair at Yale University, saw the Rush collection and then visited Walcott (Schuchert and Le Vene 1940). The day before his eighteenth birthday, Walcott wrote Marsh:

You said that you would like a specimen from the Utica Slate when you examined my collection. I enclose the *Triarthrus Beckii*; it is the only Trilobite found here in the slate, there are orthoceras or casts of them filled with sulfide of iron and near two shells; if you wish to exchange minerals for specimens from Trenton and Utica, you will oblige me very much.⁵

The reply is lost, but another letter was written a week later:

I received yours of 31st and in replying cannot send you specimens as I intended. I have had a severe cold and was unable to go in search of fossils. I expect to start next week and take a trip to Trenton Middlevill[e] little Falls and around the different localities where fossils are found, if I succeed in finding any good specimens, and that are duplicates to my collection I will send them to you. The *Triarthrus Beckii* that I sent you I found in Deerfield at the mouth of the ravine on Buggs Creek 1½ miles south of Utica, the slate lies in the bed of the creek that the specimens ar[e] dug from, farther up in the ravine, the slate runs into a brittle brown shale in which I found no signs of fossils after digging half a day. there may be some farther up, I will try again to make sure.⁶

Walcott had problems in spelling and punctuation, but he had a grasp of local geology and collecting. Not much more is known about him from ages eighteen to twenty. At least the second of these years he worked in a hardware store. A love-struck, stubborn youth could well quit school at age eighteen before graduation, when he was a “man.” He would go to work, determined to support himself and marry the love of his life. That may not be exactly the way it happened, but it is a good story and might be correct. In 1871, Walcott wrote a few figures, each accompanied by a date: 1868–790.00; 1869–765.35; 1870–513.38. If these indicate annual income, they support a view of his leaving school for an opportunity to make a lot of money quickly, followed by a year of employment, and a second incomplete year at a higher wage.

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Before his twentieth birthday, Walcott began a daily diary. From 1876, until shortly before his death, he wrote a few lines each day, commonly just noting the principal events of the day, but occasionally recording his feelings; the entries help amplify him as a man, rather than as a machine which in later years ground out publication after publication. Walcott's first record is "At the store of J. C. Roberts during the day. Commenced working there April 15[th] 1869. Ellis at Aunt Fannie, Mother and Josie at the Clarendon. Went to Church & then to the Picture Gallery. Accompany'ed G. W. G. home. Want to be thinking of Friday evening Jan 26, '70" (March 4, 1870).

Perhaps in January Walcott and G. W. G. touched hands or he saw an ankle. As to the picture gallery, bustling Utica now had thirty-five thousand inhabitants. Whether Will and Charles were still living with Mother at the hotel is not clear, but probably at least Charles was. J. E. Roberts & Company, long since vanished, was a large hardware store located at 49 and 51 Genesee Street.

The next day, Walcott recounted he paid the astounding sum of \$1.75 for the little diary which would easily slip into his pocket. He prepared a Sunday School lesson and taught for the first time, thoroughly enjoying the experience. Religion always played a role in his life. He was a staunch Presbyterian, though that may be a redundancy, but never had personal relations or scientific investigations influenced by religious beliefs. A listing of goals early in the diary gives insight, even if punctuation and capitalization were still developing:

1. Govern Temper, Tongue & Conduct.
2. Think about, Life, Death & Eternity
3. Wish for Health, friends & a cheerful spirit.
4. Pray for Faith, Peace & Purity of heart.
5. Contend for Honor, Country & friends.
6. Love. Courage & Affection.
7. Admire. Intellectual power, dignity & gracefulness.

Today these still may be values one strives for, but almost no twenty year old keeps a diary, let alone writes such remarks. It was a different time. One of the most difficult tasks for anyone interested in history is to keep from using the present day to interpret the past.

Consider the hardware business. Few places exist today where one opens a wooden nail keg to weigh out six pounds of ten-penny nails. Bridles and horse collars were common and light bulbs nonexistent. Walcott opened the store be-



fore 7:00 A.M. and faced at least a twelve-hour day. It was boredom without customers and hard manual labor when they came. There was no beginning or end, and the only tangible result was money. Even on Sundays he had to stop by to ensure that all was well at the store. For this he was receiving \$41.80 per month.

“Weather very stormy. No business during the day. Closed store at ¼ of 7. P.M. After dinner called on Hattie L. Came home and wrote L. A. R.[ust] Retired at 11. P.M. All well” (March 16, 1870). “Same old story. W. L. W. came after me help him out of trouble, did so. He promised to leave town & behave himself. Hope he will” (March 19, 1870). There is much human drama in the middle brother asking his younger sibling for help, probably as a loan, and likely not the first one.

A reply from Lura Ann Rust came six days after Walcott wrote her, and he arrived for a two-day visit at the Rust farm. Back in Utica, Walcott “Opened store at 6:30 A.M. Birthday presents from Mother and Josie. Studied geology in evening” (March 31, 1870). Walcott helped organize a baseball team in April when spring finally came. “Weather pleasant. Last day of my first year in business. Have liked it very well. Have had no trouble with my employers & all seems satisfactory” (April 13, 1870).

All was not satisfactory, as three days later Walcott had a severe headache and stomach pains. He was often ill; how much was psychosomatic and how much was real is not important. Electric battery treatments were then in fashion, and Mrs. Shepard doctored Walcott with charges. She did not kill him, and he thought the treatment helped; perhaps the thought was therapeutic. Still, it was a week more before Walcott was strong enough to go out.

Two days later, young Walcott took a major step: “Told Messers J & R & Co that I could not work any longer for them. Decided to go to Trenton Falls & recouperate [*sic*]” (April 28, 1870). Late on Saturday afternoon, two days after his decision, Walcott was in the Rust farmhouse. Monday he took the first step in his life’s work: “Practiced writing an hour in the morning. In afternoon went down to Gray’s brook to dig for fossils. Found a fine specimen of *Lepetaena a*” (May 2, 1870). Gray’s Brook, unnamed on any current map, forms the eastern edge of a golf course and meanders south behind the Rust house in a steep valley.

“Went trilobiting on the brook. Found a specimen or two” (May 4, 1870). “Tried the brook again found a fine *A. gigas*” (May 5, 1870). In fishing terms, Walcott was hooked. He did more digging for fossils, both on the brook and at

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Prospect, New York, two miles north on West Canada Creek. Walcott helped William plant corn and build a fence, and walked in the woods with L. A. R. It was not until the second week in June that Lura is mentioned by name. The urge to collect fossils was strong, but Walcott was young and had other equally strong urges.

He hoed corn, watered the garden, and drew stone for the lime kiln. The idyll was broken in mid-June when Lura became ill. It was so serious that Walcott went to Utica to bring a doctor. He took the doctor home and brought sister Josie to nurse Lura. After a week, she was seemingly on the mend, but this was only the first of many subsequent similar events.

Lura being better, Walcott could go back to picking berries, weeding, and geologizing. He returned from a quick trip to New York Mills, in time for a visit from Prof. S. G. Williams. Prof. Williams was a favorite correspondent, but none of the letters have survived. Williams moved to Cleveland and then back to New York when he joined the faculty of Cornell University. He wrote a book on geology, but made his name as a teacher of pedagogy.

Between planting and harvesting, William Rust had time for an occasional day of fossil hunting, along the brook and in Poland township. Brother Ellis came for a few days and somehow the summer flew by. "Dug on the brook all day. Found several handsome crinoids" (August 16, 1870). Crinoids are rare today but exist in tropical seas and deep water localities. These "sea lilies" consist of a long stem, a cup, and arms extending from the cup edges. They are related to starfish and like them have a fivefold symmetry.

Walcott went to Utica to see his family, but also to call on Colonel Jewett; he may have wanted to tell him of the crinoids or seek more information on the forms. "After dinner Ellis called with Patterson. J.E.R. & Co. do not wish me to work for them. Ellis said goodbye as he leaves for St. Paul Wednesday" (August 27, 1870). So the hardware prospects in Utica were closed to him, and his older brother was leaving. Walcott returned, helped cut corn, fixed a gate, made a flower stand for Lura, and went off to Utica again briefly.

After another quick trip to Utica Walcott helped repair fences and corncrib; Sunday he was down at the brook collecting. He sent off a box of fossils to Professor A. H. Worthen, the state geologist of Illinois and another favorite correspondent. There is no trace of Worthen-Walcott correspondence, but a few remarks in the diary suggest that they exchanged specimens several times.

E. William Simpson, born in the area in 1864, recalled that in his boyhood days "Charlie' Walcott the tall red-headed youth who lived with the Rusts and



later rose to prominence as a geologist, was a familiar figure as he strode through the fields with a hammer, cracking rocks in an effort to uncover some rare fossil. And it was Simpson who wandered into Otis Borden's novelty shop to catch the Trenton Falls 'expert' manufacturing trilobites out of plaster of Paris" (Thomas 1951, 166). Like the cows, tourists were a valuable resource to be milked.

Fall comes early to the fringes of the Adirondacks, and tourists leave, taking the stimulation they provided. Fall is also a busy time on any farm. Walcott helped dig potatoes, husk corn, and pick apples. The first Sunday in October was the first time Walcott went to a church that season. Country folk were just as religious as city folk, but they were busier. Cows must be fed and milked every day, including Sunday.

After several days in the Rust stone quarry, he went to Utica for a family wedding. Walcott saw Colonel Jewett and R. P. Whitfield, assistant to James Hall, state paleontologist. He took a couple of field trips in the Utica area to build up his collection. October 27 he was back on the brook breaking rock, the day before the first snow. Then he was building fences and threshing oats. Farm work may slow at times, but it never stops.

Walcott's career nearly ended with an attempt to prepare fossils by softening the limestone matrix: "Worked on the fence in the morning. After dinner placed a piece of rock in oven with caustic potash on it. Took it out in about 15m when it exploded throwing fine rock & potash into my eyes. After suffering for an hour the rock &c was removed & am doing well. Cannot read &c" (November 4, 1870). It is a wonder that he was not blinded.

That fall, the Democrats carried the state. After the election Walcott painted the barn, dug stone, helped plow, built more fences, put down a carpet, and put up a stove. Late in November the weather turned warm and he got in a day collecting on the brook. Mother was ill, so the first week in December Walcott was in Utica; Colonel Jewett was also pleased to see him.

Walcott returned to the farm to help butcher a cow and a pig, a long way from a city lad working in a hardware store. He wrote Elkanah Billings, paleontologist of the Geological Survey of Canada, and unpacked fossils sent by Whitfield. The farm Christmas was quiet, and 1870 passed away without comment.

"Read the Bible & Survey of Illinois after dinner. Retired at 9 P.M. with a headache" (January 3, 1871). Throughout his life, Walcott kept his science and kept his religion without conflict; the headache was coincidental. Several obituaries paint a glowing picture of farm life with a few chores and the rest of the time for study, but that was not true. Walcott wrote to his cousin Asa Pettibone

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in Indianapolis indicating that he would like to work in a hardware store at six hundred dollars per year. Eight long years later, when he obtained a position with the federal government, that was his salary.

Next on the agenda for the new year was a raging toothache. Walcott had a session with a Utica dentist and returned to find William laid up with a bad ankle and Lura ill. Duty called, so Walcott chopped wood, sawed it up, fed cattle, milked cows, and worked around the house; so much for leisure. Then he read aloud from T. H. Huxley's *Lay Sermons* to the incapacitated.

The extreme cold sent Walcott back to the dentist to have the tooth filled. He developed a cold which Josie nursed. He played chess with friends and went to the dentist for another round. Walcott returned to the farm and examined the fossils Worthen had sent him.

It was Walcott's turn to take sick. "Lura is a kind & watchful nurse. She is hardly able to get about yet is about me most of the time" (January 23, 1871). He and Lura decided they needed a home of their own: "There is considerable feeling with the older sisters. Lura has 29 acres & a small house which if repaired is good enough for us to live in & we can live in peace & Lura will not have to overwork & I can have a chance to live & enjoy health. Shall move" (January 27, 1871). Imagine the two men with Cecelia, Cynthia, Lura, and two children snowbound for weeks. It almost made the hardware business seem good.

Walcott was realistic enough to note that nothing could be done in his personal life until next fall at the earliest. Lura fell ill again, and Walcott tried to cheer her with plans for a house they might build some day. The cold persisted and the next chore was to fill the ice house. Walcott helped draw wood to the lime kiln and cut fence posts, but he had a weak back and was not the ideal hand to assist William. From Canada, Billings wrote that the fossils "sent him were not worth the express. I think he is playing sharp" (February 12, 1871).

William bought an ax for Walcott, cost \$1.50; "I shall try to learn to chop" (February 14, 1871). Walcott noted he had 325 fossil species labeled and packed away. He cut several trees along the banks of the brook to increase the spring flow and wash away dirt. There is more of a personal nature: "Wrote to mother about my future plans. Hope that mother will help me although I have said to the contrary. Pride & strong wilfulness often does more damage than good" (February 19, 1871).

Walcott was finally better and drove to Utica, in part to send fossils to Whitfield and Worthen. His last entry for a day mentions he gave Lura an engagement ring. "Lu's ring excited considerable curiosity. Fannie Millar returned me



my letters & picture. Shall do the same for her. Very foolish I think" (February 22, 1871). Marriage was a big decision for a young man with no money and no prospects, but the decision had been made.

Walcott wrote Billings to return his fossils, but when books arrived from Canada, he decided Professor Billings was honorable. He finished reading Huxley, commenting that points on common sense were overdrawn, and started reading Darwin's *Descent of Man*.

The snows were melting, and he found a couple of trilobites along the brook, but with further hunting he became ill with neuralgia from standing in the cold water. William found a starfish, a rare fossil, but afterward he too became sick. Lura was ill once more, as was her older sister Cecelia. "Lura some better. Wm ditto. I am rather blue as the pain has gone to my old spot the small of my back. Fear it will be some time before I get over it" (March 14, 1871).

Tension among the sisters was so great that Walcott repeated the thought of living apart. He fixed the fence and gate at Lura's place, but the house was a wreck. Somewhere he found the names of persons in St. Paul and Boston with whom to exchange fossils. Exchanges were like stamp collecting wherein one trades the local stamps for those from other areas. Still, spending time on fossils was an escape from reality. "Lura & I had a talk over our future. I shall want about \$375 to go to housekeeping &c. Do not see where it is coming from" (March 22, 1871).

The first wildflowers bloomed, a sign that spring was not just a day on the calendar. The next day, after a fruitless day on the brook, he found two new species of trilobites—a tonic to the spirits—before he left for Utica. Mother and Josie were well, and Walcott bought his own copy of Darwin before going to see Uncle William in his lair, concerning an offer to go west. "Think the inducement offered by Uncle Wm not sufficiently strong. I wrote up to him declining the offer" (March 30, 1871); Walcott's prospects were not improving.

2

Rust Farm: Cows and Collecting / Tilling and Trilobiting (1871–1876)

I have secured the fine collection of Trenton fossils of Mr. E. [sic] Walcott of Trenton Falls. It is particularly rich in trilobites. Mr. W. called my attention to one which he was confident would settle the one only question of the presence or absence of legs in trilobites. And truly there can be no doubt left upon this point.

—Louis Agassiz, 1873

IF ONE KEEPS A DIARY, twenty-one is a fine age to write noble sentiments. Unfortunately, Walcott's eyes failed him and it was two weeks before he left Utica. At the farm, Lura was better and his eyes improved, but then several family members became ill at the same time. Suddenly Lura was so sick a doctor was called, an extreme measure for country folk. "Commenced at 6 A.M. to run about waiting on the sick &c. Clarence ill from overwork. Cecelia lying quietly" (April 14, 1871). "Feel blue on account of health & dubious prospects but hope for the best" (April 15, 1871). Lura improved and moved to the couch, and Walcott prattled about future plans—anything to raise her spirits. Sick or well, farming must be done: "Out planting potatoes back of the barn. Wm sowed oats. Measured up a load of lime. Do not like the business. Lura not very much on the gain. She is worn out. Wish I could help her" (April 18, 1871).

Walcott cut up seed potatoes; each piece had to have a sprouting eye. While William and young Clarence sowed grass and oats, he stayed with Lura. He escaped the house for fence mending at Lura's place. "Think I was never in such a fix as I am now. Do not see my way out. Hope that all will come out right. Health is the one thing to be desired" (April 21, 1871). Dr. Guiteau came again to see Lura. Walcott sat with her most nights; days he slept in nearby houses to



get some rest. Though the weather was good, Lura grew steadily worse. The doctor returned, Lura sank further, but she suddenly rallied and a dark cloud lifted.

“Dug fossils on the brook all day. Found *Ceraurus pleurexanthemus*, *A. gigas* & several crinoids. Shall dig a month as mother said she would give me money to pay my board. Lura better. Set up 1½ hours in afternoon. Found that I have one rare Trilobite unnamed” (May 1, 1871). Intermixing of intimate details of life with scientific results was characteristic of Walcott’s diary. He covered his better digging spots as William warned him of visitors coming to collect. In a few days, despite rain, he was back at the brook with Charles Haskell from Holland Patent, a hamlet west of Trenton Falls; Haskell will reappear.

The month moved on with collecting and packing away of specimens. In mid-May he withdrew money in Utica for a collecting trip. Walcott went south to Madison College, now Colgate University, at Hamilton, New York. He had a letter of introduction to A. S. Bickmore, who taught natural history, prior to becoming first director of the American Museum of Natural History in New York City. Years later, Bickmore wrote: “One of his first trips as a student of fossils was to Colgate University. . . . Young Walcott was such an enthusiastic lover of geology that we immediately became fast friends.”¹

The rocks around Hamilton are crowded with fossils. These Devonian-age shales are younger and differ in composition from the Trenton Falls limestones. In a quarry east of the college, Walcott collected specimens of twenty species new to him. The next day Bickmore drove him to west to Cazenovia for another orgy of collecting. He spent his third day in a quarry to the west of Hamilton and ended up with sixty-two species for his collection. Back in Utica, Walcott tried and failed to obtain a position on a surveying party; nothing was working out for him.

Mother and Josie determined that he should accompany them to Jackson Falls, New Hampshire; a reasonable surmise is that Mother wanted him off the farm and, especially, away from Lura. He went to Rust farm to leave fossils and collect his clothes: “Found Lura better than when I left. . . . Trees leaved out apple trees in blossom & everything looks bright” (May 26, 1871).

Travel in the 1870s left much to be desired, particularly if one did not follow a main route. The Walcott entourage departed Utica on the 6:15 A.M. train. Three days later they were at their destination, changing trains multiple times, taking a ferry, and, finally, a stage. After all that, the fishing was poor at Jackson Falls: “The Falls consist of a large amount of granite & a small amt of water” (June 3, 1871).

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Apart from attending the Baptist church, Walcott collected a few minerals and partridge eggs. Writing letters on birch bark was the local thing to do; Walcott sent several to Lura. Mother did not like the place and moved her brood to Conway North. Walcott read, played cribbage, squired the ladies to Echo Lake, and climbed Mount Kiarsarge, the local thing to do.

Walcott missed church because of a sore foot; "Foot about as aggravating as possible" (June 19, 1871). He reread the first chapter of *Descent of Man* and noted he would have to go over it again to understand. The trout fishing was better, and he went to the other side of Mt. Kiarsarge to fish and geologize. The "intervale" provided a place to dance in the evenings, and Walcott made use of it. Lura was not there, but other young women were.

Walcott celebrated Independence Day in Boston with Ed Hurlburt. They exchanged fossils with a local enthusiast and left to see the Museum of Comparative Zoology and call on Louis Agassiz. The Boston Museum of Natural History, where Alpheus Hyatt presided, was their final stop; for these two young men, it was a most satisfying day. Walcott went west to Albany to visit R. P. Whitfield, who showed him James Hall's collection. Whatever Mother might have been trying to convey on the vacation vanished with the sight of so many museums with so many fossils.

"At 7 am started for Trenton Falls. found Lura better & also all the family. Am glad I am back. Trenton Falls is as good as place to live in as I have seen. Talked with Mother about going to school again. Dislike the idea after thinking it over" (July 8, 1871). Walcott helped with the haying; the work went so well that he and Haskell stole off to fish. Next it was time to hoe the corn. On Sunday, Walcott "Wrote to Josie about marrying Lu in the Fall &c. Hope that she will take a fair view as I dislike family fuss" (July 16, 1871).

"William & I spent most of the day on the brook. I found 6 *Wm* 4 *Asaphs*. Think we have found a school" (July 22, 1871). "Letter from Mother. Sorry that it was written. Wrote to Mother. Did not ans[wer] her letter & never shall" (July 23, 1871). This is life imitating soap opera, the concern of a doting mother for her youngest, ensnared by a sickly older woman without money.

Needed rain came, a blessing to the farmer, but the sun soon shone so that haying could continue, another blessing to farm folk. Ed Hurlburt came out for a day of collecting on the brook; Walcott vowed to his truest friend that he would wed Lura in the fall or winter. A nice farm was offered him by Mr. Traylor, but he did not even have the prospect of a down payment.

Lura was finally better; Walcott, and occasionally William, spent a few days collecting along the brook. "Went blackberrying in the morning. Clarence took



berries down to Mr. Morris. Selling berries to buy clothes with is a new thing for me. But I commence to learn to live economically & earn the best way I can. Provided it is honest" (August 11, 1871). A day fossilizing and it was back to blackberries, eleven quarts. Fence posts were cut and sixteen quarts of berries picked. Attending church was a relief.

The month rushed by with more posts cut, fences repaired, and another sixteen-quart day among the blackberries. Picking berries is not so romantic after the first few are eaten. William bought thirteen sheep and took Walcott along to help move them. In a fall lull, Walcott and William geologized at Cold Brook, Poland, and Rathbun Brook. To a few paleontologists, they are the best places in the world to visit.

"Cut corn with Uncle Hiram all day" (September 11). "Very lame & sore from yesterday. About the house all day" (September 12, 1871). "Worked on the brook in the morning. . . . called on Dr. Guiteau. He advised me to go to Ann Arbor if I wished to study medicine & remain 4 months & the return & read in his office" (September 13, 1870). "Wrote to mother telling her that I should like to study medicine, and that I needed help, about paying my way" (September 17, 1871). Lura left for a few days with some friends: "Lu & I sat in the old rocking chair and bid goodby as lovers always do" (September 22, 1871). Mother's reaction was exactly as one would predict in a Victorian melodrama—she would support her son if he would forego marriage. Walcott declined.

Between corn husking and potato digging, William and Walcott enjoyed a day prospecting north of Cold Brook. Because of lateral changes in the strata, combined with minor upward or downward movement on vertical faults, a collector cannot predict what fossils might be discovered at a new place. Next, it was time to bring in pumpkins and pick apples. William sold the last of the lime, which meant the kiln had to be cleaned and refilled with broken rock. With Lura away, this made October dreary. Walcott collected fall leaves, dug on the brook, and, to keep historic perspective, received a letter that Chicago was burning.

As a poor but enterprising young man, Walcott traded fossils for thirty dollars worth of photographs and hung them in his lady love's room before going off to Utica. The main reason was the trip was several sessions with the dentist. These were the days of nitrous oxide and drilling with a foot-powered treadle; slow drilling makes for heat and more pain. Walcott saw Colonel Jewett, started work on a geologic map of the Russia area, and wrote letter after letter, probably looking for work.

Over the years, the story of people's lives become blurred when an incident is reworked by several obituary writers. "In 1868 he left the Academy and dur-

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ing the following two years was a clerk in shops. In 1871, at Indianapolis, he met the state geologist, Professor E. T. Cox, who restimulated him to take up the study of paleontology, which had been dear to him since his fourteenth birthday, when he found his first fossil” (Schuchert 1927, 455). Walcott was at Trenton Falls for more than a year before Indianapolis was mentioned. Further, he was stimulated toward paleontology long before meeting Cox; the presence of a skilled collector, like William, keeps one stimulated.

“Received letter from Mr. A. G. Pettibone telling me that a situation in Indianapolis was open to me. I wrote that I would come on immediately as soon as I could get things together” (October 30, 1871). Walcott hurried to Russia, packed, and said a sad farewell to Lura. At Indianapolis, Cousin Asa met him and Cousin Libbie took him to her boarding house. Obituary writers, trying to make a good man better, mention a fine business opportunity which Walcott declined to pursue his career in paleontology. A nice touch, but not true.

Monday, Walcott was in Hildebrand & Fugate’s hardware store. He was no longer used to this kind of work and his feet hurt. A tooth started aching and got steadily worse. Friday night, he admitted crying himself to sleep: “Feel dubious about my success as a hardware merchant” (November 10, 1871). By the next Monday, Walcott had his own room and life was not quite so grim. He made a few sales, but more important, he met Professor Cox. “At the store 14 hours. Cannot stand to work so hard” (November 18, 1871). “At the store. Worked steadily. Feel I cannot stand it during the winter. The weather is so disagreeable” (November 21, 1871). He wrote Lura he would be returning soon. Another turning point in his life was reached.

Cox allowed Walcott to copy drawings of trilobites published in Prague by the paleontologist Joachim Barrande, and they discussed his returning next summer as a geological assistant. Cox gave him some Silurian fossils, intermediate in age between those at Trenton Falls and the Devonian at Hamilton, New York. Hildebrand & Fugate gave him half a day off for Thanksgiving.

Walcott told Cousin Asa he was leaving. “My month at the store was up today. I talked with Mr. Hildebrand, he said he wished me to remain, he was satisfied with me. I told him I must return for the present at least. Called on Cousin Asa & told him I was to be married &c. Called on Mr. Thurston to see his cabinet” (December 2, 1871).

Lura was delighted to see Walcott, and he reciprocated the sentiment. For two days the returned lover was happy, until a headache took him out of affairs for three days. William became ill, and it was midmonth before Walcott wrote Hildebrand & Fulgate declining their offer. At winter’s official start, December



21, the temperature in Russia was twenty-six below zero, about as cold as it gets in the namesake country. The cows had to be taken care of, but otherwise it was too cold to be out. Fussing over the Devonian fossils kept Walcott occupied.

Christmas was quiet; Walcott made few presents and received fewer. He went to Utica to attend the wedding of Miss Campbell, daughter of Uncle William's partner. As might be expected, it was a glittering affair. He saw Colonel Jewett and went to New York Mills to discuss finances before returning. Lura and a girlfriend worked on dressmaking; Walcott worked on firewood. 1871 began and ended on a Sunday: "Attended church at Trenton with Wm & Clarence. The old year goes out with a thaw & rainstorm. Altogether it has been a year of haps & mishaps but I am better than I was Dec. 31 1870. Physically & mentally & hope morally" (December 31, 1871).

On New Year's Day, Charles visited Mother and Josie and found them well; Mother gave him a Webster's dictionary and presumably assurance that she would attend the wedding. She could not prevent it, and to refuse might have meant a break with her headstrong son. Wedding preparations went on between the chores of sawing wood and tending livestock. Walcott took time to look at his Devonian fossils, perhaps to soothe bridegroom nerves.

"Can hardly think that that which I have waited two years for is to be. I have passed through" (January 6, 1872). Sunday, Walcott was at church, and Monday was another farm work day. "It seems strange that I am to be a married man. Such is life" (January 8, 1872). "At 11. A.M. Rev. M. Millard of Hol. Patent united Miss L. A. Rust & C.D.W. At 2 P.M. Wm Ellen & co. started for Rome. Reached there at 5 P.M. Present at the wedding Mr. & Mrs. H & N Rust, Cecelia, Cynthia, Jessie, Clarence, Mother & Josie. All well" (January 9, 1872). If there were comparisons between the Campbell wedding two weeks earlier and this gathering, Mother and Josie kept them to themselves.

The newly married couple spent the evening with the Gray family near Rome, New York. The next day Walcott was out with George Gray fox hunting, but there was "nary a fox," and he stopped to see mastodon bones, a clue to Lura that her loving husband never forgot science.

The Walcotts took the train to Syracuse and the road south to Rouseville, Pennsylvania. This was in the Oil Creek Valley during the great petroleum boom. Fortunes were made and lost where the oil was produced; it was exciting, though hardly the place for a honeymoon. Walcott looked at oil wells, climbed the hill near the house, and managed to sprain his ankle, which laid him up for three days. That provided time for letters, including one to Joseph Henry, secretary of the Smithsonian Institution.

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"I am desirous of obtaining the Smithsonian Reports, as far as possible. I am interested in natural science, and have a large collection of fossil from the N. Y. rocks. As there are so many valuable papers in the reports I wish to obtain as many as possible. *Col. Jewett of Utica, Prof. A. H. Worthen* Illinois, Prof. Whitfield Albany will certify to my wishing them for practical use." After a respectful close, Walcott wrote on the back of the page: "I am now in the oil regions. Is there any sound treatise upon the subject of oil wells &c. Are fossils desired in the collection (Trenton limestone mostly)."²

Another letter went to O. C. Marsh of Yale, who four years earlier had examined Walcott's fossils in Utica: "Jan 11 I visited a farmer who has dug a number of large bones (probably mastodon) from a muck hole of which he has cleaned one half. From his description of the bones in the position in which he found them I judge the head and other portions still remaining buried. . . . I shall return to Trenton Falls by Feb. 1st where a letter will reach me. Will such remains be of any value to the cabinet."³ These two letters show that Walcott was not shy in writing to senior scientists.

He hobbled to church on Sunday and after a few more days went overnight with an acquaintance to Foxburg and Petersburg. "Spent the morning visiting oil wells & coal mines. First coal mine I was ever in. Do not think I should enjoy living in one" (January 25, 1872). Back at Rouseville, he and Lura were around the house for several days. She became ill and they missed church. Then Walcott took sick, which changed their plans to return home. After the second day, a doctor was called: "He is my idea of a stylish Doc. Sat six feet from [me] looked a minute. Wrote prescription took his pay & left. I took his medicine. Cola" (January 30, 1872).

"We are sorry that we have to remain here as our visit has been long and we are causing work" (February 2, 1872). Lura actually did receive a more traditional honeymoon of one day, for they went from Rouseville to Niagara Falls. The couple spent the night, drove across the bridge to Canada, and then caught the cars for Utica. When they finally arrived in Russia, they had been away for five weeks and three days, far longer than planned.

Walcott again wrote Marsh about the bones near Rome: "The owner is a close man and will not part with them unless paid. What would you consider a fair price for them. I have never bought anything of the kind and should like to be posted."⁴ He also mentioned hearing there were no Trenton fossils in the Yale collection and offered to trade fossils for literature, especially the works of Barrande; the reply is lost.

There had been a great deal of snow, and it was followed by more. "Storm over. A light snow falling all day. We get up about 8. am, eat breakfast at 8½, do



the chores, saw a little wood, read &c. until 9 or 10 P.M. & retire" (February 15, 1872). Walcott began to compile a list of fossils from the Utica Slate, as the unit was then called, and the Hudson River Group. The weather broke, which meant three days of outside chores.

At a lull in farm work, Mr. and Mrs. Walcott went to Utica and had a congenial visit, a sign that Lura was part of the family. It was back to the farm chores; on Sunday, the roads were too bad for a trip to church. Walcott wanted to pursue chess, but there was no one to play with. "Very cold. high winds. Worked at fossils. Packed up those I had out. Have 965. 417 species ready for cases. All well" (March 6, 1872). Walcott sent a collection to Ed Hurlburt and another to one of his correspondents.

In mid-March, Walcott went to Utica and saw Uncle William about buying land; he returned the next day to speak with the more sympathetic Mr. Campbell. "After dinner went up to the mills. Met messrs W. & C. Drew \$800 from the estate making \$1000 drawn so far" (March 25, 1872). That Sunday, Walcott recorded his birthday thoughts: "I am twenty two this day. Am living in the Town of Russia, Herk. Co., N. Y. with my wife's family. Intend to study geology and farm a little the coming year. Am in fair health Lura not very well" (March 31, 1872).

He moved the couple's bed to the cabinet room where collections were displayed, and the former bedroom became a parlor. "Painting most of the day. Find it disagreeable work" (April 2, 1872). Walcott purchased six and a half acres from William for four hundred dollars, as there was every indication that Russia township was to be his home indefinitely. He put lime on his acres and assisted William and Clarence with manuring. For those not familiar with farm work, this is exactly what it sounds like. Walcott helped draw eleven loads out of the barn to put on his newly acquired land. He doctored a sick cow and put up pantry shelves.

"Mr. Moon & son Cha's called to obtain fossils for Prof. Newberry [Columbia School of Mines and state geologist of Ohio] to describe. Rather friendly to Newberry but not to Wm & I" (April 21, 1872). Walcott was lame from shoveling manure, but farm work had to go on. In the Adirondacks, spring and summer are too short to permit any delay in preparing the fields. The fields were frozen near fence lines, so plowing began in the center. The last Sunday in April William and Walcott went to the creek for a bit of fossilizing, but snow banks blocked them; at least the wild flowers were out. With the manure moved, it was time to draw stone to the lime kiln—twenty-eight loads of stone in two days. On occasion hard work is rewarded. "Found the most perfect *C. Senaria* I have ever seen" (May 1, 1872). Three days later, the young couple finally had a meal alone upstairs in their own quarters, another reward for hard work.

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Throughout May, Walcott farmed with only one day for collecting. It was planting potatoes, oats, and corn, and then manuring the fields and mending fences. Unexpectedly in June, brother Will visited: "He is west selling musical instruments. Never saw him looking better. He has a young boy so I am an uncle" (June 7, 1872). "Spent the day at Utica. Mother leaves for the east tomorrow morning. She needs the rest from dull boarding life" (June 13, 1872); that was worse than farm chores.

Walcott spent time breaking stone in the quarry to fill the kiln. He found a partner and decided to go into the wool buying business, but there was not enough to make it worthwhile. He decided to try it on his own. Back at the farm, dreadful heat led to a great storm which knocked down half a mile of fence. "Worked at fences until noon & then went trilobiting, had good success" (July 4, 1872). Walcott hoed corn, went in partners with William on a horse, hoed more corn, fixed fences, and milked. He did have two days to collect before it was time to start mowing. Cattle moved in and ruined five acres of his crops because of poor fences.

By now it must have become evident to Walcott that one could either farm or geologize, but a body could not do both. He wrote to Marsh asking the cost of a three-year course, though obviously he had no money.

The mastodon bones I have not been able to obtain, as some person has told the farmer they are worth \$2000 and he says he have that amount for them.

Do you wish to make any addition to the suit [*sic*] of Trenton fossils if so send me a list of species wished & I will send such as I have in duplicate.⁵

This letter was hardly more than a pause in the endless chores.

"Worked at fence all day. Very tired at night. Lura is gaining flesh. Looks better that she has in two years" (July 27, 1872). Walcott was not feeling well, but knew the cure. "After dinner went down on the rocks & blasted out rock. Did not find any fossils" (July 30, 1872). Walcott finally finished his work on the fences, for the time being, but oats had to be cradled and bound. Even the short time he had for collecting on the brook yielded little. During the dog days of August, William and Walcott geologized several afternoons with indifferent results.

General Grant & Horace Greeley have been nominated by the opposing political parties. Grant by the straight Republican & Greeley by a colalation [*sic*] of dissatisfied republicans, Democrats &c. Think I shall vote for grant [*sic*], as the party he represents is to my idea the one to which the government should be trusted and from his former course I think he will carry out the laws as a president working for the interests of the nation should. His op-



ponent in my judgement is not as well fitted for the office and his political support is not as strong on the principals of national unity, finance and true reform as that of Grant. (August 17, 1872)

“Drew a load of wood from the falls & worked in the stone quarry in the morning. Cut wood after dinner” (August 31, 1872). Corn and more corn was cut. A small dairy farm growing feed for livestock is about as close to a perpetual motion machine as has ever been developed in America.

Apart from several days collecting, in September there was another entertainment: “At 3. P.M. Cynthia, Jessie, Clarence, Lura & I went to the Methodist camp meeting. I did not like it myself. Think that religion is not helped by such ways of propagating it” (September 8, 1872). “Prof. R. P. Whitfield & son called. He was pleased with the fossils” (September 14, 1872). Walcott hauled lumber, built a potato bin, dug potatoes, churned butter, and found a new fossil snail at the brook. The family went to the Trenton fair, which Walcott characterized as more of a horse trot than a fair. “Drew in corn stalks & pumpkins and finished my fall harvesting except apples” (September 24, 1872).

Walcott took Lura to Utica, where he ended his wool-buying efforts. Early in October, Mother and Josie reciprocated and spent several days at Rust farm. They left, and apple picking season arrived, during which Walcott had a fall. “My knee still confined me to the house. Worked at fossils. I have 8 species crinoids, 4 star fish & 2 cystoids from the Trenton &c up to date” (October 11, 1872). Next it was digging a well and chopping wood for the winter. The end of October he went back to fossil collecting. In early November, the water must have been icy cold and the working conditions along the brook simply brutal. One day of that and it was time to run the thrashing machine. William ended up with 130 bushels of oats and Walcott with 36, not too bad for a beginning farmer.

“Voted for U. S. Grant for President and General Dix for gov. Went to Utica at 3 P.M. Met Ellis. He seems in better health” (November 3, 1872). Not unexpectedly, Grant won; more unexpected was a letter from Mother that Ellis was to be married. Lura and Walcott overcame headaches and went to Utica. They bid farewell to brother Ellis, who was off to St. Paul with his bride. Back at the farm, Walcott transformed himself into a carpenter and repaired cellar windows. “Thanksgiving day. Lura & I ate dinner alone” (November 28, 1872).

Walcott noted that snow had possession of Russia. Ed Hurlburt visited bringing a box of fossils, an exchange from a collector in Pennsylvania; both agreed the material was not very good. “Assisted Wm drawing wood. We had a hard job. I hurt my knee & Wm is about sick” (December 6, 1872). Walcott packed up fossils to sent to their correspondent, mentioned that all the snow

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made for fine sleighing, and got on with drawing in the wood from the wood-yard. "Sawed wood, worked at fossils &c" (December 14, 1872). Walcott returned to Utica and went south to Clinton, to see Professor Root at Hamilton College. The reason was not stated and the attempted meeting failed; a guess is that Walcott was exploring another option for higher education. "Worked at fossils until 10:20 A.M. and then outdoors all day. Shoveling snow, sawing wood &c" (December 21, 1872).

"Merry Christmas. Nice presents from Mother & Josie. Worked at odd jobs &c. All well. Cold. Cold. Cold & Happy" (December 25, 1872). A visit William and Walcott had sought for months finally transpired. "Prof. J'as Hall examined Wms & my collection of fossils says they are the best in the country" (December 29, 1872). Walcott took Hall to the depot the next day, buoyed by his pronouncements. "Worked on fossils all day & at chores. Am better in health & wealth & I fear not mentally or morally but not any worse" (December 31, 1872).

New Year's Day came and went. "We have been married one year today. If all years of married life pass as smoothly we cannot but be thankful. Our ties are stronger than a year ago. I hope by another year they may be stronger and that Lura may have a vigorous health. I am well but she is not. Strength seems to be lacking" (January 9, 1873).

Day in and day out, chores were a given on any farm, hot or cold. Walcott helped William draw logs to the sawmill, learned how to doctor chickens, and filled in time by extending his correspondence. "Did chores, studied a little latin &c" (January 13, 1873). "Worked at wood &c. Read a little. Unpacked English fossils" (January 14, 1873). Probably Walcott exchanged with a collector in England, for there is a London address in his diary. "Letter from Prof. Jas Hall & Mr. Hayes N. Y. C. respecting sale of fossils" (January 15, 1873).

With sleighing good, there was visiting between chores. A neighbor with a telescope showed Walcott four moons of Jupiter. Hall sent a package of books. A reform ticket won the local election, with William the new local assessor. The ice house had to be filled. Bowing to practicalities, Walcott rented the house he and Lura might have occupied to some tenants; hope for their own home receded. "Ploughed out the road. Stormy. Lura sick all day with headache. Letters from Prof. Hall & book from Prof. S. G. Williams. No decision about fossils by Prof. Hall" (February 21, 1873). Walcott tried his best to close the sale with Hall:

In yours of the 19th you ask our plans as regards the collections. We wish to have both go to the Museum, as one collection is imperfect without the other. But if the Authorities do not see fit to purchase them, they will be divided



[sic]. Prof. Marsh of Yale College wishes to obtain the Trenton fossils, and parties in New York wrote for general fossils some time since. I have not seen Marsh or written to him since you were here, but the last time I saw him he said I must *write to him* if I entertained any idea of parting with the fossils. I shall not write at present. How long will it be before you will know whether the Legislature will vote the money or not. And if they refuse shall you give up obtaining them.

I am desirous of obtaining books. What are the ones you speak of and what are the prices asked.

Would there be any object in my going to Albany to see any political parties, or is it dependent upon the Action of the Board of Regents.⁶

That is a pretty fair business letter from one not yet twenty-three. Walcott knew how politics might affect science and the problems of obtaining an appropriation.

Even by local standards, this winter was harsh. “Hope for thaw soon. Woodpile low and woods inaccessible” (March 2, 1873). “Letter from Prof. Hall. He has not received any warrant to buy fossils as yet” (March 3, 1873). A cold snap was followed by more snow: “East wind, blustery. Read studied latin &c. I must have a separate room to read and study in or else give up. Application & constant interruption cannot go together” (March 15, 1873). “Nothing but snowbanks to write about” (March 25, 1873). The couple was finally driven to doing laundry, a hard task in the cold. The weather warmed, and more snow came.

“I am 23 years old this day. Am very well. Wht 160 lbs. Lura not well. I have not improved a great deal the past year in my studies, have done more outdoor work. I shall try and make the next year a better one in the book of life” (March 31, 1873). Snow finally began to melt, a good sign, but Hall still had not made a decision, not a good sign. While waiting for word from Hall, Walcott sawed wood and put new windows in the old house. It was time to unload the winter’s crop in the barn—fifteen loads of manure one day, sixteen the next, and eleven on the third. He drew field stone for a fence, and received fossils from the enthusiast in Pennsylvania. Hall wrote again, still equivocating.

In mid-April Walcott finally got to the brook and had success collecting. On a Sunday shortly thereafter, Walcott wrote: “Read & talked most of the day. Wrote to Ellis. Chilly. North West wind” (April 20, 1873). Thereafter is a gap of more than a month in Walcott’s diary before he records calling on Judge Johnson in Utica to see if the sale to Hall could proceed. He bought a load of corn for William the following day, and there is again nothing written until July 7. When in Utica, Walcott received a telegram from Hall that the professor could not meet him in Albany; he was still dodging the issue of purchasing the collection.

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The New York State Museum was one of the few places theoretically able to expend a large sum for fossils. Hall may have wanted to buy, but the legislature had not appropriated funds. William and Walcott were left to dangle.

The lack of diary entries is difficult to explain, but the routine of never-ending farm work probably was too much even for Walcott's discipline. Combined with a sickly wife and the absence of any future prospects as Hall dragged out negotiations, such a life would discourage almost anyone.

Walcott's credit and debit accounts are kept up until September, making the lapse in diary writing even harder to understand. The figures include a ticket to Chicago and payment for an undertaker. Brother Will died in August 1873, and almost certainly Walcott went west to the funeral; it is strange he did not write of this. The only picture of Lura has on its back a date of September 13, 1873. One wonders what was the occasion to take a photograph eighteen months after marriage.

The lack of diary entries is all the more inexplicable, for sale of the fossils moved forward, though not quite as Walcott had anticipated. In early October, he wrote to Louis Agassiz, founder of the Museum of Comparative Zoology (Lurie 1960): "Prof. Hall writes that you wish to purchase the collections of fossils which he was negotiating for. He did not write any particulars, and as I shall not see him I should like to hear from you. Has he written you the price &c." Walcott's business sense was keen and he added a postscript: "Does Prof. Hall see to the packing &c. They were to be delivered at the cars here."⁷ "Here" referred to Trenton Falls depot. Walcott was not negotiating price nor paying freight charges. Agassiz responded positively, and ten days later Walcott sent a letter detailing his collection. There was a scent of money in the air:

Prof. St. John's letter is received. The collection was entirely collected by my brother-in-law Mr. Wm. P. Rust and myself, with the exception of a few western and foreign specimens which are labeled. The locality of every specimen is known, and as far as can be the names attached, except the specimens from the Trenton group, many of which are not described. Prof. Hall wished the collection to "work up" the Trenton Limestone and the specimens were not labeled, but packed with only the locality given to each lot as they were collected within an area of six miles. The original price was \$4000, but as they were to be placed in the N. Y. Museum, \$500 was taken off for a few coal ferns and unlabeled specimens. Prof. Hall agreed to take them delivered aboard the cars here and pay \$3500. He wrote that you had taken the agreement from him and to take the specimens to Cambridge, but I wished to receive written instructions from you.



Prof. Hall and many geologists from Europe and America have pronounced the collection of trilobites and crinoids the finest known from the Trenton Group. 325 Entire Trilobites 190 crinoids 6 starfish 15 or so cystoids and of corals, brachiopods &c. many new species. 175 species from the Trenton and as Prof. Hall said, "It is the best collection I have seen and we must have it." Serious financial difficulties is the reason of his giving it up.

If you wish I will leave here Wednesday with the collection, and go with it to Cambridge. If you will send a telegraphic dispatch to Trenton N. Y. as soon as you receive this and decide as circumstances require that I should know by Wednesday.

I will write a list on the following sheet.⁸

According to some accounts, Agassiz and Hall were close colleagues. Hall may have agreed to buy the collections and when he found he could not, Agassiz came to the rescue. More likely, Hall never had the money, but felt that he could always borrow the specimens from Agassiz, particularly since he got these farmers to reduce their price. Walcott's list is given below:

	No.		
	species		
Birdseye	12	20	
Trenton	175	1500	Russia Herkimer County N.Y.
Hudson River	37	139	Oneida Co., Deerfield
	(21 trilobites)		
Utica Slate	10	72	" "
Medina	3	7	Medina N. Y.
Clinton	16	28	New Hartford Oneida Co. N.Y.
Niagara	34	74	NY & Indiana
Lower H'lb	187	231	Lichfield, Herkimer Co&Albany Co
Oriskany	4	10	
Corniferous	14	24	Madison Co. &c.
Upper H'd	14	19	
Hamilton	103	294	Hamilton, Madison Co & Ithaca NY
Chemung	20	47	Ithaca
Sub Carboniferous	10	18	Illinois & Indiana
Carboniferous	34	39	" "
Cretaceous	80	184	New Jersey &c England &c
From St. Paul, Minn.			
Trenton & Niagara	30	100	

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I have partial lists of the specimens but not complete as to individual specimens. Many blocks from the Trenton have from 2 to 100 individual specimens so that a true estimate cannot be made unless all are unpacked. The above list is the number of pieces of rock holding specimens. Since commencing to write I have received a letter from Prof. Hall asking me to reserve for him the privilege of using for description a portion of the Trenton fossils i.e. to use them from the Cambridge collection when he reviews the Trenton group. That I will leave to your decision.

Genera of Trilobites & No of Individuals entire		
Asaphus	80	species 3 Hall says 4
Calymene	46	" 2
Ceraurus	48	2
Phacops	7	1
Dalmanites	7	1
Illenus	6	1
Acidaspis	21	3
Trinucleus	2	1
Bathyurus	2	1
Undescribed	3	1
"	2	1
Lichas	1	1

100 entire not enumerated of the above genera. The above is made out from a list which does not mention the duplicate specimens—and there are a number of species represented by fragmentary specimens. 17 species in number belonging to the Trenton Group.⁹

The names on the first list are those of rock formations or groups, some of which are still in use. The first four represent strata in and near Trenton Falls. Most of the rest were formations either collected by Walcott or obtained through exchanges.

For many collectors, complete trilobites are the prize, and Walcott made a point of listing them. The rocks at Trenton Falls were buried under a great thickness of strata, now removed. As a result of this burial, the organic matter in the trilobite carapace was changed to a black color. When seen against the light blue-gray rock matrix, these specimens are striking.

The specimens were painstakingly prepared and identified. Considering that this was the labor of Walcott for three years, and William for somewhat longer,



the price is not unreasonable, especially when Walcott was willing to clerk in a hardware store for six hundred dollars annually. Still, for farmers, who saw few dollars any year, thirty-five hundred dollars was a gift from heaven.

Walcott took the collection to Cambridge and spent a week unpacking and arranging it. Memory plays tricks, and years later Walcott recounted that in September 1873 Agassiz inspired him to study trilobite appendages. Unless Agassiz came to Trenton Falls, Walcott had the month wrong. Be that as it may, Walcott found inspiration on this short visit; only two scraps remain of the trip. First, the last published item Agassiz wrote was a short note based on a trilobite in the Rust-Walcott collections (Agassiz 1873). Second, after Walcott's death, Frank Springer, a lawyer-paleontologist, recalled a letter from Walcott about their first meeting in Agassiz's museum in 1873. What a pity Walcott did not keep his diary during the entire year. There is a postscript to the trip, for when Agassiz died December 14, Walcott wrote his widow:

I take the liberty of writing to you as I wish to express sympathy for the loss you have met and also to ask a favor. In the short time I was at your house the uniform kindness with which I was received completely won my heart and when I returned I looked to Professor Agassiz as a guide in whom I could trust and follow. I never knew what it was to have a father; most of my friends were bitterly opposed to my geological tastes. I had always fought my way and when Prof. Agassiz received and treated me as one who was not wasting his life and was doing what was right, he instilled into me an enthusiasm and determination to follow natural history as a pursuit that can never be eradicated.

I am as yet but a boy of 23 years and shall devote the remainder of my life to this one object.

The news of Prof. Agassiz's illness and death came to me as none other ever before. You may wonder at this but it is a true earnest feeling that I cannot express. I have been reading the books you gave me. Everywhere I find this tribute to the Great Mind that created the objects of his study. It is a consolation to think of his meeting the reward which the long life of devotion to truth brings. Much as he is missed we cannot but accept it, and know that the spirit freed from the bonds of the physical nature will advance as it could out here.

I wrote to Prof. Agassiz respecting Prof. Hall's collection mentioning some things which if seen by others, and returned to Prof. Hall might cause ill feeling. I also wrote a few facts about the interior structure of trilobites which I do not care at present to have generally known. If you will be so kind as to have the letters destroyed you will greatly oblige me.¹⁰

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The last paragraph shows Walcott had taken his first steps toward study of the biology of trilobites. It also hints that Hall could do Walcott harm. He was to figure prominently in Walcott's budding career. Hall's action or inaction in regard to purchase of the Rust-Walcott collection, combined with stories he had heard, cautioned Walcott not to trust that man too far.

In view of Walcott's indication of inspiration from Agassiz, it is not amiss to remark on what William Rust taught him. Before he came to the farm, Walcott was an enthusiastic collector. However, William must have shown him subtle differences in the rock layers at Trenton Falls and the changes to be seen laterally in certain beds. Far more significant, he emphasized by example the importance of steady work day after day at a locality. Like collecting, preparation of fossils requires hours of effort. Using a hammer to break rock or a needle to scrape away adhering matrix are physically different, but require the same mental toughness to keep at the task.

Collectors come in all varieties. Some pick up objects because they appear strange, some pick up items considered aesthetically beautiful, and some are intellectually challenged. The second and third categories seem to apply to William. He had choice specimens, gathered as time from farming permitted. If a tourist wanted to part with good money for one of his treasures, all to the good, but that was not the main purpose of collecting.

Walcott, being city-bred and not farm-bound, had a stronger theoretical base and a broader world view. He could make contacts and exchanges which William had neither time, knowledge, nor inclination to pursue. William had a firsthand knowledge of local geology, Walcott had a concept of zoology, and the two made a good team. As hard as Walcott worked, he still had more free time than any hired hand of the era, and this must have been thanks to William relieving him of some of the farming duties.

There is a vague line between an amateur and a professional collector. Walcott began to see that along with the intrinsic value of the Trenton fossils as mentally stimulating, they might have extrinsic value beyond casual sales to tourists. As an intellectually curious young man, Walcott probably hated to part with his fossils, but as a poverty-stricken young husband, he must have been delighted to sell. Dedicating the collection to science by placing it in a museum while receiving cash was a marvelous solution. The encouragement and money from Louis Agassiz came at precisely the time that Walcott needed both.

In 1874, Walcott was gathering more fossils. The money from Agassiz made life easier and he could devote more time to study. As a result of Agassiz's in-



spiration, Walcott was enthusiastic about investigating the limbs of trilobites. However, farm work still must have eaten into his time. Lura's health began to decline, but whether this was a steady weakening or a series of ups and downs, as in earlier years, is unknown.

An incomplete 1874 diary is mainly devoted to descriptions of trilobites and recording collections, quite unlike the previous documents. An 1875 notebook has more counts of trilobites collected and an inch-by-inch section of the strata up the valley wall from the level of Gray's Brook. It was the raw material for the next step of publications. In becoming an author in scientific journals, in a sense, he became a scientist. A vast gulf separates a collector of fossils, be he amateur or commercial, and a describer.

Walcott's first paper is in the *Cincinnati Quarterly Journal of Science*. The rocks on which that city are built are among the world's most fossiliferous and are renowned for the variety, beauty, and abundance of fossils. At the level of the Ohio River, the oldest rocks exposed are about the same age as the youngest rocks at Trenton Falls. Fossils in the overlying strata are similar to those from the Rust farm, but differ slightly because they are younger.

Cincinnati prospered as the Ohio developed into a major trade route, and it became an intellectual and cultural center. The fossils sparked the interest of educated men, especially the Germans who emigrated after 1848. Their influence was so strong that the first volume of Newberry's geological survey of Ohio was published in both English and German editions. The city is one of few places in North America where self-trained paleontologists played a significant role (Caster 1982). After the Civil War, members of the "Cincinnati school" formed a natural history society, and S. A. Miller, a local lawyer and paleontologist, launched a journal. Nearly one-third of its contents were from his pen, mostly describing his own fossil finds. Another third were papers from other amateur paleontologists or naturalists, and the remainder consisted of translations or articles reprinted from other journals. Miller's journal lasted for only two years, but it sparked the Cincinnati society into starting its own publication. The isolated amateur at Trenton Falls, corresponded and exchanged fossils with several Cincinnati enthusiasts during the early 1870s, and that led to his contact with Miller.

In July 1875, there appeared "Description of a new species of trilobite" by "C. D. Walcott of Trenton Falls, N. Y." (Walcott 1875). The details of *Spherocoryphe robustus* fill slightly more than one page, including a dorsal and side view of the form. For those who wonder at the name "trilobite," the fossil has three

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parts, head (cephalon), middle (thorax), and tail (pygidium). The pygidium is commonly a single piece, the cephalon is commonly a large region which may have a smaller portion to either side, and the thorax consists of a number of segments. Complete articulated specimens are uncommon.

“New species of trilobite from the Trenton limestone at Trenton Falls, New York” (Walcott 1875a) appeared in the October and final issue of the journal. This short paper was twice as long as his first. For practical purposes, trilobites are known from the dorsal, or top, surface. In rare instances the edges which bend over to the ventral surface are exposed. Even more infrequently, an extra plate or hypostome is on the ventral side. Walcott found this part and illustrated it. One copy of the paper bears a note in Walcott’s handwriting: “Pygidium incorrectly copied by the engraver.” Alongside the remark is a sketch showing how it should have been portrayed. Attention to detail is important, something Walcott had learned long before he began to publish.

Two short papers appeared in the *Annals of the New York Lyceum of Natural History* and were “read June 7th, 1875.” This means that they were presented to the membership at a meeting. It is not necessary for an author to “read” his paper, so there is no reason to assume that Walcott was in New York City in June. Both are on the same trilobite, follow consecutively and fill seven pages, plus a plate of illustrations drawn by Walcott and a page of captions. “In the present article, it is proposed to consider certain facts of occurrence, which seem to bear upon the habits and mode of life of one of the principal species of the Trenton rocks, *Ceraurus pleurexanthemus*” (Walcott 1875b, 155).

Walcott described the occurrence of this trilobite found at the base of a thin limestone layer. He commented that 326 complete specimens occurred in an area of thirty by forty feet, documenting intense effort in collecting. An addition at the end of the paper reads: “To October 16, 1875, 1160 specimens of *Ceraurus pleurexanthemus* have been noted on the under surface of the thin layer (‘Ceraurus layer’). Of these 1110 lay on their backs; while but fifty presented the dorsal surface up. Forty-five of these fifty were very small, the remaining five of medium size” (Walcott 1875b, 159). A reasonable surmise is the second figure was based on quarrying and collecting done in 1875. Reopening of the Rust-Walcott quarry in the early 1990s confirmed Walcott’s remarks on orientation of these trilobites and other comments about the occurrence of associated fossils.

One legend about Rust is that he buried fossils for some months in manure as part of the preparation process. The *Ceraurus* at the base of the layer are often covered with a thin film of shale and ammonia, and the cow manure may have



been just strong enough to weaken this layer so it could be easily removed. Walcott's nearly disastrous experiment with caustic potash and heated rocks were an attempt to speed this etching process.

Trilobites are extinct, so that all one can do in discussing their life habits is speculate. The prevailing view was that trilobites swam on their back. Walcott judged his distribution data confirmed this interpretation, though that concept did not remain many years longer in the literature. Walcott may have been incorrect, but he was providing the kind of information that no one else had gathered. The current view is that *Ceraurus* and the other fossils were probably killed where they lived by a sudden influx of sediment; most individuals were flipped over by the sediment-bearing current and smothered.

The second paper (Walcott 1875c) was a highly technical description of the interior of *C. pleurexanthemus*. Several key points are detailed as to how segments of the thorax articulated, and lateral and cross-sections are illustrated. Walcott may not have been the first to consider the mechanics of the trilobite carapace, but he was an early student of paleobiomechanics.

These works are more significant scientifically than the first two papers, and they appeared in a more respected outlet. Cincinnati is not New York, and a private journal is not the same as publication by a distinguished society. The Lyceum, organized in 1817, was the fourth oldest scientific society in the United States (Fairchild 1887). Like all aging bodies, it was experiencing difficulties, reflected in the date of publication for Walcott's *Annals* papers. Priority concerns scientists, patent applicants, and similar endeavors in which a date is critical. Some of the nastiest fights in science concern who thought of an idea first and who published it first.

The Lyceum covered the entire spectrum of natural history, but because of the limited number of pages published, a volume stretched over several years. Volume 11 began in 1874 and concluded in 1877. Numbers 7 and 8 of this volume, according to the title pages, came out in February 1876.

Printed on a page of Walcott's first article is "November, 1875." That month Walcott could have purchased preprints, technically a separate printing in advance of publication of the number or volume; Hall often did this. The key date is when the paper is available. If a paper is printed in December but distributed in January, for priority, the publication is really a year younger than the year printed on the title page. In March 1876, Walcott distributed reprints, not preprints, so it could be that these are 1876 works. On the other hand, the Lyceum secretary could have distributed preprints in 1875. Walcott and his