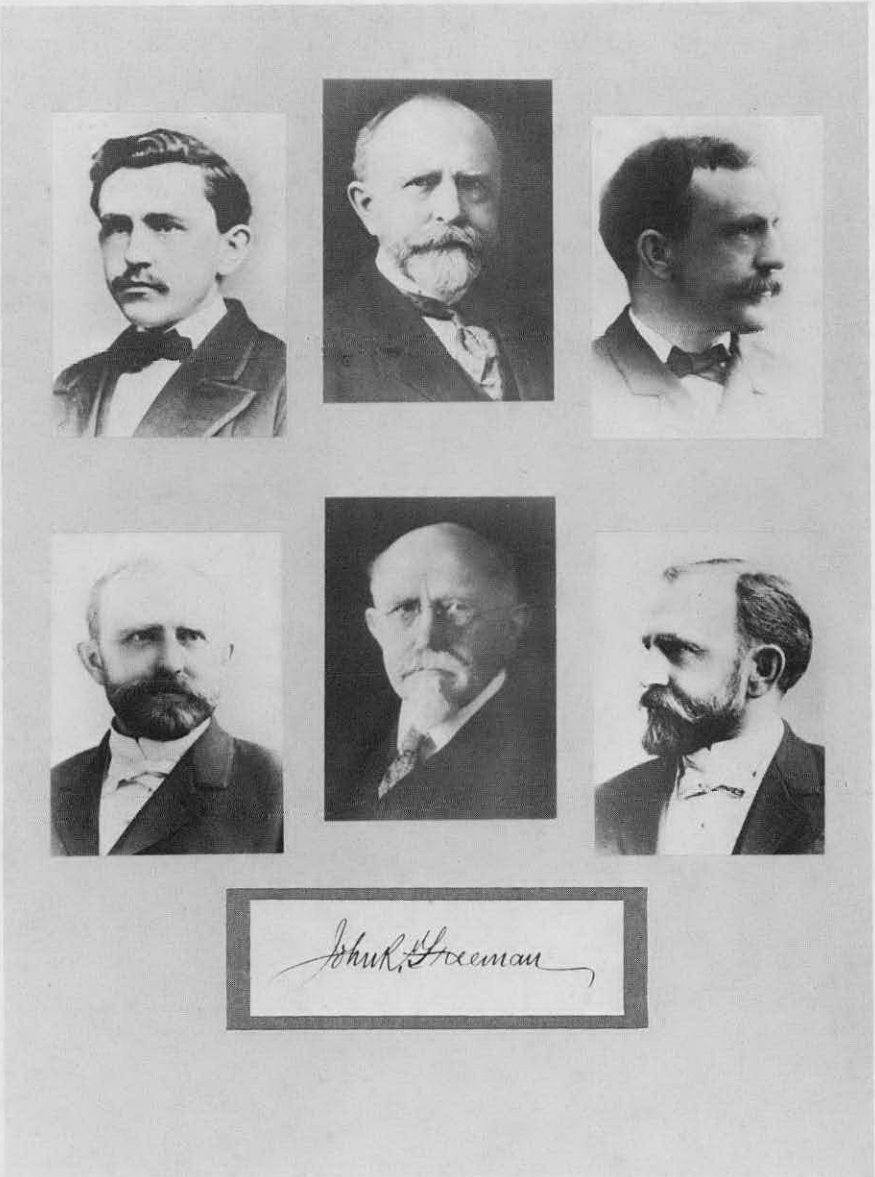

Photographs of John R. Freeman taken upon his graduation from MIT (upper left) and at later stages of his life. The signature is reproduced from the files of Dr. Hunter Rouse.

MEMOIRS OF DECEASED MEMBERS

JOHN RIPLEY FREEMAN, Past-President and Hon. M. Am. Soc. C. E.[1]

DIED OCTOBER 6, 1932

John Ripley Freeman was born on July 27, 1855, in West Bridgton, Me., where his early life was spent on his father's farm and where he began his education at the country schools. Later, he attended the public schools of Portland, Me., and Lawrence, Mass. He entered the Massachusetts Institute of Technology, in Boston, Mass., in 1872, and became a student in the Department of Civil Engineering, graduating in June, 1876, with the degree of Bachelor of Science.

After graduation, Mr. Freeman went to work for the Essex Company, a water power company at Lawrence, Mass., on the Merrimack River, which had previously employed him during his vacations at the Institute. He soon became Principal Assistant Engineer to the late Hiram F. Mills, Hon. M. Am. Soc. C. E., the Chief Engineer of the Essex Company, one of the foremost hydraulic and sanitary engineers of his time and a member of that eminent New England school of hydraulicians represented by Charles S. Storrow, Hon. M. Am. Soc. C. E., Uriah Boyden, James B. Francis, Past-President and Hon. M. Am. Soc. C. E., and Joseph P. Davis, M. Am. Soc. C. E. Mr. Mills at that time was engaged on extensive hydraulic experiments, the results of which have only in part been made public, and he was also carrying on a large consulting practice devoted mostly to problems of water power, foundations, and factory construction. In all this work Mr. Freeman was an active assistant and there he laid the foundations for his remarkable career.

After ten years of this apprenticeship at Lawrence, Mr. Freeman resigned his position there in 1886 to become Engineer and Special Inspector for the Associated Factory Mutual Fire Insurance Companies, of Boston, Mass. He re-organized the corps of inspectors employed by those companies, conducted experiments looking to the improvement and standardization of fire prevention apparatus, and conducted scientific researches into the causes of fires. During this period he presented to the Society his papers entitled "Experiments Relating to the Hydraulics of Fire Streams"[2] and "The Nozzle as an Accurate Water Meter."[3] For the first of these papers he received the Norman (Gold) Medal of the Society in 1890, and for the second the Norman Medal of 1891. While in Boston Mr. Freeman arranged to give one-half his time to a consulting practice in water power, municipal water supply, and factory construction. There, he also began his long career in the public service, to which he gave so much of his life. He was a member of the Water Board

[1] Memoir prepared by Walter E. Spear, M. Am. Soc. C. E.
[2] *Transactions*, Am. Soc. C. E., Vol. XXI (1889), p. 303.
[3] *Loc. cit.*, Vol. XXIV (1891), p. 492.

of Winchester, Mass., where he made his home, and in 1895 and 1896 he was Engineer Member of the Metropolitan Water Board of Massachusetts, which was then engaged in preparing plans for the development of a large additional water supply from the Nashua River for the Boston Metropolitan District.

In 1896, Mr. Freeman left Boston to become President and Treasurer of the Massachusetts Mutual Fire Insurance Company and its Associated Companies, at Providence, R. I., a position which he held at the time of his death. Although best known to the profession as a Consulting Engineer in many fields, he gave fully of his time after he went to Providence to the insurance business and developed those natural talents as an executive and business man which gave him pre-eminence in the factory insurance field. His success was marked by a constant improvement in fire prevention methods and a steady reduction in insurance costs. His companies, which wrote about $65 000 000 of insurance in 1896, had about $3 000 000 000 on their books in 1932.

Mr. Freeman approached the problems of building construction and of safe-guarding life and preventing fire losses as an engineer and an insurance executive. He wrote extensively on fire protection matters and in 1905 issued a publication "The Safeguarding of Life in Theatres," which represented a comprehensive study of theatre fires, their causes, and means of prevention. In 1915, he presented to the International Engineering Congress at San Francisco, Calif., a paper on "The Fire Protection of Cities."

For many years Mr. Freeman was alive to the importance of adequate design and good construction in preventing the loss of life and property from earthquakes. He was a member of the Seismological Society of America and collected at Providence an unusual library on seismology. He devoted much effort to stimulating engineers, geologists, and seismologists to the importance of obtaining adequate information on the magnitude and character of earth movements in the vicinity of major seismic disturbances. He visited many earthquake regions in all parts of the world to study at first hand the causes of failures in buildings and other structures, and in 1932 published a book entitled "Earthquake Damage and Earthquake Insurance," which may be considered a textbook on the subject of earthquake-resisting design.

In an age of specialization, Mr. Freeman did not confine his work to those branches of engineering within which the civil engineer to-day is supposed to practice. He was at one time, for example, a civilian member of an Army Board on disappearing gun carriages. He was, however, pre-eminently an hydraulic engineer and his field was primarily in water power, river control, water supply, and allied problems of a sanitary and hydraulic character. Except for short periods on his larger undertakings he never employed a large organization in his consulting practice, preferring to give to each task a large measure of his personal attention. Mr. Freeman believed that a change of work afforded a complete rest. Engineering was his recreation, and he practiced it with an enthusiasm and thoroughness that made him early a prominent figure in the engineering world.

Mr. Freeman never lost his interest in the hydraulic and construction problems associated with the development of water power with which his early work in New England was identified. He wrote extensively on water power subjects and made many investigations and reports on water power projects in the United States, Canada, and Mexico. He organized in 1905 a staff of engineers for the preliminary surveys and investigations for the Feather River Development of the Great Western Power Company, in California, and subsequently advised on the Big Bend and Caribou Developments. In 1907 and 1908, he was Senior Consulting Engineer to the New York State Water Power Supply Commission, which was charged among other duties with that of conserving the water resources of the State. Among other storage projects which he studied was a reservoir on the Sacandaga River above Conklingville, N. Y., in the Adirondack Region, which has since been constructed. He was called in from time to time to advise upon the construction of the Massena Power Development on the St. Lawrence River, for the St. Lawrence River Power Company, and its successor at Massena, N. Y., the Aluminum Company of America; and afterward gave advice on ice difficulties and on back-water and other operating problems. He also advised the Aluminum Company of America on its power developments on several Southern rivers and on the design and construction of new aluminum smelting works at Niagara Falls, N. Y. He made investigations on water power development for the Canadian Government in Alberta, Manitoba, and British Columbia; designed high masonry dams for the Mexican Northern Power Company, and for the Pacific Gas and Electric Company at Lake Spaulding, California; designed and supervised the construction of a high masonry dam on the Missouri River, at Holter, Mont.; and prepared plans for many power projects which have not been executed, notably for the development of the Great Falls of the Potomac River, for a large hydro-electric project in the Lachine Rapids, on the St. Lawrence River, near Montreal, Que., Canada, and for a subterranean development for the Ontario Power Company, at Niagara Falls.

Not the least of Mr. Freeman's contributions in the broad field of Hydraulic Engineering were those on problems of river control and navigation. Among his writings on these matters was a paper on "Flood Control of the River Po in Italy"[4] which was presented at the meeting of the Society on June 6, 1928, and for which he received the J. James R. Croes Medal on January 21, 1931. In 1903, he was made Chief Engineer of the Charles River Dam Commission and prepared an exhaustive report on the project for the conversion of the lower estuary of the Charles River into a fresh-water lake, which has since been constructed. In 1904, he reported to the Massachusetts Metropolitan Park Commission on the improvement of the Mystic River and the drainage of the Fresh Pond marshes. In 1905, 1908, and 1915, Mr. Freeman was appointed by the President of the United States a member of Engineering Boards to report on a sea-level *versus* a lock canal and on problems of dam and lock foundations, and earth slides which blocked the Isthmus of Panama several times. From 1917 to 1920, he acted as Consulting Engineer

[4] *Transactions*, Am. Soc. C. E., Vol. 94 (1930), p. 161.

to the Chinese Government on the improvement of the Grand Canal and the prevention of disastrous floods on the Yellow River and the Hwai River, organized a staff of engineers to investigate these problems, and went to China himself in 1919. Between 1924 and 1926, Mr. Freeman was a member of the Engineering Board of Review of the Sanitary District of Chicago and prepared a program for the regulation of the Great Lakes. His report on these matters included exhaustive studies of winter evaporation from the Great Lakes and of minor earth movements or tilting affecting the problem of lake levels.

Mr. Freeman was greatly interested in the application of the hydraulic research laboratory to the study of the river and harbor problems. He made himself familiar with such laboratories in Europe, and presented to the Society a paper on the "The Need of a National Hydraulic Laboratory for the Solution of River Problems."[6] In order to stimulate the interest of American engineers in the laboratory approach to hydraulic problems he had translated and published in 1929 a series of monographs by leading European hydraulicians, entitled "Hydraulic Laboratory Practice." As a further means of educating American engineers to the importance of the hydraulic laboratory and to provide trained men to operate such laboratories when they were built, Mr. Freeman in 1923 gave $25 000 each to the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Boston Society of Civil Engineers, with which to provide for traveling scholarships in hydraulics open to young engineers and junior professors. The first scholarship was awarded by the Society in 1927 and since then, one or two men have studied each year in Europe. Mr. Freeman also conceived the idea of a National Hydraulic Laboratory in Washington, D. C., and was active in furthering the passage of the necessary legislation at Washington and in advising on its construction.

In the water supply field, Mr. Freeman had a long record of distinguished service, and his many published water supply reports made him perhaps best known to engineers in that field. In 1899, he was engaged by the Comptroller of The City of New York to investigate new sources of water supply for that city, and after eight months of intensive work he submitted an exhaustive report on all its possible water supply sources. In this report, he presented valuable experiments on the flow over the crests of model dams, a recomputation of the yield of the Croton System, and an estimate of the future water consumption of New York City, which has been well confirmed by subsequent events.

In 1903, he was a member of the Commission on Additional Water Supply of New York City, the so-called Burr-Hering-Freeman Commission, which investigated the yield and quality of all available sources of supply for the city and made a report which became the basis of the subsequent work of the Board of Water Supply. Mr. Freeman, with his insurance training, recognized the importance of ample water pressures in large cities and was largely responsible for the adoption of the Commission's recommendation

[6] *Transactions*, Am. Soc. C. E., Vol. LXXXVII (1924), p. 1033.

for delivering the new supply in the City at a considerably higher level than the existing distributing reservoirs at Croton, a recommendation that was followed in the construction of the Catskill Works. In 1905, he was appointed Consulting Engineer to the Board of Water Supply of New York City, the body created in that year to construct the Catskill System. He was active in the organization of the Engineering Corps of the Board of Water Supply and in the planning and construction of the Catskill Works. He continued as a Consultant to that Board until his death.

In 1906, Mr. Freeman was one of a commission of three engineers engaged to report on the Los Angeles Aqueduct, a project to bring the waters of Owens River 240 miles to the City of Los Angeles, Calif. In that work he recommended a location for the Owens River Aqueduct which made possible the development of power not previously considered feasible.

He was engaged in 1909 in the capacity of Consulting Engineer on the problem of new sources of water supply for the City of Baltimore, Md.; from 1909 to 1912, he was Consulting Engineer to the City of San Francisco, Calif., and planned the Hetch-Hetchy System, in which he made the development of electric power an important feature. Among other cities which had sought his advice on water supply matters were Nashua, N. H., Denver, Colo., Seattle, Wash., San Diego, Calif., and the City of Mexico, Mexico.

In addition to his country-wide public service, as a Consulting Hydraulic Engineer, Mr. Freeman was active during the World War as a member of the National Advisory Committee on Aeronautics, and reported at that time on the Hog Island Shipyard. He was also a member of the Visiting Committee of the Bureau of Standards, Washington, D. C. In Providence, which became his home after 1896, he identified himself with many local activities. In 1911, he made a study of city planning for the east side of Providence, including new highways, parkways, and parks. He also carried on as a private venture a large real estate development of higher character in the vicinity of his home. He served for ten years as a Director of the Rhode Island Hospital Trust Company and of the National Bank of Commerce, in Providence; in 1904, he was a member of the Rhode Island Metropolitan Park Commission; and, during the war, served as President of the Providence Gas Company.

Mr. Freeman was keenly interested in technical education and spoke and wrote on such educational matters. For forty years he was a member of the Corporation of the Massachusetts Institute of Technology, Boston and Cambridge, Mass. He was once offered the Presidency of the Massachusetts Institute of Technology and twice was offered the chair of Civil Engineering at Harvard University, but had to decline in each case, feeling that he was better suited to professional work.

On April 21, 1931, Mr. Freeman was given a testimonial dinner, sponsored by the Providence Engineering Society, at which engineers, scientists, educators, industrialists, and other friends paid him a remarkable tribute for his many varied accomplishments. He was an Honorary Member of the American Society of Mechanical Engineers, the Boston Society of Civil Engineers, the Providence Engineering Society, the New England Water

Works Association, the Badische Technische Hochschule, Karlsruhe, Germany, and Mitgleid des Wissenschaftlichen Beirats des Forschungsinstituts, in Munich and Walchensee, Bavaria, and a Past-President of the first two of these societies. He held honorary degrees from Brown University, Tufts College, the University of Pennsylvania, Yale University, and the Sächsische Technische Hochschule, Dresden, Germany.

At its meeting on January 17, 1933, the following Resolutions were unanimously adopted by the Board of Direction of the Society:

"*Whereas:* It has pleased Almighty God to remove from our midst our late Honorary Member and Past-President, John Ripley Freeman.

"*And Whereas:* We realize that in his death, the World has lost a most useful citizen; the Engineering Profession an able leader; and the American Society of Civil Engineers a valued and loyal member.

"*Now, Therefore, Be It Resolved:* That the Board of Direction of the American Society of Civil Engineers hereby records its profound sorrow at the passing of its respected and revered friend and supporter.

"*Be It Further Resolved:* That the sincere sympathy of the Board of Direction be conveyed to his bereaved family; and

"*Be It Further Resolved:* That a page be set aside in the Minutes of the Board upon which shall be inserted this Resolution, a copy of which shall also be transmitted to his family."

In 1888, Mr. Freeman was married to Elizabeth Farwell Clark who, with one daughter and four sons, survives him.

Mr. Freeman was elected a Junior of the American Society of Civil Engineers on June 7, 1882; a Member on April 3, 1889; and an Honorary Member on September 29, 1930. He served as Director from 1896 to 1898; as Vice-President in 1902 and 1903; and as President in 1922.