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MEMORIAL TO HERMAN LEROY FAIRCHILD

BY GEORGE HALCOTT CHADWICK

"Pas à pas on va bien loin."

This simple motto, on a simple book plate, sums up the life and philosophy of one who, step by step, went indeed "bien loin"—a long way. From his barefoot days on the Farm to the presidency of our Society that he helped to found; from a frail childhood and bare survival over three brothers to a robust, vigorous manhood and 13 more than four-score years; from country school teacher to the honored and beloved professor at the University of Rochester; from one who walked ignorantly through Nature to writer of a 2-foot bookshelf on a science in which he became an outstanding pioneer; from a lonely unsocial youth to a charming companion and the winner of a distinguished-service medal from his adopted city as the proponent and exponent of high civic ideals—surely "bien loin."

Such is but a part of the record of Herman LeRoy Fairchild. It will, I think, surprise his world-wide circle of friends in science to learn that this man of magnetic personality, sturdy physique, and paramount health was a puny child even throughout his years of schooling. Therefore let him tell the story of his youth in his own words, fortunately dictated by him to one of his grand-daughters in his declining years, for the private use of the family. He says:

NOTES ON EARLY LIFE OF HERMAN LEROY FAIRCHILD

One and one-quarter miles west of the village of Brooklyn, in Susquehanna County, Pennsylvania, is the intersection of two highways. One hundred years ago these four corners were known as the "Bissell Corners," lying in the north-west portion of the farm of Dr. Samuel A. Bissell. The north-south road was known as the Abington-Snake Creek Turnpike. The east-west road was a State Road laid in direct line across the steep ridges and the deep valleys with no regard for grade.

Dr. Bissell with his wife and three children had migrated from Hartwick, near Cooperstown, New York, to Brooklyn in 1816. His credentials as a practicing physician consisted merely of a letter of commendation from Dr. Nathaniel Gott of Hartwick, New York, dated May 25, 1815. The family for some years lived in the Wilkinson cabin and built the frame house about 1823. The remainder of the farm was purchased of Daniel Lawrence. These purchases were made in the years 1817 and 1818. "A History of the Township of Brooklyn" by Edwin Weston records some facts relating to the Bissell and adjacent properties.

The hardship of medical service in this new country was so exacting and harmful that Dr. Bissell passed away in 1829, when he was 41 years of age. He was buried on the crest of the ridge on the south side of the road leading west, surrounded by apple and chestnut trees. The grave was surrounded by a handsome iron fence. A marble monument ornately carved with the conventional willow tree stood at the head of the grave. When Grandmother Bissell passed away, in 1873, the remains of Dr. Bissell were removed to the Brooklyn cemetery.

Dr. Bissell left his wife, Sallie Ann Foster Bissell, and 12 children:

[Samuel Augustus (M.D.); Sarah Maria, married Dr. George W. Morse, army surgeon; Hannah Minerva, married Samuel Adams; Eliza Ann (born February 3, 1817), married (late) Eri Gregory; Harriett Louisa, second wife of Samuel Adams; Isaac Thomas; Emeline Fidelia, married Benjamin Morse; John (died young); Lydia Almira, married George Eastman; Mary Amanda (born September

18, 1825), married H. C. Fairchild; Jane Antoinette, married William Frink; Rosena Cordelia, married William Brookins; Catherine Venina, married Adam Lieb.]

How the large family ever managed in the small house is a mystery.

My mother was Mary Amanda. My father was Harmon Canfield Fairchild. My father was born in New Milford, Connecticut, on October 9, 1820, and when a boy the family, who were farmers, migrated to Susquehanna County, Pennsylvania. Little is known of his early life. One remarkable incident of his catching a deer by the tail is told in an article in "Forest and Stream," January 1924, page 24. We do not know if young Harmon was apprenticed or if, as a young man, he hired to William H. Boyd, a carpenter and builder in Montrose. I was born April 29, 1850, in a house on the south-eastern outskirts of Montrose.

By hard work and heavy lifting in his occupation as a carpenter, my Father's health was impaired and about 1853-1855 he purchased the Bissell homestead and we moved from Montrose to Brooklyn.

I have only the faintest recollection of those days. One is the visiting at a house in Montrose, and one is riding with Mother on the floor of a lumber wagon going from Montrose to Brooklyn. My earliest definite recollection is the autumn of 1856 (I was 6½ years old), being out in front of the old house under a small Poplar tree and throwing up my hat and hurrahing for Fremont. So I have been interested in politics since the organization of the Republican Party.

My father had two sisters, Sarah who married George Briggs, and Amanda, who married Benjamin Westbrook, and a younger brother, Ransom, who died of tuberculosis at the farm about 1857. I have a faint recollection of walking in the fields with him. Grandmother Fairchild died at the farm about 1850.

In 1856 I had three younger brothers, Earl, William, and Edgar, but by a contagious disease they all passed away within a month of each other, and, although I was fragile and delicate, I survived.

We lived in the old house until the new one was built in 1866. This old house was one and a half stories in height and was built around a huge stone chimney like other houses of that time and region. The house was set back well from both highways on the north-east corner tract. It faced south and the front door entered a narrow vestibule which opened on the right to an east room and on the left to the west room. The north side of the house was occupied chiefly by the great kitchen with its huge fireplace and ovens. This was in the day before stoves and all cooking was done in the fireplace and ovens. Bert [his brother] has the crane from the fireplace. The north-west corner of the house held a bedroom and pantry. The stairways were in the north-east corner of the kitchen. The house was located in a watery tract and in the cellar was a beautiful permanent spring. In front of the house, as shown in the photographs, was an enclosure with native stone walls three feet thick. The stone was evidently gathered from the area. The enclosure was said to have been a garden but as I knew it, it was all loose stone. Why the house had been placed in a rather wet and terribly stony tract we do not know. The old house shows in some photographs taken in the 1880's. For years it stood without any chimney and was used as a carriage house, then, finally it was dismantled. Some of the doors of the old house were used in the construction of the new house. In the chamber at the west end one room was finished off. Where Grandmother Bissell disposed of her numerous youngsters she never told me. When we moved to the Farm, all the Bissell children were married except Eliza who married later. For many years after moving to the Farm, Grandmother Bissell lived in the east room, sometimes shared with Aunt Eliza, and until Grandmother's death in 1873 she made her home with us.

During the many years of medical service by Dr. Bissell, Grandmother had acquired a large amount of information relating to disease and medication and knew all of the standard drugs with their uses. As an old resident with rich experience and keen memory she was in great demand as a visitor, in the years after 1850; and her considerable knowledge of drugs and medication was free to be utilized.

In my boyhood days the first or primitive stage of artificial home lighting had been passed: The stage of the tallow dip. Tallow and wax candles could then be purchased in the stores, and also the moulds for making candles at home. Mother had a frame of twelve tubes for running a dozen candles at one time. Sometime in the 1860's kerosene supplanted all other and less safe lighting fluids, and even today the candle and kerosene lamp are the light sources in most rural homes. Our lantern was the primitive type which type had been in use for centuries. It was a metal case with multitude

of perforations for escape of the light of the enclosed candle. The use of kerosene permitted lanterns with glass globes. And so my history ranges from tallow candles to electricity.

My Aunt Eliza took me to the Methodist Sunday School and I was reared a Methodist, which I regard as an intellectual misfortune. Before I left Brooklyn I sang bass in the Church Choir.

The school house of the district was located on our Farm which is a few rods west of the Corners on the north side of the State Road. Excepting the clearing of about an acre in the north-west corner, the north-west tract of the Farm was in forest, and is today. This forest extended west on the land of George M. Ely, across the head of the Sutliff Hollow. This forest was of huge trees, especially chestnut and hemlock. These chestnut trees, over 100-feet high, were the survivors of the chestnut forest which had given the name "Chestnut Hill" to the locality. On stormy autumn mornings when the chestnuts were ripe many people came to gather the nuts. Most of the forest had open ground with a dense canopy which shut out the sunlight, so it was dark and wierd, "the forest primeval." A few rods north of our house was a fine specimen of *Liriodendron Tulipifera* (tulip-tree), known in the lumber trade as "white-wood." It was much over 100-feet high with a diameter of four or five feet. It was cut down for lumber. Mr. Ely also cut down his part of the forest.

This log school house had benches around the walls without any backs and sloping desks of pine plank built against the wall. These desks were greatly whittled by the knives of the pupils. I learned to read before I went to school at the age of six. My Aunt Eliza was my first teacher. I used to carry a pillow to school to lie upon for, as a boy, I was slender and weak. I was never able to hold my own in any games or play with the strong and husky farm boys. While my body was weak, my mind was alert and I easily mastered all the textbooks of our school. The teachers used to say that they never saw me studying but my recitations were always perfect. A new school house was built half a mile north, up the Turnpike, when I was young but I have not the slightest recollection of the demolition of the old school house. Our new residence, built in 1866, was near the site of the old school house.

The Civil War years, 1861 to 1864, are deeply impressed on my memory and I followed events and read the papers with as much interest and appreciation as I would today.

One misfortune to me of my life on the Farm to the age of 19 was the entire lack of a knowledge of Nature. There was no library in the village and there were no people of college education and no one, except Mr. Weston, with any knowledge of natural history so that, until I went to college, I had no study of plants, or animals, or rocks, or anything pertaining to Nature. In those semi-idle years I might have become a competent botanist and all-round naturalist.

My life was lonely. My parents were not companionable with me. Fayette, who was born in 1858, was eight years my junior. Fayette was accidentally fatally shot on the Fourth of July, 1874. Another brother, Bert Bissell, the youngest of the family, was born in 1868. My only near relatives were the family of Aunt Lydia Eastman. She raised a large family in a little log house four miles south of us in Lathrop township. Unfortunately I had no sisters and there was no social life among the farmers in that district. I was my own companion and had to think out life problems as a boy by myself. My mental make-up is largely a result of the loneliness of my childhood and youth. From the time I was twelve years old I roamed the hills and woods with Father's heavy rifle.

My lonely life on the Farm until I was nineteen had little of adventure. One adventure is recalled. When I was a boy transportation of cattle by railroad had not been undertaken. The cattle and sheep providing food for the eastern cities were driven on their own feet from the western ranches to New York and Philadelphia. Every summer tens of thousands of cattle and hundreds of thousands of sheep passed in droves across our Farm on the State Road. Of course these droves had to rest and feed and water overnight. Our Farm had large pastures well watered and was a favorite overnight stop for the droves and the men. When I was thirteen years old a drove needed another helper and Father told the owner that I could go along with him. No limit was set and I continued with that drove with only the suit I had on and the same shoes walking behind the cattle for between two and three weeks, until we brought up near Philadelphia. The owner of the drove paid me well, and obtained a half-fare ticket on the railroad for me and I came home with a pocket full of money and fame as the great traveled boy of the locality. Father and Mother were not seriously worried about me. They knew that I was self-reliant and capable.

Our Farm was poor for agriculture. All of the land east of the Turnpike was too stony or wet for

cultivation and most of the ledges of the hillside were Devonian sandstone. The only small portion that was fit for the plow was the smooth ridge leading south from the State Road on the western edge of the Farm. The northern end of this ridge is yet in forest behind the house, the fields were mostly in poor pasture. The only farm products ever sold were butter and a little hay. It was a dairy farm and Mother made the butter. The roads of that time were all dirt roads and mostly very stony. I spent days each year in throwing stone out of the road with a hoe. This work applied on a road tax.

This county of Susquehanna was honored during the years of the Civil War by having its Representative in Congress, Galusha A. Grow, serve as Speaker of the House. My Father was active in the new Republican party and a warm supporter of Grow. Grow's handsome portrait ever adorned our sitting room and he was my boyhood hero. Many years later, I think it was during my college days, I had the privilege of a brief visit with Grow near the close of his life at his home in Lennox township.

The New York Tribune was the family Bible, and Horace Greeley, the Prophet. A daily visit was made to the Center (Brooklyn Village) for news and mail. During much of the year the return trip from the Center was after dark. In the hundreds of such trips I made I never saw any wild beasts but Bert and his friends did see a skunk or something almost any evening. Indeed, during all of my life on the Farm I never saw a skunk. Woodchuck and squirrel were my big game. I participated once in a midnight hunt for raccoons in the swamp forest at the extreme south point of the Farm.

In my early years I went barefoot much of the time. On frosty mornings bringing in the cows, many times I have stood on the warm ground where the cow had slept.

When I was nine years old Father rented the Farm for one year, and we lived in Scranton, Hyde Park section. Father was Brakeman on trains of the Delaware, Lackawanna, and Western Railroad running between Scranton and Washington, New Jersey. I went to school in the new Hyde Park school building.

In the year 1862 Uncle Ben Morse had a U. S. Government contract for bridge construction near Chattanooga, Tennessee. My father joined his force as a bridge carpenter. During his long absence from home in the summer of that year I was the man of the house, 12 years of age. Fayette was four years old. My chief duties were looking after the cattle in the three great pastures and providing the fire-wood. In the latter my intimate companions were the wheelbarrow, ax, and buck-saw. Mother and I milked the several cows. She made butter which was packed in tubs and shipped to commission merchants in New York City.

A mile away at the outlet of the south pond Albert Reynolds utilized the waterpower in various ways, among others, the carding of wool and Mother obtained the woolen rolls ready for spinning and the family was always supplied with stockings of her spinning and knitting. Mother was a tailoress and could cut and fit clothing so our clothing was mostly all homemade. When I was a boy we all wore boots and I do not know when I had the first pair of shoes. I never had an overcoat until I left the Farm at the age of nineteen years. During the later years and including the three winters in teaching school I wore heavy shawls.

An early recollection is a pile of long timbers near the old house which Father had intended to use for new timbers (sleepers) under the old house. Later he found that it was impracticable and for years he worked on the materials for a new house. He made all the window and door frames; also the heavy doors and all the inside work. When I was 14 and 15 years old, I dressed and matched by hand the hard maple flooring for the kitchen.

Father had invented a corn planter which was effective in our stony fields. It came into considerable use and he sold the patent rights for considerable money and so he was able to incur the expense of a handsome new residence. I had the finest outfit of horse and carriage in all that region. This was the only luxury I ever had. This buggy was associated with the only occasions on which I paid any attention to the Fair Sex. Two young ladies were each given one ride. Father constructed a brake on the buggy which was out of sight when not in use and was effective on the steepest hills. He obtained a patent for it but never realized on it because the fashion in carriages changed from flat bottom to curved bottom.

Together Father and I cut and sawed the trees for the lumber for the new house. By ox team

we hauled the wood to and from the mill two miles south. Much of the rock on our Farm would split up into thin regular lines like boards. With this stone we laid the cellar wall and in 1866 materials were ready for erecting the house. We had a "Bee" for putting up the braces of the second story and, barring that, all the work of construction was done by Father and myself when I was 16 years of age.

The two rows of great maple trees yet standing in front of the house I set out in the summer of 1866 while the house was building. I had carried the trees from the woods. Two chestnut trees close to the south-west corner of the house were allowed to remain. These were cut down by a tenant in later years.

Two inspiring views are had from the Farm. On the south a gap in the hills gives a vista of the mountains west of Scranton, about thirty miles away. Eastward, some fifteen miles away, the Elk hills are conspicuous. Two peaks rise from a short north and south ridge. The higher peak is the highest ground in the belt of latitude between the Catskill on the east and the Rocky Mountains on the west. These lofty peaks against the eastern sky appealed to the imagination of my youth and long years after, it was my pleasure to stand on the lower peak and see the wide world spread out beneath me in all directions.

Originally the farm was heavily timbered with chestnut and the locality was known as "Chestnut Hill." The school house near our home represented the Chestnut Hill School District. One remnant of the primeval forest of my boyhood today is the woods covering the northwest section of the farm except the clearing for the house. Several chestnut trees of second growth were standing in the fields and usually were laden with nuts in the autumn. Some years we gathered the better nuts. Father would thrash the branches with a pole while standing out on the limbs. When the tree was cleared we picked from the ground systematically. One autumn, I recall, we shipped chestnuts to New York City by the barrel. In chestnut season the raw nuts were a principal part of my daily diet.

A considerable area south of the State Road was occupied by an orchard of natural fruit to which no attention was ever paid. One tree on the east row was an apple famous in that region in season. It was an "Early Harvest," beautiful striped red and very sweet with a delicious flavor. With sugar and cream it was equal to peaches. Another tree of this kind was standing farther south on the Ridge near the well and site of the Wilkinson cottage where the Bissell family lived for some years before the frame house was built in 1823. The same apple was abundant in at least that part of the township. It was a beautiful sweet apple and is probably preserved in that district to the present time, and called "Sutliff Sweet" or "King Sweet."

When I was 16 years old an examination was held in the village for qualification of teachers. I took the examination as a matter of interest and passed it, of course, but with not the slightest intention of using the certificate. But in the autumn the School Director insisted on my taking a school in the extreme eastern edge of the town, at Kingsley's [Oakley's] station on the Delaware, Lackawanna, and Western Railroad and so when I was in my seventeenth year I taught a four months' winter term and boarded around among the poor farmers, walking the five miles home every weekend. As I think of it now, it was a tough life. Many of the pupils were older than myself and I was poorly prepared for the work. I was lacking in years, in physique, and in social experience. It was probably a pretty poor school but the directors insisted on my taking another school the next winter which I did.

The third winter I taught in Lathrop, the town south of Brooklyn. It happened that my uncle, George Eastman, was the School Director and this school district had a reputation for rough-house. There were some bad characters in the district but it happened that my cousin Wakefield Eastman, who was some years older than I was and was the physical equal of any of the tough gang, was to be one of the pupils, also two other of the Eastman boys. I did not have much trouble until the latter part of the term when I threw one of the Ainey boys on the floor and choked him until he gave up a knife. The big fellows stood around with no interference.

During all of my life on the Farm I had had practically no money of my own to spend. All my wages in working for farmers and salary for teaching were handed over to my Father.

My summers, to the age of 19, were leisurely with some work for the farmers. We never did much work on our Farm except cutting the grass and cultivation was by hiring help or on shares. In the

autumn of 1869 I was working by the month for Isaac Van Auken. My last day was hauling logs with an ox team and piling them on skid-ways. The evening of that day I had a letter which opened up what I had long hoped for, a fuller life and college education.

Uncle William Frink had been freight agent at Scranton, Pennsylvania, of the D.L. & W.R.R. from the time it was built and remained so to nearly the time of his death. He wrote offering a position as clerk in his freight office. I remained there until September of the next year. Aunt Jane Frink was my favorite aunt and I was her favorite nephew and I lived with her as one of the family. During those months I saved sufficient money to take me through a year in college.

I had thought of different institutions. George Breed, one of my older school-mates in Brooklyn, was the first college student from our town. He told me of Cornell University where he had been for a year. The character and spirit of the institution appealed to me. I wrote an inquiry to Ezra Cornell who was then in the New York State Senate. I have his reply preserved with the quaint envelope.

One June day I went to Ithaca, passed entrance examinations to Cornell, and left town in the afternoon. I had not looked in a book for study for years and never more than the common school textbooks, which shows that the examinations were very easy.

With working summers, steward of eating clubs in the college year, and with loans from Uncle William, I was able to go through the four years without a break and was graduated July 2, 1874.

It is the Rev. Bert Bissell Fairchild of Dexter, New York, Herman's younger brother and the loaner of this manuscript, who supplements it thus:

On our father's side the family is of English parentage and our father came to Pennsylvania from Connecticut at the age of fourteen, in October 1834. He died in 1904, at the age of 84 years. My mother's parentage was partly English and partly French, her father, Dr. Samuel Bissell, coming from French parentage somewhere down the line, and he was one of the first physicians to locate in that section of Pennsylvania where my brother and I grew up.

Father was a carpenter by profession, but for many years suffered from the results of stomach hemorrhages and was unable to do any laborious work. He was a wide reader. In recent years compliments had been paid him, to me, by men who knew him all his life.

Our mother was a very able woman, and I many times wonder where she obtained the education and equipment for life which she enjoyed. She passed away in October 1907 [in her eighty-third year].

Yet this weakling lad outdistanced by a decade both of his long-lived parents! And made the decades between 70 and 90 years, after "retirement," the most prolific of his life—over 100 titles!

Doctor Fairchild has recorded that while living with his Uncle William and Aunt Jane Frink in Scranton in 1870 he "began a collection of fossil coal plants from the Lackawanna-Wyoming anthracite basin." Thus just prior to his entering Cornell his interest in geology became established, when he was about 20 years of age. Seven years later his long series of published writings began with two papers based on this collection, the suite of figured specimens being still preserved in the University of Rochester Museum of Natural History. Thus Fairchild's primal geologic work was in paleobotany. At about this time he came also upon graceful pinnae of the Upper Devonian "fern," *Archaeopteris jacksoni*, in the John Young quarry a mile or so south of Montrose, Pennsylvania. The Rev. Bert Fairchild writes: "When I was a very small lad I remember going to this quarry with my father, after fossils, which Young had saved for my brother at his request." These were certainly among the first of the fossil forms to attract Herman's attention, awaken his curiosity.

The roots of a man lie deep. From his own words we have seen the soil in which

Herman Fairchild's were nurtured—the farm, the parents and old folks, the companionless, observant, thoughtful days that gave self-reliance with the sternness of truth that is found in such a natural environment. Here, brushing against hard facts, were the makings of a scientist.

I have seen that farm and the dignified, well-architected, well-groomed homestead that he, at the age of 16, helped his father build in the hilly woodlands of Susquehanna County. In the make-up of that father and the mother there must have been a large measure of the best that is American. It breathed in the setting of their home, aristocratically apart from yet dominating the roads at the four corners. It breathed in their will to educate their surviving sons, one to science, the other to the ministry. And so Herman went to Cornell University, blest by inheritance and training, with dogged persistence, an inquiring mind, temperateness of thought and habit, unfailing optimism, and a compelling quiet humor.

Already, indeed, he had gone "bien loin"—a good bit of a way.

COLLEGE YEARS; MARRIAGE

When young Fairchild entered Cornell University (an institution then only 2 years old), September 14, 1870, he found, according to information kindly supplied by the university, a rigid curriculum laid down for him in the course in Science in which he enrolled. His only choice was between mathematics (analytics and calculus) and history in the second and third trimesters of his sophomore year. Mathematics, French, German, and unceasing training in English made up a large part of his schedule, with history, physics, chemistry (a year of each), moral and political science, logic, optics, psychology, and history of philosophy. But there were also physiology (under Burt G. Wilder) in fall term freshman year and botany in spring term; astronomy in winter term junior year; and in senior year, English literature under James Russell Lowell, geology under Charles Frederick Hartt in fall and winter, and physical geography probably under Hartt in the spring besides 20 lectures by Louis Agassiz on Natural History to which he may have gained admission in his sophomore year. In the freshman botany course young Fairchild just missed having David Starr Jordan, who came to Cornell as a youthful instructor in that subject in the autumn of 1871, but one can well believe that Herman did not fail to cultivate Jordan's acquaintance nor fail to take a course with Andrew D. White in modern history, as will be seen beyond in the title of Fairchild's commencement essay. Hartt, not quite 10 years Fairchild's senior, his geology teacher, had already made a name for himself in New Brunswick and Brazil, going there first with Louis Agassiz. His work on Brazil came from the press in the year in which Herman entered college. Hartt's enthusiastic devotion to geology must have been inspiring to his students. But the greater influence proved in the long run to be that of Hartt's mentor, Agassiz, proponent of the glacial theory. In fact, it is in such men as Agassiz and Lowell that we perceive many of the directives of Fairchild's later life, including his fine command of English.

Our informant (Mrs. Olive Northup Snyder) adds:

During his undergraduate days Fairchild was elected to the Greek letter society of Delta Upsilon. In the statistics of the class of '74 compiled in Fairchild's senior year he designated himself as 5 feet

9 $\frac{3}{4}$ inches high, weighing 145 pounds, a Republican in politics and a Methodist in religion. During his undergraduate days he lived at 70 Lynn Street, in the heart of the small village of Ithaca, about a mile from the campus.

For the Commencement exercises in June 1874 he wrote an essay on "The Conflict between Science and Religion in Its Latest Phase." This shows to some extent the direction in which the young student's mind was even then traveling. At this same Commencement he received the degree of Bachelor in Science of which there were 28 awarded that year—26 men and 2 women.

It will be recalled that only 2 years later Doctor Andrew D. White, afterwards President of Cornell and Ambassador to Berlin, published a large book on *The warfare of Science and Theology in Christendom*, with a larger and finer edition at the turn of the next century. At about the latter time, Professor Fairchild, after having been President of the Rochester Methodist Episcopal Union from 1893 to 1895, changed his allegiance to the Unitarian Church in Rochester under Dr. William C. Gannett.

And it must be that during his Ithaca residence he met Miss Alice Egbert, a teacher in the schools of that city who became, a year after his graduation, his wife.

Herman LeRoy Fairchild, B.S., Cornell 1874, was now 24 years of age, fired by his contact with great minds and presumably looking forward to marriage. He records that in February of his senior year he had begun public lecturing and that on May 15 of that year he had been a competitor for the Woodford Prize in Oratory; but also that on the Fourth of July, 2 days after his graduation, his 16-year old younger brother Fayette was accidentally fatally shot.

An illuminating incident occurring at this time is described by Fairchild's brother, Bert.

I remember keenly that about the time he graduated somebody arranged for him to lecture in the Presbyterian Church in Brooklyn [Pennsylvania].

A considerable criticism developed because he set the creation of the world considerably back of 6000 years. The old fundamentalists "could not take it."

In the fall of 1874, Fairchild began teaching natural sciences in Wyoming Seminary, a Methodist institution at Kingston, Pennsylvania, directly across the Susquehanna River from Wilkes-Barre, where he remained for 2 years, meantime being married (July 25, 1875) to Miss Alice Egbert of Ithaca, New York.

Two beginnings were made in this period, one in research, the other in optics, but both constituting a single aim—publicity. Probably after graduation but at least before severing connections with the old home, Herman began work on his coal fossils for publication. He drew his own illustrations, with a skill that lasted him a lifetime. Bert, his brother, six years old when Herman finished college, writes:

I have been looking over my brother's books. I can see him sitting in the farm house "sitting-room" making the drawings from the fossils from the old John Young quarry, using "India Ink," which he ground as he needed it.

These must have been the "coal plants;" any drawings of *Archaeopteris* went unpublished.

The art of photography, then comparatively young, and the art of lantern projection, still newer, appealed to young Fairchild with all their educational possibilities and with an ardor that never cooled. At his retirement from teaching in 1920, at

the age of 70, he was still using the lantern, that he himself had early built, and delighting his classes with the fine pictures he had taken in many countries. Said the Rochester Democrat & Chronicle at his passing:

Students will remember him fondly for his lantern slide lectures, always willingly given if the students pleaded unpreparedness when they came to class. He was the first professor at the University to use visual instruction in his classes. He took his own photographs and made his own slides, gathering a library of illustrations numbering more than 3,000. His brilliance as a lecturer was once said to be equalled by only a few teachers in the world.

When Professor Fairchild showed his slides he always talked directly from the lantern as he inserted them. For a pointer he used a hatpin directly against the plate shown. Many of his students adopted the same practice. Doctor Hoffmeister writes that some of these old slides are still in use at the University.

LECTURING IN NEW YORK CITY

Armed with stereopticon and sets of natural-history slides taken from many printed sources, the young husband, leaving his wife and their first child on the Farm, struck out courageously into unknown territory, the big city itself, and for 11 years (1877 to 1888) he maintained the growing household (the last of the four children was born in 1885) by writing popular-science articles, lecturing in 100 private schools and institutions, some teaching in higher institutions, and public lecturing. During that first winter (1877-1878) he was instructor in geology at Vassar College, Poughkeepsie, New York, in addition to his other activities. The novelty of his method and the attractiveness of his talks and their illustrations made an enlarging reputation for him.

His brother, Bert, writes:

As a lad (he was eighteen years older than I) I have keen recollections of seeing him leave the apartment (with his so-called "magic lantern") for his daily trip about the City, during which trip he would visit several schools.

At one time there was a plan developed for him to take charge of certain classes (young ladies, I believe) under the management of a man by the name of Abell. These classes were to visit Europe and during the tour would be under the instruction of my brother, but whether this instruction was to be along geological lines, I am unable to say. The plans never came to fruition because of the death of Mr. Abell.

Almost immediately he enjoyed the friendship of Dr. John Strong Newberry, the eminent physician-geologist, professor in the Columbia College School of Mines, and with him was instrumental in reviving from its moribund condition the old and honorable New York Academy of Sciences, of which Doctor Newberry was the President for a quarter of a century (1867-1892). The first volume of the Annals of that Society carries Fairchild's first published papers (1877), those on his coal plants, finished at the Farm probably during the previous autumn, and the first volume of its Transactions (1882) contains two articles by him.

Another lifelong friendship cemented at this time was with John J. Stevenson, Professor of Geology at New York University from 1871, who was Fairchild's predecessor as our first Secretary (1888-1890) and who became President of our Society for 1898.

By 1882, Herman Fairchild was conducting geology classes at Cooper Union, New York City. He seems to have been lecturing there as early as 1878. The popular articles were discontinued, and for the next 5 years all writing for publication was laid aside except that on the history of the Academy. Instead there was a photographing trip in August 1883 through the newly opened Yellowstone National Park (established in 1872) for fresh lecture material, with another such trip to Mexico as official photographer in the winter and spring of 1885. He was elected in the latter year to Secretary and Editor of the New York Academy of Sciences under Doctor Newberry, a post held with proficiency up to his departure from the city 3 years later.

During that 3 years, Fairchild's organizing ability showed itself in two other ways—as an original or "charter" member, in 1886, of the Alpha chapter of Sigma Xi at Cornell University, and in the preparation of the large History of the New York Academy of Sciences, published by the Academy in 1887. In August of that year, the American Association for the Advancement of Science brought its summer meeting to the metropolis, and Fairchild was selected for the onerous task of Local Secretary for the meeting. This was but 5 years after the founding of Section E (Geology and Geography) of the Association, of which section Fairchild was already a member, as well as of Section F (Zoology).

Thus, 13 years after graduation, Herman L. Fairchild, popular lantern lecturer, secretary and editor of a foremost Academy of Sciences (of his own rebuilding) and author of its history, New York City leader for the general scientific Association of the Americas, had come again "bien loin"—a large journey. And another institution had its eye on him.

FIRST PERIOD AT ROCHESTER

For 23 years, from the days of Professor Henry A. Ward, the all-around naturalist and scientist, until 1888, geology had rather taken a back seat at the University of Rochester. The only courses in it were carried by men with primary interests elsewhere, Samuel A. Lattimore in chemistry, Harrison E. Webster in zoology. Twice, for a year or two, its instructors (James Orton, Edward Benton) were without rank as full professors. In 1888, Webster, having served 5 years, was leaving for larger fields (he became President of Union College), and Ward's chair was vacant once more.

"My brother's call to Rochester University," writes the Rev. Bert B. Fairchild, "came out of a clear sky, and without any warning. He had been recommended by some of the professors in Columbia University, if I rightly remember." There can be little doubt that Doctor Newberry was in the forefront of these Columbia sponsors. A life-size white plaster intaglio of Newberry always stood in full view in Professor Fairchild's office at the University of Rochester.

The story of that call is related by Mr. Edward R. Foreman, the president and editor of the Rochester Historical Society, in a biographical note to Doctor Fairchild's paper published by that society in 1929:

He came to Rochester in 1888 (when 38 years of age), upon invitation of President Martin B. Anderson; arriving one June morning, and at three o'clock in the afternoon of the same day was

ected to the Chair of Geology and Natural Science, in the University of Rochester. Those were the "old days of small things." Up to that time the University had never had two hundred students.

In addition to Geology, Professor Fairchild taught first year's Botany, Zoölogy, Physiology and Physical Geography. After establishment of the Department of Biology, he expanded Geology to several branches, and added Paleontology, Mineralogy and Meteorology, with only casual student assistance.

This double duty in geology and biology lasted for 8 years, constituting the first period of his service at Rochester, but added thereto for the first 2 of these years was a truly herculean task. This was the reorganizing and relabeling with 40,000 labels the contents of the Geological Museum of the University. Quoting Mr. Foreman again:

The famous Ward Collections in geologic science were found in disorder, in 1888, following their removal from Anderson Hall to Sibley Hall. Using spare time for two years, Professor Fairchild classified and installed the Geological Museum, and the opening to the public was celebrated by a reception on June 13, 1890. He was Curator of the Museum, 1888-1920.

The memories of many students will recall the arrangement of the Department throughout that time. On the second floor of Sibley Hall (over the college library), reached by an egregiously long flight of steel staircase, was the museum on the right side of a short hallway and the laboratory (which also served as the office, lecture room, and library) on the left. Another flight led up to the biological museum high in the tower above the laboratory. Later, this third floor became the lecture room for geology.

The museum ceiling was practically two stories high. In the central space, as one entered, stood almost erect the Ward cast (restoration) of the giant sloth, *Megatherium*, surrounded by lesser plaster casts (*Glyptodon*, skull with tusks of a Mammoth and various others). Two wings led off, right and left, filled with cases. The right (east) wing was paleontological, arranged by periods. The left wing was mineralogical, petrological, phenomenal, and economic material. The cases were all alike, high and long vertical glazed ones, with adjustable glass shelving, arranged comb-fashion along each side wall to form a series of alcoves. But down the mid-passage of each wing, and again along the far side of the central circle, were older table cases having storage drawers beneath; most of these cases came down from the third floor when the new biology building absorbed their former contents. These storage drawers sheltered the coal plants gathered in 1870, a series of rocks and fossils of New York presented by the early State Survey, and other research material, not exposed to public view. Flat framed plaster casts of ichthyosaurs and the like garnished the walls.

The overflowing energy of Professor Fairchild (once a frail boy), at his approach to 40 years of age, is seen in the other things he then did. He was one of the 13 original members of this Society who met in Ithaca on December 27, 1888, so soon after he arrived in Rochester; he was in fact its youngest member and the last to survive of these 13; and with our "organizer and founder," Professor Alexander Winchell, he formulated our Constitution and By-Laws in the following spring. His constructive genius turned then immediately to the Rochester Academy of Science,

struggling under lack of vigorous leadership. Before the end of 1889, he had thoroughly reorganized this Academy and become its President, serving for 12 consecutive annual terms (until 1901). At the same time he took over the editorship of the Proceedings of the Academy and retained this load with only slight interruptions for 46 years (until 1935). The first volume of these Proceedings carries Fairchild's first contribution (1891) to the local geology—an interpretation of a deep well log clear to the pre-Cambrian.

By 1890, he had been made Registrar of the University of Rochester and Secretary of its Faculty. For 10 years (to the end of the century) he kept all the academic records with meticulous care. In 1890 his load was slightly lightened by the coming to Rochester of Charles Wright Dodge, recently graduated from Michigan, to be Instructor in Biology and Curator of the Zoological Museum.

At the same time Professor Fairchild was in great demand as a public speaker. Schools and societies turned to him for enlightening entertainment with his stereopticon. For some 20 years (1890 to about 1910) he notes that "many public lectures on geology and zoology were given." Indeed, whenever the Program Committee of the Academy of Science was unable to fill a meeting date, it was Herman Fairchild who always stepped in with something novel and fascinating to hold the audience. He was the life and soul of the Academy long after others had taken over the nominal leadership.

Small wonder, then, that active field research did not begin for our Professor Fairchild until after the opening of the Ward Collections on June 13, 1890, and the arrival of Professor Dodge, and that only two ephemeral papers appeared from his pen during these first 2 years (1888 to 1890). Then, however, began the field investigations, chiefly in glacial geology and physiography, that continued for a third of a century (1890 to 1923).

Concerning that field work that shall ever be his monument, Dr. J. Edward Hoffmeister of the present Department of Geology has said, picturesquely, in an appreciation read by him on December 5, 1943, at the memorial service in Rochester:

Whether he knew it or not, young Mr. Fairchild entered a glacialist's paradise, when he came to Rochester to be Professor of Geology and Natural History at the University in 1888. One of his first tasks was to unravel the local geology.

Fairchild tackled the job energetically and enthusiastically. Any time which was not devoted to his duties at the University and his tasks as officer of the American Association for the Advancement of Science, he spent in the field. He traveled by street car, railroad, horse and buggy, on foot, up hill and down valley until he knew the Genesee country better than the Indians before him. The more he discovered, the more fascinating the search became. He found ancient lake bottoms, shore benches and beaches made by waves in bodies of water which had long since disappeared. He found large boulders miles and miles from their native territories. He found hills made of masses of rocks of all sizes, which he knew could only have been produced by the action of tremendous sheets of ice. He found a buried valley running right past our door—a valley filled with from 400 to 600 feet of sand and gravel, an unseen valley to most people. But Fairchild could see it. He traced it for miles to the south of us and so accurate was his work that years later when surveyors, with all their modern equipment and all their information gathered from drill holes, mapped it, their maps were nearly identical with those of the pioneer.

Then came the task of correlating all the separate pieces of information which he had obtained from his field studies; the task of putting together in their proper chronological order the events which

produced the present surface. This he did and the story as he originally told it has in all essentials withstood the test of later investigations.

Today, when a man works on the glacial geology of this broad area, he begins with Fairchild and frequently ends with Fairchild.

Still pushing ahead, "pas à pas," in the third year after its organization (and his coming to Rochester), Fairchild became in 1891 Secretary of the infant Geological Society of America and the supervisor of its publications for a period of 15 years (until 1906). It was during those 15 years that the real foundations and the reputation of our Society were firmly established, its procedure and format of its publications standardized, its membership built up to include all geologists of standing in North America and South America. This was accomplished, as Dr. Charles P. Berkey who later occupied the same office has remarked to me, not through brilliancy of attack, but by the steady push of a man who optimistically believed in the success of a worth-while undertaking, and who lived with it day and night. That was Fairchild, as later it was Berkey also. According to his biographers he was "virtually the publisher" and the "effective administrative head" of our Society.

Unwearied still, in 1892 Fairchild brought to Rochester in August the summer meeting of the American Association and acted as its Local Secretary as he had at New York 5 years earlier. The youthful Geological Society of America met concurrently. Three months later occurred the death of his benefactor, Dr. John Strong Newberry of Columbia University School of Mines (from 1866), President of the New York Academy of Sciences. A tribute to him in the Academy's Transactions (1893) was the first of the 17 biographical memoirs that Fairchild wrote, as it was also the next paper of consequence since his induction to Rochester. In the same year (1893) he took on new duties: Secretary of the Council of the American Association, First Vice-President of the Associated Alumni of Cornell University, and President of the Rochester Methodist Episcopal Union (until 1895), while in 1894 he acted as General Secretary of the American Association for the Advancement of Science. Meantime his geological publications began to drop from the press, commencing, as Doctor Hoffmeister has commented, with the local geological history; nothing in glacial geology appeared until 1895.

In 1896, the year in which I came to the Ward Establishment across the street from Sibley Hall and to live with Professor Ward, I found Fairchild the most talked-of man at the college. Forty-six years of age, with a trim dark beard, an eye both piercing and kindly, and a confident carriage, he already had to his credit papers in our Bulletin on the glacial lakes of western and central New York and others on kames and the general physiography and geology of the Rochester area—11 titles in all. He had the full control of the Rochester Academy and of our Geological Society, a large finger in the American Association, and he was still the officer of record at the University. With the separation of the Department of Biology under Professor Dodge in that year, the first period of his service at Rochester merged into the second, his title became abbreviated to Professor of Geology, and the expansion of that one department was perfected, as above described by Mr. Foreman.

Surely, in those 8 years (1888-1896), step by step, Herman Fairchild had come a long and not an easy road.

SECOND PERIOD IN ROCHESTER

Professor Fairchild's activities were those not of an ambitious but of an indefatigable man. The society offices that came to him were but a just recognition of his capacity to carry them with faithfulness and distinction. He was never boastful of them. At the college he always handled more than a man's share of teaching. This second period (1896 to 1914), free from biology, saw him giving courses in Physical, Historical, and Economic Geology, Paleontology, Mineralogy, Meteorology, Physical Geography, and sometimes other subjects on demand. Abundant field trips with his classes, as also the frequent lantern talks, stimulated the enthusiasm of his students, who, until the University admitted women in 1900, were wholly male. Alone in the department until 1914, he had only occasional help, from some of the more interested of these pupils. When, belatedly, the chance came for me to "go to college," Fairchild's personality held me to Rochester, and I served (1901-1904) as his laboratory assistant in Mineralogy until graduation.

Still holding all his offices in societies and faculty, at the very outset of this 18-year period, carrying the department unaided, he accepted membership on the newly formed Committee on Policy of the American Association (later the Executive Committee), serving on it for 32 years (until 1928) and exercising considerable judicious influence that led eventually to his revising (1923) the constitution and rules of the Association. The next year (1898), as elective Chairman of Section E of the Association, he became one of its Vice-presidents at the semicentennial meeting held in Boston, Massachusetts.

Then, not content, Fairchild's historical bent found expression as Collaborator (1899 to 1901) in the Division of Forestry (U. S. Department of Agriculture) under Gifford Pinchot; he wrote a history of the Division which apparently never came to publication but in which we have a further index of the breadth of Fairchild's interests as affecting the public welfare.

At the same time, his field investigations began to take on a new turn. He was finding unexplained glacial lake beaches, before unknown, and puzzling relations of moraines to beaches that challenged solution. Hitherto he had been largely following upon and elaborating the work of J. W. Spencer, Grove Karl Gilbert, and others before them. He had, to be sure, recognized a new glacial lake in central New York, with southerly escape, and had named it for his deceased patron, Lake Newberry. He had corrected the diagnosis of the Pinnacle Range at Rochester, shown it to be a kame-moraine. He had identified early escapes and lake levels of the Genesee River. But now he was striking out once more courageously into the unknown, on a hot scent that absorbed his waking thoughts and leisure moments. Publication came fast in these years from 1896 to 1914—over 100 titles, at least one-third of which may be looked upon as major contributions to our science; besides, there was the revision, with much rewriting, of LeConte's textbook, *Elements of geology*, in 1903.

Nor was it coincidence that a new day was dawning for the University with the coming to Rochester (1900), early in these years, of Benjamin Rush Rhees, a president imbued with the concept that college professors, no matter how hard worked, should be productive. He found Fairchild practically the only man doing research

in his Faculty, though a few others were writing texts. The Professor gladly exchanged his Faculty administrative duties as Registrar and Secretary for more time in the field and in writing about these absorbing fresh discoveries. In the following year (1901) he resigned the presidency of the Rochester Academy of Science and closed up his work for the Division of Forestry; but at the same time he was persuaded to act as Associate Editor of the *American Geologist* and he continued in this labor for four years (to 1905). In this year (1901) died his favorite aunt, Mrs. Jane Frink, with whom he had lived in Scranton (1869-1870) before he entered Cornell.

A change had come also at Albany with the passing of the veteran James Hall in 1898 and the subsequent accession of the more youthful and energetic John M. Clarke. Even under the interim incumbent, F. J. H. Merrill, support was forthcoming for wider investigation, which began in the west (Lake Erie basin) in the summer of 1901, where Fairchild tied in with the studies of Frank Leverett brought in from Ohio, thence turned eastward (1901; 1902) to find where these waters were finally let down into Mohawk outlets between Syracuse and Little Falls.

It was in the latter section that I, his student assistant, first had the pleasure of working with him, for 2 days of a spring recess, and observing his method. He was patient and persistent in observation, checking and rechecking in the light of various possible interpretations. It was upon this great care, and the keenness of his eyesight, in eliminating all other explanations that rested the solidity, the permanence of his conclusions. All was done "step by step."

Again, by his good offices, he brought our Society to Rochester for the winter meeting of 1901-1902.

In the summer of 1903 came the chance to go abroad. As delegate to the International Geological Congress in Vienna, Austria, in August, Fairchild used the opportunity to study and photograph the geology of parts of Italy, Switzerland, Austria, and Germany. Naturally his largest harvest was among the glaciers of the Alps, where he did some arduous climbing. This slight setback (together with the revision of LeConte) to research and publication was soon overcome. In 1906, under Doctor Clarke, Professor Fairchild was made an official member of the New York State Geological Survey (as assistant and expert in Geographic Geology), an association that lasted until his retirement.

The care of his mother, widowed in 1904 (surviving until 1907), and of the old homestead in Brooklyn, Pennsylvania, and the inadequate aid in handling his rapidly enlarging classes in a revived college necessitated some further curtailments. In 1905 he had given up the associate editorship of the *American Geologist*. Now, in 1906, he resigned from the long-held post of Secretary of our Society and was succeeded by Dr. Edmund Otis Hovey of the American Museum of Natural History. The directive work of the Society thus passed to New York City, where it has since remained.

He was now, at 56 years of age, absolved from learned-society duties save the committee work for the American Association and the editorial labors for the Rochester Academy, though nevertheless he remained a frequently sought adviser to both that Academy and our own Society. Instead of constraining posts of honor he now had freedom of travel, beyond those unfailing annual trips to the society meetings. In

the summer of 1906 he went to the Pacific Coast to study the effects of the recent San Francisco earthquake; in August he examined critically the then problematical Coon Butte in Arizona, which he renamed "Meteor Crater," and in September he wound up in the City of Mexico, as delegate to the International Geological Congress, meeting there. The meteor impact-crater was publicized by him, later revisited.

His next trip was to Alaska, in August 1909, and he returned by way of Winnipeg as guest of the British Association for the Advancement of Science, meeting there. Meantime (1907) he had presented his large private library to the college, where it has been combined with the other departmental accessions in our science field under the title of the Fairchild Geological Library of the University of Rochester. In that year his mother passed away. But long before that his home life had been broken by prolonged illness of his second daughter, Lillian, poetically gifted, whom Mrs. Fairchild had had to take west in the hope of benefit but who succumbed there in 1910.

For the State Museum, under Doctor Clarke, Fairchild meantime (1906 to 1910) made special studies of drumlins and explained their mode of formation, pushed his investigations into northern New York, where I sometimes joined him from Saint Lawrence University, and traced the tilted shore line of Lake Iroquois to its extinction channels around the north skirt of the Adirondacks, showing that it went hundreds of feet above the marine beaches with which Spencer had correlated it. To the marine waters he gave the name Gilbert Gulf (an arm of Woodworth's Hochelagan Sea) in the Lake Ontario Basin. The glacial lake levels in the Black and Mohawk valleys now received their first description, and by them the ice lobes east and west of the Adirondacks were for the first time correlated. The Pleistocene geology of the Thousand Islands region was fully written up and illustrated.

Then, in 1910, at the age of 60, his life reached four turning points: a deserved honor, a great sorrow, a new or rather a newly expanded interest, and cessation of the busy round of public lecturing. In June, he went to Pittsburgh, Pennsylvania, to receive from the University there the honorary degree of Doctor of Science. On July 2, thirty-sixth anniversary of his graduation from Cornell, his daughter Lillian, in her early thirties, died far from home, where her mother had taken her to regain health. To a home-loving man very fond of his children, this bereavement following the long separation and pseudo bachelorhood was a trial bravely concealed by his submission and fortitude.

September found him a delegate to the Conservation Congress called by President Theodore Roosevelt at Saint Paul, Minnesota. Mr. Foreman says:

While never active in politics he has been interested in civics. He was one of the organizers of The Rochester City Club. In 1910, he was delegate to the Conservation Congress, . . . following which he wrote on conservation. In that year he gathered a group of Rochester men, and was Chairman of the Rochester Commission Government Association until the World War caused its exit [in 1915]; but out of this association arose the Commission Government Association of New York [State], of which he was President during 1911-1912 [two years]. The educational work of this Association and the influence of its successor, the Municipal Government Association, secured from the Legislature the Optional Charter bill which has given autonomy to the cities of the State.

Doctor Fairchild was Vice-President of the Municipal Government Association of New York State from 1914 to 1916.

Mr. Foreman continues:

He has been President of local organizations, . . . and is an Honorary Member of the University Club, and a member of other clubs; also corresponding member of many societies.

The principal "local organization" named by Mr. Foreman was The Brotherhood, and this brings us to the religious influence in Herman L. Fairchild's life of two profound and liberal thinkers. One was the Rev. William Channing Gannett, pastor of the Unitarian Church in Rochester, where the memorial service to Doctor Fairchild was held December 5, 1943. The other was the Rev. Algernon Sidney Crapséy, my friend and rector for many years at St. Andrew's Episcopal Church, Rochester, unfrocked on December 4, 1906, for heresy by a narrow-minded and jealous group of his colleagues, but who became thereby an even greater power for good in the city, founding this Brotherhood, of which Doctor Fairchild was President in 1912.

Doubtless this civic activity was in part a diverting or escape reaction, as may have been also the geologic studies in France and the British Isles made in the summer of 1911. In 1913, Doctor Fairchild was appointed a member of the New York State Board of Geographic Names, serving thereon for 10 years (to 1923). Meantime, field work progressed steadily, leading him at length into the Hudson and Champlain valleys, where he came into sharp conflict with the views of Professor J. B. Woodworth of Harvard with regard to the marine or nonmarine nature of the uplifted water planes. It now seems likely that the story is far more complicated than either man could then imagine it and that both were in some measure right, but the disagreement has ever since repulsed rather than drawn the younger students into this field.

In the closing days of 1911 there had come to Doctor Fairchild what, next to the affectionate regard of his host of pupils (to whom he was always "Fairie"), was the most prized recognition in his life—election to the highest office in our Society. At the annual meeting in New Haven, Connecticut, December, 1912, he summed up his life work in a presidential address on *The Pleistocene geology of New York State*.

Thus, in 1914, as the third period of his service to Rochester was about to open, we see Herman LeRoy Fairchild, Honorary Doctor of Science from the University of Pittsburgh, Professor of Geology for now 26 years at the University of Rochester, lately President of The Geological Society of America, of the New York State Commission Government Association, and of Doctor Crapséy's Brotherhood, a guiding spirit still in the Rochester Academy of Science through its editorship and in the American Association for the Advancement of Science through its Committee on Policy, delegate to conservation and international geological congresses, author of 140 bulletins, papers, and articles, mostly on geology, now a bit tired and overburdened with his teaching and his 64 years of intensive living. "Pas à pas" he has traveled "bien loin"—a long and a sometimes wearisome way.

THIRD PERIOD IN ROCHESTER

In 1914, as the guns began firing in Europe, and in recognition at last of the heavy burdens that lay upon his most illustrious and productive staff member, President Rhees called me back, by an arrangement with Ward's Natural Science Establishment, to give halftime assistance in the formerly one-man department of geology. Then began a period of co-operative work, both in instructional and in society and research activities, from which Doctor Fairchild seemed to derive as great happiness as did I.

This was a time of philosophical thinking, of the writing of biographic memoirs (13 of them), of popular scientific literature (*Adventures of a watermol* and *A Nature drama*), and of studies on the postglacial uplift across New York, New England, and the Maritime Provinces of Canada, which last he explored in the summer of 1917. The civic efforts were reaching fruition and no longer bound him; the local association discontinued in 1915, and the presidency of the State association was relinquished in 1916. In December 1915 Doctor Fairchild was a delegate to the Pan-American Congress in Washington, D. C., which consolidated the New World against European designs, and he continued thence to Panama in January to observe and photograph the effects of the slides in the Canal.

In 1918, after our entry into the World War, and when the Students' Army Training Corps was established at Rochester, he was allowed to take over my full time from the Ward Establishment and in that year he was elected Life Member of the Rochester Academy of Science, followed in 1920, when he reached 70 years, by election as Patron of the Academy, the highest honor it could bestow, together with congratulatory speeches from various members. This was the occasion also (April 29) for testimonials of approbation and birthday gifts from Faculty and students of the University. A life cycle was closing. Retirement from the State Survey was automatic, from the college it was voluntary.

He was a little stouter, now, and slightly round-shouldered, with snow-white hair and closely trimmed white beard unsoiled by tobacco (which he never used), his eyes full of merriment, his step sprightly, with still a quarter of his life ahead of him. At some time before 1914 the biological collections had been removed from the third floor in Sibley, and this former museum room was converted into a lecture hall for geology. The "lantern" and the long wall blackboard had been transferred upstairs, on the second floor the lecture benches had given place to new laboratory tables, while the blackboard space had yielded to extensive bookshelves to house the ever-growing Fairchild Library of Geology. These open bookcases, elaborately carved in dark wood, were the handiwork of Lewis Henry Morgan, of Rochester, great authority on the American beaver, built originally for his own library. They extended along three sides of the room, parted, however, by two tall windows at the corners. (Librarian John R. Russell writes they are still there.) Beside one of these windows stood the Professor's desk and swivel chair, barricaded slightly by files of manuscripts and correspondence, which, with the neighboring bookshelves, placed everything of frequent reference within easy reach.

But, in addition, was another chair of which I have never seen the like, though it was not built to order. It has swinging arms that meet in front as a book rest or

writing desk, or turn parallel for chair arms, while the body can at the touch of a button be rotated on rollers into a reclining position with knees raised. In this chair, which should be preserved somewhere where it will be permanently prized in his honor, the Professor did most of his scientific writing. There, or at the desk, he would be found, busily at work or briefly relaxing, whenever free from class duties, and always with a cheery word. Sometimes as one entered about to speak, he would say quickly, before they could get a word out: "I don't believe it!"

Still full of youthful zest, Professor Fairchild retired, not to please himself but to please me, to give me my chance. It was my mistake. He should have continued on for many years. The end of the road was not yet, though he had come "bien loin," a long, long way indeed.

In the city of Rochester he had a "double," as familiar a figure on the city streets as Fairchild himself. This was J. Foster Warner, architect and city planner, whose home was near the campus. Warner's face was a bit thinner, his white beard more pointed, his eye more wandering, his movements nervous, and he walked hurriedly, leaning forward. The two men, brought together in civic efforts, struck up a great friendship. Warner drove a speedy roadster in which the two explored the countryside, scenically and geologically, oftenest at 70 miles per hour and once disastrously for others. This association continued far into the next period, when they collaborated in a paper on the building stones of Rochester.

AUTUMN AND WINTER

Few, even of the younger men who participated in the seventieth-year anniversary ceremonies, guessed that Doctor Fairchild would outlive them. Few indeed are those now living who can recall those ceremonies. One by one he saw his old associates in University and Academy precede him into eternity, in the 23 years that remained. As the youngest he was naturally the last also of the small group that founded our Society. Many of his one-time students also passed away. Thrice again he was called upon to write memorials. But it was no time of idleness. At Fairchild's own memorial service, the years after retirement were summed up thus by Doctor Hoffmeister:

When most people reach their 70th year they look forward to a little rest, some leisurely traveling, and a chance to do things they have always wanted to do, but never had the time to do. But not Fairchild. He remained just about as active as ever. To me one of the most remarkable things about him is what he accomplished between the ages of 70 and 90. He published within these twenty years over 100 scientific papers. And many of these are of considerable size, including a history of the Geological Society of America. A man who can do this is made of stern stuff.

May we who are his successors be worthy of the rich heritage which he has left us.

His office was transferred (1920) to a large room on the second floor of Carnegie where he had much more space to spread out his work tables and exhibit his long series of maps. The title on the door read "Professor Emeritus." Many an emeritus living thus close to the scene of his long labors would have felt the urge to meddle in the affairs of his successors. Instead, Fairchild threw himself wholeheartedly into doing what he had long hoped to do—finishing the uncompleted and elaborating with further detail and illustration the completed field work. He even took on some

new items, such as examining in 1921 the production of sulphur at Freeport, Texas. Not until 1923 does he record the end of his days in the field.

That was the year in which, on November 30, his wife for 48 years, Mrs. Alice Fairchild, died after years of semi-invalidism.

In the same year, with Dr. J. McKeen Cattell, who had been its General Secretary, and others, he completed a revision of the Constitution and Rules of the American Association for the Advancement of Science, which was adopted by the Association at their meeting of December 27, 1923, in Cincinnati, Ohio. This revision changed the name of the Committee on Policy to Executive Committee, a committee on which Fairchild continued to serve for 5 more years until in 1928 he felt his health unequal to the winter travel, a total period of service on this committee of 32 years, one-third of his long lifetime. In 1923 also he closed his 10-years' work with the New York State Board of Geographic Names.

At about the same time he set up a fund of \$2000 at the University of Rochester through which (quoting Doctor Berkey) "in memory of a poetically gifted daughter, who died in early womanhood, the Lillian Fairchild Memorial was established by him, providing an annual award to a young artist, poet or writer," the first of such awards being conferred on November 12, 1924, to Carl W. Peters of Fairport, N. Y., for painting.

But his travels were not over. In the winter and spring of 1924, at 74 years of age, he represented the University of Rochester on the Marsh Panama-Darien Expedition to Central America in the successful search for the supposedly fabulous "white Indians"; he "brought back with him collections and data for university records" (*Democrat & Chronicle*) and contributed a paper on these Indians to *Science*. To the same journal in that year he supplied a 16-page history of the American Association. The year closed for him with his marriage at Syracuse, New York, on November 22, to Miss Philomena (Minnie) C. Michel of Rochester, long a faithful member and attendant at the meetings of the Rochester Academy of Science, and long thereafter his faithful companion and attendant through good and ill, until his decease.

The bibliography for the years from 1920 to 1925 shows something of the breadth of interest he had retained and of his return to educationally productive writing, especially the fine monograph on the Pinnacle Hills of Rochester. In 1925 the New York State Museum published his bulletin on the Susquehanna River in New York, but the companion work on that river in Pennsylvania was never issued by the survey of that State. These twin papers were the grist of his latest field work, his maturest judgment.

Particularly, now, Fairchild turned his attention to popularizing the local geology, beginning in 1925 with a 95-page fully illustrated geologic chapter in a book on the *History of the Genesee Country* by a Chicago firm, immediately reprinted by him separately and individually in better form as the *Geology of western New York*, for local sale. This was followed by a series of 23 chapters detailing *in extenso* the *Geologic story of the Genesee*, with profuse illustration, that ran for 2 years (1926-1928) in the *Gas & Electric News* (Rochester) and were in turn assembled with additions in an equally rapid-selling book among local readers.

In the midst of this series, the News paused (in March, 1928) to tender to its readers a fine portrait and a short account of his life, in the course of which it said:

We are presenting, therefore, a brief analysis of the geological attainments of Dr. Fairchild, who is about to return from a winter spent in Florida. Enroute, Dr. Fairchild will stop off at Nashville, Tennessee, for the convention of the American Association for the Advancement of Science. This 12 or 14 week period of combined work and play in some warmer clime is an annual practice of Dr. Fairchild. Among other things, while away he will complete his series of articles for the Gas and Electric News.

The enthusiasm for these articles has been noticeable from their very beginning. Hundreds of requests have been received from persons throughout this section to be placed on our mailing lists, and colleges, universities and other institutions of learning have asked to receive them.

Dr. Fairchild, it may be said, never really takes a vacation. He is ever making new findings, studying, writing, collaborating and otherwise adding to the fund of geological and scientific knowledge which is helping to make the present more interesting by linking it with the past, thereby increasing man's store of knowledge.

Dr. Fairchild has been President of several local societies; corresponding member of scientific societies, and honorary member of some of Rochester's clubs. He has traveled over all of North America and much of Europe in search of scientific data.

It was following this Nashville meeting that he terminated his service of 32 years on the Executive Committee of the Association.

Two much older papers of popular interest were also reprinted in this year (1928), one by the Smithsonian Institution, the other privately. Three papers publicized Professor Henry A. Ward and the Natural Science Establishment he founded, which was at length taken over by the University in 1931.

This spurt of energy seems to have temporarily depleted him by 1928. He gave up the American Association committee work, applied himself chiefly to writing the history of our Society after his monograph on the *New York drumlins* appeared in 1929 in the Rochester Academy Proceedings. Nevertheless, short papers, reviews, and newspaper and magazine popular articles continued to come from his pen, as they had from 1920 on, some of them with an economic or civic slant, others (in the Scientific Monthly) of greater length. Nearly always, pictures, diagrams, and maps accompanied these papers. His writings from 1926 onward provoked the setting apart of the Mendon Hills (kames, kettles, and eskers) for a State Park, as they earlier had instigated the taking over of Cobb's Hill by the city of Rochester for a park and reservoir site. In 1929, when an effort was being made to acquire more of the Pinnacle range by the city, he prepared a richly illustrated paper on the effacement of natural monuments for the Rochester Historical Society that elicited the tribute to him by its President, Edward R. Foreman, as follows:

Professor Fairchild's enduring reputation will rest on his investigations and studies, and his writings in geologic science. The paper, published herein, on *The Effacement of Rochester's Nature Monuments*, is only the latest of an extended list of writings, being number 228 of his bibliographic record. His writings now bind into fourteen volumes. And we hope that the end is not there.

While his writings in earth science cover a wide range, his special field, in which he has international reputation, is Pleistocene or glacial geology. The effects of the latest ice-sheet, especially in New York State, with its remarkable series of ice-impounded waters, glacial lakes, has been his enthusiastic and tireless study for thirty-five years. The published results of his work are mainly in the *Bulletins of the New York State Museum*; the *Bulletin of the Geological Society of America*; and the *Proceedings of the Rochester Academy of Science*.

In 1931 he came back with a longer paper for the Historical Society on the geologic causes of the city's growth.

Doctor Fairchild's eightieth birthday, April 29, 1930, on which he received congratulatory letters from many of his scientific friends, brought no cessation but a renewal of his productivity. Foremost of the eight titles in 1932, perhaps principal of all his writings, is his 239-page history of our organization, entitled *The Geological Society of America 1888-1930; a chapter in Earth Science history*, which he began with Xenophanes in 614 B. C. and introduced with the words: "This writing was not a self-imposed task. The Council of the Geological Society requested me to record its history."

This is no place to review this entertaining and truly monumental volume, but one pauses with interest to note in its early pages a return to the theme of young Fairchild's Commencement essay of 58 years before (in 1874), now with explicit citation of Andrew D. White's book, on the long conflict between established theology and resurgent science, a conflict in which, as we see it today, neither side showed much tolerance, and neither side won. Fairchild's remarks here, breathing an irrepressible scorn of much organized "religion," recall the chuckles with which he once came upon a little doggerel probably now familiar to all readers, about King David and King Solomon with their "many, many lady friends and many, many wives."

For our younger members it may, after the passing of 12 years, be profitable to put into type again the appreciative words of the Editor (Mr. Joseph Stanley-Brown). He wrote:

A close and delightful friendship of nearly half a century with the Historian gives additional zest to the honor he has done me in asking that I write a preface for his admirable story of the creation and career of The Geological Society of America.

Probably few Fellows realize how great an influence the Secretary of the Society exercises on the conduct of its affairs. Other officers come and go but he goes on forever—almost—and develops skill as time passes and a firm, guiding hand as experience accumulates. The nature of the Society's type of corporation makes this inevitable and it is fortunate for all interests that it is so. In the History, Professor Fairchild with characteristic modesty, minimizes his services to the organization in its early, formative days, but those of us who have walked by his side up the years, place on his efforts that real and high valuation to which they are entitled. How fortunate that the Society was able to entrust the putting of its chronicles in imperishable form to one who has had intimate knowledge and heavy executive responsibility reaching back to the very beginning.

It was no light task that was assigned to the author by the Society, but it has been accomplished with dispatch and judgment. . . . A full measure of credit and thanks is due for the lasting service rendered.

Inasmuch as the dedication is to "the memory of the *twelve deceased fellows* who, with the author, made the formal organization of the society" in 1888, it is clear that Fairchild was the only one who, from personal knowledge, could then render such service, nor could that escape its due meed, which came in the form of a gift of a specially bound copy from our Society at the Cambridge (Massachusetts) meeting in December of that year (1932) to which he made a response recorded in our Bulletin (1933) that now, for its breadth of thought and power of analysis of the relations of geologists to civilization, is recommended by the writer of this memorial for re-reading by every member and for universal broadcasting.

Yet the real "high spot" in Fairchild's life had perhaps been reached nearly a year earlier, on January 13, 1932, to be exact, when his friends at home had done him a signal honor—the presentation by the Rochester Academy of Science to the University of Rochester of a life-size bronze bust of Doctor Fairchild, with appropriate ceremonies, but his response at this time has not been found of record. Of this occasion the Rochester Democrat & Chronicle said, in their obituary notice:

The professor will hold a high place in the University's hall of fame. In 1932 a bust of him was unveiled in Chester Dewey Museum on the River Campus before educators and scientists who heaped acclaim on the honored guest.

The unflinching felicity of his utterances on public occasions led to many calls of this nature upon Doctor Fairchild, among which are to be noted his remarks in 1932 at the dedication of the "Carthage" Memorial Tablet commemorating an early settlement around about the lower falls of the Genesee that was later absorbed by the growing city of Rochester, and similarly in 1933 for the Swinburne Memorial Tablet at the new River Campus of the University. A part of the latter address will be quoted beyond.

For the 4 years 1932 to 1935 inclusive, his bibliography shows over a score of titles to his credit, seven of these being considerable papers, namely four in the Society's Bulletin, two in the Proceedings of the Rochester Academy, and one, with J. Foster Warner, on the building stones of Rochester, published by the Rochester Historical Society. Science carried four shorter articles, our Proceedings four, the Historical Society two. The rest are newspaper or scattering. Surely an industrious 4 years.

Then came another great sorrow, in his eighty-sixth year, the death on December 1, 1935, of his only son, LeRoy Frink Fairchild, a married man in the middle of his fifty-first year, with two children (daughter and son), who had been living in a suburban section of Rochester. Mrs. Fairchild writes me:

Dr. Fairchild's illness to which you refer dated from Roy's death, up to which date he was in perfect health. After attending Roy's funeral, he went to bed where he was confined for 20 months, with extreme mental depression.

During this illness, which was not wholly mental but accompanied by serious loss of vitality and of optical vision, I was able to see him once, at his home on Winterroth Street, Rochester, through the kindness of his wife. He was sure that he was about to die and was disposing of his possessions and gave me the historic and unique chair previously described. Yet eventually, through the acumen of one of the staff of the Strong Memorial Hospital of the University, his physical condition was repaired, and his eyesight partially restored so that he was able to be about the city. But this illness terminated the Academy editorship.

Although the newspaper obituary states that he had been "an invalid for six years," which would mean from 1937, he was still able to contribute an important paper to Science in 1938 (with a shorter one to the Academy Proceedings in 1936). This final paper, truly his "swan song," was a triumph of will power as well as the concentrated essence of his philosophic thinking in the great field of cosmic geology. Concerning it Mrs. Fairchild has revealed:

I am enclosing the last published article of Dr. Fairchild's, which I think remarkable because it was written under great handicap and after his first severe illness. I took his dictation in long hand and looked up and read references! Most of the mathematics involved he did mentally, before I in my slow way could arrive at figures on paper. I suppose I was stupid and he grew impatient and nervous and gave up several times, but always returned to the task after a few days. I can yet see him stomping around the table, lamenting the loss of his sight. But when the article was finished and Dr. Cattell accepted it for publication in *Science*, he was as pleased as if it had been his first publication.

On the sixth of June, 1938, at the age of 88 years, he received the last of the great honors bestowed upon him. Quoting again the *Democrat & Chronicle* (November 30, 1943):

In 1938 he was chosen for the Municipal Museum's Commission's first Civic Achievement Award. The choice followed a careful study of more than 50 questionnaires submitted by leading Monroe County citizens.

This award took the form of a silver medal, which he greatly prized.

A special effort was made in 1938 to obtain the attendance of the six surviving Original Fellows at the Fifty-first Annual Meeting in New York City. Doctor Fairchild was there. Mrs. Fairchild writes:

About his attendance at the semi-centennial—I let him go alone to help restore confidence in himself. He was growing discouraged and relied more and more on me. And when he found I was really serious about his going alone (the Society had sent a check to cover my expenses) he was as pleased as a child and took great delight in the preparations. Of course it was arranged to have friends meet the train in New York after we had put him aboard here.

His active life over, the days passed slowly now, while his strength ebbed. On his ninetieth birthday, April 29, 1940, says Doctor Berkey,

the Geological Society presented him with a volume of letters to which he made response under date of May 1, 1940, in the following terms: "In the flood of messages and gifts, anent April 29th, the choicest and most highly appreciated is the handsome volume of letters from the Fellows of the Geological Society. This is the capstone of my scientific monument. For this I am deeply grateful to you. And I send thanks and appreciation to your office aids and the writers of the letters. With great pleasure I have listened to the reading of these cherished messages. Memory is quickened by the mention of old-time happenings, and emotion is stirred by the words of friendship, affection, approval, commendation and praise. I wish I could send personal individual reply to each writer."

The ministrations of a devoted wife nursed along the failing frame. On September 22, 1943, Mrs. Fairchild wrote me:

With Dr. Fairchild confined to the upper floor and mostly in bed and I here alone, there are so many *must* things to be done that time and strength do not suffice for the social amenities.

Dr. Fairchild's physical condition is not much changed in several years. Mentally however he fails. There are days when for periods he scarcely remembers anything. He is not in pain but is uncomfortable and despondent, due partly to failure of sight and hearing. It is astonishing that he has not a trace of arthritis and walks with agility.

The special message he sends you is "his dying admiration and affection" (He is not dying). Some days if asked for a message he would not even remember you.

Thus to the last he retained those flashes of humor, born of his great love for his fellow man. For in just 5 weeks he was being rushed to the hospital, following, as

Mrs. Fairchild writes, "a fall downstairs at our home." There his marvelous strength sustained him for a month. Said the Rochester Democrat & Chronicle the next day, beginning a long biographic sketch:

Death yesterday ended the career of 93-year old Herman Le Roy Fairchild, Rochester's "grand old man of science" and geologist of world renown.

Professor Fairchild, whose home was at 106 Winterroth St., died in Strong Memorial Hospital at 7 o'clock last night (Nov. 29, 1943). An invalid for six years, he was admitted to the hospital Oct. 27.

Wrote Mrs. Fairchild later:

Though I miss him dreadfully I would not wish him back to suffer in mind and body from the infirmities of age. The loss of vision was especially hard to bear for both of us. And he has long since wished to die. I wonder how he had courage to dress and face each day when there was absolutely nothing for him to do but sit and wait. Even thinking was denied him the past few years.

So I would like to think that he has found a happier land free from pain and perplexities.

Indeed it was "bien loin"—a long, and at the end a pretty stony way.

THE MEASURE OF A MAN

"You are doing that which I have long advised—to praise the living and to tell the truth about the departed," said Doctor Fairchild with a twinkle in response to the Society's felicitations at the Cambridge meeting (1932), adding: "Yet, I am a bit curious about that future criticism, which I will not be able to controvert." Certainly there are few who would wish to say anything of him that he would not like to hear. Instead, a flood of tribute and of eulogium followed upon his departure. Notices of his death were carried by the newspapers the country over and brought out simple expressions from many a man in the street, such as the following:

I thought of you when I cut the enclosed clipping from the Kingston paper—he was the one we went up to the glen with and did some scouting and prospecting in the middle of the creek, as you no doubt will recall readily, now that I have reminded you of it. (E. R. Beardsley.)

I needed no reminder; we were uncovering and photographing a great unconformity, he giving of himself for me. It was characteristic of him.

His home paper said of him (Democrat & Chronicle, November 30, 1943):

While Rochester claimed Professor Fairchild as one of its most distinguished citizens, the world reached out for the volumes of geologic lore he had given to science during his lifetime. Scientists recognized him as virtually the only authority on the glacial geology of Northern, Western and Central New York.

Until his illness he was a familiar figure to the citizens of Rochester—hale and ruddy cheeked, despite his years, with bushy white eyebrows, white hair and whiskers, and forever championing in sturdy tones any civic project for preservation or recognition of natural resources of the area.

He was loved most of all by his students at the University of Rochester, where he taught for 33 years.

A memorial service for him was held in the First Unitarian Church, Cortland and Temple streets, Rochester, at 4 o'clock on the afternoon of December 5, 1943. This was the church to which Professor Fairchild had become attached under Doctor Gannett. The service was attended by the Faculty of the University, by the mem-

bers of the Rochester Academy of Science, the Rochester Historical Society, the Geological Society and various other organizations, and by a host of former students and friends. Among other testimonies was that of Doctor J. Edward Hoffmeister for the Department who, though a new-comer, caught the spirit of the patriarch with great perfection.

In the appraisal of his life some thought need be given to its background; fortunately, much of that has been told in his own words. It appears further that he was the first child, born in his father's thirtieth and his mother's twenty-fifth year—an ideal combination, we are told. To live in the same house with his earliest public school teacher, Aunt Eliza, was a marked mental advantage; her religious tutelage was a distinct moral one. Besides he had the spiritual and emotional uplift later of singing in the choir. To be free from diversion into trivial employments by younger brothers and sisters militated for serious thought and action. Early responsibility on the farm bred self-reliance, thrift, and industry. Teaching in country schools, as Berkey has observed, "developed a liking for public speaking and a facility of expression that was to make him a powerful figure in later years." Doctor Berkey further sums up the early entourage as constituting "the foundations of an education that gave bent to a long lifetime of surprisingly productive effort and wide influence."

Though it is with the crudest of yardsticks that we measure a man by his productivity, in this case there was certainly no lack, either in quantity or quality. As each new volume of published writings went to the bindery, its author had run off for inclusion a printed sheet of its contents, with the titles serially numbered; he also distributed these lists to his correspondents. In his response to the gift copy of our History in 1932 he remarked jovially:

Last month I published four papers, two of them being in our Bulletin. Besides, in youthful egotism, I printed a list of my writings, 253 titles.

His facility as a writer, always clear, crisp, logical, holding the attention, stimulating to thought and action, was paralleled by his ease as a speaker, notable for his enunciation and diction. Doctor Berkey makes special mention of his "public lecturing, which he followed as a personal interest with marked success through all other changes for more than fifty years."

In addition there was a technical skill to which no one has alluded in print. Just as he took and developed his own photographs and lantern slides in the early years, so he made his own drawings for illustrations and his own maps, he built and manipulated his own stereopticon, though not disdaining the fine projector eventually presented by Bausch & Lomb Optical Company. In 1929 Mr. Foreman asserted that "His photographic record covers all the years since dry-plate photography was invented." His artistic taste is evident in the selection and arrangement of photographs for his published papers. His drafting and surveying equipment was extensive and choice, operated expertly and preserved with care. He was one of the first to use a typewriter; for many years it was a portable Blickensderfer with a scientific keyboard far superior to the present standard and incomprehensibly inefficiently arranged placing of keys. But the "Blick," with its rotating (interchangeable) type wheel, lacked speed and lost its market.

To ability in all these directions was added faithfulness of performance. His responsibilities were met, never too little or too late, nor even when absence would have been excusable. In his own words (in the response at Cambridge):

My absence from the later meetings of the Society should be balanced against my presence at the first 33 meetings, at 27 of which, summer and winter, it was my privilege to be Secretary. And with only four exceptions I attended all the meetings to the year, 1920.

[These four exceptions, we may note, were due to conflicts in dates with appointments at the meetings of the American Association.]

Since 1920, for twelve years, I have failed in attendance on the meetings of the Society. This absence has not been of purpose or desire. For all those winters I have migrated to some warmer climate; and for the few times that I lingered to January, I was held on the executive committee of the American Association. And last winter, when I remained at home, you went far south, to Tulsa.

Because of this faithfulness he was in close touch with the members and the acts of four great scientific societies, so that Doctor Berkey was able to write of him:

His intimate knowledge of the steps that led to their founding and development in each case made him the natural authority on their history, and his volumes are everywhere consulted on these matters.

He outlived all his contemporaries. He alone was left of the 13 "original members" to write the History of our Society. And when that event was celebrated at Cambridge, he pointed out:

At this time, only eleven stars illuminate the roster of the Society, one-tenth of the 112 Original Fellowship. These luminaries will not long remain above the life horizon. In the Society's history I have said that the last one to vanish should have special mention.

That last one is Mr. Darton, who surely deserves the special mention. All the others named by Fairchild in his response (Upham, Davis, E. H. Williams, Perkins, Winslow, Hill; as well as Gurley, Simonds, Turner, but not Ulrich) had set below the horizon before him. At the semi-centennial meeting in 1938, there remained only six (Darton, Fairchild, Gurley, Hill, Simonds and Ulrich) of whom five were present at the meeting.

As a further result of his faithfulness, he brought to Rochester two meetings of our Society (August 1892; December 1901) and one of the American Association (August 1892; a "convocation" meeting).

To fidelity must be added enthusiasm, which sustains it. Says Berkey:

He contributed much to organized science. No one in his time was more continuously engaged or more successful in developing scientific organizations to larger usefulness. He was a constructive person. Whatever he touched seemed to be improved. Every organization grew. And it was at least in part his enthusiasm and confident service that made them grow.

Again, and without doubt a prime coefficient, was his high standard of thought and living. All his habits were temperate. Tobacco, liquor, profanity, smuttiness, gluttony were foreign to him. I never saw him in anger. Although he liked to affirm that "an enlightened self-interest is the highest altruism," his was an unselfish and a generous heart.

Two things, however, he disdained. One was "the prostitution of pure science to private gain," as he jokingly dubbed economic geology even while he taught it enthusiastically to his students. For all his advice, and it was often substantial

advice, to the various commercial interests of the city he took not one cent. It was part of his service to the community. Said David White in his presentation speech at Cambridge (1932), after protesting the neglect of applied science in the History:

If Professor Fairchild appears to slight economic geology in his review, it is easily explained by the purity of his own scientific ideals. Of the 253 papers by him, already mentioned, only three relate to economic geology, and it is probable that he received no pay for the work of which they are the outcome.

While the professor himself classified only these three papers as economic, one can easily pick out three or four more from his list that can be so regarded.

His other scorn was for religious cant and bigotry. In the expression of this he was sometimes bitter and unrestrained, a relic of the feeling with which such matters were argued in his boyhood and even in mine, perhaps in his own home on the farm. This bitterness crops out, as before noted, in the History, for instance in such clauses as this:

but, most unfortunately for intellectual progress, Christianity had foolishly included in its "sacred writings" the old folklore and fanciful Mosaiic cosmogony and had invested them with supernatural authority.

But I think he would have been grieved if he had ever found that such expressions reacted unfortunately upon impressionable youth.

Among his personal traits we must note also his lack of conceit, remarkable in one who had accomplished so much, been so honored. In the outline of his scientific activities that he drew up for the use of his memorialist four things only are underlined: Born, Parents, Married, Second Marriage. But of one thing he was proud, his business acumen, and he made that the last item and climax of that outline, thus:

Transactions in real estate throughout the years, without legal aid:

As owner: Acquired ten vacant lots in northeast Rochester.

House and lot on North Goodman Street.

One acre tract on Clover Street, Brighton.

The old-home farm in Pennsylvania.

As architect and builder:

Designed and drew the plans of four houses.

Erected six houses.

Disposal: All properties sold, except the house on Winterroth Street and the tract on Cloyer Street.

He was an eminently practical man, chiding me once gently with seeking to put the ideal before the practical. Yet he never let his own standards down.

In his study and writings the controlling motif was simplicity. Complexity did not please him. He wanted the story to read simply and straight ahead. It was this quality that led him into conflict with Woodworth in the Hudson Valley. It was this that made the concept of the migrating peripheral bulge unacceptable to him until his studies on the Susquehanna River in Pennsylvania forced him to recognize it, as a new and personal discovery. (This important report has been rejected at Harrisburg, chiefly it seems because of objection to this very matter.) Thus, too, when the field relations had brought him to recognize one unmistakable readvance of

the ice, breaking the glacial lake succession in western New York, he could not admit that other such readvances were not only likely but indicated by the field evidence. A visit from Mr. Frank B. Taylor in the early 1920's revealed to us proofs of such a readvance at a later stage, but although Doctor Fairchild went over the field with all of us he was unconvinced of so complex a story.

Yet, well past 70, his mind was still open in other directions, such as when some years later in his "Gas & Electric" articles he took over unhesitatingly the new reclassifications of the local Silurian and Upper Devonian. His general attitude toward progress in scientific knowledge was of the receptive and judicial nature requisite in an editor of publications. Illustrative of this is the incident related by his brother:

Some few years ago he and I went to Pennsylvania. We visited the site of the old John Young quarry, but the spoil had been covered by rubbish and brush, and we were unable to find any of the fossils.

After we made that trip to Pennsylvania, . . . I asked my brother why you desired fossils from the Young's quarry. He told me that the younger geologists were raising some question as to the accuracy of certain commonly accepted geological periods, and that you thought some data might be obtained from the Young's quarry. However, partly because I was asking for information, partly to ascertain my brother's reaction to the situation, I asked him if the younger geologists were right in their claims. He replied that he was not entirely familiar with the situation, but that he would not be surprised if they were right, since new information led to new conclusions. He was too broad-minded to be disposed to insist that the men of his age were right.

Nor could such a man fail to be interested in civic affairs. At first this took the form of examination of the local geology to aid commercial interests (without recompense) and the writing of newspaper articles on natural gas, road improvement, and the like. Said the Democrat & Chronicle in his obituary:

Almost as soon as he came to Rochester at the age of 38, Professor Fairchild began to reconstruct the soil and rock formation of the area from times preceding the glacial age. He wrote monographs and articles numbering hundreds on the geology of the region, on drumlins, moraines, kames, the ice age, glacial lakes, morainal lakes, subterranean streams, on earth origin and on economics, zoology, meteorology, civics and sociology.

His maps and writings on the subject of geology in New York were made official by the New York State Museum and were accepted as authoritative by geologists and teachers throughout the world.

Engaged in such research he became incensed at the commercial despoliation of the natural features upon which his studies were based and argued vehemently in print for their preservation, with the satisfaction finally of seeing many of them set apart as city or State parks. It is to be regretted that these parks are now to so large an extent being diverted from their primal purpose by "landscaping" and conversion to playgrounds while we geologists sit silent, letting his work be lost.

The positive side of this picture was the effort to encourage development of natural resources, such as the report on the Mount Morris dam site (1928), and on artesian waters for Dunkirk (1921) and for Rochester (1930). Concerning the latter, the Democrat & Chronicle tells the story thus:

Several years ago Professor Fairchild carried his knowledge of the subterranean strata of the area into the community limelight. His voice was heard staunchly amid the squabble over Rochester's

future water supply. One side sought development of a plant to utilize Lake Ontario water at Bogus Point and another group advocated an expanded project at Honeoye Lake. Professor Fairchild called attention to vast underground sources that might be tapped and called up data compiled through years of study to prove that such resources were at the city's command.

Mrs. Fairchild supplements this, writing:

One thing of interest is that the figure he arrived at without help of instruments as the possible depth of the buried valley was almost exactly what they found it to be on drilling. The electric gadget before drilling estimated the depth considerably less.

But the rest of the story is that the politicians won out, while a sister community successfully tapped these underground supplies for a 6-inch flowing well.

Another case of disregard of Doctor Fairchild's warnings was in the building of the highway bridge over the Genesee River close to its mouth at Charlotte. Finding rock near the surface on the west bank the engineers assumed a like condition on the east but went down 103 feet through mud in the center of a buried gorge whose existence Fairchild had long predicted.

It was but a short step from these varied contacts with public matters, and experiences with political handling of the city's affairs, to leadership in citizen movements for better government, to which he gave himself unstintingly from 1910 to 1915.

It was not the aim of Herman Fairchild to make geologists. A crop would spring up of its own accord. He offered no post-graduate instruction. There were larger institutions to do that. His purpose was to make the world around them permanently more interesting to those who elected his subjects, and in this he was eminently successful. Nevertheless to those who came to him with special geological leaning he was exceedingly stimulating and encouraging. Two of them have been his successors since 1920.

It was partly the inspiration he imparted to his classes that gave him such strength in the community, partly the large following that his personal magnetism drew in to the societies he headed. Doctor Berkey has summarized all this in these words:

Professor Fairchild was an exceedingly active and influential man. He was widely known for his enthusiastic earnestness and evident confidence in the worthwhileness of his undertakings. No one who saw his powerful figure in action in his prime would have imagined that he had been physically frail as a child. With the passing of youth, however, aided doubtless by his persistence in out-of-door life and in following his geological field studies, he had grown greatly in physical strength and in like measure in intellectual power. His presence was encouraging and he was welcome wherever he went. He always had an interesting contribution to make, and usually made it with telling effect. In a controversy or conference he was habitually on the winning side. But his influence was always thrown to the side that stood for orderliness and for serious-minded cooperation and for sound service in the public interest, no matter what difficulties had to be faced.

He was a born teacher with a distinct flair for popularizing. He was a far-sighted organizer and an adviser of unusual competence. He has left an indelible mark greatly to his own credit and much to the benefit of at least four outstanding scientific organizations of this country—the American Association for the Advancement of Science, the Geological Society of America, the New York Academy of Sciences, and the Rochester Academy of Science, and they have all lavished honors upon him. He served one of the outstanding colleges of university grade for more than fifty years, helping materially in giving it high standing in science—in the meantime making steady contribution to a better knowledge of his special branch of geologic science.

His powerful influence in civic affairs has already been noted, redounding to the benefit of the whole State: That upon the scientific thinking of the people within

his orb has been far greater, as expressed by Doctor Hoffmeister in his memorial address:

I believe the people of this area are unusually geologically minded in spite of the fact that there are relatively few products of economic value found in the local rocks. People here are interested in the origin of the Finger Lakes, the Pinnacle Hills, the rocks exposed along the banks of the Genesee Gorge. There is no question about it, this interest can be almost entirely traced to the influence of Professor Fairchild. He was able to make his rocks live, he gave them a personality. Do you remember when the memorial boulder, opposite the entrance to the main quadrangle of the River Campus, was dedicated to Thomas Thackeray Swinburne, composer of "The Genesee"? Professor Fairchild closed the speaking exercises with an address entitled "Personality of the Boulder." He said among other things:

The boulder has appropriateness in bearing the name and perpetuating the memory of Thomas Thackeray Swinburne. We have a geologic name for these alien boulders, transported far from their native sites, and often perched in insecure positions. We call them erratics. Tom Swinburne was an erratic of the human species. He has traveled far from conventional thought and belief. He did not pattern his life and purpose from other people. He was individual. His poetic imagination has lifted him from the common plane to a pinnacle of near-genius, always a precarious position. Yet, the world sadly needs more of that type of unconformity to the level of unthinking and superselfish humanity. We honor the memory of Swinburne for his moral individualism and courage as well as for his poetic gifts.

Rock of Ages Geologic! You are to stand here as a noble memorial of a departed being of poetic genius. And from this commanding position you are assigned to keep watch and ward over the University of Rochester. You are to note the goings-out and the comings-in of the future generations of students; and to them you are to be a reminder of the worthwhileness of "things of the spirit." And year by year, you will receive, vicariously, the tribute of successive groups of University graduates.

He gave a personality to his rocks.

Said Mr. Foreman (1929):

The people of Rochester, especially, should be appreciative and grateful for his many scholarly writings on the remarkable natural phenomena of Central and Western New York; and, particularly, for his very handsome and profusely illustrated book, written in popular style, *The Geologic Story of the Genesee Valley*.

And, referring to the serial chapters of that book as they appeared in print, Mr. C. R. Vanneman, Chief Engineer of the New York State Public Service Commission, wrote (1927) to the Gas & Electric News:

I am enjoying reading the articles of Dr. Fairchild. I find them very instructive and written in a vein which is easily understandable by the layman as well as by the engineer.

* * *

A great man, a great writer, a great and true friend.

"*Pas à pas on va bien loin.*"

SUMMARY

Member of American Association for the Advancement of Science (and of the Committee on Policy or Executive Committee); Geological Society of America; New York Academy of Sciences; Rochester Academy of Science; New York State Geological Survey; New York State Board of Geographic Names; International Geological Congresses (delegate); Conservation Congress (delegate); Pan-American Congress

(delegate); Marsh Panama-Darien Expedition; Rochester Commission Government Association; New York State Commission Government Association; Municipal Government Association of New York State; Rochester Methodist Episcopal Union; The Brotherhood (Dr. Crapsey's); Associated Alumni of Cornell University; Sigma Xi; Delta Upsilon; Rochester City Club; The University Club (honorary); and other civic clubs. *Guest* of British Association for Advancement of Science.

President of Geological Society of America, 1912; Rochester Academy of Science, 1889-1901; New York State Commission Government Association, 1911-1913; Rochester Methodist Episcopal Union, 1893-1895; The Brotherhood, 1912.

Vice-President of American Association for the Advancement of Science, 1898; Municipal Government Association of New York State, 1914-1916; Associated Alumni of Cornell University, 1893.

Chairman of Section E of the American Association, 1898; Rochester Commission Government Association, 1910-1915.

Secretary of the American Association for the Advancement of Science, 1894 (of its Council, 1893, of the New York meeting, 1887, the Rochester meeting, 1892); the Geological Society of America, 1891-1906; the New York Academy of Sciences, 1885-1888; the Faculty, University of Rochester, 1890-1900 (and also its Registrar).

Collaborator, Division of Forestry of the United States Department of Agriculture, 1899-1901.

Editor of Geological Society of America, 1891-1906; New York Academy of Sciences, 1885-1888; Rochester Academy of Science, 1898-1935; American Geologist (Associate), 1901-1905.

Historian of American Association for the Advancement of Science, 1924; Geological Society of America, 1932; New York Academy of Sciences, 1887; Rochester Academy of Science, 1906; Division of Forestry, 1900-1901 (not published); Geology Department, University of Rochester, 1924; Ward's Natural Science Establishment, Rochester, 1928.

Revised the Constitution of American Association (with Cattell), 1923; Rochester Academy of Science, 1889; wrote original constitution for Geological Society of America (with Winchell), 1889.

Founder of Fairchild Geological Library, University of Rochester, 1907; Lillian Fairchild Memorial, (operative) 1924.

Honors: Hon. D.Sc., University of Pittsburgh, 1910; Patron, Rochester Academy of Science, 1920; Bronze bust, Rochester Academy, 1932; Award for Civic Achievement, Rochester Municipal Museum, 1938.

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MANUSCRIPTS AWAITING PUBLICATION

- Pleistocene literature of New York State (Prepared for Rochester Academy of Science).
 Valley and River Susquehanna in Pennsylvania (Prepared for Topographic and Geologic Survey of Pennsylvania, but refused publication).
 (An important and extensive field investigation, companion work to New York State Museum Bulletin 256 (1925), accompanied by mathematical studies of high value, that should be made public.)