SCIENTIFIC AMERICAN

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A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. LXXI.—No. 22. ESTABLISHED 1845.] NEW YORK, DECEMBER 1. 1894. [$3.00 A YEAR. WEEKLY.

THE PARK AVENUE IMPROVEMENT IN NEW YORK.

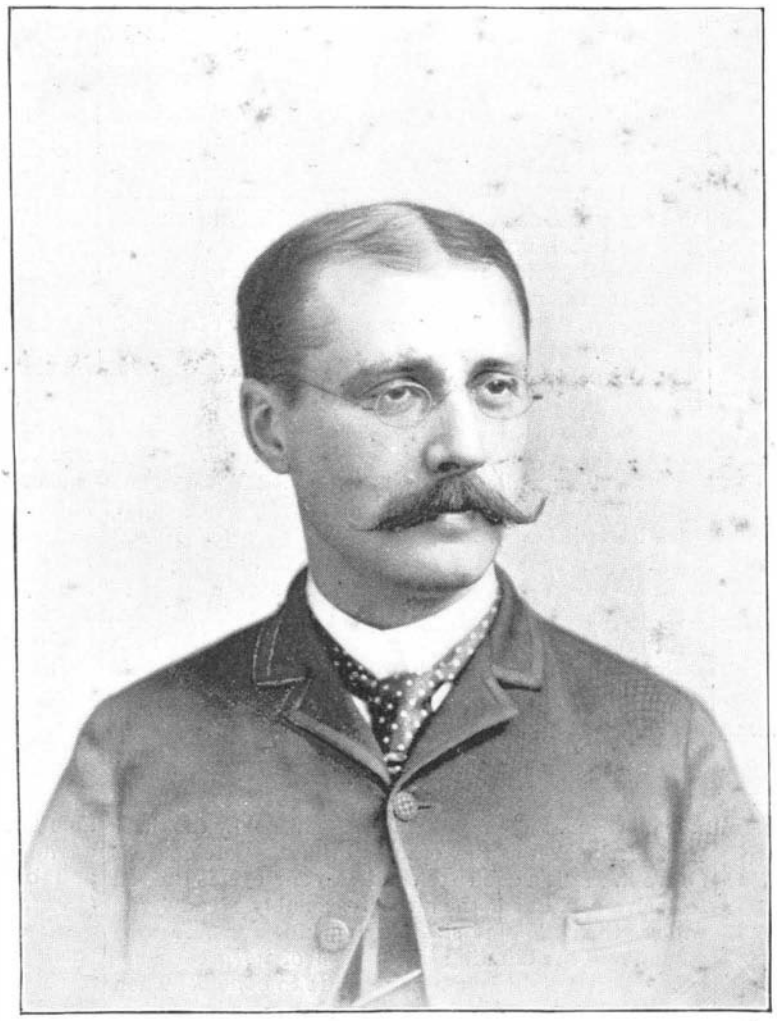
We have already given our readers a description of the Park Avenue improvement in this city, an undertaking now in full progress, and of which we present a view, the reproduction of a photograph taken on the site of operations. The improvement contemplates the removal of the four lines of railroad track used by the three great railroad companies, the New York Central, the New Haven, and the New York and Harlem Companies, whose lines end at the Grand Central Station in this city. These tracks are to be removed from the surface and placed on an elevated structure, which will span the center of the roadway. The street is 140 feet wide and the elevation of the tracks will restore to it a central area nearly 60 feet wide.

Our view, taken just below 125th Street, shows a very characteristic portion of the work. In the foreground are seen two panels or longitudinal elements of the structure almost completed. Running lengthwise of the structure are the side plate girders, 7 feet 2 inches deep and 65 feet long. These are carried on columns at the sideand transverse lattice girders extend across the street, and at the center of each transverse girder a central column is eventually to be placed. But as it is impossible to put in the foundations of this column without interfering with the running of trains upon the old tracks, temporary wooden trusses are placed across the line, and these support the center of the transverse trussing, leaving all clear for the four tracks below. When the trains are transferred to the deck of the new elevated structure, the central columns will be put in place and the wooden trusses will be removed. The wooden trusses are shown very clearly in the foreground of the cut in position under the steel trusses. They constitute a peculiar form of falsework. In the distance a long series of them are seen filling up the avenue, and in the background the tower of the drawbridge now in use is seen. This will in due time be removed and supplanted by the great high level four track drawbridge which forms one of the most important links in the system.

The planking seen stretching across the span will be replaced by a box girder floor, as it may be termed, which acts as a solid trussing and flooring at once. This system, termed the solid floor system, has been extensively used on the New York Central road.

Far in the background is seen the rider spanning the work. This is a species of traveling crane used for putting the pieces in position.

For further details of the work we refer our readers to our issue of April 28, 1894.



PROFESSOR GEORGE H. WILLIAMS.

GEORGE HUNTINGTON WILLIAMS.

"Geology has lost its brightest star" was the true but sad message of condolence that flashed over the wires early last summer to comfort the sorrowing hearts of the family of one of the youngest and ablest of American geologists. The years of his life were few in number, but counted by what he accomplished, they seem like generations, for they are rich in results.

George Huntington Williams was born in Utica, N. Y., on January 28, 1856. He was the eldest son of Robert S. Williams, now president of the Oneida National Bank, and received his early education at the public schools and free academy of his native

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THE PARK AVENUE IMPROVEMENT IN NEW YORK.

GEORGE HUNTINGTON WILLIAMS.

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city. Thence he passed to Amherst College, where he was graduated in 1878, standing high in his class. He promptly began a post-graduate course, and then went to Germany, where, after preliminary studies in Brunswick and Gottingen, he settled in Heidelberg and devoted himself chiefly to the study of geology, and especially to petrography, which branch he pursued under the direction of the great Rosenbusch. His inaugural dissertation on the "Eruptive Rocks of the Vicinity of Tryberg in the Black Forest" gained for him in 1882 cum summa laude the degree of Ph.D. He returned home during that winter, and early in 1883 received an appointment as associate in the Johns Hopkins University, in Baltimore. Two years later he was advanced to the grade of associate professor, and in 1892 was given full possession of the chair, with the title of professor of inorganic geology.

From 1883 till his death—only a little more than a decade—he developed the course of study in his department and attracted students from all over the United States to the new university. If at the outset his inexperience as a teacher made him feel doubtful as to the results, the full classes that came to him soon dispelled all fears and were but a just tribute to his ability, tireless energy, and personal magnetism.

Dr. Williams also grew as a scientist. Maryland contains a representative of every geologic period from the earliest to that now in progress. Indeed, it may be said without exaggeration that no State in the Union contains a fuller geologic sequence, and there are few areas of like extent in the world where the record is so complete. He was quick to take advantage of this fact, and his earliest work was along the line of microscopic examination of the structure of the rocks of the vicinity. This was his specialty, and the United States Geological Survey promptly sought his aid. There is not space to even mention the titles of his individual investigations, and later more competent authority will discuss them in detail. We can only refer to a few of his larger researches. As early as 1886 the Geological Survey issued as a special bulletin his studies of "The Gabbros and Associated Hornblende Rocks in the Neighborhood of Baltimore, Md." (78 pp.), and in 1890 they published his work on "The Greenstone Schist Areas of the Menominee and Marquette Regions of Michigan" (241 pp.) From his work in Maryland grew the preparation of a geologic map of the State which, with researches on the crystalline rocks, have not, as yet, been completely published by the Geological Survey, but in 1892 he published through the Johns Hopkins Press two valuable maps of the vicinity of Baltimore, one of which was a topographic map, the other a geologic map. The latter was printed upon the topographic map to represent all the rock formations. Eighteen separate types were shown. The geological aspects of the neighborhood of Baltimore were popularly presented by him in an address entitled, "The University and its Natural Environment," delivered before the university authorities on Commemoration Day, February 22, 1892. It was about this time that he edited a "Guide to Baltimore" for the meeting of the American Institute of Mining Engineers held in that city, which contained his valuable paper on the "Geology of the Crystalline Rocks," together with two maps made by him. Prof. Williams also prepared "Notes on the Microscopical Character of Rocks from the Sudbury Mining District, Canada," for the Geological and Natural History Survey of Canada.

His entire bibliography, as published in the "Bibliographia Hopkinsiensis," includes some seventy-two titles. Besides the papers previously mentioned, his "Notes on the Minerals Occurring in the Neighborhood of Baltimore" (1887) and his "Geology and Mineral Resources of Maryland" (1893), deserve worthy notice, and also his more recent "Geology and Physical Geography of Maryland" (1894). He was the author of "Elements of Crystallography for Students of Chemistry, Physics and Mineralogy" (New York, 1890), and for which he made all the drawings. This book has been said to be "the best text book on the subject written in this country." At the time of his death he had in preparation a work on the microscopic structure of the rocks of North America, for which he had accumulated much material.

Professor Williams was a member of the International Jury of Awards in the department of mines and mining of the World's Fair held in Chicago during 1893, and in connection with the special exhibits of his State edited the work entitled "Maryland: Its Resources, Industries and Institutions," which was published by the State Board of Managers for the World's Fair Commission. He also wrote the "Mineral and Petrographical Exhibits at Chicago" for the American Geologist. His other editorial work included the supervision of the terms in mineralogy and petrology for the "Standard Dictionary," also he was on the staff of the present revision of "Johnson's Cyclopedia," and he was an associate editor of the Journal of Geology.

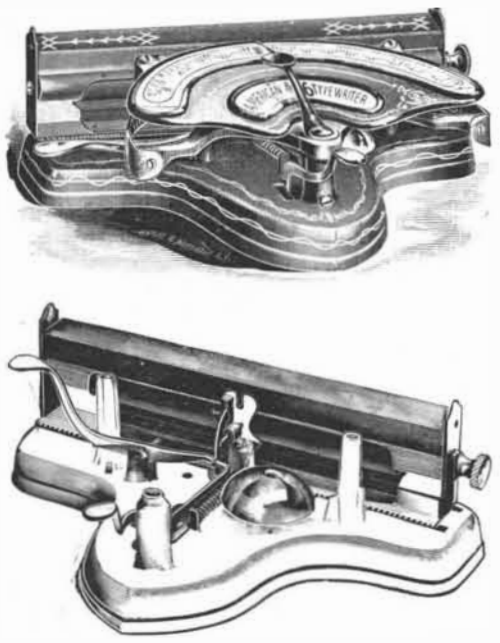
He was a member of many scientific societies, and among these may be mentioned the Geological Society of London and the French Mineralogical Society abroad. While at home, besides his membership in the American Association for the Advancement of Science, he was connected with the Geological Society of America, in which organization he held the high office of vice-president at the time of his death. Professor Williams was also a member of the International Congress of Geologists, and when that congress met in Washington in 1891 he was one of the managers who conducted its members on the excursion to the canyon of the Colorado.

In April of this year he was called upon by the United States Geological Survey to prepare a map of the Potomac River and Chesapeake Bay, and at the close of his work at the university, in order to secure certain necessary material, he made a trip down the Potomac River. Then he went to Utica to visit his parents before taking his much-needed vacation, but in a few days he was taken ill with a malarial fever, which soon developed into typhoid and terminated fatally on July 12. A career which seemed to hold the certainty of further and more golden fruition was thus prematurely brought to a close. He had accomplished so much in the few years of his active life that there seemed to be no professional heights to which he might not hope to soar and no honors too great but that he might hope to receive them, and yet the cherished ideals of his life were but half attained when the end came. How few of us have done so much with the talents at our disposal!

In the autumn a meeting was held in Baltimore at which his colleagues paid reverence to the memory of their deceased associate, and a committee was appointed to select a suitable permanent memorial commemorative of Professor Williams. This will, in all probability, be a portrait which will be hung in McCoy Hall of the Johns Hopkins University, in honor of the young scientist who did so much for the glory of American geology.

THE AMERICAN TYPEWRITER.

The typewriter shown in the annexed illustrations has the merit of being one of the least complicated in-



THE AMERICAN TYPEWRITER.

struments yet invented for the purpose, and notwithstanding its great simplicity, it will do work that does not suffer by comparison with that done on costly and more complicated machines. The alignment is perfect, and the letters and characters being printed directly without an inking ribbon, are clear and distinct.

The machine has all the advantages of high-priced machines, with exception of great speed and manifolding; still, with practice, work can be done quickly and neatly. The machine is well and strongly built, and the working parts are few and not delicate. It has a paper feed that is all that can be required, and there is nothing about the machine that is liable to break or get out of adjustment.

Although this typewriter is adapted to commercial work and general writing, it would seem that the low price would make it available for young people. In the hands of a bright boy or girl a machine like this is one of the best of educators.

The manufacturers state that in the short time this machine has been on the market the sales have reached 3,000, all of which are giving good satisfaction. The machines are made by the American Typewriter Company, of 267 Broadway, New York City.

Alcohol from Apples.

Vivien and Dupont have experimented as to the manufacture of alcohol from apples. One hundred quarts of apple juice, weighing 233 pounds, contained 89·75 per cent of water, 0·30 per cent of ash, 2·04 per cent of pectin bodies, and 2 per cent of cane sugar, 2·97 per cent dextrose, 8·50 per cent levulose, and 0·84 per cent. of other sugars; total sugars, 14·31 per cent. On adding phosphoric acid, potash, and ammonia (or sodium nitrate) the fermentation proceeds as quickly and completely as with turnip juice, and by this means 5 per cent of alcohol is obtained from the apples. This alcohol was considered to be of better quality than the ordinary alcohol from cider. The grounds remaining compose 18 per cent of the apples taken, and contain 2·5 per cent of sugar.

What is Your Weight?*

Many persons weigh themselves frequently and imagine that they know their weight. Sweet illusion! Nothing is more difficult than to know one's weight exactly, even with access to first class scales. We hear one say, "I am making flesh, I have increased 2 pounds;" and another, "I am getting into form, I weigh 3 pounds less;" but while I do not wish to make myself disagreeable, especially to people who keep account of their weight, I am convinced that in most of such cases there is really not an ounce of gain or loss; or, if there is any variation, it is not what the scales record. A lady goes into a store, weighs herself, and receives a card: August 15, 120 pounds. She goes to the country, and returning after several months weighs herself again in the same store and receives a card, on which she finds inscribed: November 22, 126 pounds. She has gained 6 pounds in three months and ascribes it to the change, the fresh air, etc. She feels happy—good weight, good health. But is this increase real? In nine cases out of ten it is only apparent, due mainly to wearing more or heavier clothes, thicker boots, etc. The ordinary methods for determining variations in weight give absolutely fallacious results. The causes which influence weight are numerous, and rarely taken into consideration. For example, was the weight taken immediately after breakfast, or long after? Or following active exercise attended with free perspiration? Again, many people, even educated people, have extraordinary ideas as to what affects the weight of the body. Have you not been asked more than once if it is true that one weighs less after meals than before? As if every additional weight in the pocket or the stomach were not necessarily revealed by the balance. The fact is that people are in the habit of weighing themselves, for good luck, one day after breakfast, another day before dinner, another day with heavy clothes on, another day when it rains, etc. Add to this the errors of the scales, and who can say that he knows exactly his own weight or range of variation? One's weight is like a mobile expression—it changes every instant. The study of this matter is, nevertheless, of considerable physiological and hygienic importance—a fact of which I have become thoroughly convinced in the course of over ten years' investigation of the subject.

The inaccuracy of ordinary balances, such as one finds in hotels, at railway stations, etc., determined me to make a portable balance to weigh a hundred kilogrammes (220 pounds), and to be exact to within an ounce, and since then I have weighed myself regularly every day at the same hour in the morning and under identical conditions, and to-day I possess a record of five years of experiments conducted with the utmost precision. Every day when weighing myself I record the barometric and hygrometric variations, the temperature, and the dinner menu for the day. These experiments have convinced me more than ever that our weight is in a perpetual state of fluctuation. After eliminating the errors of the instrument, our weight varies, subject to innumerable influences. After breakfast, on a warm day, one loses more than 150 grammes an hour. How then are you to arrive at your true weight when it is subject to such incessant fluctuations? When we remember that 70 per cent of our body is water, there is little difficulty in understanding that our weight must vary continually with the transpiration of moisture; moreover, it varies with the pressure of the atmosphere. The mere variations in atmospheric humidity suffice to account for a change of more than a pound, and other causes may suffice to account for another pound.

The person who weighs only at intervals may infer from this that he is growing lighter or heavier, but the conclusion is unwarranted. There are some people, on the other hand, who will tell you that their weight never changes. This, too, is an error; it is constantly fluctuating. The fault is generally that the scales used do not record variations of a pound or so. For ordinary purposes this is of no consequence, but for recording changes of weight in sickness it is of very serious moment. The scales are not without their importance in medical practice, especially with infants. The weight of an infant increases in definite proportion during the first weeks of life, and there can be no departure from this regularity of increase without impairment of health. For adult persons, too, it is good to consult the scales, for they are the barometer of health. Any sudden increase of weight, amounting to a pound or so in a day, indicates a tendency to disease. It is evidence of health when the weight does not fluctuate more than three or four ounces from day to day. Great fluctuation implies functional derangement.

*Dr. Henri de Parrville, in Le Correspondant.