No. 1303

NECROLOGY

STEPHEN WARNER BALDWIN

In the death of Stephen Warner Baldwin there has passed away another of the notable figures in the engineering history of the United States. He belonged to the era of practical training which brought forward so many gifted men in the nineteenth century to take part in the active developments following the Civil War.

He was born in Baldwinsville, N. Y., February 4, 1833, and received his early education in Homer in that state. He entered the Lawrence Machine Shops at Lawrence, Mass., as an apprentice under the late John C. Hoadley, dividing his three years between the machine shop, forge, boiler shop and drawing-room. The admiration he felt for Mr. Hoadley lasted all through his life, and on the death of his old chief, both out of affection and out of sentiment, Mr. Baldwin was active in buying from the Hoadley estate a large amount of expert apparatus, which was made a gift to the Society.[1] Mr. Baldwin worked with Mr. Hoadley on his single-valve automatic engines and on his portable or farm engines. From this experience he always had a strong interest in the development of agricultural machinery for the West.

He later became manager of the Clipper Mowing Machine Works at Yonkers, N. Y., and was associated with the Johnson Iron Works at Spuyten Duyvil, N. Y., improving the machines of both these companies with his own inventions. He soon became one of the prominent mechanical engineers in the field of manufacture of steel and was president of the Spaulding & Jennings Company. But he will be principally remembered as the New York representative and agent for so many busy and successful years for the Pennsylvania Steel Company of Philadelphia and the Maryland Steel Company of Sparrows Point, Md. He remained with these companies until 1904 when he was retired, but was an honored adviser until his death.

[1] Trans. Am.Soc.M.E., vol. 8, p. 349. Some of this apparatus remains in the possession of the Society as museum specimens. Other units have been sold and loaned where they could be made useful.

Mr. Baldwin was intensely interested in the problems of education for the young engineer. When Milton P. Higgins proposed his scheme of half-time schools in which lads were to work at books for half the day and in the shop atmosphere for the other half, Mr. Baldwin's interest was not alone because the projector had been a fellow apprentice at Lawrence, but because he believed the idea to be sound. The Artisan School of Syracuse, in which his friend, Prof. John E. Sweet, is so important a factor, was also near his heart.

Mr. Baldwin was early brought into active relations with the Society. He served on early nominating committees, was made Manager for the term 1887–1890 and Vice-President for 1890–1892. But his greatest service was as Chairman of the Finance Committee with control over the budget of each year. He was successively reappointed fourteen times, and his service ceased only with the changes in Constitution and By-Laws in 1904. He was a member of the Council's committee which bravely faced the problem of the purchase of No. 12 West 31st Street, in 1890, when the Society had no capital to invest in such a great undertaking, but only the earnest purpose of those members whom the Secretary of that date had stimulated to the point of venturesomeness. The bonds issued as a part of the financial scheme were all redeemed and the second mortgage paid off within the period of Mr. Baldwin's activity. He worked very hard for two winters over a plan to develop meetings of the Junior Members of the Society for their common advantage. The monthly meetings of the Society in different cities are a heritage from those efforts.

Mr. Baldwin was a sound and straight thinker, a man of great power of application, an analytical reasoner, a diligent and painstaking worker. Tall and commanding of figure, he had the grace, refinement and broad culture of the scholar. His inventive mind was always at work, adding labor-saving devices as well as improvements to whatever interested him, and his pleasing personality intensified the impression of good fellowship by which he put every one at ease. He inspired such confidence in his integrity that he was constantly sought as an adviser. He was at one time a member of the American Society of Civil Engineers and of the American Institute of Mining Engineers. He was very active also with his friend, J. F. Holloway, in the building up of the Engineers Club, and was one of its four honorary members.

Mr. Baldwin died at the home of his daughter on January 5, 1910, after several years of physical weakness, although of clear mental capacity, and a personality active in the days of the upbuilding of the Society has gone to his reward.

MARK BARY

Mark Bary who died December 27, 1909, was born at Detroit, Mich., on June 27, 1873.

Immediately after his graduation from the University of Michigan in the class of 1897, Mr. Bary entered the employ of the Michigan Electric Company as assistant and later in the same year was engaged as instrument man with the Missouri River Company. For the next two years Mr. Bary was employed by Bryan and Humphrey as assistant in electrical and mechanical work and as superintendent in their office. In March 1900, he became engineer-in-charge of the Laclede Power Company at St. Louis, Mo., and later in the same year, engineer of construction of the city lighting plant of the Imperial Electric Light Company, St. Louis. In 1901 Mr. Bary became first assistant to H. H. Humphrey, consulting engineer, Detroit, Mich., his chief work being the mechanical design and superintendence of installation of electrical and mechanical power plants. From 1904 to 1907 he was engaged in consulting practice under his own name in St. Louis.

Mr. Bary was a member of the St. Louis Society of Civil Engineers and the Disraeli Society of St. Louis. He entered the Society in 1903.

CHARLES W. BATCHELOR

Charles W. Batchelor was born in London, December 21, 1845. Soon afterwards his parents moved to Manchester, where he received a liberal education and where he served his apprenticeship in several of the largest engineering works of that city. At the age of twenty-two years he came to this country to install machinery for the Clark Thread Company of Newark, N. J., and almost from the first was intimately associated with the inventor Thomas A. Edison, assisting in the development of the electric pen, the telephone transmitter, the phonograph, the electric railroad and the Edison incandescent lamp and lighting system.

In 1881 he went to Europe to represent the Edison interests at the Paris electrical exhibition of that year, and remained in Paris for three years where he was the first to introduce the system of electric lighting. He made the original installation at the Paris Opera House, and started a number of isolated plants in other parts of Europe; at the same time establishing and managing a large factory at Ivry.

Returning to this country in 1884, he assumed the management of

the Edison Machine Works, an organization which in the course of time developed into the Edison General Electric Company, and the selection of the site of their large works at Schenectady was made by him. Later this company combined with the Thomson-Houston Electric Company and became the General Electric Company.

Of late years he had practically retired from business and devoted much time to travel, though he retained the presidency of the Taylor & Company Iron Foundry, a concern in which he had been interested since its establishment.

Mr. Batchelor was a member of the Museum of Natural History of New York and the New York Botanical Garden. He was a member for a number of years of the American Geographical Society, the American Institute of Electrical Engineers and the American Electrochemical Society. He entered the Society in 1880.

He died at his residence in New York City on January 1, 1910.

GEORGE HENRY BAUSH

George Henry Baush was born in Holyoke, Mass., April 9, 1870, and was educated in the public schools of that city. His technical training was gained from his father, who founded what is now known as the Baush Machine Tool Company, of Springfield, Mass. In 1896 he became general foreman and superintendent of the Baush Company and in 1904 was elected its vice-president and general superintendent, all designing of machine tools being entirely under his charge. In 1906 Mr. Baush became associated with Hill, Clark and Company of Chicago, as manager of their Philadelphia office, resigning from this position to accept a similar one with the Fay Machine Tool Company of Philadelphia, which he retained until within a few months before his death on September 12, 1910.

CLAY BELSLEY

Clay Belsley died at his home in Peoria, Ill., September 3, 1910. Mr. Belsley was born at Spring Bay, Ill., January 28, 1873, and was graduated from Cornell University in 1898 with the degree of M.E. Soon afterward he entered the employ of the Link-Belt Company of Chicago, where he had charge of the mining machine plants. He later entered the service of the McEntee-Peterson Engineering Company of Peoria, by whom he was placed in full charge of their work in the South, including the building of the electric light plant at Gastonia, N. C. In 1901, Mr. Belsley returned to Peoria and opened a private practice as consulting engineer.

Among other important work undertaken at this time, he designed an electric light and power plant for Tom J. Gardner at Las Animas, Colo., installed the mechanical and electrical plant of the Corning distillery, and had charge of the design and construction of all the work of the Woodruff Ice Company of Peoria. He was also engaged during this period in expert investigation in connection with legal work.

In 1908, Mr. Belsley accepted the appointment of city engineer of his native city, resigning his lucrative private practice to perform this public service. While personally superintending the construction of a masonry culvert for the city, he contracted typhoid fever and from the resulting weakened condition never recovered.

WILLIAM P. BETTENDORF

William P. Bettendorf was born in Mendota, Ill., July 1, 1857, and died at his home in Bettendorf, Iowa, June 3, 1910.

His career as a mechanic and inventor began with the termination in 1878 of his apprenticeship as machinist in the Peru Plow Company, Peru, Ill. The following three or four years were devoted to the design and manufacture of farm implements at Moline and Canton, Ill. In 1882 he returned to Peru, accepting a position as superintendent of the Peru Plow Company, and shortly afterward invented the now famous Bettendorf metal wheel, still used in fully ninety per cent of the agricultural implements made in the west. He also designed the full line of special machinery for the manufacture of steel wheels, from a wheelbarrow wheel to a grain harvester.

The Peru Plow Company being very limited in capital and manufacturing capacity, Mr. Bettendorf organized the Bettendorf Metal Wheel Company at Davenport, Iowa. With this company he severed his connections in 1891 and turned his attention to designing an all-steel running gear for farm wagons. This task, seemingly simple, but in reality of prodigious proportions, led him into hydraulics and intricate die-working before its final accomplishment. The gear was made entirely of sheet steel pressed into shape by special hydraulic presses and elaborate dies, and was the first with a tapering spindle to accommodate any size of standard wooden wagon wheel.

While perfecting the steel wagon gear, it occurred to Mr. Bettendorf that the ordinary truck for freight cars could be greatly simplified, the number of parts and weights reduced and the strength increased. His efforts along these lines resulted in the Bettendorf brake beam,

pressed from sheet steel similar to the axles of the steel wagon gear. That which will prove an enduring monument to his memory as a car builder is the design of steel underframing for freight cars and the highly advanced methods for its manufacture.

Mr. Bettendorf became a member of the Society in 1895. He was also a member of the Western Railway Club, the New York Railway Club, the Railway Club of Pittsburg, the Eastern Railway Club, the New York Mechanical Club, the American Foundrymen's Association, the Union League Club and the Chicago Athletic Association.

JAMES HENRY BLESSING

James Henry Blessing was born in the village of French's Mills in Albany County, N. Y., September 14, 1837. At his father's death in 1849 he left school and in 1853 was apprenticed to the machinist trade for four years, with the firm of F. and T. Townsend, Albany, N. Y. He remained with this firm until 1861, when he entered the United States Navy as acting assistant engineer. After the war he became engineer in charge of steam machinery of the Brooklyn Horse Railroad Company, returning to Albany in 1868 to act as superintendent of the foundry and machine works of Townsend and Jackson, successors to F. and T. Townsend.

In 1870 Mr. Blessing invented the return steam trap, the best known of his one hundred and twenty inventions. In July 1872 he left the employ of Townsend and Jackson to engage with Genl. Frederick Townsend in the manufacture and sale of these and other steam specialties, under the firm name of Townsend and Blessing. In June 1873, this firm sold their interest to the Albany Steam Trap Company and Mr. Blessing became secretary and treasurer and general superintendent of the company, and afterwards president.

Mr. Blessing was elected mayor of Albany in 1899. He was a member of the Society of Engineers of Eastern New York and of the Albany Historical and Art Society, and entered this Society in 1891. He died in Albany, February 21, 1910.

JONAS HENRY BLOOMBERG

Jonas Henry Bloomberg was born in New York City, February 2, 1870, and was educated in the public schools and later at the College of the City of New York. In 1900 he removed to Mexico where he devoted himself with great success to sugar house machinery. He built and designed most of the modern sugar houses and distilleries

there, the more important ones being at the Rio Vista Plantation, the Almonte Plantation and the La Crosse Plantation. At the time of his death, April 27, 1910, he was consulting engineer of the Rio Tamasopo Sugar Company of Tamasopo, S. L. P.

Mr. Bloomberg was a member of the National Geographical Society of Washington, D. C.

JAMES WELDON BRIDGE

James Weldon Bridge was born at Atlanta, Ga., March 24, 1873, and educated in the public schools of Atlanta, receiving in 1892 the degree of B.S. in M.E. at the Georgia School of Technology.

His early shop experience was with the Atlanta Consolidated Street Railway Company from 1894 to 1898, at which time he entered the drawing-room of the Atlanta Railway and Power Company, becoming general foreman of shops in 1900. In 1902 he became superintendent of the manganese mines, Georgia Iron and Coal Company, and afterwards held various positions of importance with city and interurban railway companies. At the time of his death, December 20, 1909, he had just taken up the work of general manager of the Pittsburg, Monongahela and Washington Street Railway Company, stationed at Monongahela, Pa.

Mr. Bridge entered the Society in 1905.

WILLIAM HENRY BRYAN

William Henry Bryan died December 5, 1910, at Chicago, Ill. He was born August 14, 1859, at Washington, Mo., and received his early education at the country schools. In 1881 he was graduated from Washington University with the degree of M.E., having spent his vacation in the shops of the Missouri Pacific Railroad where he learned telegraphy and other railroad practices. Since that time he had been employed as a general assistant erecting engineer and salesman with Frank H. Pond; as local manager of the George F. Blake Manufacturing Company, New York; as secretary of the Pond Engineering Company; and, in 1889, as secretary and local manager of the Heisler Electric Light Company of St. Louis, Mo., then developing a long-distance series of incandescent lighting. In 1891 he went to Chicago as manager of the Western branch of the Yale and Towne Company, New York. Since 1892 he had been a consulting mechanical and electrical engineer in St. Louis. During this period he constructed the water works at Washington, Mo., the power plants of the Imperial Light, Heat and Power Company, of the Coliseum, of

the Grand Leader, of the Eli Walker Building, and of Ferguson and McKinney, all of St. Louis. He also rendered excellent service in practical smoke abatement for the Citizens' Association of St. Louis in 1892 and 1893.

Mr. Bryan was a member of the Engineers Club of St. Louis, having served as secretary, vice-president and president; of the present Smoke Abatement Committee of the Civic League of St. Louis, of the American Society of Heating and Ventilating Engineers, of the St. Louis Railroad Club, the Mercantile Club, the American Water Works Association, serving on its Committee of Depreciation, and president of the Washington University Association. He became a member of the Society in 1891, and since 1906 had been an active and influential member of the Committee on Meetings, and as such was mainly instrumental in inaugurating and conducting a system of local meetings in St. Louis.

WILLIAM WILBERFORCE CHURCHILL

William Wilberforce Churchill died at Oshkosh, Wis., March 24, 1910. He was born at Monroe, Wis., January 6, 1867, the son of Norman and Dr. Ann Sherman Churchill. After graduation from the Monroe High School in 1883, he spent one year at Rose Polytechnic Institute, and in 1886 entered Cornell University, from which he was graduated in 1889 with the degree of M.E. He was made a Fellow of Sibley College for 1889–1890, and received the degree of M.M.E. in 1890.

After graduation Mr. Churchill spent a few months with E. P. Allis & Company, Milwaukee, Wis., and then entered the employ of Westinghouse, Church, Kerr & Company, New York, where he remained until his retirement because of ill health, in 1906. He rose through various intermediate positions in Chicago, Pittsburg and Boston to be chief mechanical engineer of the company's headquarters in New York, and at the time of his retirement was vice-president and director. During his sixteen years of service he superintended the construction of the Boston terminal; the Kingsbridge power house, New York City; the Atlanta water-power plant, Georgia; the Lackawanna & Wyoming Valley Railroad, Pennsylvania; the Grand Rapids, Grand Haven & Muskegon Railroad; Hotel Pontchartrain, Detroit, Mich.; the Northern Colorado Power Company, Denver, Colo.; the electrification of the Long Island Railroad, New York, and many others. In 1902 he spent some time

in Europe in connection with the electrification of the London Underground Railway.

Mr. Churchill was a member of the New York Railroad Club, the Cornell University Club, the American Association for the Advancement of Science, and several Masonic orders.

CHARLES B. CLARK

Charles B. Clark was born at Bangor, Me., June 20, 1858, and died March 24, 1910. He was educated in the public schools of Bangor and in 1876 began an apprenticeship of five years with the Hardy Machine Company, Biddeford, Me., during which time he studied mechanical engineering under a private tutor. In 1881 he was employed as an engineer on a steamboat and in 1882 worked as journeyman in the shops of the Lawrence Machine Company, Lawrence, Mass., where he also attended the evening technical schools. He was subsequently employed as superintendent of construction of machinery for the Detroit Dry Dock, Detroit, Mich., the Dunford and Alverson Dry Dock, Port Huron, Mich., and the Simpson Dry Dock, East Boston, Mass. In 1889 he returned to the Lawrence Machine Company as superintendent and general manager, leaving this concern three years later to become manager of the Orono Pulp Company, Orono, Me. Four years later he went to New York where from 1896 to 1898 he acted as manager of the Merrimac Paper Company of Lawrence, Mass. Since February 1898 he had been general superintendent of the Eastern Manufacturing Company's mills, South Brewer, Me.

EDGAR PARK COLEMAN

Edgar Park Coleman was born July 12, 1867, at Decatur, Ill., and died November 27, 1910, at Buffalo, N. Y. His early education was obtained in the country schools and in the Rose Polytechnic Institute, Terre Haute, Ind. In 1893 he was graduated from Leland Stanford Junior University and two years later from Cornell University with the degree of M.M.E. After leaving Cornell he spent one year in the employ of the Metropolitan West Side Elevated Railroad, Chicago, Ill., and the seven years following at the South Chicago Works of the Illinois Steel Company, making quantitative measurements of steam, water, air and gas; efficiency tests of engines, pumps, gas producers, blowers, etc.; and firing boiler trials of hand, stoker, coal dust and gas. He also originated the design now in use of the Porter-Allen 7500-i.h.p. exhaust valve gear; the 8500-i.h.p. exten-

sion release gear for Corliss engines and a steam regulating system for five pairs of independent and two cross-compound engines on a common receiver. In 1905 Mr. Coleman took up his work of steam engineering with the Lackawanna Steel Company, Buffalo, N. Y., in which he was engaged at the time of his death.

He was a member of the American Chemical Society and the Park Club of Buffalo.

WILLIAM E. CRANE

William E. Crane died on May 22, at Duluth, Minn., after a short illness. He was born in Burlington, Conn., and received his early education at the local schools. At fourteen years of age he began to apply himself to engineering and two years later took charge of a small engine at Bristol, Conn. He later went to Waterbury where for twenty-five years he was connected with the Benedict and Burnham Company as chief engineer. After severing his connection with this firm he became consulting engineer for the New England Engineering Company of New York, and designed several power plants of considerable importance, notably, that of the Kings County Electric Light and Power Company, the Passaic Electric Light and Power Company and the Albany and Hudson River Railway Company. Later he was chief engineer at the Hotel Astor in New York City, but failing health forced him to resign and seek the climate of Minnesota.

Mr. Crane was a member of the National Association of Steam Engineers and joined this Society in 1887. He was the author of a treatise on American Stationary Engineering and had the distinction of being the first man to use the double eccentric on a Corliss engine. In addition to his engineering activities he took a keen interest in public affairs and contributed much to the press on social conditions.

BARTON CRUIKSHANK

Dr. Barton Cruikshank was drowned in the St. Lawrence River on June 27, 1910, where he was conducting a boys' summer school and camp at Cedar Cliff, N. Y.

Dr. Cruikshank, who was born in Albany, N. Y., February 5, 1866, was educated in the public schools and Adelphi Academy of Brooklyn and in the Brooklyn Polytechnic Institute, where he received the degree of B. S.

After graduation he entered the shops of the Brady Manufacturing Company, in which he soon rose to be superintendent and assistant manager, finally becoming president. From there he went to Boston

in the employ of the Boston Heating Company, and later to Princeton, N. J., as instructor in graphics and mathematics in the university. In 1891–1892 he acted as consulting engineer for the Indurated Fibre Pipe Company in New York, and in 1893 became superintendent of the Hammond Typewriter Company, Brooklyn. During his residence there, Dr. Cruikshank assisted Dr. Larkins in starting and organizing the first manual training high school in Brooklyn.

In 1899 he accepted the presidency of the Clarkson School of Technology at Potsdam, N. Y., from which he resigned in 1902 to become president of the Cogswell Polytechnic College in San Francisco. Two years later he returned to the East, entering the employ of the Solvay Process Company in Syracuse, N. Y., as designing engineer, remaining until a year prior to his death when he took up the organization of the boys' camp which was so unfortunately the scene of his sudden death.

CHARLES B. DUDLEY

Dr. Charles B. Dudley died at his home in Altoona, Pa., on December 21, 1909. He was born July 14, 1842, at Oxford, Chenango Co., N. Y., where he received his early education. In 1862 he enlisted as a private soldier in the 114th New York Volunteers and fought in seven battles, receiving a severe wound at the battle of Opequan Creek in 1864. Returning from the war in 1865, he prepared at the Oxford Academy and Collegiate Institute to enter Yale, from which he received in 1871 the degree of A.B., and of Ph.D. in 1874. His graduation thesis, On Lithium and a Glass made with Lithium was published in full abstract in the Proceedings of the American Association for the Advancement of Science.

The following year he became assistant to Dr. George F. Barker, Professor of Physics at the University of Pennsylvania, and during this time published in the Franklin Institute Journal some translations of German technical papers. After a month spent as teacher of sciences at Riverview Military Academy, Poughkeepsie, N. Y., he went in November 1875 to Altoona to take up what proved to be his life work as chemist of the Pennsylvania Railroad.

When Dr. Dudley entered upon his new task, no railroad had a chemist as a regular employee, although many had had occasional chemical work done, and the whole subject of the relation between scientific knowledge and its practical use by railroads was in a very chaotic state. It would not be possible to enumerate the special investigations and studies leading to modifications of practices in daily use on railroads which have been considered since that time by the experi-

mental department at Altoona, for the chemical part of which Dr. Dudley was responsible. That which attracted the most widespread attention, perhaps, was the study of steel rails, made in the early eighties, which gave the steel-maker as never before a view of his product from the standpoint of the consumer and forced upon him a study of it not only for immediate output but also with a view to the demands which service would make upon it.

Another very important line of work, perhaps the most exacting and time-consuming undertaken, was the making of specifications. Investigations were made, furthermore, into the questions of ventilation, car lighting, steam heating of cars, disinfectants, cast iron for car wheels and other important uses, paints, long-continued tests on bearing metals, analyses of coals, water supplied both for boiler use and drinking, and explosives.

Dr. Dudley had been abroad on three important commissions: in 1886 to study oil burning on locomotives in Russia, in 1900 as a delegate to the International Railway Congress in France, and in 1909 as a delegate to the Convention of the International Society for Testing Materials in Denmark. He had been vice-president of the American Institute of Mining Engineers, and twice president of the American Chemical Society. At the time of his death he was president of the International Society for Testing Materials, as well as of the Bureau of Explosives of the American Railway Association. He was a member of the English, French and German Chemical Societies; of the Iron and Steel Institute of Great Britain; of the Verein deutscher Eisenhüttenleute; the American Society of Civil Engineers; the American Institute of Electrical Engineers; and social clubs in Philadelphia, Washington and New York. He was also much interested in the Altoona Mechanists' Library.

Dr. Dudley was a member of the Research Committee of the Society at the time of his death.

JOHN DENISON EVARTS DUNCAN

John Denison Evarts Duncan was born at Union Falls, N. Y., July 26, 1871. His preparation for his university course was in the high school of Ann Arbor, Mich., and in 1893 he was graduated from the University of Michigan with the degree of B.S. in electrical engineering and in 1894 from Cornell University with the degree of M.E. From 1894 to 1896 Mr. Duncan was employed by the Terre Haute Street Railway Company, Terre Haute, Ind., and the Stanley Electric Manufacturing Company, Pittsfield, Mass. With the latter

company he was associated with Mr. Stanley and Mr. Chesney in their extensive experimental work connected with the solving of the early high tension problems which were first studied and worked out at their factory. On leaving the Stanley Electric Manufacturing Company, Mr. Duncan successively held positions in New York with the Metropolitan Street Railway Company; the Western Electric Company; the New York Telephone Company; Westinghouse, Church, Kerr and Company; and the Consolidated Railway Electric Lighting and Equipment Company. In 1901 Mr. Duncan entered the employ of Sanderson and Porter, New York, and in 1903 was sent to Portsmouth, N. H., by his firm to construct a 1000-kw. power station for the Rockingham County Light and Power Company. At the time of his death, July 13, 1910, he held the position of managing engineer with the same firm. While directing the engineering work of this firm Mr. Duncan was in responsible charge of the design and execution of many large and diversified projects and well earned the high esteem and confidence of his employers, associates and friends in engineering and business circles. All who knew him and his work recognized his versatility, sound judgment and exceptional ability.

Mr. Duncan was a member of the American Institute of Electrical Engineers, the Brooklyn Engineers Club, the Engineers Club of New York, the Machinery Club of the City of New York, the Michigan Club of New York, the University of Michigan Club, and the Cornell University Club of New York.

RALPH WALDO EMERSON

Ralph Waldo Emerson was born at Orland, Me., March 18, 1872, and received his early education at the country schools and the Phillips Andover Academy. In 1890 he entered the Worcester Polytechnic Institute where he received his technical training, leaving there in 1893 before graduation, to serve an apprenticeship with Brown and Sharpe Manufacturing Company, of Providence, R. I. He remained here for two years and was subsequently connected with the Wheelock Engine Company and the Norton Emery Wheel Company, Worcester, Mass. In 1898 Mr. Emerson accepted a position as draftsman with the Cereal Machine Company of Worcester, Mass., known later as the Shredded Wheat Company and was responsible for much of the special machinery. When the company moved to Niagara Falls, he took charge of the layout and equipment of the plant, and from the position of draftsman rose to that of mechanical engineer. In 1904 he became master mechanic of the Case

Factory of the Singer Manufacturing Company, South Bend, Ind., with which company Mr. Emerson was connected until some six months before his death when, as mechanical engineer and factory economist, he opened an office of his own.

In coöperation with Frank Bishop, Mr. Emerson invented and patented a refrigerating machine for domestic use.

Mr. Emerson was a member of the Commercial-Athletic Club of South Bend.

JAMES B. FAULKS, JR.

James B. Faulks, Jr., was born December 13, 1873, at East Orange, N. J. After his early education in the public schools, he attended the Bordentown Military Institute and later entered Stevens Institute of Technology from which he was graduated in 1896 with the degree of M.E. He held during his lifetime many positions of prominence in engineering work, among which may be mentioned that of draftsman with the Standard Air Brake Company of New York, of engineer of tests with the Edison Electric Illuminating Company, New York, of designer with the Harrisburg Foundry and Machine Works, Harrisburg, Pa., and also with the Crocker-Wheeler Company, Ampere, N. J., and of mechanical engineer with the New York Safety Steam Power Company, New York. He was also prominent in connection with experimental work on the Roumaine cultivator, and was identified with research work in gas engines. In 1904 Mr. Faulks accepted a position at Syracuse University as an instructor in the L. C. Smith College of Applied Science, and at the time of his death, July 14, 1910, occupied the chair of experimental engineering.

Professor Faulks was a member of the Technology Club of Syracuse.

CHARLES A. FERRY

Charles A. Ferry died at Phoenix, Arizona, May 2, 1910. He was born at Utica, N. Y., September 1, 1851 and prepared for college at the Montreal High School. After a year at McGill College he entered Yale from which he was graduated in 1872 with the degree of A.B. He remained in New Haven for three years doing graduate work and in 1875 went to Chicago where he studied law in the office of Judge Upton. Shortly afterwards he became interested in manufacturing and was engaged in the manufacture of steel railway couplers, in 1891 becoming president of the Chicago Tire and Spring Company. For several years before his death Mr. Ferry was not engaged in active business, but was always interested in the

development of the science of modern times as applied in all directions.

CHARLES FREDERICK FOSTER

Charles Frederick Foster was born in Boston, Mass., September 28, 1852. He was educated in the public schools of Boston and the Punchard Free School of Andover, Mass., from which he was graduated in 1869. At the age of seventeen he began his engineering career as rodman, later becoming leveler and transitman, in the office of the City Engineer of Boston, where he remained until 1872. The next three years were spent with the Lowell and Andover Railroad and in the Water Works of Lawrence, Mass. Subsequent to this he became an assistant to Walter McConnell in general engineering in and around Boston; and from 1876 to 1880 occupied the position of mechanical engineer and superintendent of the St. Louis Cotton Factory, St. Louis, Mo. In 1873 he became assistant engineer of the Heine Safety Boiler Company, St. Louis, Mo. In 1893 Mr. Foster was identified with the World's Columbian Exposition at Chicago, and it was due to his excellent work and energy that the task of construction was completed in time and the fair opened on the date set. He was also connected with the International Exposition, Atlanta, Ga., as mechanical and electrical engineer and with the Universal Exposition at St. Louis, Mo., held in 1904, as chief operating engineer.

In 1905, he returned to Chicago and resumed his private practice, devoting his spare time to the compilation of engineering data which unfortunately his sudden death on May 8 left unfinished.

Mr. Foster was a member of the Western Society of Engineers and the Engineers Club of St. Louis. He became a member of this Society in 1890.

The Western Society of Engineers records in its minutes: "Mr. Foster will be best remembered for his wonderful power of thought concentration; his indomitable energy; his deductive mind; his mastery of detail; his executive ability; his skill in handling large bodies of men and molding them into a concrete, harmonious, forceful working unit; his connection with various universal expositions; and by his intimates for his lovable character and amiable disposition."

JOSEPH GARBETT

Joseph Garbett, who was for many years prominently identified with the mechanical industry of Minneapolis, died at his home in

that city, August 22, 1910. He was born in Shropshire, England, January 7, 1852, in which county he received his early education, and where he spent the first years of his commercial life in the Horsehay Iron Works, and later was associated with the Coalbrookdale Iron Works, becoming superintendent of the latter at the age of twenty-three. In 1879 he left England and entered the employ of O. A. Pray and Company, Minneapolis, manufacturers of flour and saw-mill machinery, as foreman and pattern-maker. He steadily developed into a thorough and able mechanic and when the Twin City Iron Works was established he, with O. P. Briggs, constituted the firm, Mr. Garbett serving as chief engineer. It was here that he designed the Twin City Corliss engine which is so favorably known throughout the country today. When the Twin City Iron Works was absorbed by the Minneapolis Steel Machinery Company in 1902, Mr. Garbett was prominent in its affairs, becoming mechanical engineer of that company as well as a director.

In steam engineering Mr. Garbett was an accepted authority. For the past five years he had devoted much time to gas engines and gas producers. He spent several years abroad studying the various types of foreign power plants of this type, and finally adopted the Muenzel, a German engine, as the foundation of a gas engine for American manufacture. To this he applied his skill and engineering ability and developed one of the most successful gas engines and suction producers in use in this country today.

ALFRED MONTGOMERY GOODALE

Alfred Montgomery Goodale died in Waltham, Mass., December 17, 1909.

He was born in Saco, Me., December 20, 1855, and educated in the public schools of that State, receiving from the Maine State College the degree of B.S., in 1875. He served for five years in the works of the Saco Water Power Machine Shop, Biddeford, Me., and the Bates Mills, Lewiston, Me., building, setting up and running cotton machinery; and in 1880 became superintendent of the Newton Mills, at Newton Upper Falls, Mass., afterwards acting as agent, from 1881 to 1883, and from 1884 to 1894, for the Hamilton Woolen Company of Amesbury, Mass., and the Boston Manufacturing Company, of Waltham, Mass. Since 1894 he had been treasurer and a director of the Boston Manufacturing Company. With each of these companies, Mr. Goodale had charge of the erection of new machinery, engines and

boilers, and of the reorganization and improvements of the existing plants. In 1901 he started the firm of A. M. Goodale and Company, in Boston, brokers in cloths and yarns.

Mr. Goodale served on various city commissions and was a trustee of the Waltham hospital. He was a director of the New England and Northwestern Investment Company and of the Westfield Creel Company. Besides his club and Masonic connections he was president of the New England Cotton Manufacturers' Association. In 1898–1901 he served the Society, which he joined in 1886, as one of its Managers.

FREDERICK BELLOWS HALL

Frederick Bellows Hall was born October 18, 1868, at Boston, Mass. He received his technical education at the Massachusetts Institute of Technology and after graduation in 1890, was employed by the West End, now known as the Boston Elevated Street Railway Company, as draftsman on the design of their Central Power Station. The following year, as chief draftsman with F. S. Pearson, consulting engineer, Boston, he designed various power stations, among them the Brooklyn City Railroad Company, Brooklyn, N. Y., Montreal Street Railway Company, Montreal and Quebec, St. Johns Street Railway Company, St. Johns, N. B., Halifax Street Railway and Lighting Company, Halifax, N. S., Chelsea Gas Lighting Company, Chelsea, Mass., Charlestown Gas Company, Boston, Mass., Lawrence Gas Lighting Company, Brighton, Mass. During this time he also acted as superintendent of construction of power stations for the Baltimore Electric Refining Company, Baltimore, Md., Dover Lighting and Power Company, Dover, N. H., and the Portland Street Railway Company, Portland, Me. He was subsequently employed as assistant chief engineer of the Brooklyn City Railroad (Brooklyn Rapid Transit) Company in charge of the design and construction of their Kent Avenue, Southern and Ridgewood Power Stations; and in 1894 had charge of the design and construction of the main power station of the Consolidated Traction Company (now the Public Service Corporation of New Jersey), Newark, N. J. In 1895 he engaged in the design of apparatus for the manufacture of sulphuric acid, and in the following year was employed by J. H. Bickford as consulting engineer in charge of the design of a power station for the Steinway Railway Company at Astoria, New York. In the same year he became treasurer and general manager of the North Sydney Mining and Transportation Company, Sydney, Cape

Breton, N. S., leaving there to become chief draftsman for the Riter-Conley Manufacturing Company of Pittsburg in charge of the design of blast furnace and steel works for the Dominion Iron and Steel Company of Cape Breton. From 1899 to 1901 he was engaged on the design and construction of the main power station of the Manhattan Elevated Railway Company, New York City, and at the time of his death, October 27, 1910, was in the employ of W. E. Baker and Company of New York.

HARRY S. HASKINS

Harry S. Haskins died at his home in Philadelphia on March 13, 1910. Mr. Haskins was born in Moretown, Vt., March 5, 1834, and at the age of twelve entered the machinists' trade, first with Edwin Harrington and later with the Junction Shop, both in Worcester, Mass., where his family had moved. When Mr. Harrington went to Philadelphia, to engage in the building of machine tools, Mr. Haskins accompanied him, and soon afterwards the partnership of Harrington and Haskins was formed, which later became the firm of Edwin Harrington, Sons and Company. On the death of Mr. Harrington, the business became incorporated, with Mr. Haskins as president, an office which he retained until the time of his retirement, in 1900. Through his mechanical ability and inventive faculty he added many improvements to the gear-cutting machines, hoists and overhanging railways manufactured by the firm.

GUSTAVUS C. HENNING

Gustavus Charles Henning, one of the foremost experts in the testing of steel and an inventor of testing apparatus, died at his home in New York City on December 30, 1910.

Mr. Henning was born in Brooklyn in 1855, and educated at the Polytechnic Institute of Brooklyn and at Stevens Institute of Technology from which he was graduated in 1876 and where during his college course he was fortunate enough to come under the influence of Prof. Robert H. Thurston.

Immediately after graduation he entered upon the work of inspection of steel for engineering structures. This work brought him in touch with the late George S. Morison and made him familiar with the problems of structural material.

His inventive genius and the opportunities for its exercise resulted in the design of a form of extensometer which he described in two

papers before the Society, A Mirror Extensometer[1] and A Roller Extensometer.[2] His study of the defects and limitations of the high-powered testing machines operated on the usual hydraulic principle resulted in his design of a testing machine for full size specimens in which the stretch of the adjusting screws is the measure of the stresses upon the test specimen. The two screws, or more, should be fitted with micrometer extensometers and their uniform stretch within the elastic limit of the material would be a constant measure of the effort without the interference from friction inertia and other causes.

Mr. Henning was a great admirer of the Emery design of testing machines and was sent abroad as a representative of the manufacturers for the installation of certain important British and German orders. Acquaintances which he made during this sojourn resulted in his selection as the official delegate and representative of the Society at certain conferences of the International Society for Testing Materials. It was during this time that Mr. Henning made very important contributions to professional literature in the form of partial reports upon Standardization of Methods of Testing, which will be found in Transactions, Vols. 6, 11, 12, 14, 17, 18 and 20. The severity of Mr. Henning's labors at this period caused a breakdown of health from which it is fair to say that he never fully recovered.

On the formation of the American Society for Testing Materials, Mr. Henning found himself rather in the insurgent class as the result of his experiences and opinions formed during his professional work. For this reason he took no part in the formation of the standard specifications and attacked them vigorously when presented before the Society. Business changes and the development of special firms with large capacity for the conduct of the work of inspection of structural material resulted in Mr. Henning's abandonment of professional work in that particular field.

The last years of his life during the continuance of a state of health which warranted his attention to business, were devoted to developing the use of the diamond as a cutting face for tools. He found considerable development for this special work in the manufacture of electrical details in hard rubber. He presented a paper before the Society at a monthly meeting in December 1904, elaborating in some detail his special achievements in this field.[3]

[1] Trans. Am.Soc.M.E., vol. 18, p. 849.
[2] Trans. Am.Soc.M.E., vol. 23, p. 594.
[3] Trans. Am.Soc.M.E., vol. 26, p. 409.

Mr. Henning became a member of this Society in 1880. He was also a member of the International Association for Testing Materials, the Iron and Steel Institute of Great Britain, the Iron and Steel Institute of America, the American Society for the Advancement of Science, the American Geographical Society, and the American Institute of Mining Engineers. His other contributions to the Society were Notes on Steel,[1] On the Elastic Curve and Treatment of Structural Steel,[2] and Investigations of Boiler Explosions.[3]

LEWIS JOHNSON

Lewis Johnson, one of the oldest members of the Society, was born in New Orleans, La., June 8, 1836, and was educated in private schools. Following a natural tendency for mechanics he entered the mechanical profession while very young and served both at shop practice and marine engineering. His education was gained by close and earnest study and by a wide experience which included, among other things, the designing and constructing of new machinery for the baling of cotton, ginning of moss, manufacture of ice, and propulsion of steamers. During the last few years of his useful life, Mr. Johnson was president and chairman of the Executive Committee of the Sewerage and Water Board of New Orleans, and of the Audubon Park Association, both directed toward civic improvement. At the time of his death, May 26, 1910, he was president of the Johnson Iron Works of New Orleans.

WASHINGTON JONES

Washington Jones, who died on July 30, 1910, was born in Philadelphia, February 22, 1822, and became an apprentice at the works of Merrick and Agnew at fifteen years of age—the first apprenticeship taken in that establishment, it is said. His industry and capacity were attested by his advancement to positions of responsibility there and in several other engineering works of Philadelphia, such as the Southwark Foundry, Merrick and Towne, and the Penn Treaty Works of the Neafie and Levy Ship and Engine Building Company. He was associated with the Port Richmond Iron Works of the I. P. Morris Company as constructing engineer from 1856 to 1891, with a brief interruption of a few years at the Southwark Foundry, when he bore

[1] Trans. Am.Soc.M.E., vol. 4, p. 410.
[2] Trans. Am.Soc.M.E., vol. 13, p. 572.
[3] Trans. Am.Soc.M.E., vol. 20, p. 649.

an important part in the productions of that establishment during the Civil War.

Mr. Jones had been a member of the Society since 1880. He was also an honorary member and past-president of the Engineers Club of Philadelphia, a member of the American Society of Civil Engineers, and the oldest surviving member of the Franklin Institute, of which he was vice-president at the time of his death.

WALTER CRAIG KERR

Walter Craig Kerr was a notable example of a type of engineering practitioner peculiar to the United States, the producer of great engineering achievements, who is a constructor as well as a consulting engineer. Such an engineer draws up and submits to his clients his own specifications for the work to be done for the latter; and then as supervisor or general contractor undertakes to carry these out under his own direction, his compensation coming to him not in the form of a consultant's fee, but of the profits from the financial undertaking. This system has been called the American system as distinguished from the British or European.

Mr. Kerr was born at St. Peter, Minn., on November 6, 1856. He was graduated from Cornell University in 1879 with the degree of B. M. E., and remained at Cornell for an interval of three years, as instructor and later assistant professor in mathematics. In 1882 he became a salesman and installing engineer for the Westinghouse Machine Company, East Pittsburg, Pa., designing the general installations for his company. In the following year he was made manager of their Eastern office. Through his realization of the common advantage to producer and consumer if the former can both supply the material and properly erect it, a company was formed in 1884 of which Herman Westinghouse, William L. Church and W. C. Kerr were the nucleus. In this company and with the work it soon found for itself to do, Mr. Kerr was a forceful personality; and his faculty for organization and his energy as an officer have been large factors in the increase of its scope and the magnitude of its undertakings. He was vice-president at the start and, as the result of later changes in the personnel, he was president of the company at the time of his death. He was at one time vice-president of the Westinghouse Machine Company, was also a director of the Electric Properties Company at his death and had recently been elected a vice-president of the Merchants' Association by New York City merchants. He became a member of the Society in 1886 and was active on its commit-

tees whenever asked to serve and full of helpful suggestions at many times. He was a member also of the Engineers Club, the American Institute of Electrical Engineers, the Canadian Society of Civil Engineers, and other business and social organizations. He was an enthusiastic yachtsman at his home on Staten Island and governor of the local club. He died at Rochester, Minn., May 8, 1910.

It results of course from Mr. Kerr's advocacy of the constructive principle above referred to, that coöperation of engineer and contractor is to be preferred to an antagonism between them, that his monuments of achievement are those of his company rather than of any individual. This is both a loss and a gain, or perhaps is the algebraic sum of the two. By embodying their own designs in a materially existing structure, the name of the designs is not lost, as is so sure to be the case when they do not also construct. The grandeur of the structure as a material fact overshadows the mental achievement of the great concept, and the fact that it was the work of many obliterates the significance of the work of the organizing mind. But the work of the company has covered the construction of interurban electric lines in Michigan, Ohio, Missouri and New York states; power plant design and installation using both steam and water power for railways, lighting plants and producing factories. This firm electrified the Long Island Railway among others. Much of the power and hydroelectric plant for Cornell University was put in by their company, as Mr. Kerr had served as Trustee for the University for many years and was active in bringing Prof. R. H. Thurston to the Directorship of Sibley College in 1885.

But the most considerable single undertakings with which Mr. Kerr will always be identified were the engineering of the great Southern Terminal Station in Boston, Mass., and the great uptown terminal of the Pennsylvania Railroad at the end of its tunnels under the Hudson river, and the connecting subways in New York City. These are splendid examples of the effective coöperation of the architects and engineers of the railways as owners and beneficiaries, and the consulting-constructing parties who were grouped together under Mr. Kerr's leadership. The Pennsylvania Terminal at 33d Street and 7th Avenue was visited by the Society in a body under the guidance of Mr. Kerr and Mr. Gibbs, by their invitation, at the time of the Annual Meeting in New York in 1909. Mr. Kerr was persuaded to present an account of the Boston Terminal at the Annual Meeting of the Society in December 1899[1] which is a model of the clear and concise presentation of a large topic.

[1]Trans. Am.Soc.M.E., vol. 21, p. 451.

JOHN EDWARDS McKAY

John Edwards McKay was born February 22, 1837 in New York City, and received his early education in the public schools and in the Free Academy, now the College of the City of New York. In 1852 he began a two years apprenticeship with Charles W. Copeland of New York and in 1854 entered the drawing-room of the Morgan Iron Works, New York, as draftsman and machinist. In May 1859 he was appointed third assistant engineer, U.S.N., from which post he resigned after serving one year, and was again employed by Copeland and by the Coast Survey. In August 1862 he was reappointed to his former grade in the Navy, in December promoted to second assistant, and in May 1864 made first assistant, retaining this position for two years. At that time men in the service of the Navy with practical experience as well as ability to design and make drawings were much in demand, and as Mr. McKay was well equipped in these respects he was ordered to shore duty at Washington, D. C., where under the direction of Benjamin F. Isherwood, chief of the Bureau of Steam Engineering, he made designs and drawings of marine engines, boilers, etc., for many of the government warboats. From 1868 to 1872 Mr. McKay was superintendent of the Wood and Mann Engine Company, Utica, N. Y., designing and constructing many steam engines, rolling-mills, saw-mills, etc. He invented at this time a very excellent automatic variable cutting-off for steam engines.

In 1872, at the request of Mr. Tracey, chief engineer of the Croton Aqueduct, Mr. McKay severed his connection with the Wood and Mann Company and entered upon a public service career. During the long period dating from 1872 until his death on May 12, 1910, Mr. McKay was connected successively with the Departments of Public Works, of Water Supply, and of Water Supply, Gas and Electricity of New York City, and was prominently identified with the many important improvements and extensions in connection with the water supply of the Boroughs of Manhattan and the Bronx, as they are now called, and with the care and maintenance of the system.

Included in the work done by Mr. McKay were the design and supervision of the construction of the tower, chambers, gates, screens, pipes, etc., in connection with the storage reservoir on the west branch of the Croton River at Boyds Corners, Putnam County, N. Y.; the design and preparation of the plans for the storage reser-

voir on the middle branch of the Croton River near Brewster's Station, Putnam County, N. Y.; the design and drawing of the junction gate-houses and appurtenances, at 113th Street and Amsterdam Avenue and at 93d Street near Columbus Avenue, New York City, and the drawings of the six lines of four-foot pipes between these gate-houses for the replacement of the old aqueduct between those points; the design and drawings of the first successful submarine pipe between Manhattan and Blackwells Islands for a supply of Croton water to the institutions on the latter; the design and drawings and superintendence of the installation of the five-million gallon pumping engine now in the High Bridge Pumping Station, and also the superintendence of the six-million gallon pumping engine in that station; the original studies and plans of the High Service Pumping Station, machinery, boilers, stand-pipe and tank, etc., between 97th and 98th streets near Columbus Avenue, New York City; the design and drawings and the superintendence of installation of a specially designed quick-action 36-inch valve in the gate-house of the Central Park reservoir for the control of a fire line to the lower part of Manhattan; drawings in connection with the Fourth Avenue improvement work from 42d Street to the Harlem River and the supervision of construction on this work. From 1903 until the time of his death Mr. McKay had responsible charge of the Croton, the Bronx and the Byram water sheds and the storage reservoirs there, including the dams, gate-houses, aqueducts, pipelines and appurtenances and the distributing reservoirs in New York City, and was responsible for the proper conservation of the storage and the flow through the aqueducts to the city.

Mr. McKay was a member of the American Society of Civil Engineers and the Engineers Club, and at the time of his death resided in White Plains, N. Y.

JAMES D. MACPHERSON

James D. Macpherson was born in Glasgow, September 15, 1872. He was educated in the public schools of his native city, and there served his apprenticeship in the machine shop, later going into the drafting room of Lees and Anderson, builders of marine engines.

After a cruise on a tramp steamer, as assistant engineer, he came to the United States in 1891, entering the service of the James Leffel Company, builders of turbines and water wheels, first in New York and later in their shops at Springfield, Ohio. While there he was

employed as assistant in the designs for the great turbine plant of the Niagara Falls Power Company and other work of similar character, until February 1898. He then entered the employ of the Diesel Motor Company of America, Providence, R. I., as chief draftsman and assistant engineer.

By careful reading and home study he had added much theoretical knowledge to his practical experience, and under the guidance of the chief designer, Arthur J. Frith, he mastered the elements of thermodynamics and of electrical science. During 1901 he was active in perfecting and improving the details of construction of the Diesel motor. In 1902 he was chief designer for Diesel engine work for the American and British Manufacturing Company of Providence, R. I.

From August 1903 until his death he was in the employ of the American Diesel Engine Company, New York, first as assistant, and later as chief engineer.

Mr. Macpherson died at Paterson, N. J., on November 9, 1910. He was a man of sterling integrity and loyalty, a careful and conscientious engineer; and the mechanical success of the American type of Diesel engine is in large measure due to him.

He was a member of the Engineers Club of St. Louis.

WILLIAM METCALF

William Metcalf was born at Pittsburg, Pa., September 3, 1838, and was educated there and at the Rensselaer Polytechnic Institute, from which he was graduated in 1858. Immediately after graduation he went into the employ of the Fort Pitt Foundry, as draftsman and afterwards as superintendent, and later joint proprietor. One of his chief duties as superintendent was the casting of mortars, shells and guns for the United States Government during the Civil War, at a time when the largest cast-iron guns ever made were being cast at this foundry.

Soon after the close of the war, Mr. Metcalf bought an interest in the firm of Miller, Barr & Parkin, later Miller, Metcalf & Parkin, and after incorporation in 1889 known as the Crescent Steel Company. This company engaged in the manufacture of fine steel. In 1895, Mr. Metcalf retired from the Crescent Steel Company and in 1897 organized the Braeburn Steel Company, of which he was principal stockholder and president at the time of his death, December 5, 1909. His book, Steel, a Manual for Steel Users, is regarded as an authority.

Mr. Metcalf was a member and one-time president of the American Society of Civil Engineers and the American Institute of Mining Engineers, and was the first president of the Engineers Society of Western Pennsylvania. He had served as vice-president of the American Iron and Steel Association, and was a member of the Institution of Civil Engineers of Great Britain. In addition he was a member of the Duquesne Club of Pittsburg, the Century Association and Engineers Club of New York, and was actively engaged in hospital and charity work. He was appointed by the United States Government one of seven appraisers for the condemnation of the property and franchise of the Monongahela Navigation Company, in March 1897.

Mr. Metcalf entered the Society in 1880 and served it as a Vice-President from 1882 to 1884.

WILLIAM NELSON PARSONS

William Nelson Parsons was born at Northampton, Mass., February 15, 1869, and received his technical training as a special student in mechanical engineering at Cornell University.

Mr. Parsons served his apprenticeship as a machinist with Charles C. Herrick of Northampton and later entered the employ of the Deane Steam Pump Company, Holyoke, Mass., and the Stanley Electric Manufacturing Company, Pittsfield, Mass. In 1900 he was employed in the drawing room of the Taft Pierce Company of Woonsocket, R. I., and at various times subsequently with the Goulds Manufacturing Company of Seneca Falls, N. Y., the Royal Electric Company of Montreal and the Steamobile Company of America, Keene, N. H. At the time of his death, April 24, 1910, he was chief draftsman for the Buffalo Bolt Company of North Tonawanda, N. Y.

WALTER L. PIERCE

Walter L. Pierce was born at Boston, Mass., June 8, 1855, and was educated at the public schools of Boston and New York. In 1878 he entered the employ of the Lidgerwood Manufacturing Company, New York City, as a stenographer and, while holding this position acquired his technical training through private tutors from Stevens Institute. Mr. Pierce was connected with the Lidgerwood Manufacturing Company for thirty-two years, during twenty-nine of which he acted as its secretary and general manager. He died in New York City, December 10, 1910.

Mr. Pierce was remarkable as an organizer and so perfect was his work that no detail of the great business that grew up under his hand was neglected during his long absences from his desk while seeking health. Besides his connection with the Lidgerwood Manufacturing Company he was treasurer of the Hayward Company and of the Gorton and Lidgerwood Manufacturing Company, both of New York. He was a member of the Engineers Club, the Machinery Club, of which he was a director, a past-president of the National Metal Trades Association, and an associate member of the Society of Naval Architects and Marine Engineers.

FRANCIS JOHN PLUMMER

Francis John Plummer of Norwich, Conn., died April 5, 1910, and was buried at Worcester, Mass.

Mr. Plummer was born at Lancaster, Mass., February 29, 1840. He was apprenticed from 1857 to 1860 to Ball & Williams of Worcester, Mass., and continued with them as journeyman machinist until 1863, subsequently becoming foreman and superintendent for Ball & Williams and R. Ball & Company, where he remained until 1868. He then entered the employ of the S. A. Woods Machine Company, of Boston, leaving them for a brief connection as partner with the firm of E. C. Taintor & Company, of Philadelphia. Returning to the Boston firm, he took charge of the works and acted as superintendent from 1878 to 1885. His next connection was with Goodell & Waters of Philadelphia, also builders of wood-working machinery, where he held for five years the position of designer of planing-mill machinery. In 1890 he became associated with C. B. Rogers & Company of Norwich, Conn., of which he was superintendent and manager until 1907, when ill health compelled his resignation. His work was almost exclusively the design and manufacture of wood-working machinery, especially planing, molding and sawing machines for general building and car work. Many of his inventions are now extensively manufactured by the American Wood-Working Machinery Company.

Mr. Plummer was a member of Sedgwick Post, G. A. R., having enlisted from Worcester with the Third Batallion Rifles in April 1861; and of several masonic orders. He entered this Society in 1891.

CHARLES T. PORTER

Charles Talbot Porter, a charter member of the Society and recipient of the John Fritz Medal for his "work in advancing the

knowledge of steam engineering and for improvements in engine construction," died in New York, August 28, 1910, at the home of his son, Louis Morgan Porter.

Mr. Porter was born at Auburn, N. Y., January 18, 1826. He was descended from a notable line of New England ancestors including, on his father's side, the Rev. Jonathan Edwards, and on his mother's side, Governor John Winthrop of Massachusetts and Governors Saltonstall and Winthrop of Connecticut. He was graduated from Hamilton College in 1845 and at the fiftieth reunion of the class presented the Half-Century Annalist's Letter, a feature of the annual meetings of the Hamilton alumni. After graduation he read law in his father's office in Auburn, and was admitted to the bar in 1847. The next year he married Harriette S. Morgan of Aurora, N. Y., and their married life was unbroken until within a few weeks of Mr. Porter's death, when Mrs. Porter died.

After practising his profession for six or seven years, first at Rochester and afterwards in New York City, Mr. Porter became interested in mechanics in connection with a stone-dressing machine invented by one of his clients, which failed to operate satisfactorily. Believing that the fundamental principles of the machine were correct Mr. Porter went to work to improve it, picking up by the way a knowledge of drafting and designing, and therein brought out his latent mechanical ability. The stone-dressing machine was driven by a steam engine which he desired to run at high speed, but the governor was of the usual simple fly-ball type which could not be speeded up and consequently the regulation of the engine was faulty. To remedy this defect Mr. Porter was led to design and perfect his well-known central counterpoise type of governor which has since carried his name.

Subsequently came the development of the high-speed Allen steam engine, later known as the Porter-Allen engine, which was essentially the life-work of Mr. Porter. The first engine was built in this country and shown at the London Exhibition of 1862, equipped with the Porter governor, and operating non-condensing. In 1867 at the French Exposition five engines were installed, the only high-speed engines exhibited.

The exhibit at London and subsequent attempts to sell engines of this type in England showed the demand to be entirely for condensing engines. This brought about the development by Mr. Porter of a jet condenser to be direct-connected to his engines, with an air pump adapted to the high speed at which the engines ran. The building of these engines was begun in England in 1864.

In his work in steam engineering Mr. Porter became associated or intimately acquainted with many of the early distinguished engineers, notably with John F. Allen and Charles B. Richards. Mr. Allen had originated a link and valve motion for steam engines, well adapted for use with the Porter counterpoise governor, and it was the combination by Mr. Porter of this mechanism with his governor, together with Mr. Porter's advanced ideas upon high rotative speeds and methods of engine construction, that resulted in the Porter-Allen engine.

Along with the study of steam economy was the need of a steam-engine indicator adapted to high speeds. This led to the design by Mr. Richards of the first indicator to meet these requirements. The patents were acquired by Mr. Porter and an instrument was shown in connection with the engine at the London Exhibition. It was shortly afterwards manufactured by Elliott Brothers of London.

In the early manufacture of his engines, many practical difficulties had to be met owing to the crudeness of machine shop methods. Numerous devices and systems of manufacturer were introduced by Mr. Porter to attain the accuracy, without which successful high-speed machinery would be impossible.

In 1868 Mr. Porter returned from England, formed a partnership with Mr. Allen and began the manufacture of engines in a small shop in Harlem, N. Y. During the three years of business depression, beginning with 1873, the manufacture of the engines was discontinued, but later was begun at the Hewes and Phillips Iron Works at Newark, N. J., under Mr. Porter's own name. They have since been manufactured by the Southwark Foundry and Machine Company at Philadelphia.

In 1880 Mr. Porter installed a high-speed steam engine in the Edison laboratory at Menlo Park, N. J., which marked the beginning of direct-connected generators. Following this, the first of a series of engines for so-called steam dynamos was constructed for the Edison Station at Pearl Street, New York, each independently driven by a direct-coupled engine.

While these events are important in the history of the high-speed engine for electric generating, the introduction of Mr. Porter's engines into rolling-mill work was of even greater moment. The early processes were deliberate because man was habituated to slow movements. The first power came from the slow-turning water-wheel, later from the slow-speed steam engine. Faster movements were obtained through gears and belts and then came the direct-connected, easily controlled high-speed engine.

At the first Annual Meeting of the Society in 1880, Mr. Porter read a brief paper upon The Strength of Machine Tools,[1] and he subsequently presented numerous others. At the beginning of the manufacture of the Richards indicator, he prepared for the makers, Elliott Brothers of London, a brief treatise on the Steam Engine Indicator, and in 1874 this was revised and very much enlarged by him and brought out simultaneously in London and New York. This contained the tables of the properties of saturated steam which so long remained a standard, based upon the experiments of M. Regnault. Not long before his death he published his Engineering Reminiscences, which are an interesting and valuable account of many incidents in the development of steam engineering. Mr. Porter was a member of the Board of Judges at the Centennial Exposition of 1876.

ILTYD ISAAC REDWOOD

Iltyd Isaac Redwood was born in London, December 16, 1863. He was educated at private schools, attending courses in elementary mechanics and drawing, afterwards supplementing them by evening study.

He began his career as a chemist in 1879 when for two years he acted as assistant to his father, Dr. Theophilus Redwood of the Pharmaceutical Association of Great Britain. In 1882 he became assistant chemist in the laboratory of Young's Paraffin Light and Mineral Oil Company, Ltd., in Scotland, and in 1887 entered the employ of the Queen's County works of the Standard Oil Company at Blissville, Long Island, where he became successively chemist, foreman of various departments, assistant superintendent in charge of construction work, and draftsman. Since 1897 he had been technical manager and expert adviser of the English works of Borax Consolidated, Ltd., manufacturers of borax and allied products

Mr. Redwood was a member of the Society of Chemical Industry, the Royal Society of Arts, and the Aëronautical Society of Great Britain. He entered this Society as an associate in 1890 and was made a full member in 1903. He was the author of several works, namely, Ammonia Refrigeration; Mineral Oils and their By-Products; Lubricants, Oils and Greases; and was a recognized authority in chemical engineering.

[1] Trans. Am.Soc.M.E., vol. 1, p. 119.

STILLMAN W. ROBINSON

Stillman Williams Robinson died October 31, 1910, at his home in Columbus, O. He was born near South Reading, Vt., March 6, 1838, and earned the money to defray the expenses of his early education and to prepare himself for college as an apprentice to the trade of machinist. In 1860 he entered the University of Michigan, making his way to Ann Arbor mostly on foot and meeting his expenses on the way by working as a machinist. From here he was graduated in 1863 with the degree of C.E., having supported himself throughout the college course by skilled instrument making, while there inventing a machine for graduating thermometers, in which work he was particularly interested. After graduation he entered the government service as assistant engineer in the United States Lake Survey, remaining until 1866 when he returned to his alma mater as an instructor in engineering. In 1870 he became professor of mechanical engineering and physics in the Illinois Industrial University, now the University of Illinois, establishing the first department of mechanical engineering in this country; and in 1878 was made dean of the College of Engineering. In the same year he was called to Ohio State University as professor of physics and mechanical engineering and occupied that chair until 1895 when he resigned in order to devote his time to his extensive professional interests.

Professor Robinson was the author of a number of important books and papers presented before various societies. He also secured about forty patents, many of which were fundamental and of great value. His inventions were based upon scientific research and mathematical investigation and were the results of skilful study. When the Ohio gas fields were first discovered, the problem of measuring the volume of flow was referred to Professor Robinson and solved by him in his brilliant application of the Pitot tube, resulting in methods now in universal use.

His interest in education was always great and led him in 1890 to organize an association composed of teachers of mechanical engineering which in 1893 developed into the present Society for the Promotion of Engineering Education. His interest in the University of Ohio did not cease with his retirement and he made at various times valuable donations to the equipment of its department of mechanical engineering, finally establishing the Robinson fellowship in engineering as a permanent foundation.

The following minute was adopted by the faculty of the Ohio State University, at its meeting following the death of Professor Robinson:

As a man, Professor Robinson was an indefatigable worker. There was no limit to his enthusiasm and ambition in his profession. Personally, he was modest and retiring, never claiming credit for himself though most generous in according it to his associates. He was greatly interested in the work of those around him, impressing his own enthusiasm upon the efforts of both colleagues and students, encouraging, stimulating and rewarding them. His memory and influence will long be felt in the lives of those who follow him and who have taken up his work.

PERCY A. SANGUINETTI

Percy A. Sanguinetti was born in Kingston, Jamaica, B. W. I., June 17, 1844, and died at his home in Mt. Vernon, N. Y., on January 30, 1910.

At the age of sixteen, he entered service as an apprentice in the locomotive shops of his native town. A few years later he received an appointment to the British Navy Yards at Chatham, England, where he worked through the various departments. During this time he passed a successful examination as teacher of mechanical drawing in the evening mechanical schools at South Kensington, London. In 1867, he was appointed by the Admiralty Board to represent the town of Chatham at the Paris Exposition and to report upon its mechanical features.

His experience in the United States dates from the Centennial Exhibition at Philadelphia in 1876, where he served as assistant to the machinery bureau, designing the system of shafting and the cascade in the pump annex and assisting in the experiments with turbines. At the close of the Exhibition he entered the service of the Franklin Sugar Refinery in Philadelphia, where he remained twelve years, conducting during part of this time a course in mechanical engineering at Franklin Institute. In 1893 he acted as mechanical aid at the World's Columbian Exposition in Chicago and for the following three years occupied the chair of mechanical engineering at the Armour Institute of Technology. In 1895 he came to New York to engage in consulting practice and during the two years previous to his death had served in the appraisal bureau of the Public Service Commission.

In 1901, Mr. Sanguinetti secured the coöperation of a score of

representative manufacturers of this country in the introduction of American machinery into Jamaica, especially in sugar plantation and power development. His latest work was the remodeling of a sugar refinery near New Orleans, which he completed just two months before his death.

THOMAS H. SAVERY

Thomas H. Savery was born in Philadelphia, Pa., on May 31, 1837, and died at his home in Wilmington, Del., April 5, 1910. He was educated at the Westtown Boarding School and later at Friends' Select School, Philadelphia. When sixteen years of age he was apprenticed as a machinist to William Sellers and Company of Philadelphia, with which firm he remained for five years, becoming at the completion of his term of service general foreman of the Columbus machine shops of the Columbus, Piqua and Indianapolis Railroad, and later foreman of the Altoona shops of the Pennsylvania Railroad. In January 1864, he accepted a position as superintendent of Pusey and Jones Company of Wilmington, Del., was admitted as a partner, and was connected with the company as vice-president and then as president until his retirement in 1907 from active service. Mr. Savery was chiefly interested in the development of paper machinery and it was through his efforts and inventions that the Pusey and Jones Company became the acknowledged leaders in building paper machinery.

At the time of his death he was president of the Harpers Ferry Paper Company, the Shenandoah Pulp Company and the Harpers Ferry Electric Light and Power Company, Wilmington, Del. He was also a director in numerous companies in Wilmington, Philadelphia and other cities.

HORACE SEE

Horace See, President of the Society in 1888, died in New York City on December 14, 1909.

He was born in Philadelphia, and after the usual classical and mathematical education of the private school entered the shops of I. P. Morris & Company. Thence passing to Neafie & Levy, and the National Armor and Shipbuilding Company, at Camden, N. J., and Geo. W. Snyder of Pottsville, Pa., he entered on his best known life-work with William Cramp & Sons, Philadelphia.

He rose here to be designer and superintending engineer in 1879, designing vessels and machinery of greatly improved construction and performance, introducing improved methods of work and standards in

that great establishment, and giving to the United States a shipbuilding plant of capacity and quality compare favorably with the products of the Clyde and Newcastle. It was under his leadership that the United States Navy contracts for the first vessels of what was then called the "New Navy of the United States" were taken, and the big ships of the American Line at that day bore his impress. It was at the zenith of this busy period, when he was confessedly the leader in his field, that the presidency of the Society was placed in his hands. He presided at the Nashville and Scranton meetings of 1888.

The following year it became apparent that avenues of professional advancement would not open further for him in Philadelphia, so that he came to New York with the honors thick upon him won from his busy years. He became at once consulting engineer for the Newport News Shipbuilding and Dry Dock Company, Newport News, Va., and was the host of the Society on his visit to that plant at the Richmond meeting of 1890. He was superintending engineer for the Southern Pacific Company and the Pacific Mail Steam Ship Company, and superintendent for the Cromwell Steam Ship Company, and in his private practice as a marine engineer and naval architect he designed and prepared specifications for many yachts and commercial vessels. Some of his improvements in hull and machinery are in international use.

Mr. See was adjutant of the Twentieth Regiment of the National Guard of Pennsylvania during the riots of 1877, and later Captain of the First Pennsylvania Regiment. Besides various business and social connections, he was a member of the Society of Naval Architects and Marine Engineers, of the Institution of Naval Architects of Great Britain, as well as of the Northeast Coast Institute of Engineers and Shipbuilders, and the American Geographical Society; associate member of the American Society of Naval Engineers and the United States Naval Institute; and fellow of the American Association for the Advancement of Science.

He contributed a paper on the method he introduced for producing true crankshafts for multiple-cylinder engines[1], and his presidential address was a discussion of manual training and methods of instruction for technical work[2].

[1] Trans. Am.Soc.M.E., vol. 7, p. 521.
[2] Trans. Am.Soc.M.E., vol. 10, p. 482.

OLIVER S. SHANTZ

Oliver S. Shantz was born at Breslau, Ontario, Can., August 12, 1863, and received his early education at the Berlin and Ithaca high schools. From 1879 to 1886 he was apprenticed to J. Y. Shantz and Sons, Berlin, Ontario, manufacturers of automatic machinery. In 1893 Mr. Shantz was graduated from Sibley College, Cornell University, with the degree of M.E. and six years later received a master's degree in mechanical engineering from the same university. He was successively engaged as engineer and designer for Schaeffer and Budenberg, New York City, for one year; as instructor in mechanical engineering at Cornell University for four years; as draftsman for the Otis Elevator Company, New York City; salesman for the Tonkin Boiler Company, New York, and assistant engineer with the Edison Portland Cement Company, of Orange, N. J. In 1901 Mr. Shantz affiliated himself with the Rand Drill Company of New York, representing them in Chicago, and while with this company made a specialty of sand pumping, installing many large plants of this character. In 1905 the Rand Company was merged into the Ingersoll-Rand Company of New York and Mr. Shantz took charge of their interests in Detroit. Four years later he re-entered the employ of J. Y. Shantz and Son Company, Buffalo, N. Y., manufacturers of buttons, in the capacity of assistant manager.

Mr. Shantz died on September 7, 1910, after an illness of a few days. He was a member of the Manufacturers' Club and the Chamber of Commerce, Buffalo.

GARDINER C. SIMS

Gardiner C. Sims, president of the William A. Harris Steam Engine Company, died at his home in Providence, R. I., on March 20, 1910. Mr. Sims was born in Niagara Falls, N. Y., July 31, 1845, and was educated there in the public schools. He began his engineering career with a four years' apprenticeship at the locomotive works of the N. Y. C. & H. R. R. R. Co., West Albany, N. Y., afterward entering the navy yard at Brooklyn, N. Y., but returning to his former employers after three years, to become their chief draftsman. He next became superintendent of the J. C. Hoadley Engine Works at Lawrence, Mass. Here he met Pardon Armington, with whom he formed a partnership for the manufacture of steam engines, both men devoting their entire time to experimental work as a result of which they gave to the

world the quick-running engine, in opposition to the established engineering practice and precedents. They built the first successful engine for Thomas A. Edison, which was sent to the Paris Exposition with his first dynamo, in 1881.

In 1876 Mr. Sims spent eight months at the Centennial Exposition and was appointed democratic commissioner from the State of Rhode Island to the World's Columbian Exposition in 1892, where he was made chairman of the Exposition committee on electricity and electric and pneumatic appliances, and was a member of the committee on machinery and transportation.

At the outbreak of the war with Spain, Mr. Sims volunteered, and was appointed Chief Engineer by the Navy Department and ordered to the navy yard at Boston. For his work in this branch of the service Mr. Sims was made a lieutenant-commander and received congratulatory letters from Secretary Long and Engineer-in-Chief George W. Melville.

At the close of the war he was summoned by the War Department to assume the position of superintending engineer of the United States Army Transport Service, and discharged his duties with honor until the completion of the work. He was appointed police commissioner in 1902, and at the time of his death was connected with the William A. Harris Steam Engine Company of Providence, R. I.

J. HENRY SIRICH, JR.

J. Henry Sirich, Jr., died January 22, 1910, at Bethlehem, Pa. He was born at Baltimore, Md., April 9, 1881, and received his technical education at the Baltimore Polytechnic Institute, from which he was graduated in the class of 1898. He served his apprenticeship at and afterwards entered the drafting room of the engineering works of Robert Poole & Son Company, now the Poole Engineering & Machine Company, of Baltimore.

In April 1903 Mr. Sirich became an assistant engineer on the steamships of the Atlantic Transport Line, remaining with them a year during which he secured a United States license as second assistant engineer of ocean condensing steamers of 10,000 gross tons. From 1904 to 1908 he was connected with the American Bridge Company at Ambridge, Pa., and the Westinghouse Machine Company, East Pittsburg, Pa. In the latter company he entered first the turbine-testing department, of which he became foreman in September 1905, and later was transferred to the turbine-erecting department of the New York district, as trouble foreman.

In July 1908 he became connected with the power department of the Bethlehem Steel Company and held the position of chief draftsman at the time of his death.

WILLIAM W. SNOW

William W. Snow who died at his home in Hillburn, N. Y., April 26, 1910, was born at Heath, Franklin County, Mass., July 17, 1828. At fifteen years of age he took up the book-binding trade, but in 1846 left it to become assistant civil engineer with the Worcester and Nashua Railroad. In 1848 he went to Woonsocket, R. I., and for the five succeeding years was employed in the foundry at that place, when he accepted a position as superintendent of the Indianapolis City Foundry. In 1856 he established a factory at Newburgh, N. Y., for the manufacture of car wheels. This business was successfully carried on under the general management of Mr. Snow until 1859, when he withdrew his interests to become general manager of the Union Car Wheel Works, Jersey City, N. J. In 1866 Mr. Snow came to Ramapo, N. Y., and with others organized the Ramapo Wheel and Foundry Company, of which he was made general manager and superintendent and finally president. In 1881 he organized the Ramapo Iron Works in Hillburn, N. Y., a village founded by himself. Nine years later he began the erection of commodious buildings in Mahwah and installed therein the Ramapo Iron Foundry Company. He was the president of this company until its consolidation with the American Brake Shoe and Foundry Company when he became chairman of its Executive Board, which position he held at the time of his death.

In 1895 Mr. Snow was appointed by Governor Morton one of the New York State commissioners to the Atlanta, Ga., Exposition. He joined this Society in 1889 and was also a member of clubs in Boston, Philadelphia and Chicago. He was well known in European circles as one of the most prominent manufacturers of this country.

ERNEST PACKARD SPARROW

Ernest Packard Sparrow, who died in Dorchester, Mass., on April 18, 1910, was born at Portland, Me., September 17, 1857, and received his early education from the Westbrook Seminary. In 1880 he was graduated from the Worcester Polytechnic Institute with the degree of B.S.

Mr. Sparrow's first shop experience was with the Indurated Fibre Company, Gorham, Mass. He was subsequently associated with the Fitchburg Steam Engine, the Mather Electric Light, the Thompson-Houston Electric Light, the Jarvis Engineering, the E. P. Allis, the Boston Rubber Shoe, and the New Brunswick Rubber companies. For the past few years he had been associated with the B. F. Sturtevant Company of Hyde Park, Mass., where he was engaged on special engineering work.

Mr. Sparrow was affiliated with several benevolent orders and organizations.

ALBERT SPIES

On August 16, 1910, Albert Spies, editor and proprietor of Foundry News, died suddenly at his home, 40 Glenwood Avenue, Jersey City, N. J. He was born in New York City, July 20, 1862, and received his early education from tutors and at the Hoboken Academy. When only nineteen years old he was graduated from Stevens Institute of Technology, and for a number of years engaged in engineering practice and technical journalism. In 1893 he became editor of Cassier's Magazine, and in 1904 also assumed the editorial conduct of the Electrical Age. For several months he brought out both papers practically unaided until the pressure of work forced him to relinquish his activities on the latter journal in January 1906. In the fall of 1906, following the death of Louis Cassier, Mr. Spies severed his connection with both papers and in February 1907 became editor of the Electrical Record, continuing until early in 1910 when he resigned to bring out his own paper, Foundry News. Only four issues were published prior to his death.

Mr. Spies was a member of the Engineers Club and the American Institute of Mining Engineers, as well as an associate member of the American Institute of Electrical Engineers.

SAMUEL EVANS STOKES

Samuel Evans Stokes, the son of Dr. John H. Stokes, was born at Moorestown, N. J., on October 3, 1846, and died at his home in Germantown, Philadelphia, on November 12, 1910. He was graduated from the Lawrenceville school in 1863 and immediately went into the machine works of Isaac P. Morris and Company in Philadelphia. Here he remained for four years, going from one department to another and becoming an expert machinist and draftsman. After two years spent in large works in Detroit he formed a partnership

with Alfred Parish, known as the Stokes and Parish Machine Works. In 1876 this firm obtained the concession for all the machinery required by the Centennial Commission and the exhibitors and were given entire charge of Machinery Hall and the erecting of exhibits, also building a steam elevator which ran from the main hall to the roof. Shortly afterward the firm began to build hydraulic elevators which soon became their specialty.

In 1885 a serious nervous breakdown made it necessary for Mr. Stokes to retire from active business, and the firm was taken over by the Otis Elevator Company of New York. In 1896 Mr. Stokes went abroad with his family, remaining in Europe for two years.

CHARLES SWINSCOE

Charles Swinscoe, consulting engineer of the Clinton Wire Cloth Company, Clinton, Mass., was born at Nottingham, England, January 1, 1833. His early education was received in the Collegiate School, Manchester, England. He came to this country when a lad and at one time was Fourth Officer on the Dreadnought under Capt. Samuel Samuels.

From 1851 to 1854 Mr. Swinscoe studied practical mechanics in his father's shop. In 1867 he established the steam pump works of the Geo. F. Blake Manufacturing Company, at Boston, designing most of the work. In 1876 he left this company to take charge of the Reading Hydraulic Works, designing its steam pumping machinery. From 1878 to 1880 he was in charge of the Bay State Brick Company and after that date of the Clinton Wire Cloth Company, Clinton, Mass., of which in 1903 he became consulting engineer. He died at Clinton, Mass., November 5, 1909.

Mr. Swinscoe was a musician of ability and was president of the Clinton Choral Union and organist of the Episcopal Church for many years. He was a member of the Clinton Historical Society, and joined this Society in 1887.

ROBERT BARNARD TALCOTT

Robert Barnard Talcott was born at Richmond, Va., December 1, 1863, and educated at the public and private schools of that city and of Washington, D. C., later receiving instruction in mechanical drawing in the evening courses of the Linthicum Institute, Georgetown, D. C.

He started his business career by entering the office of W. H. Tenny and Company, merchant millers, Washington, D. C. In 1882

he became draftsman for the E. D. Dent Company, and in 1884 for the supervising architect of the United States Treasury. From October 1906 to February 1909 he was general manager of the Vacuum Cleaner Company of New York City. With the exception of this period, Mr. Talcott, remained in the heating and ventilating division of the supervising architect's office of the United States Treasury until October 1910, when he was furloughed on account of his health. He was at various times assistant chief engineer in this office, consulting mechanical engineer of the Department of Agriculture in Washington and consulting mechanical engineer in connection with the power plant for the United States Soldiers' Home, Washington, and the Walter Reed United States Army Hospital, Washington. He died December 4, 1910, at Lutherville, Md.

Mr. Talcott became a member of this Society in 1907. He was also a member of the American Society of Heating and Ventilating Engineers and the American Society of Inspectors of Plumbing and Sanitary Engineers.

FREDERICK MERIAM WHEELER

Frederick Meriam Wheeler of Montclair, N. J., died at his summer home in Westhampton, Long Island, on September 15, 1910.

Mr. Wheeler, who was born in Brooklyn, N. Y., in 1848, was graduated from Summit Academy in New Jersey, and subsequently attended the Polytechnic Institute, Brooklyn, N. Y. His early apprenticeship was served in the machine shop of the Lake Mills, Lake Village, N. Y., and he later studied mechanical engineering for five years under Henry J. Davison of New York City. He made hydraulic and marine engineering his specialty and for over thirty-four years was associated with the George F. Blake Manufacturing Company, of New York, of which he became director and secretary. When the company was absorbed by the International Steam Pump Company, together with other hydraulic works, Mr. Wheeler was made a director in the new company.

Mr. Wheeler was the inventor of the Wheeler surface condenser which is extensively used in this country and Europe and has been adopted by the United States Navy. He organized the Wheeler Condenser and Engineering Company, with works at Carteret, N. J., and was also officially connected with the Ludlow Valve Manufacturing Company of Troy, N. Y.

Mr. Wheeler was a charter member of the Society of Naval

Architects and Marine Engineers, and was also a member of the American Society of Naval Engineers and of the Engineers Club of New York. He served as a member of the advisory council of the Engineering Congress at the Columbian Exposition in 1892, and had for many years been prominent in public and social circles in his home city. He was one of the charter members of the Society.

ALFRED WILKINSON

Alfred Wilkinson, who died at his home in Bridgeport, Pa., on August 30, 1910, was born at Stockport, in Cheshire, England, May 17, 1845. Here he attended the common schools and the Mechanics Institute. When fourteen years of age he came to the United States, entering the Richmond shops of the Philadelphia and Reading Railroad Company where he remained till 1862. When the Civil War broke out he enlisted in the navy and served under Admiral Farragut, being promoted for meritorious service to third assistant engineer. At the close of the war he entered the employ of Carr, Crawley and Devlin, Philadelphia. In 1876 he opened an office of his own in Philadelphia as expert steam engineer, and in 1891 invented the automatic mechanical stoker which today bears his name and which is extensively used on ocean liners and in large manufacturing plants. In the same year Mr. Wilkinson organized the Wilkinson Manufacturing Company at Bridgeport, Pa., and began the manufacture of his invention. He was at the time of his death president of the company.

Mr. Wilkinson was a member of the Franklin Institute and the Manufacturers' Club of Philadelphia. He inherited his mechanical genius from his father, Joseph Wilkinson, who invented a cook stove and an automatic oil cup for steam engines.

CHARLES HENRY WILLCOX

Charles Henry Willcox died at his home in Westport, Conn., on September 13, 1909. Mr. Willcox was born in Little Falls, N. Y., on March 31, 1839, and was the son of James Willcox, founder and president of the Willcox & Gibbs Sewing Machine Company. He entered his father's business at the age of eighteen and was continuously connected with the company as mechanical engineer from 1866 until his retirement a few years before his death and most of that time as director. The natural bent of his mind was toward mechanics and in collaboration with James E. A. Gibbs he developed

and placed on the market the invention of the single-thread chain-stitch sewing machine, which is now so widely used in the making of wearing apparel. Other patents followed, in particular that of the automatic tension, which it is said consumed ten years of patient experimentation before it was perfected. Mr. Willcox was also the inventor of two straw-hat sewing machines, in one of which the stitch is visible and in the other the stitch concealed. These two machines are used to-day in the manufacture of fully 90 per cent of all straw hats made. The knit goods manufacturing field also received an impetus through the invention of the Willcox & Gibbs hosiery trimming machine. The overlock machine worked out by Mr. Willcox in collaboration with the late Stockton Borton, was a great advance over the hosiery trimming machine and is recognized as one of the finest mechanical productions in sewing machines. Through the ornamental character of its stitch it has been adopted in lines of manufacture other than that for which it was originally intended.

In addition to his connection with the Willcox & Gibbs Sewing Machine Company, Mr. Willcox was for forty years affiliated with the Brown & Sharpe Manufacturing Company, Providence, R. I.