

MEMOIR
OF
SAMUEL STEDMAN HALDEMAN.
1812-1880.

BY
J. P. LESLEY.

READ BEFORE THE NATIONAL ACADEMY, NOV. 16, 1881.

BIOGRAPHICAL MEMOIR OF S. S. HALDEMAN.

SAMUEL STEDMAN HALDEMAN was born at Locust Grove, in Lancaster county, Pennsylvania, on the 12th of August, 1812.

In front of the ancestral mansion in which this offspring of a worthy race first saw the light rolls one of the largest and most beautiful of the rivers of the New World—the river Susquehanna; its spreading tree of waters draining forty-five counties of the two greatest States of the Union, pouring southwards into the head of the largest bay of the Atlantic coast; a shallow river, a mile wide, lovely with green isles and rocky riffles in the summer season; a furious torrent in the early spring, submerging its banks and sweeping the accumulated ice-floes of a thousand affluents, with waste of forest and wreck of human habitations, into the sea.

For some miles above his birthplace low hills of rounded limestone and red shale confine the flood and support a back country (to the east and west) of unsurpassed fertility, tilled by the thrifty descendants of an old German immigration.

Twenty miles below Harrisburg, the capital of the State, the river changes its southeast course and flows due east five miles along the base of a range of quartzite cliffs about four hundred feet high; then bends southward and passes through a wide gate in the ridge, with a vertical wall of rock on the eastern, and high and wooded steeps on the western bank.

From the top of these cliffs, under which young Haldeman was destined to pass his life, he could look northward over the Great valley as the settlers proudly named it—the Cumberland valley as it is now known—bounded by the long, straight, sharp-topped North mountain, called, from its lovely tint through the hazy air, *der Blaenberg*, the Blue mountain, but by the Indians the *Kitatinny*. As far as the eye can reach towards the east and west the horizontal crest line of this verdant rocky wall of the Great valley, about a thousand feet high, bounds the northern horizon, broken

only once, and to its base, to let the noble river issue upon the low country.

Such was the paradise into which our friend and fellow in science was born, and in which he lived as happy an existence as is vouchsafed to mortals for sixty-eight years, never wandering from it except at long intervals and under stress of scientific necessity, to consult his fellow-workers or the books which he could not otherwise obtain, or to gather information at the centres of learning. He never traveled for the love of traveling. I cannot remember a conversation in which he described the scenery, the architecture, or the social pleasures of a journey. He reveled in anecdotes; but every anecdote related to some fact or mistake or law of science. He bore absence from home with the fortitude and patience of an investigator immersed in his researches, but seemed to think of no place in Europe or America as a possible home, merely as a workshop. His only home was by the banks of the great river, under the beetling cliff, with the roar of the iron furnace pervading the air, and the society of his wife and children amply sufficient for his heart. Here he peacefully lived and worked, and here he peacefully died, alone, in the night, on the 10th of September, 1880, without sickness or suffering, as every man of science should die.

The Haldemans are a Swiss family. They emigrated from the Thuner See in the Canton Bern to the banks of the Susquehanna in the early days of the colony. They were hardy, thrifty, hard-working, intelligent people; acquired land, saved money, and were full of enterprise and energy, lovers of freedom, and shrewd politicians.

Jacob Haldeman, Samuel's great-grandfather, when independence of England was declared in 1776, was the member of the Committee of Public Safety from Rapho township.

John B. Haldeman, his grandfather, was elected member of the General Assembly for Lancaster county in 1795.

Frederick Haldimand, his grand-uncle, however, being an English army officer, remained a tory and an exile, but a distinguished one, for he was the first governor-general of Canada.

Henry Haldeman, his father, was born in 1787 and died in 1849—a man of vigorous intellect and a lover of books, a man of business and of consideration in the State.

His mother, Frances Stedman, bore seven sons, and died when Samuel, the eldest, was a lad twelve years old. An accomplished

musician she endowed her boy with that delicacy of ear by means of which he pursued his life-long investigations into the nature of vocal sounds, resulting in the Trevelyan prize essay, which placed its author at the head of that branch of science.

But his eyes were as alert as his ears. No form in nature escaped his notice. He played in the midst of the undescribed curiosities of a new world. He had no teachers of natural history but his own senses. The nearest society of naturalists, the Academy of Philadelphia, eighty miles distant, was born the same year with himself, and published the first number of its proceedings (May, 1817) not until they were both five years old. Say was then describing almost his first "Species of American Fresh-Water and Land Shells not Noticed in the Systems" and "New Species of North American Insects." Nuttall was making his observations on the birds; George Ord on his flowers, and Le Seuer on the fishes one by one. Troost made his first communication on American mineral forms, and Lardner Vanuxem his first analysis, in 1821. In the same year Henry Seybert's first analyses appear in the journal of the Academy. Jessup's *Geological notes on eastern New York* and Keating's description of Franklinite appeared in 1822, along with Hare's first meteorological speculations and Schweinitz's description of mosses. Harlan published his batrachian dissection in 1823; Charles Bonaparte described his petrels, and Godman his fragment of mastodon, in 1824; Bigsby, the veteran geologist so lately lost to us, made a flying visit to describe a trilobite, and Jacob Green his first communication on a new salamander, in 1825. John P. Wetherill joined the scientific coterie late in 1826, Conrad and Morton in 1827, and Reynell Coates and Dallas Bache in 1829.

Through the zealous fellowship of these men Philadelphia, when it ceased to be the political capital of the Great Republic, continued to be the capital of American science. Their earlier sporadic studies of details in botany, zoölogy, mineralogy, and physics served not only as a preliminary discipline for their minds, as a reconnoissance of the fields to be afterwards more broadly surveyed, as tentative searches for the best avenues of investigation, as a tuning of the grand piano on which each of them in solo, or in duets and trios, were to perform their symphonies of science, but they served also to make these early musicians of the divine harmony of nature known to each other, affiliating them with the orchestras abroad, somewhat better organized already than their own, and prepare for them an

audience, first in collegiate and then in the mercantile world, on both sides of the Atlantic. And this imperfect sketch of one may perhaps be accepted as an indication of the various career of all.

While young Haldeman was a school boy he not only rummaged his father's excellent library of books, but also the library of fields and waters, through which he played, fished, and hunted like and with other boys. He made a collection of fresh-water shells from both banks of the river and its islands. He boiled out and set up the skeletons of rabbits, opossums, muskrats, and field mice. He enlarged his museum by the addition of birds, which an itinerant methodist minister taught him how to stuff. But he had not yet learned the meaning of the words species and genus. It is doubtful whether we know now the real meaning of those words any better than he did then. But he had not even the economical use of them; for in fact very few generic and specific names had then been assigned. Naturalists were scarce; societies of naturalists scarcer. And it is a noteworthy fact that the lover of nature feels no need of names for the living things he loves until he meets a fellow-lover of them, and the two attempt to gossip about their mistress and her doings. Then the genius of language offers its services. Solitary man might utter cries, but could not have spoken speech, and the anchorite must in time lose his vernacular.

But young Haldeman knew the forms and colors and habits of his shells all the same, although they had no Greek and Latin labels.

At fourteen years of age he was sent to a classical school in Harrisburg. Two years sufficed to prepare him for Dickinson College, in Carlisle. Fortunate in falling under the instruction of a thoroughbred teacher, Dr. John H. Keagy, the scholar did his master honor. An assistant teacher, Mr. J. T. Q. Mittag, still lives to talk with enthusiasm of the boy's precocious knowledge and indefatigable zeal.

But the classics were not to his taste. The past had little charms for this student of nature. What others thought and felt interested him little. History, politics, metaphysics, poetry were unembodied fictions of unobservant repeaters of undemonstrated traditions of the nature that had passed away. All around him bloomed and breathed an infinity of living things, clad in forms and colors of their own, to stimulate his curiosity, inspire his intellect, and delight his ear and eye. These were his natural teachers. Among these he could run and not be weary, sit and meditate, collect,

examine, contrast, compare, classify, and generalize. This was the work to which he was born and in which he had been bred from infancy. The college routine irked him. The college curriculum was an arena of dust and noise. He thirsted not to learn, but to know. He must find it all out freshly for himself and by himself. "I cannot learn from others" he said once and again; "I must see for myself."

Such a spirit is always noble, but such a conviction is now, in 1881, not wise. But in 1830 it was wiser, but yet not altogether wise. Fifty years has made an enormous difference in the situation and surroundings, the pathways and apparatus of youth of genius. Fifty years ago a born naturalist, especially a naturalist born on this side of the Atlantic, could in fact do no otherwise than make it all out for himself, for it had not been as yet made out by any one. Nor would much time be wasted in rediscovery or reinvestigation. In fact the verification of those earlier isolated observations and rude groupings of facts by several independent naturalists is an indispensable preliminary for the beginnings of our sciences. Now, the student who refuses to learn what has already been accomplished, on the plea that real knowledge must not be traditional but original, shows only the arrogant temper of the folly of youth.

Nevertheless Haldeman learned much at college, and especially from one remarkable man who taught there, Henry Darwin Rogers. Happy the youth who placed himself willingly in the sunshine of that keen intellect, that poet, that called teacher of men, eloquent above the common, and ambitious only to attain the highest summits of observation from which the most extensive outlook of things could be seen.

But Haldeman was not to be a great geologist. The bent of his nature was for analytical discrimination, the fine distinction of details, a true perception of each object in and of itself and of its separate members, by which it and each of them maintains a standing personality in spite of all other beings in the universe. His great master could only see the larger groupings of nature, cared little for the parts, and reveled in general laws. The scholar found it impossible to fix his attention upon an entire landscape by reason of his personal sympathy with and fiery curiosity respecting each proper object in it, rock, tree, flower, bird, beast, insect, and the motion of each, and the sound which each one uttered.

Had Haldeman's eye dominated his ear he would have become

an eminent palæontologist; as it was he did become eminent in one branch of zoological science, a branch which demands the finest eye in the world—entomology. But his ear being born master of the eye, his destiny declared itself, and he became eminent as a philologist, the highest authority in all questions touching the analysis of the animal and human voice; and in the course of years his immense collection of facts respecting vocal sounds classified itself, and his intellect was strong enough to bear the classification; and so the spirit of generalization seized upon this analyst of details, as it has upon so many others, and made him a large and generous thinker; opened to him the past history of his science, and showed him how to formulate permanent laws for it. Yet to his dying day he preferred analysis to synthesis, and was never happy in a general discussion until he could bring it back to mere description. For Rogers facts were good for nothing but to breed and illustrate laws. For Haldeman laws were tiresome except as a mere running commentary upon the glorious text of facts. All nature to him was like a volume of scripture, every letter of which, while necessary for forming a word, and the words sentences, and the sentences paragraphs, and the paragraphs chapters, and the chapters books—every letter of which was in itself so beautiful, so rich, so perfect a thing that the copying scribe will gladly obey the affectionate requirement of the Mishnah to say a prayer before he writes it, and to wipe his reed and take new ink before he writes the next.

It was precisely this intense affection for the nature in detail, for every single object of sight and hearing, that in the end made of young Haldeman a great man; for greatness does not mean size, but completeness; and perfection is the same as truth. What he loved was not the name of the thing, nor some story about the thing, nor some relationship of the thing to its surroundings and to the observer, nor its possible usefulness, nor its relative beauty, but the thing itself. He loved each thing for itself. Consequently he studied everything under the best auspices for finding out its true form and nature; and this habit, bred in childhood and matured through after life, with singular simplicity and disinterestedness, with an ever-growing love of fact, truth, reality, made Haldeman one of the most trustworthy observers—one of the most accurate naturalists that ever lived. What he saw he saw, what he heard he heard, and what he described was accepted by others as a good statement—as a matter of course. He therefore seldom erred, ex-

cept when his scorn of less conscientious men excited his passionate opposition. Then he was unjust. To the end of his life he refused to learn of others what they desired to teach as their own observations. He never cared to know anything but his own observations. He never quoted anybody. He seemed unable to give entire faith to anything that was told to him, even by those whom he most sincerely loved and respected. At the meetings of the Academy of Natural Sciences, of the American Association for the Advancement of Science, of the National Academy, he was always interested and amused, and listened keenly to papers on physics, as well as on natural history; but his prevailing mental attitude was that of distrust or half faith, or a mere fugitive curiosity; for he had not made those experiments, dissections, analyses, or observations himself; and they were out of his line, unstudied by himself, therefore undemonstrated. They were very curious and interesting; very instructive *if true*; but they might not be true. What he had himself investigated *that* he was quite sure of being true; and in those investigations of his own he was well content to live.

The natural consequence of such a character was that he accomplished in his own way more than most men. His zeal in his own work hedged it about against interferences and interruptions. It ran its unwearied course straight from the beginning to the end. His collection of facts became vast, and his memory placed the whole of it at his command. He wasted none of his mental energy on copying the notes of others, or in redescribing what was already described by competent observers. The new—the new only—was his first, last, and only love. His letters from Europe were short and bare of stories, for, as he said in self-excuse, everything in Europe has been well told; why tell it again?

College life, therefore, was not at all to his liking, and he abandoned it at the end of the second year, when he was eighteen years old, in 1830, and began again to occupy himself at home wholly with his cabinet of minerals, plants, shells, and insects, and his library of scientific and philological books.

But being a minor, and owing his support to his father, business of some kind or other must be attached to his scientific pursuits, if for nothing else than to save appearances, and the family name from the scandal of idleness and unthrift, to which it had never before been exposed. The early German communities of middle Pennsylvania were an intolerant race, who preferred their barns to

their houses, their horses to their children, and stockings to any kind of bank of safety and exchange. To add field to field, until there was no more room for the sportsman, seemed in their eyes the last word of wisdom. As for useless learning let the lame, the blind, and the puny cultivate that land on which no man can thrive. Most of them had come from the land of the Black Forest, the Vosges, and the intermediate plain of the Palatinate. To these had been added deserting Hessians from the British army and peasants from other German regions of misery and ignorance. On a substratum of mediæval superstitions in their mental character lay a superstratum of sterling virtues—industry, temperance, frugality, and a horror of war. The women were notable housewives, pious, industrious, more saving even than the men, great breeders of families, and as jealous of their rights and of the welfare of their offspring as the lioness of her cubs. The hard-headed fathers had hard-fisted sons, in whom the love of the rifle—that first gift of the god of America to all new-comers—became an enthusiasm. The daughters were round-faced, buxom maidens, able to protect themselves from their lovers and subject them when they became husbands. But all alike—fathers, mothers, sons, and daughters—were as ignorant of what we call knowledge as the cattle in their fields. The hard life of the fatherland had become a life of abundance and freedom and jollity in the new world. Irremediable poverty had been exchanged for unlimited opportunities for acquiring wealth. The lord and the bishop, the recruiting officer and the tax-gatherer, had all been left behind, and the peasant-serf had become a land-owner and a nobleman. He looked upon his broad acres with the pride of an unquestioned and absolute mastership, guarded his fences against the least suspicion of trespass, and herded his cattle and stored his crops in a limestone castle built from his own quarry, with a stone colonnade on one side and lofty bank and bridge on the other; and when his grain was ground teamed it to Philadelphia in a high-peaked wagon, like a ship, drawn by seven great horses, on one of which he rode, while his advent was announced by seven chimes of little bells mounted on the hames. A huge trough hung from the back of the wagon, from which as from a manger the cattle fed at noon, and underneath between the wheels swung from chains the platform tray, in which his mastiff lived to guard him and his cortege.

But in his family life he was still the *Deutscher Baur*. His

house was low, confined, and crowded; his bedroom stifling; his table a pine board in the kitchen, with the spinning-wheel and reel beside it; no book but Luther's Bible and psalm-book and the almanac; no musical instrument of any kind; no picture on the wall; no ornament but a china dog or sheep on the mantelpiece. The family linen was kept in wooden trunks, and the family clothing hung on wooden pegs around the walls of the bedroom. No flower garden claimed a share of the kitchen garden ground; a few holyhocks and sunflowers flaunted in the sunlight; that was all. Few houses were free from vermin, and, except the bread, which tradition taught the women how to bake excellently well, the food was coarse and unvaried or artificially unwholesome. Dyspepsia and rheumatism were the diseases of the country.

As time went on, and the Indians disappeared with the panther, the wolf, the bear, and the elk from the ever-shrinking stretches of forest land, as hamlets grew into villages and villages into towns, German books got printed, and here and there a German newspaper. Children were sent to poor and scattered German schools. The laws of the colony and then of the Commonwealth were printed both in German and in English. German theological seminaries arose to supply the pulpits; German colleges began to cultivate liberal learning; but still the mass of the population talked German in the house, the store and the market, and cared nothing for any knowledge beyond the limits of farming, litigation, and politics. In 1839 I heard arguments from fine young fellows whom I met in the German counties against believing that the earth was round. The opposition of the German population to the common-school law of Pennsylvania was nearly universal. There was a *rooted sentiment in all the German counties that learning spoiled men for the duties of life.*

If this sentiment prevailed against the old-fashioned learning and the humanities of the then existing schools, history, eloquence, poetry, philosophy, and mathematics beyond the merest arithmetic, the aversion manifested to the newer sciences may be easily imagined. To shoot birds to stuff and mount, and beasts to dissect and articulate; to collect shells along the river bank and rock specimens from the cliffs; to spend hours with a microscope over some minute fragment of a weed leaf, or flower; to draw the invisible tarsi of noxious bugs with patient precision as if they were dollars and cents in a cash account—was, in the eyes of the Pennsylvania Dutsch, to be

a *taugesnit*, a good-for-nothing, a decent sort of vagabond. Public sentiment frowned upon all such misspenditure of human strength and time.

Young Haldeman was one of the winged horses harnessed, therefore, into the Conestoga market-wagon team. His father had purchased land at the mouth of the Chikiswalungo creek, which enters the Susquehanna river just beneath the great wall of quartzite, at entrance to the gap above Columbia. He himself was set to run a saw-mill on this water-power. But business was more irksome to him even than his college life, and he hailed a threatening sky as a friend coming to give him an excuse for remaining in his back office among his books. He learned to love the rain more than the sunshine; and this penchant for rainy days became a fixed affection which he exhibited to the end of his life. As the storms of society made monks feel safe and comfortable in their cells, so the western thunder-storms of summer and the northeast snow-storms of winter relieved young Haldeman both of business responsibility to his father and of the stupid garrulity of neighbors, and permitted him to remain at home with his own soul in that natural world of forms and colors and sounds in which he was prophet, priest, and king.

Thus he spent five years from 1830 to 1835, when at twenty-three years of age he married Miss Mary A. Hough, who was to be a perfect companion to him for a long life and the mother of his four children.

It was in this interval of five years that preparations were made for those Geological State surveys which we now look back upon as the ground-painting of that great canvas on which the middle distance and foreground picture of American sciences has been in a large part finished in. Paleontological and geological papers begin to take precedence of descriptions of species and chemical analyses of single specimens in the Proceedings of the Philadelphia Academy.

Morton's arrangement of a few of Vanuxem's Notes on the Secondary, Tertiary, and Alluvial Formations of the Atlantic Coast had been published in 1828, with his own descriptions of some New Jersey and Delaware fossil shells and others in 1830. Conrad's first considerable paper on the geology and organic remains of a part of the peninsula of Maryland appeared in 1830. His next, upon the Tertiary beds and fossils of the Southern States, was not read until April, 1834.

Henry D. Rogers read to the Academy in the following June his

first description of anthracite coal. He was already a fellow of the London Geological Society, and had been appointed State geologist of New Jersey. The analyses published in his paper were by Alex. Dallas Bache, then professor of chemistry in the University of Pennsylvania. Rogers was a member of the new Geological Society of Pennsylvania, but not an officer, and it is remarkable that not a single paper of his appears in its first volume of transactions for 1834 (published in 1835). But in the transactions of the American Philosophical Society, of which he became a member January 2, 1835, his name is conjoined with that of Wm. B. Rogers in an important paper on the Tertiary geology of Virginia, read on the 5th of May. The continuation of these contributions was delayed until March, 1839. He published nothing over his own name, from a feeling that every statement of a great subject should be as extensive and complete as possible. What he had to say he reserved for his second or general report on the geology of New Jersey, published in 1840.*

Richard C. Taylor pursued an opposite course, and read numerous geological papers on special districts at the meetings of the Geological Society, the first one on April 23, 1834.

Troost, Ducatel, Clemson, Olmstead, Vanuxem, C. T. Jackson and Alger, Conrad and Lea were all at work in 1835 in different States of the Union. Edward Hitchcock had published his report on Massachusetts in 1833. In 1836 the great surveys of New York and Pennsylvania were commenced; Hall, Mather, Emmons, Vanuxem, Conrad in the former, and Henry D. Rogers, with Booth and Frazer for the first year, in the latter.

Haldeman was destined to throw in his lot with this company of ardent explorers. But that was not his first intention, nor was geology his first love. His observations of the living forms of nature had revealed to him a world of sounds which made all nature vocal, speaking to his ear and to his imagination in distinct articulate language, analogous to that of human creatures. Thus he had early entered the halls of the science of philology by quite a different door from that in common use. The crowd of scholars had their entrance in front, by the gate of written literature; he found the postern to it of organic sound. They studied the generation of words and the collocation of vocables; he was inspired to investigate the pronun-

* The first report of progress was published in 1836-8, 164 pages.

ciation of the elements and the syllabic combinations of language as they actually reproduce themselves millions of times every hour on the lips of tribes and nations of savage and civilized peoples.

Up to the year 1836 he had taken every opportunity to study human vocal sounds in Pennsylvania. He longed to broaden the field of the research and compare the dialectic German-English of his birthplace with the dialects of foreign countries. He proposed therefore to accompany Lynch's expedition to the Dead Sea, where he could study the vocal elements of a totally different branch of the human family, the Semitic. But the funds allowed by the Government for that expedition were too limited, and his application for a place in it was fruitless.

He thought at one time of applying for an Indian agency, whether in connection with that of Simon Cameron of Lancaster, or not, I do not know; but this plan also was in some way frustrated, and the result was that he accepted an appointment of an entirely different character and for several years a career of active exploration as a working field geologist.

In 1836 Henry D. Rogers, having been State geologist of New Jersey one year, being now appointed State geologist of Pennsylvania, and preparing to devote his chief attention to this new field, called upon his quondam pupil, Haldeman, to assist him in continuing the field operations in New Jersey.

In 1837 Booth having accepted the appointment of State geologist of Delaware, and Frazer commencing his career in the University of Pennsylvania, the corps of assistants was reorganized, and Haldeman was transferred to Pennsylvania, his new colleagues being Whelpley, Trego, and McKinley. The letter of appointment and instructions which he received, dated April 12th, 1837, was of a character which seems now especially stringent. He was required "to allot at least six months of each year, counting from the first of May to some early day in November, to active geological research in such parts of the State" as should be from time to time designated; "to discharge during the remainder of each year various duties connected with the survey, namely, to prepare reports on all the examinations made" by him; "to execute those portions of the geological map assigned" to him, "rectifying the topography of the State map in all cases where it was practicable, and making geological sections and drawings illustrative of the features of the regions explored" by him, * * and perform his share "in col-

lating and arranging the specimens of the several cabinets to be constructed." He was given to understand that "the good of the survey" demanded "that whatever" he might "collect, either in the way of specimens or of informations, whether connected with the economical or scientific geology of the State," was "to be regarded as the property of the Commonwealth, and to be delivered to" the State geologist "as the responsible repository of all the materials procured during the survey." To this was added:

"You are especially enjoined not to impart to the public, or to any individuals but the members of the geological corps of the State, any discoveries, facts, or important opinions bearing upon the mineral resources or scientific geology of any tract of country, however small, until the same shall have been reported to and first published in the reports of the State geologist.

"In all cases where information is sought from you I request that the persons seeking it be desired by you to address their queries to the State geologist, who, being responsible for the consequences of publishing or otherwise making known any facts prior to the publication of his reports, should in justice retain the option of holding back or divulging whatever may be brought to light by the researches of the survey."

He was required to prepare his detailed report of each field season by the 1st of January following, "accompanied by a minute geological map and by such drawings and sections as may assist in understanding the descriptions." Specimens were to be referred to by some number "previously affixed to the specimen and to be found in the catalogues."

Besides these annual reports a brief monthly report of progress was to be sent in on the first day of each month of field work, "giving a sketch of the investigations" of the month and statement of progress.

Provision was made for a "sub-assistant," and the letter of appointment concluded with the following impossible condition:

"While it is expected that you will, your duties continuing to be performed in a manner satisfactory to me, remain in the service of the survey until its completion, yet, should powerful reasons induce you to withdraw, you are required to announce your intention at least one year before your resignation."

In the annual report of progress for that year will be found a sketch of the geology of Dauphin and Lancaster counties, substan-

tially prepared by Haldeman at the close of the field season, after his return to the house which his father had built for the young married pair, within a stone's throw of the iron furnace which his brothers managed, at the mouth of Chickes Creek, and under the morning shadow of the great rock. A long portico, screened by tall columns faces the water and commands a magnificent view up the sweep of the river. To the right spreads the open rolling country of the Great Valley; to the left that of York and southern Lancaster. The dam at Columbia makes a fair broad lake of the river, at the edge of which move canal-boats drawn by horses. Above the river bank and in front of the mansion pass to and fro the long trains of the Pennsylvania railway—a home of comfort and peaceful beauty.

Haldeman was an entitled assistant of the State geologist only one year; his name does not appear in the lists of 1838 and following years in the introduction to the final report of 1858. But his connection with the State geologist and the survey was not by any means broken off.

His widow informs me by letter, dated April 11th, 1881, that her husband "was with Professor Rogers from 1837 (see date of letter [of appointment]) to 1842, and five annual reports were prepared by him. He spent a part of each winter in Philadelphia for that purpose and was in the field every summer. I know that he personally surveyed Dauphin and Lancaster counties, but I cannot recall where else, and I can find no letters that would inform me."

From the programme of the field work of 1837, given in the second annual report, it appears that the sectional study of the Susquehanna river was assigned to Haldeman as his first work, and that this broadened afterwards over Dauphin and Lancaster counties.

From the close of his short official geological career in 1837 he resided forty-two years at his home under Chiquis rock, never leaving it willingly or for any very long absence, refusing all purely business engagements and contenting himself with his share of the profits of the iron works, as a silent partner who had the best right to put implicit trust in the capacity and integrity of his two brothers, Edwin and Paris Haldeman. "Here books and cabinets accumulated under his laborious hands, only to be scattered again and give place to others when his insatiable appetite for knowledge led him

into new fields of investigation."* It was not unusual for him to work sixteen hours out of the twenty-four. His correspondence with John L. Le Conte and other scientific friends was continuous, and he made frequent visits, lasting a day or a week, to consult and discuss difficult points with them at Philadelphia. By this means he was not unseldom seen at the meetings of the American Philosophical Society and Academy of Natural Sciences, and usually had some new communication to make, while he was always ready to participate with liveliness and sometimes with vehemence in the debates.

In conversation, whether public or private, he impressed his companions and audience by a certain unflagging fullness and force of intellectual life. He was excessively fond of talking. He would talk to any one—man, woman, or child—as long as they would listen, whether they comprehended what he said or not. He was always so possessed by his subject that the size, quality, and behavior of his audience were matters of no concern to him. An oration or a lecture was rather a soliloquy. He never placed himself in the mental posture or position of an interlocutor, and therefore felt no sympathy for an audience. There was no consecutive arrangement discernible, because, whatever old fact or new idea occurred to him he uttered at once; and by a thousand cross-threads of memory he was forever led astray. His wealth of illustration was that of an immense museum, in which at every step scores of curious objects distract the visitor's attention. In fact, he may be said never to have met his fellow-men except in this museum, and as its creator and curator, knowing every specimen and its history and its relationships. It was impossible for him to teach systematically any minds who were not already on a par with his own—students and men of research, who had similar museums of facts and ideas of their own. His professional lectures were astonishing *tours de force*, and often ludicrously eccentric to common people. The story goes that he published in a programme that his next lecture would be on fish, but the hour passed in philological statements, anecdotes of stupid blunders made by dictionary men, and illustrations of the unpronounceable sounds of savages, without any allusion to fish until he arrived at the last sentence.

On the other hand, his books and memoirs were written with

* Dr. D. G. Brinton's memoir in the Proc. Amer. Phil. Soc. p. 281, 1881.

extraordinary precision, completeness, and good order. But here also the bent of his nature for analytical definition was conspicuous. When a law is stated its proofs and illustrations follow in long series, overwhelming opposition by the multitude of facts. Little is said of other men's opinions, and dialectic confirmation is scarcely thought of. The world is to Haldeman too much a universe of facts to need much logic. His life was spent in collecting facts in sufficient number, that, when arranged, they should speak for themselves and tell their own tale with little help from him. He seemed to be all the time a spectator of his own children's performances at a school exhibition where they were acquitting themselves creditably by reason of their admirable bringing up.

In 1839 Haldeman communicated to the Academy of Natural Sciences at Philadelphia an analysis of marl from New Jersey. (Jour., VIII, p. 150.)

In 1840 Haldeman's Monograph of the Fresh-water Univalve Mollusca of the United States began to appear in print in Philadelphia, with colored 8° plates by Lawson.* On this work, descriptive of the Limniadae, his early fame as an able naturalist was established at home and abroad. Eight successive 8° numbers appeared in the years from 1840 to 1845, and during this active interval he made journeys in all directions, as far as Tennessee and the Carolinas, searching for shells along the banks of the rivers of the country. Notices of it are to be found in the *Revue Zoologique* for 1842, p. 194, and for 1848, p. 117. No. 1. *Clepsina scabra*, &c. Supplement *Planaria gracilis*.

In this appeared his description of *Scolithus linearis*, a new genus and species of fossil plant, the most ancient organic remain in Pennsylvania. Hall's Palæontology of New York, I, p. 2, with figure. This fossil is abundant in the Chiquis rock, but it is as likely to be a worm burrow as anything else, and doubts of its organic character are felt and expressed by other naturalists.

In these tours of observation his eye fell upon a thousand objects of nature—birds, beasts, fish, shells, insects, plants, rocks—which went to swell his collections, and to furnish not only subjects of discussion among his friends, but for papers read in subsequent years at the meetings of the various societies who in rapid succession hastened to enroll him among their members.

* Two vols. 8°, now very scarce, the last copy selling at auction for \$30.

In 1841 Haldeman published in the Proceedings of the Academy of Natural Sciences of Philadelphia descriptions of five species of *Cyclas*, two of *Cypris*, and two fresh-water shells, all new (Proc. I, 53, 54, 78), and made a verbal statement respecting *Unios* (p. 104), a branch of malacology however which Isaac Lea took possession of and developed in a series of memoirs superbly illustrated, which he published at intervals for many years in the Transactions of the American Philosophical Society at Philadelphia, and continued to publish privately at his own expense.

In Silliman's Journal he published two articles "On the habits and characters of the *Melaniana* of Lamarck." (Am. J. Sc., XLI, 21; XLII, 216.)

In the Journal of the Academy (VIII, p. 200) will be found a paper "On five new species of fluviatile shells."

The year 1842 was a busy one. His entomological club was in high activity, specimens and descriptions passing between Chiquis, York, and Baltimore incessantly. Meltzheimer and Zeigler lived in York county and the Reverend Dr. J. G. Morris in Baltimore.

Le Conte made his first visit to Chiquis, at Haldeman's invitation, on his way back from Washington to Philadelphia, and was persuaded to allow his earliest descriptions of species to be submitted to the quartette and published under their auspices in the Proceedings of the Philadelphia Academy. The acquaintance thus formed developed into a close friendship and alliance in scientific labors, Le Conte bringing to it his youthful traditions of his father's learning, Major John Le Conte, and the native genius for accurate observation and precise description of each reacting on that of the other in the happiest manner for many years. But while the younger friend remained faithful to his favorite science and gradually confined his investigations to one branch of it, the Coleoptera, publishing more and more copiously as years went on down to the present year, the elder friend's interests ranged more widely through the animal kingdom, and his active work upon insects declined and ceased in 1858, although the two continued to consult until 1860, after which Haldeman became wholly devoted to his philological speculations.

In 1842 Haldeman published Descriptions of two new Susquehanna river *perches*; three of the river *unios*; a *cyclops*; two new species of *tubifex*; two of *cyclas*; a new *stereelmintha*; two new *entamostraca*; four *hydrachnae*, and a *daphnia*. (Proc. Acad. N. S., Phil., Vol. I, N. S., pp. 141, 143, 152, 184, 196.)

He proposed this year a rule of nomenclature for avoiding the bestowal of the same generic or specific name to objects belonging to different branches of the animal kingdom. But the effort was unsuccessful, and the new names given by him and by other naturalists following his leading idea have been relegated by Le Conte and Horn to their proper places as mere synonyms. He proposed *Hypodon* for *Diodon*, a genus of Cetacea, &c. His article on Zoölogical Nomenclature appeared in the American Journal of Science in 1844.

The first number of his Zoölogical Contributions, 8°, printed in Philadelphia, appeared this year and was noticed in the Revue Zoölogique (p. 222). It described the new genus *Unionicola* and nine species of *Hydrachnidae* parasitic upon *Unio*.

He furnished for the American Journal of Science at New Haven a notice of the zoölogical writings of C. S. Rafinesque. (XLII, 280.)

In the fall and winter of this year 1842 (1842-'3) he gave a course of public lectures on zoölogy in the Franklin Institute at Philadelphia, and his introductory lecture was printed in three numbers of the "Public Ledger" newspaper. (Vol. XIII, November 30, December 2 and 5).

In 1843 he published a catalogue of *Carabideous coleoptera* of southeast Pennsylvania and new descriptions of North American Coleoptera. (Proc. Amer. Acad. N. S., Phil., I, p. 269.)

"On the impropriety of using *vulgar names* in zoölogy." (Zoöl. Contributions, Phil., 8 Dec., p. 34.)

"On the arrangement of *insect cabinets* with a view to indicate the geographical position of the species by colored labels." (Zoöl. Contrib. No. 3, pp. 35-40, 1 map.) This idea was applied by Agassiz in arranging the geological cabinet at Neufchâtel.

For Mr. Trego's Geography of Pennsylvania, which appeared this year, Haldeman furnished an outline of the zoölogy of the State. A notice of this appeared in the Revue Zoölogique for 1846, p. 19.

In 1844 he published "Additional Descriptions of North American *Coleoptera*." (Proc. Acad. N. S., II, pp. 23, 53, 89.)

"Seven New Species of *Aphis*." (Proc. Boston Soc. N. H., I, 168, 169.) This seems to have been his first publication in that society, of which he was elected a member Sept. 2, 1840.

The American Association met this year in Boston, and Halde-

man contributed to its Transactions a report entitled "Enumeration of the *fresh-water mollusca* common to Europe and America, with observations on species and on their distribution."

For the History of Lancaster County, which appeared this year, he furnished as an appendix a sketch of the natural history, including the geology of the county.

For the American Journal of Science he furnished the article on zoölogical nomenclature referred to above (XLVI, p. 18), and an account of some electrical phenomena (XLVI, p. 215).

April 19, 1844, he was elected a member of the American Philosophical Society at Philadelphia.

In 1845 he published "Remarks on *Corydalus cornutus*" (Proc. Acad. N. S., II, 182) and other new genera and species of *insects*. (III, 124-128, 149-151, 348.)

In 1846 he published descriptions of *Unio crassus* and *U. abacooides* and several new genera and species of *insects*. (Proc. A. N. S., III, 15, 75, 124.)

He furnished a history of *Agrilus ruficolles* and the figure of the bird to Emmons' Journal of Science and Agriculture (pp. 300, 301), and Trans. N. Y. State Agricultural Society (p. 374).

He also delivered an address at Gettysburg on the occasion of the laying of the corner-stone of the Linnæan Hall of Pennsylvania College.

In this same year his mental activity appears in a new light through a communication on the science of vocal language, made to the Linnæan Society connected with the college at Lancaster, and entitled "On the natural order of the articulate sounds of the human voice." (Linn. Record and Journal, 1846, II, p. 172.)

This was supplemented by his communication to the American Philosophical Society "On the phonology of the Wyandot Indians." (Proc. A. P. S., 1846, IV, p. 268.)

And again the following year by another paper at Lancaster "On the nature of diphthongs and the formation of syllables." (Linn. Rec and Jour., 1847, IV, p. 44.)

This subject occupied a great part of his thoughts even at this early date. It became subsequently his sole occupation, to the exclusion of all other trains of ideas. But his methods were always those of a naturalist, and his data were picked up one by one as opportunities for listening to peculiar pronunciations were thrown in his way. He was especially eager to take advantage of the res-

idence of a few remnants of the Indian tribes in the Eastern and Southern States. He visited Washington when Indian delegations arrived at the seat of Government, for the sole purpose of listening to the articulate sounds which red men of various tribes in the West uttered in conversation with each other.

The results of his earlier observations were reported at the Boston meeting of the American Association in 1849 and at a meeting of the American Academy in Boston. His paper was entitled "On some points of linguistic ethnology," with illustrations chiefly from the aboriginal languages of North America. (Proc. A. A. F. A. S., 1849, p. 423; Proc. Am. Acad., Boston, II, 165 to 178; 1850, V. 5.) And those who heard his wonderful mimicry of the extraordinary sounds of the savages will remember the curiosity and amusement they excited and the conviction which the hearers felt in his exceptional ability as an original investigator of this branch of science—a conviction amply justified by the appearance of his *Elements of Latin Pronunciation* in 1851 and of his *Trevyllian Prize Essay* in Vol. XI of the *Transactions of the American Philosophical Society* in 1859.

In 1847, besides his committee Report on the progress of entomology in the United States in 1846, he published more genera and species of *insects*; a description of *Salamandra erythronota*, and corrections of previous papers. (Proc. Acad. N. S., III, 149, 315, 348.)

Materials towards a history of the *Coleoptera longicornia* of the United States constituted a memoir for the transactions of the American Philosophical Society (X. 2 S., pp. 27-66; Proc. A. P. S., IV, p. 371 to 376). Corrections and additions to this paper appear in the Proc. A. P. S., IV, 371 to 376.

In the proceedings of this society (IV, 356) he described the occurrence of a large species of *Filaria* in a species of *Lycosa*. (*F. lycosae*, Iconog. Encyc., p. 48.)

Descriptions of several new and interesting animals: *Cecidomyia robinia*, *Apus affinis*, &c., were published in Emmons' Amer. Jour. S. and Ag., VI, 192, 193, and Proc. Boston S. N. H., VI, 401, 403; also his description of *Æonia ebonina*, a new species of *trilobite* (p. 191.)

"On the occurrence of a species of *Evania* in various parts of the world carried by the *Blatta* which infests ships" was the title of a paper which he read before the American Association for the Advancement of Science, of which he had become a member at its

first meeting in 1848 at Philadelphia. The paper was published in Emmons' Am. Jour., VI, 211.

He furnished a paper also "On the Apparent Projection of a Planet upon the Moon's Disc during an Occultation" for the Proceedings of the American Philosophical Society (vol. V, p. 16).

At the meeting of the American Association this year he read a paper "On the Chromatograph, a Modification of the Chromatic Wheel of Newton." (Proc. 1847.)

In this year, 1847, he made his first voyage to Europe, and wrote in French, in Paris, for Dr. Chenu's Illustrations Conchologiques, a paper entitled Monographie du genre *Leptovis* of Rafinesque (*anculosa* of Say), with a figure. I have no further information respecting this journey, for he was no diary keeper, and hated the whole tribe of *raconteurs de voyage*, but it must have exercised a noteworthy influence upon his after life. He did not revisit the Old World, as we foolishly call it, until 1859, and then with set purposes of a purely philological kind. Paris now; then Rome. The Jardin des plantes in 1847—the Propaganda dei fidei in 1859. Such is human evolution in the individual, reversing its direction in the race.

In 1848 he published a description of a fibrous lava of Hawaii. (Proc. Acad. N. S., IV, 5.)

Descriptions of North American *Coleoptera*, chiefly in the cabinet of J. L. Le Conte, &c., appeared in the Journal of the Academy, I [2 S], pp. 95–110, and *separata* were printed in Philadelphia, with four plates, in 1849.

"On a new organ of sound in *Lepidoptera*;" "On the supposed identity of *Atops trilineatus* with *Triarthrus beckii*;" "On the occurrence of *Cremastocheilus* and other insects in ants' nests, and of *Chelifer* found parasite under the elytra of *Alaus oculus*;" "On the history and transformations of *Corydalis cornutus*," and "On certain insects common to New Mexico and the United States" are papers which he sent to Silliman's Journal. (IV, V [2 S.], pp. 435, 107, 148, 157, 435.)

At the meeting of the American Association he described a perfect American specimen of the trilobite *Phacops hausmanni*.

"On results of smelting iron with anthracite coal" and "On the construction of furnaces to smelt iron with anthracite" are two of his papers which appeared in the American Journal of Science (V, p. 296, and VI, p. 74, with a figure), of great importance for our

estimate of Haldeman's life and character. They show that the man of science was not a mere naturalist. They intimate his connection with the business world and his curious observation of the events of the passing age. They are an index of one of the great historical events of the century—an event destined to revolutionize the face of society in the New World and to react powerfully on the civilization of Europe. The first trials of anthracite in the Pioneer furnace at Pottsville in the winter and spring of 1839 under the superintendence of William Lyman of Boston, and the brilliant success of John Thomas, the Welshman sent over by the Swede Company to make the same experiment on the Lehigh river, were watched by all the iron men of middle and western Pennsylvania with the liveliest attention. In the end anthracite furnaces took the place of charcoal furnaces in the eastern part of the State, and the Haldemans foresaw and prepared for the new order of things. Before ten years had passed one-half of all the iron made in the United States was Pennsylvania anthracite iron; and the vast increase of the output of metal not only lowered its price and favored the extension of the railway system, but compelled the Kelly's invention of blown iron in Kentucky, from which came directly Bessemer's invention of the low-steel converter, enhancing the average rate of transport and lowering the cost of rails and rolling-stock.

No wonder then that Haldeman was compelled for a moment to leave the shells on the river bank and the bugs on the trees to study the shape of his brothers' furnace-stack, the strength and heat of its blast, and the quality of the pig-metal produced from the burden when mixed with the new fuel; and to add one more illustration of the fact that a well-disciplined man of science can transfer his faculties of observation and generalization to any legitimate new region of inquiry and find himself a practical discoverer there also.

The same connection with the interests of the iron furnace at his door gave him the chance for making the discovery of the *artificial production of capillary lava*, which he described at a meeting of the Academy in Philadelphia (Proc. IV, 5), just as his difficulties in keeping his bugs safe from parasitic destruction had induced him to communicate to the Academy, long before, his observations of facts on the *preservative qualities of copper*. (Proc. I, 269.)

In 1849 he published descriptions of new species of *Cryptocephalius* and *Hymenoptera* (Proc. Acad. N. S., IV, 170, 203). Separata were published in Philadelphia. This paper appeared as *Cryptoce-*

phalinatorum borealis, &c., in the Journal of the Academy. (I, [N. S.] p. 245 to 265.)

“On the identity of *Anomma* with *Dorylus* . . . driver ants,” appeared in Proc. Acad. N. S., IV, 200-202.

“History of *Phalangopsis*, a genus of Orthoptera, with a description of three new species,” and “On the larva of *Physocælus inflatus*,” were read before the second meeting of the American Association in 1849, and published in their transactions. (II, 1850, pp. 346, 347.)

He described several of the Susquehanna river fish species at this meeting (Proc., p. 411), and these appeared in the Journal of the Academy N. S., Philadelphia (vol. VIII, p. 330—).

“On Some Points of Linguistic Ethnology” (a paper already referred to) was read at the Boston meeting of this year.

In 1850 he published his report on the progress of Entomology in the United States during the year 1849, as chairman of the committee of the Academy. (Proc. V, 5.)

He read a note on the orthopterid genus *Daihinia* at the Boston meeting of the American Association. (II, 346, 347.)

Silliman's Journal published his four new species of *Hemiptera* and two new parasitic *Hymenoptera* (IX, 108-111.)

He wrote for the Iconographic Encyclopedia of Science, Literature, and Arts, published in New York, the articles *Articulata; insecta* (II, 132-196), *Entomology*, *Conchology*, *Radiata*, and others.

He published this year his *Zoölogy of the Invertebrate Animals*.

In 1851 he published a description of *Eriophilus mali* (*Hymen*) in the Pennsylvania Farmers' Journal, August, and in the Proc. Boston S. N. H. (VI, 401-403.)

His “Elements of Latin Pronunciation for the use of Students in Language, Law, Medicine, Zoölogy, Botany, &c.” Philadelphia, 8°, pp. —, alluded to above, appeared this year, and slowly worked its way into favor with philologists, who recognized the severe natural-history method of inquiry and demonstration followed by the author. However far the subject may seem to lie away from the pursuits of collectors, microscopists, and anatomists, it touches them all closely when they begin to classify and give names to their genera and species; and Haldeman found himself involved in an etymological and archæological labyrinth—becoming, in fact, as so many geologists have become, a palæolinguist; so that this accidental,

outside, mere dress connection of the wordy presentation of the objects of nature grew into a great intellectual vocation for him, calling him at last to abandon all his previous pursuits to devote himself to it, as will be noticed further on.

Much of his time in 1851 and 1852 was spent in editing the Pennsylvania Farmers' Journal, but he continued his entymological researches. The United States Exploring Expedition under Stansbury committed to him the study of its insects, his descriptions of which appear, with two plates, as Appendix C, pp. 366 to 378 of the report. A short account of an Albino *Tamias lysteri* appears in the Proc. A. N. S., Philadelphia, VI, 198.

In 1853 he sent a description of *Aphis stamineus* to the Boston S. N. H. (Proc. VI, 401) and to the Penn. Horticultural Soc., of which he was a member. (Proc., 1853.) He furnished Dr. John L. Le Conte with descriptions of insects, which appear as an appendix to his catalogue in the Proc. A. N. S., Philadelphia (VI, 361-5). But, as if to show that his philology did not sleep, he read at the Cleveland meeting of the A. A. F. A. S. an "Investigation on the power of the Greek Z by means of phonetic laws." (Proc., VII, p. 251.)

In 1854 he published remarks on Girard's *Limnadena*, and this was his last communication to the Academy for some years. (Proc. A. N. S., Philadelphia, VII, 34.)

In 1855 was published the second edition of Taylor's Statistics of Coal, under the editorship of Haldeman, who not only saw this large and important volume through the press, but showed what he had been about the previous year or two, during which his communications to the various natural-history societies had almost wholly ceased. In point of fact he had agreed with Mrs. Taylor after the death of her lamented husband, the geologist, Richard Cowling Taylor (in 1851), to assist her in revising and bringing up to date his great work on coal, the first edition of which had appeared in 1848 as a volume of 900 pages, 148 of which were in the Introduction, and 709 made eight chapters on the statistics of coal in the United States, British America, Russian America, Oregon Territory, Upper California, New Mexico, Mexico, and Texas.

The second edition was printed with larger type, 224 pages of Introduction* and only 400 pages of statistical matter, relating

* Pp. 19 to 91 and 112 to 119 being the only additions.

solely to the United States, Oregon, Upper California, Texas, New Mexico, British America, and Russian America.

The coal statistics of Europe, Asia, and Africa noticed in the first edition were omitted in the second; but the American tables are enlarged; and as this was done by reference to reports of the geological surveys of various States and other sources of information the labor was very great. Mrs. Taylor had a portfolio of her husband's unpublished additional notes, and had continued her habit of making selection of such from all available sources; but in spite of the assistance she afforded the editor, his task was a long and tedious one.

In 1856 Haldeman read before the American Association at its meeting in Albany a paper on the "Relations Between Chinese and the Indo-European Languages." (Proc. X, pp. 201-216.) Over this dangerous ground Haldeman travels with comparative security, because of his long previous scientific training in the delicate manipulation of contrasts and resemblances, of false and true analogies and homologies among the innumerable forms of living things. In fact, this memoir is a fine example of how naturally a naturalist, turning aside into the garden of philology, looks upon words as life forms, and distinguishes them as fossil or recent. Many of his tabular cross references are not only most ingenious but really valuable; or will become so after the present taboo of the vocabulary by comparative philologists has—as it must inevitably—come to an end.

In 1857 and 1858 I find no record of his publications. He was busy with his lectures in Dover, Delaware. He had been appointed professor of natural history in the University of Pennsylvania at Philadelphia in 1851. In 1855 he accepted a similar professorship in Delaware College, and subsequently lectured there on his favorite theme as professor of comparative philology, being the first occupant of that new chair, which he held continuously until his death. But while lecturing to his classes in Delaware he acted as professor of geology and chemistry in the State Agricultural College of Pennsylvania.

In 1859 he went a second time to Europe, and took that occasion to read a paper before the French Entomological Society on his "Discovery of an Organ of stridulation in an *Orthosia*." (See Ann. [Ser. 3] VII, p. 43.) I will anticipate by saying here that he sailed a third time for Europe in 1861-'2; a fourth time in 1866, and a fifth in 1875.

"These journeys," writes Mrs. Haldeman to me, "were chiefly undertaken for the study of dialects and languages, in order to verify his theories of the sounds of the human voice."

In England and Germany he was of course at home, for English and German were his vernacular forms of speech, and his native Pennsylvanisch Deutsch gave him the great advantage of comprehending what merely literary travelers find impossible jargons in Swabia and the Palatinate. He became able to converse in French and Italian; and his Latin was a medium of communication with the priesthood of the Catholic church, into communion with which he had been received in 1844. (?)

In London and Paris he came into accidental contact with, or rather diligently sought and cultivated, the acquaintance of people of all nations, even of the antipodes. To cite instances in evidence of the amplitude and variety of such opportunities: He learned from Emma, Queen of the Sandwich Islands, then in London, the sounds of the Hawaiian dialects; those of the Guzerati from a Parsee in Paris; those of the Tonga Islands from natives studying at Rome; Khwrdish he found also spoken by the students of the Propaganda.

He passed a great deal of his time in the British Museum and in the Bibliothèques Nationale and Mazarin, and with men who had been corresponding with him by letter for years—Pitman, Ellis, Latham, Prince Bonaparte, in London; De Chenu, De Menerville, Biot, Humbert, in Paris; De Saussure, at Geneva; Belardi, at Turin; Metzel, in Leipsig. Others, like Bleek, at the Cape of Good Hope, and Lundel, of Stockholm, he did not of course see, but he kept up his correspondence with them.

Having on his first visit to Italy found Rome the best place for the study of the living voice, he revisited it on a subsequent voyage. Special favors were shown to him by the regency of the Propaganda. He described to me on his return his methods of research. He was allowed *carte blanche* to select his specimen-men from the list of students, and these were detailed from their studies successively as he required them. Each in turn remained with him for several days, submitting to that trying and amusing cross-examination which we old friends of Haldeman find it easy to picture to ourselves. No lawyer ever handled a witness with more pitiless persecution until the last drop of knowledge was drained from him and the last shade of uncertainty respecting any statement was dis-

pelled. He exhausted in this way the vocal repertoire of between forty and fifty varieties of human speech during one of these two residences in Rome.

Whatever of this kind was in a man he could elicit by the directness of his method and the indefatigable insistence of his zeal. He worked over a student under examination not at all in the manner of conversation, but as an artist works on a bust in wax. His honest endeavors inspired both confidence in his intentions and interest in his operations. His questions opened up so many unexpected trains of ideas that those who at first were simply bored found themselves taking a personal part in the investigation, and did their best to analyze the hitherto unconcious play of their own vocal organs. On his side the discipline of infinite repetition had its natural results, for he could mimic the most extraordinary clicks and clacks of Pacific coast or South Africa as easily as the hamsa in Arabic, or the combinations familiar to the Indians of the Mexican Gulf.

I have already said that his organs of hearing were extraordinarily perfect, as was early shown by his ability to detect and discriminate the several sounds made by insects. It led to the discovery of a new organ of sound in lepidopterous insects, described by him in Silliman's Journal in 1848.

His papers: On the natural order of the articulate sounds of the human voice, published at Lancaster in 1846; On the nature of diphthongs and the formation of syllables in 1847; On the phonology of the Wyandots in 1846; On some points in linguistic ethnology in 1849; his volume on Latin pronunciation in 1851—have been already noticed under their respective years. They had made his name as an original investigator known and gave him ready access to men of science everywhere. In 1853 Agassiz wrote to him, "I long to see your work on etymology. I have always been delighted with the originalty with which you treat these subjects." To his intellectual ability, when he chose to exercise it in generalizing from his multitudinous data, the highest testimony is given by Charles Darwin in the preface to his "Origin of Species" (p. vii), where he refers to Haldeman's "able paper on species and their distribution."

But a royal stamp was set upon Haldeman's life work in London when he carried off from a competition with eighteen competitors from all parts of Europe the Trevyllian prize for his essay entitled

“Analytic Orthography: An investigation of the sounds of the human voice and their alphabetic notation.”

On his return to America he offered the manuscript to the American Philosophical Society in Philadelphia, and it was gladly accepted and published * in the Transactions of the Society and afterwards by J. B. Lippincott & Co., of Philadelphia, in 1860.

An analysis of the features of this remarkable work would be hardly in place in this brief biographical memoir of its author, but the remark may be permitted that its design was as original as its execution was admirably well ordered and complete, and it is safe to say that by this exploration he exhausted the range of vocal possibilities for human beings of all ages and climes.

From 1860 to 1865, the interval of five years between the appearance of his prize essay and the issue of his *little volume of “Affixes in their Origin and Application”* (E. H. Butler & Co., Philadelphia, 1865), Haldeman was immersed in linguistic studies, mostly at his home on the banks of the Susquehanna. His second voyage to Europe, in 1861-’2, was no interruption to these studies, for he traveled not for pleasure or for health, to gratify the curiosity of a sightseer, or to assuage the *ennui* of a *dilettante*, but as an isolated ear might be imagined to travel on some special business, commissioned by the other organs of the body, and confining its attention faithfully to that and to that alone.

In 1862, at a meeting of the American Philosophical Society, January 3, he described certain peculiar sounds and words of the Basque language, which he had obtained from natives of the Pyrenees during his second journey in Europe; but he made no other communication at the meetings until October 2, 1863, when he followed Prof. Chase’s quotations from his prize essay (in answer to Mr. Dubois’ questions concerning the number of possible vowel sounds) with some remarks, and giving some illustrations of “whispered vowels.”

In 1864 he published his Notes on Wilson’s Readers.

At a meeting of the American Philosophical Society in Philadelphia, February 19th, he exhibited a curiously-shaped pebble, excavated from the Susquehannah Valley drift deposits, to illustrate the very artificial aspect which purely natural objects of this kind sometimes wear, and therefore how cautious geologists should be in

* Vol. XI, p. 259. See Proc. A. P. S., Vol. VII, pp. 125, 126.

accepting them as evidences of human handiwork. (Proc. A. P. S., IX, 342.)

In this year also appeared his book entitled "Tours of a Chess Knight," mathematically treated.

In 1866 I have already said he made his fourth visit to Europe for philological studies.

In 1868 he read a lecture before the Teachers' Association of Pennsylvania "On Etymology as a means of Education," and it was published in the Pennsylvania School Journal for October.

He published "Quackery in American Literature" in the January number of the Southern Review; an article on "School Readers" in the April number, and articles on "Northern Geographies" and "American Dictionaries" in the January and July numbers of 1869.

He also published, in 1868, his "Rhymes of the Poets," under the *nom de plume* of Felix Ago. (E. H. Butler & Co., Philadelphia.)

In the American Philological Association, Transactions 1869-70, appears his essay "On the German Vernacular of Pennsylvania," in which he was naturally an adept, having heard it spoken around him all his life. It was a fruitful source of information to him, an inexhaustible mine of investigation in all his researches into the mode, degree, and direction of those verbal and grammatical changes which all languages undergo, especially under circumstances of migration.

In 1870 (May 16), at a meeting of the American Philosophical Society, he exhibited a cylindrical colored bead found in digging the Pennsylvania canal through an Indian grave on the banks of the Susquehanna river, about the year 1832. He referred the members to the figures of similar beads (called Phœnician and Venetian) published in the society's proceedings of December 3, 1862, VIII, p. 114).

He sent to the London Philological Society a paper entitled "Pennsylvania Dutch, a dialect of South German, with an infusion of English." It was read in London June 3, 1870, and afterwards published by the Reformed Publication Board in Philadelphia in 1872.

In 1871 a second edition of his "Affixes to English Words" was published by the Butlers of Philadelphia.

Previous to November 1, 1872, Haldeman had made a very ex-

tensive collection of sonnets for the purpose of studying their construction and discovering some normal rhythmic order. He had tabulated 600 arrangements of the sonnet, and the tale was evidently not yet complete when at a meeting of the American Philosophical Society of that date he described his plan and purpose. (See Proc. A. P. S., XII, p. 561.)

In 1873, before sending a review of Prof. Blain's "Latin Pronunciation" to the Southern Magazine for October, he presented to the American Philological Association a memoir "On the pronunciation of Latin" as presented in several recent grammars," and it was printed in the Transactions of 1873. In private conversation he was accustomed to indulge in the most violent, and at the same time most amusing, invectives against the common run of authors of popular text-books in all departments of science, and his illustrations showed what a curiosity-shop his memory had become.

In 1874 his "Notes on Etymology" appeared in the Pennsylvania School Journal in the number for May, and a paper "On an English vowel mutation present in *cag, keg*," in the Transactions of the American Philological Association.

In 1875 another paper "On an English consonant mutation present in *proof, prove*," appears in the Transactions of the same society. He also sent a review of Prof. Shipherd's History of the English Language to the Southern Magazine for January.

This was the year of his fifth and last voyage to Europe, where he was so busy with his researches that he communicated nothing to the societies of which he was a member except a short notice of a polychrome bead from Florida to the Smithsonian Report of 1877.

In 1878 appeared from the press the work on which he had been so assiduously engaged for years—"Outlines of Etymology," published by J. B. Lippincott, of Philadelphia.

Being now set somewhat free he began to make again communications to societies of which he was a member, and read before the American Philological Association of that year (1878) a paper on "Virgil's Hexameters," which was published in their Transactions.

He also sent "Gleanings" of his studies to the American Antiquarian, Vol. I, No. 2.

In 1879 he stated "The etymologic objection to the spelling reform" in so acceptable a form that it was published in the Proceedings of the National Educational Association for that year. (P. 257.) He also wrote a "Review of Prof. Fisher's Three Pro-

nunciations of Latin," which appeared in Stoddart's Review for 1880.

He was now ardently engaged in excavating the floor of a pre-historic cave at the base of Chiquis rock, near his house, which he had always suspected to contain valuable relics of the past, as well as in enlarging his Indian cabinet from the surrounding country. It soon became known through Lancaster, York, Dauphin, and Cumberland counties that he would buy all that was brought to him of any value, and scores of boys became systematic arrow-head hunters. A few months before he died he told me many anecdotes of his adventures with these boys, one of which is worth preserving, not so much for its own sake as because it illustrates the habitual attitude of his mind towards all phenomena. Two boys were searching the furrows of a ploughed field. One of them found an arrow-head, but after examining it threw it away as good for nothing; the other afterwards refound it, approved it, and brought it to Haldeman for sale. Then the first boy claimed it as first discoverer. To Haldeman the personal element in the contest was invisible; but he saw in the adventure an illustration of the philosophy of ownership and a bizarre exhibition of the conflict among men of science over rights of priority. "You see," he said, "to find is not to find; to own is not to own. To know is to find; and to find by knowledge is to own. That is mine, says one. Not if you don't comprehend it, replies the other; you merely picked it up; I found it." And on this philosophical basis he paid the second boy and dismissed the first with an admonition to become a wiser man.

His description of the objects found by him in the Rock Retreat at Chiquis, as he called it, had gone through the press as the last Article in the XVth Volume of the Transactions of the American Philosophical Society; but the fourteen quarto plates on which he had arranged in series typical specimens of his collection were not quite finished. This memoir was his last. But it is not the last of his many writings to be placed on record; for he left in the press of Lippincott & Co., of Philadelphia, a book entitled "Word Building."

In the American Naturalist for May, 1879, he treated the subject of "Unsymmetric arrow-heads and allied forms" with his usual acumen, drawing natural-history conclusions from them.

In 1880, at the meeting of the American Association at Boston, a few days before his death, he described some "Stone axes from British Guiana" sent to him by one of his daughters, the wife of

the United States consul at Pernambuco, who had resided there many years and frequently corresponded with her father on his favorite subjects, both philological and antiquarian. He read also at the same meeting "Remarks on Aboriginal Pottery."

A few days after his return from Boston he wrote to me that he had greatly enjoyed that meeting, which was one of the finest ever held by the Association, but that he was now too old to have such pleasures without paying too high a price for them.

That same night he died. He vanished from the sight and hearing of his friends and correspondents in science and learning as unexpectedly and suddenly as though he had stepped into his Rock Retreat and the great wall of Chiquis cliff had shut upon him like a door.

One more of the world's magicians had performed his wonders on the planet before admiring and loving audiences, made his bow, and gone elsewhere. We miss the magic sorely; we miss the magician more. That is all that we can say. "Everything is well and wisely put." He learned well; he taught well; his scholars are now among our teachers. American science was his cotemporary, classmate, and friend; but while we submit each one in turn to the inevitable law of growth and decay in the flesh, science knows nothing of decay, but only growth; and the human intellect, at the same moment entering and issuing from its coffin, will pursue its course still a cotemporary of the science of the future.*

* NOTE APRIL, 1886.—Mrs. Haldeman died July, 1883. Haldeman left at his death two sons and two daughters: Carston N. Haldeman, who is unmarried and resides in Taliahassee, Fla. Francis H. Haldeman, married to H. S. Stauffer, manufacturer of Mt. Joy, Lancaster county. Eliza J. Haldeman, who married Col. Philip Figyelmesy, appointed by Mr. Lincoln U. S. Consul at Demerara, and still occupying that post; and Victor M. Haldeman, who married Josephine Kemmerer, and resides at Gen. Wayne, Delaware county, Pa., engaged in business. He left four grandchildren: Loyos H. Figyelmesy, named after Louis Kossuth, under whom his father fought in Hungary; Samuel H. Figyelmesy; Mary Hough Kemmerer, and Gay Kemmerer.