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ALFRED ELY BEACH.

When this issue of the SCIENTIFIC AMERICAN reaches our readers many of them will have already been apprised by the daily press of the death of Mr. Alfred Ely Beach, one of the members of the firm of Munn & Company, and for fifty years a leading figure in the world of science and invention. When a prominent member of a great business dies, his record in the business world is usually of ephemeral interest, in the sense that his works perish with him. But in the case of Mr. Beach it is different. In the works of his life, in his inventions—many made at so early a date as to be some decades ahead of the proper time for their development—in his services in the world of science as one of the proprietors and virtually a co-founder of the scientific publications of his firm, in the work represented by the thousands of patents procured by his firm for the inventors of America during the last fifty years—in these, his life's work is of perennial character, and his services to humanity will not soon be forgotten, while the SCIENTIFIC AMERICAN will endure as a monument of the life's work of his firm. In speaking of his death to our readers we feel that the loss is theirs as well as ours, and that among the numerous clientage of inventors who have profited by the counsels of this firm, and of scientific students who have found in the SCIENTIFIC AMERICAN their weekly pabulum, will be found an army of devoted friends and true mourners.

Alfred Ely Beach was born in 1826 in Springfield, Mass. His death occurred on January 1, 1896, from pneumonia. His father, Moses Y. Beach, was one of the prominent figures in the life of old New York. He was the founder and for many years the proprietor of the New York Sun. His son received his education at the celebrated Academy in Monson, Mass.

The Reverend Alfred Ely, a distant relative, from whom Mr. Beach was named, was the Presbyterian clergyman of the town, and Mr. Beach was placed under his guardianship. After graduation from the academy the father took his son into the Sun office, and under his father's direction he received the thorough training in the publishing business which left him so well equipped for what was to be his life work. It was a rare treat to hear Mr. Beach tell of his early experiences in the forties, when the electric telegraph was slowly coming into use, when the first railroads and steamships were making their entry into the world, and when the habits of life in old New York were less cosmopolitan than now.

In the Monson Academy, which was one of the leading educational institutions of the country, Mr. Orson D. Munn, with whom Mr. Beach has been associated for a few weeks less than half a century, had been a schoolfellow of Mr. Beach. In 1846 the two young men entered into partnership, purchasing the SCIENTIFIC AMERICAN. The paper was then but a small affair. It had been started on August 28, 1845, by Rufus Porter, a strange, many sided genius, who found room in the columns of the new journal not only for science, but for poetry, and for moral and religious items. The issue of July 23, 1846, was the first to appear with the title of the new firm of Munn & Company as proprietors, and Rufus Porter as editor.

Another interesting point is brought out by an announcement made at this early date in the columns of the new journal to the effect that patents could be secured through the SCIENTIFIC AMERICAN Patent Agency. Mr. Beach, having an inborn taste for mechanics, became at once interested in the inventors of this country and gave his best work and thought in securing for them their rights from the Patent Office.

In 1846 the profession of patent solicitors was hardly known. Most of the work in this city had been done by Mr. Sickles, the father of General Daniel Sickles, and a lawyer by the name of Seth Staples.

During the year 1846 less than 600 patents were issued. The inventors of the United States were just starting on their career which has brought about the issue of more than 20,000 letters patent annually for the past ten years.

Between the years 1850 and 1860, it was Mr. Beach's custom to go to Washington every two weeks, to personally attend to the applications pending in the Patent Office, which had been filed by Munn & Company as a firm, and no solicitor was better known at the Patent Office than he.

Later, as the business of soliciting patents assumed larger proportions, it became necessary to establish a branch office at Washington, which is still kept up with a corps of some twenty employes. The SCIENTIFIC AMERICAN meanwhile grew in size and interest, and with the patent department as an adjunct, the incessant labor of the two partners was often prolonged far into the night, and the SCIENTIFIC AMERICAN became a unique figure in the world of journalism. It formed a complete review of the world's progress in science, its bound volumes forming semi-annual records of permanent value. It seemed desirable that much of the interesting matter which had appeared in the paper during the year should be put into book form, and in 1872 the "Science Record,"

an illustrated octavo volume of 590 pages, compiled mostly by Mr. Beach, was first published. The "Science Record," in addition to numerous articles and notes on science and invention, contained biographical sketches, with portraits, of noted men of science. Thus in the volume of 1873, now before us, we find a beautiful steel engraving of Professor Joseph Henry, woodcuts of Tyndall, Peirce, Dana, Morse, Kirchoff, and Bunsen, men prominent in the world of science, and of Judge Nelson, of the Supreme Court, together with accompanying biographies.

In 1876 the publication of the "Science Record" was discontinued. The SCIENTIFIC AMERICAN SUPPLEMENT, which was started in the same year, was designed in part to take the place of the "Record," and also to illustrate the great Centennial Exhibition in Philadelphia. When the year was completed the demand for the new publication was so great that it has been continued up to the present time, and is considered by thoughtful men, who as a class are mostly its patrons, to be the most valuable scientific "current opinion" or "review of reviews" that has ever been published. Mr. Beach took a special interest in this publication, and by his energy and taste for sound reading, his selection of matter for the paper has made it popular and gained for it a very large circulation.

It is not going too far to say that the editing of the SUPPLEMENT by Mr. Beach was a labor of love. Mr. Beach was a good Spanish scholar, and the monthly edition of the SCIENTIFIC AMERICAN, published in part in that language, was established at his instance. When its circulation had reached the point where the income from it equaled the expenditure he manifested great delight. He wanted our South American republics to know what was going on in mechanics, the arts, and the sciences at the North. His fondness for new inventions always rendered him courteous to inventors, and however busy he might be, he never was reluctant to lay aside his work to greet an inventor and listen to his description of his invention, exhibiting that degree of interest which was marvelous. He enjoyed every new invention, and never tired looking after an inventor's best interest.

His regularity of attendance at the office was remarkable. He never took a vacation. Year after year would go by without his ever being absent from his desk. His extensive reading of contemporaneous matter, as well as of books of general literature, gave him, in spite of his apparent confinement, a large horizon appreciable by anyone to whom he opened his mind. There was a piquancy of thought and originality of mind about him that flavored all his utterances.

Mr. Beach was in many ways a most remarkable man, but perhaps the most conspicuous feature of his evenly balanced character was the never tiring industry with which he applied himself to the multifarious interests with which he was connected, and to the investigation of hundreds of new and interesting subjects constantly coming into the field of his researches. Although he well knew his limitations, he was never satisfied with mere superficial or cursory knowledge of a subject, but brought to each new question the closest analysis and most careful scrutiny of the facts, with a directness in all cases indicating that there was never any "lost motion," and with an amplitude of previous information suggesting Bacon's well known saying, that he had "taken all knowledge for his province." He was never impatient, never in a hurry, and always had time for everything, for his life was carefully regulated, down to the nicest details, with the idea of saving and making the best possible use of all his time. His faculty of conciseness and directness of expression, and his quick perception of the salient points of an invention submitted for his judgment, were marked characteristics of his business life.

The ever active mind was not satisfied to be busy only with the recording of other men's work. He was himself an inventor who has made a broad mark in the world of science and art. He invented, about 1853, the first typewriter, which was intended for the use of the blind, and which was awarded a gold medal at the Crystal Palace Exposition. His machine, a most elegant and expensive piece of mechanism, is still in existence, and has been fully illustrated and described in this paper. His inventions touch upon cable traction of cars and other railway inventions dating back some thirty years. Pneumatic tubes for delivery of mail matter; also the famous Beach hydraulic shield for tunneling in earth and under river beds, were inventions dating back over twenty years. The first successful use of the shield was in the construction of the experimental tunnel under Broadway, between Warren and Murray Streets, in 1869, while one of the latest noteworthy examples of its use was the construction, in 1890, of a large railway tunnel between the United States and Canada under the St. Clair River at Port Huron, Mich. Mr. Beach was twenty years in advance of his time, and his inventions have acquired their fruition two or more decades after he originated them.

Mr. Beach's private life was characteristic of his

strong and individual personality. For society, as such, he had no taste, but all his time, away from the office, was passed at home, among his family, where, as husband and father, and always as closest friend, his gentleness, his sympathy, his ever thoughtful attention to the comfort and happiness of those dependent upon him, afforded evidence that here only did he seek the happiness of life, except such as was afforded by the satisfaction with which he successfully pursued his intellectual labors.

His personal habits were of the simplest and most regular description. He believed that good health depended upon regular habits, simple life, early hours, and regular and systematic exercise; and, although Mr. Beach was an unusually hard worker, he scarcely ever during his life had an illness until his last. He had a great love of music, and the opera was his only dissipation.

Mr. Beach was an ardent admirer of the Rev. Henry Ward Beecher, and he desired to become a parishioner, but the distance between his house in New York and Plymouth Church, Brooklyn, was so great that this became impracticable. With the consent of Mr. Beecher, a private telephone wire was introduced into the church, with a transmitter attached to the pulpit, the result being that Mr. Beach could attend divine service without leaving his own home.

He greatly enjoyed asking his friends to his house during the early days of the telephone, to listen to the eloquent preacher. When the hymns were announced hymn books would be handed about, and the little parlor congregation could join in the songs of praise with the audience several miles away.

Mr. Beach's family consists of a widow, one son, and a daughter, who mourn his loss. Since Mr. Beach has been taken away it is a comfort to him who has been associated with Mr. Beach during his long life of labor to feel that the ever active mind which never spared the apparently frail body may now be forever at rest.

**THE HOUSING OF THE WORKING PEOPLE—ITS ECONOMIC AND ETHICAL ASPECTS.**

The eighth special report of the Commissioner of Labor, by Mr. Carroll D. Wright, which is devoted to the question of the housing of the working people, is distinguished by that breadth and detail which have made the United States government reports famous the world over.

The term working people is a very broad one, and includes in any country a great multitude which is capable of subdivision into classes that differ widely, according to their character and habits of life.

Mr. Wright makes a three-fold division: First, the artisan class, which is composed of men who are well paid, and are steady, saving, and ambitious. They live in good homes, and, as a rule, make reliable tenants. Landlords provide comfortable houses for this class and are glad to have them as tenants.

The next class includes, first, the "unfortunate, who, through sickness or other misfortune, have grown deeply in debt," and become discouraged; and secondly, the "lazy and careless, and those who are not particularly intelligent or ambitious, or are possessed of bad habits." These make poor tenants, and landlords give them little encouragement. Generally speaking, it is the first half of this class that has been the object of model dwelling enterprises of a philanthropic character. Socially considered, they are on the "down grade," and if left to themselves, they are in danger of gravitating to the third class, which "includes the incorrigible, the drunkard, the criminal, the immoral, the lazy, and the shiftless."

The people in this lowest class are destructive as tenants and they pay rent only under compulsion. They have scarcely any domestic habits or instincts. Herding together in city slums, they live in a promiscuous disregard of sexual privacy that is utterly prohibitive of moral or social cleanliness.

A great philanthropist, Lord Shaftesbury, who for sixty years devoted himself to the improvement of the homes of the poor, says: "I believe that nothing has led to more misery of every sort, moral and physical, than burying those people in holes, where nobody saw them, and they saw nobody except those who lived immediately around them." There is but one remedy for the evils of the slum—to sweep it away. The vice and disease which breed quickly amid the darkness of slum and cellar life will disappear altogether, or in large part, if these unfortunate people be obliged to live in decent homes, amid sanitary surroundings, and with due regard to the sexual separation which is necessary to the decency of domestic life.

The case made out by this report may be summed up as follows:

1. The workman is paying too much rent. The sum expended in this way should never amount to more than 20 per cent of his weekly wage. In some European countries it rises as high as 30, 40, and even 50 per cent.

2. The accommodation which he receives is often cramped, unhealthy, and badly situated.

With a view to encouraging this migration to the country, the London County Council has recommended what is known as a model zone system, by which a tariff, equivalent to a mean rate of one-fifth of a penny a mile up to twenty miles, is charged on special workmen's trains to and from the suburbs.

Belgium offers such cheap rates that the working people are able to live in the farthest outskirts of Brussels, and yet go to work in the city at an expense for railway fare of only four to five cents a day.

	Per cent.	Per cent of net profit.
Improved Dwellings Association, New York City...	5	6
Boston Co-operative Building Company, Boston, Mass.....	6	9-96
Improved Industrial Dwellings Company, London, England.....	5	8
Rosemount Dwellings for Working People, Edinburgh, Scotland.....	6	..
Rouen Cheap Dwellings Company, Rouen, France..	3	8
Berlin Building Association, Berlin.....	5	..
Amsterdam Association for Building Laborers' Dwellings.....	5	..

That model housing can be made to pay, is proved by the above table published in the report, which shows dividends paid, and per cent of net profit earned, by various companies for the last year for which such returns were available.

The solution of the problem of housing the working classes is to be found in the co-operation of model housing companies that will be satisfied with a moderate rate of interest, with a combination of the various transportation companies that will make cheap rates for the laboring classes.

The remark of Georges Picot that, "The improvement of dwellings is the best guarantee of civilization," is borne out by the observation of the philanthropist Shaftesbury, who testified, as the result of his many years of labor, that he was "certain that many people who are in a filthy and deplorable condition have been made so by their own surroundings."

Any influence that tends to destroy the individuality of the man or the family is to be deplored. The herding and swarming of city life does this. Any influence that tends to emphasize the individuality of the man or the family is fraught with lasting benefit. The separate cottage dwelling, with its breathing space of surrounding fruit and flower garden, sheltering hut one family, and owned by one man, is capable of bringing more physical, moral, and social blessedness into the life of the working people than all the other philanthropies of Christendom combined.

**Another Large Racing Yacht.**

According to Engineering an order has recently been placed with Messrs D. & W. Henderson, of Partick, Scot-

land, for "an exceptionally large racing yacht," which is to carry the enormous sail spread of 20,000 square feet.

She is to be built from the designs of Mr. Geo. L. Watson, the designer of Thistle and the three Valkyries; but the owner's name has not yet been made public.

The sail area of Defender and Valkyrie III was respectively 12,640 and 13,026 square feet; and a well-known yachting expert has spoken of them as "over-canvased brutes." It was confidently asserted last year that the limit of possibilities in size had been reached, and that future yachts would show a return to more convenient and reasonable dimensions. Yet, according to this report, the new boat will exceed this year's racers in spread of canvas by about 60 per cent. Last season's boats drew about 20 feet of water; and if the projected yacht be deep in proportion to her power, she will be as awkward to bring in and out of harbor as a man-of-war.

A CABLE 2,184 meters long is to be laid in the Amazon River between Para and Manaus, an ordinary telegraph being impracticable, on account of the impenetrable forest.



ALFRED ELY BEACH.

3. This high rent and overcrowded accommodation is not necessarily the fault of the landlords. It grows out of the fact that the working man, especially if his work be of an intermittent character, must of necessity live near his sphere of labor. This has naturally led to a rise in the price of building land in the neighborhood of factories; and statistics show that the price of land, and the cost of building, have risen faster than the rate of wages among the working classes has increased. The householder will inevitably try to ease the burden of rent that lies upon him by the subletting of rooms, and hence arises the excessive overcrowding which obtains in all large manufacturing centers.

4. The most promising solution of the difficulty lies in the direction of increased rapid transit facilities. This would bring the speediest relief to the congested districts. No people enjoy the freshness and freedom of the country so keenly as the working classes; and as soon as it is in their power to enjoy the comforts of country cottage life and at the same be within reach of their daily work, there will be a large exodus to the suburbs. This would result in a lowering of rents, and an increased accommodation for those that remained in the city dwellings.