

# TRANSACTIONS

OF THE

## AMERICAN SOCIETY

OF

# CIVIL ENGINEERS

(INSTITUTED 1852)

## VOL. LXXIX

Edited by the Secretary, under the direction of the Committee on Publications.

Reprints from this publication, which is copyrighted, may be made on condition that the full title of Paper, name of Author, and page reference are given.

NEW YORK

PUBLISHED BY THE SOCIETY

1915

NOTE:—This Society is not responsible for any statement made or opinion expressed in its publications.



**ALFRED NOBLE, Past-President, Am. Soc. C. E.\***

---

DIED APRIL 19th, 1914.

---

Our America, America of the Twentieth Century, enlightened, progressive, prosperous beyond any other country of the world, would not be what it is to-day if it had not brought forth an army of engineers, an army small in numbers but mighty in accomplishment, always in the van of progress, making plain the highways of development in which the multitude marches on to attainments ever higher and higher.

The work of this little army has never had just recognition, and these who have wrought the victories of peace tread the quiet paths of life and pass out of it, leaving behind works of enduring usefulness without having recorded upon such works in time-defying bronze or graven stone even their names. Not so with the army, which with trumpets blaring and flaunting banners marches into the "imminent deadly breach" and reaps a harvest of death and a halo of glory. There is scarcely a city or town in these United States which has not reared a monument to some military hero or some group of the rank and file whose support lifted the hero to the plane of public admiration.

The great and good men of our Profession are living their useful lives without a thirst for fame, doing the duty at hand faithfully and well, and passing resolutely on to the next which presents itself.

This was the history of Alfred Noble, who on April 19th, 1914, peacefully ended a useful life. A life so honorable, so kindly, so full of achievement that we delight to honor his memory, and would in some enduring way chronicle the deeds which have so eminently earned for him the love and admiration of his fellow-engineers. We, who thus delight to do him honor, are members jointly and severally of The American Society of Civil Engineers, The Western Society of Engineers, The Franklin Institute, The American Society of Mechanical Engineers, and The Institute of Consulting Engineers. Ours is a common loss, a community of feeling, and unitedly we record our appreciation of the man, the engineer, and the faithful friend. His were the simple homely virtues of truth, honesty, industry, and human kindness. Upon the solid foundation of sterling character he reared the superstructure of a splendid manhood, the story of which we would perpetuate, not only to do him honor, but

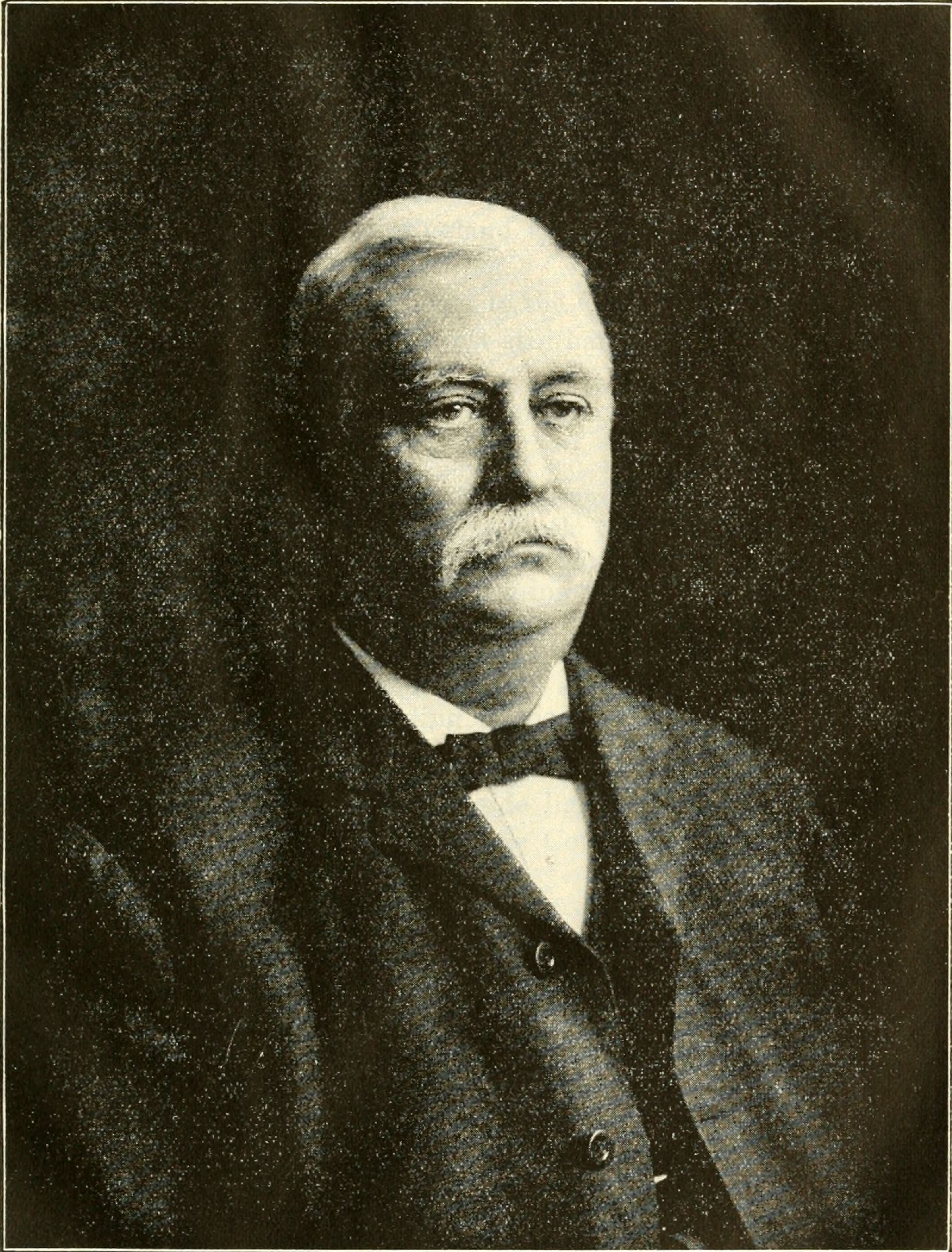
---

\* Memoir prepared by a Sub-Committee (composed of Ralph Modjeski, Onward Bates, and Isham Randolph, Members, Am. Soc. C. E.) of a Joint Committee appointed by The American Society of Civil Engineers, The Western Society of Engineers, The American Society of Mechanical Engineers, The Franklin Institute, and The American Institute of Consulting Engineers.



to hold up to the men who come after us a worthy example of a professional career to be emulated.

In an old family Bible it is recorded that on August 7th, 1844, a son was born to Charles Noble and Lovina Dowd, his wife, at Livonia.



ALFRED NOBLE

On August 9th, 1862, two days after his eighteenth birthday, he enlisted in Company C, 24th Michigan Volunteers. Before doing



to hold up to the men who come after us a worthy example of a professional career to be emulated.

In an old family Bible it is recorded that on August 7th, 1844, a son was born to Charles Noble and Lovina Douw, his wife, at Livonia, Wayne County, Michigan. This son received the Christian name of Alfred. The child grew and waxed strong in body and in mind, and in those early and impressionable years no doubt the teachings of his mother helped to mould the character which commanded the respect and admiration of all those with whom he came in contact. She is described as being a "Woman of remarkable qualities, self-reliant, precise, austere, pious—New England type." Many of Alfred Noble's best traits were due to her training.

Our land can never pay its debt to the Christian mothers, who have gone to their rest, and its hope must still hang upon Christian mothers living and yet to come.

The concise chronicle before us goes on to say of his "early life and education":

"Spent on his father's farm until the age of eighteen. Helped his father and brothers in the arduous work of clearing, draining, and cultivating land in the new Michigan Country. Meanwhile, obtained education at the district school, beginning attendance when four years old. His three brothers all died young. When old enough to ride a horse he attended the Union School, at Plymouth, Mich., where most of his early education was gained. Of studious disposition, learning rapidly and thoroughly, according to his old Teacher, Dr. Frisbee."

This is all we have from the family record, to which tradition contributes nothing, and the only side light we have is from the pen of Judge Edgar O. Durfee, of Wayne County, Michigan. He writes (May 27th, 1914):

"I have known Alfred Noble as long as I have known anybody. His farm home was about a mile from the farm on which I was brought up, and I saw him very often. Some of the time we attended the same district school, and the winter of 1861 attended the graded school in Plymouth where we were in the same class in higher algebra. From his earliest school days he always excelled in all of his studies. He was very studious, and as a boy was the same as a man, always truthful and always lived up not only to the letter but to the spirit of his promises."

Scant as is this record of the first eighteen years of his life, it is sufficient to show "the boy as the father of the man".

We have now reached the war period, and the record says:

"On August 9th, 1862, two days after his eighteenth birthday, he enlisted in Company C, 24th Michigan Volunteers. Before doing



so, however, he obtained the consent of his mother, who opposed his going, but who withdrew her opposition on his declaration that he felt it his duty to enlist."

Here let us interpolate from Judge Durfee's letter:

"One little thing illustrates his character in that regard [loyalty to truth]. He was eighteen years old on the seventh day of August, 1862, on which day he enlisted in Company C, Twenty-fourth Michigan Infantry. His mother was thoroughly imbued with the idea that card playing was the greatest vice in the army—although we of the rank and file learned that the games played there were only euchre and old sledge. She asked him not to play cards, and he promised her he would not play cards while in the army. He lived up to this promise strictly, although he watched the boys play and learned more of cards than most of them, and as much as any of them."

The Judge gives his estimate of Mr. Noble thus:

"I think he was the best boy and man I ever knew, taking him all in all. He was very quiet, not given to boasting, was a warm friend, and had as fine a sense of humor as any person I ever knew. I am sure that everybody who came in contact with him as a boy and man was his friend."

Once more we quote from the scant outlines afforded by the record:

"The regiment (24th Michigan Infantry) was raised principally in Wayne County, following Lincoln's call in June for 300 000 volunteers. It was one of the first regiments composing the 'Iron Brigade', so called by General Hooker for its behavior at the battle of South Mountain. The regiment, being drilled for a time, did not participate in that battle (South Mountain), but arrived at the front in time to get into action at Fredericksburg in December. From that time until February, 1865, Alfred Noble took part in all of the principal engagements of the Army of the Potomac. At Gettysburg his brigade bore the brunt of the first day's fighting, and in particular his regiment lost 80% of its number. Although compelled to retire because of greatly superior numbers, the resistance of the 'Iron Brigade' on that occasion is generally credited with saving the Union position and making possible the final victory on the third day, on which the result of the entire war hinged. Alfred Noble was never wounded during the war, but at one time was very ill in the hospital, and considered that he owed his recovery to the ministrations of the Sisters of Charity. He was mustered out of service with his regiment in June, 1865, with the rank of sergeant, having acted as orderly at corps headquarters for a period of five months.

"He kept a diary during the war and throughout the rest of his life. Thus is told, in a statement of about 225 words, the story of his young soldier's life during nearly three years of marching, fighting, and enduring, a fraction of one word of each of these 1 000 days of stress, hardships, and danger. We long for a glimpse of the diary that he kept during the period when our country was fused in the 'melting pot' of war."



James H. Brace, M. Am. Soc. C. E., in his personal reminiscences of Mr. Noble, says:

"In the long twilight after supper, Mr. Noble could sometimes be induced to talk of his war experiences. He was very reluctant at all times to discuss this subject. He seemed to believe that it was every good citizen's duty to serve, then when the war was over, go about his regular business as though nothing had happened; that the country owed him nothing for his services, and that there was no good in keeping up the old spirit."

Eugene W. Stern, M. Am. Soc. C. E., says:

"As you know, Mr. Noble was very loath to speak of his war experiences, and it was during the course of the last three years of rather close acquaintanceship with him that from time to time I was able to glean a few incidents. It appeared to me that he wanted to forget the Civil War. The humorous side he was more inclined to dwell upon. He never wore a Grand Army button, to my knowledge. He told me the following incidents:

"Some years ago, when he was Resident Engineer on the Memphis Bridge, a man wearing a Grand Army button, claiming to have been a Colonel or Brigadier General during the War, came to see Mr. Noble about some matter or other in connection with some material he was selling. \* \* \* 'He told me', said Mr. Noble, 'that he had been at Chancellorsville', and mentioned a certain incident which I knew did not agree with the facts, which I told him. He seemed rather astonished at my information on this point, and asked me how I knew, and I told him that I was there. He asked me to what Army Corps I belonged, and what rank I held. 'I am the last surviving member of it', I said. He seemed curious to know, and I replied, 'The great Corps of Privates'."

Mr. Stern says, further:

"On another occasion, in talking with him about the requisite qualities of a good soldier, he said, 'Ability to withstand hunger, fatigue, and hard marching, were very essential qualities, but to be a good runner was also often a very useful attribute'."

We know that, youth though he was, he served his country as a fighting man for three long years, and emerged from the ordeal of war uncontaminated by its demoralizing influences and conscious in his modest estimate of himself, that he was capable of service to his country and his kind in the more congenial paths of peace.

As we know, he chose for himself a career which he had to enter through the door of educational preparation. How he went about it is briefly told in the skeleton record of facts to which we must frequently refer.

"From July, 1865, to September, 1867, he held a clerical position in the War Department at Washington, Adjutant General's Office. During this time he saved his earnings and prepared himself, with the help of private tutors, to enter college, with such industry that



in the fall of 1867 he entered the University of Michigan as Sophomore in the class of '70. Among his classmates were Justice William R. Day and Judge Rufus H. Thayer, of Washington, D. C. He was a member of the Alpha Delta Phi fraternity, and became vice-president of his class in his Junior year. While an undergraduate, he was absent a year and a half in Government employ, acting as recorder with the United States Lake Survey, and kept up his studies at the same time, taking his degree of C. E. in 1870."

Of this period Mr. Justice Day, writing under date of November 3d, 1914, says:

"It was my privilege to be a classmate of his in the University of Michigan, where we graduated together in the class of 1870. I have met him from time to time since, and have known of the great career which he has had in his Profession, and am glad to know that it is the opinion of his associates that he was among the first engineers of this country.

"I well remember when Alfred Noble came to the University of Michigan, where he entered the Sophomore class in 1867. He was somewhat older than the rest of us, and, in my opinion, far more able than any of us. He had had three years' experience in the army, and those who knew him there said that he had been a faithful and valiant soldier. I do not think any of his classmates ever heard him speak of his army career. He probably regarded it as merely a part of his duty, and not a thing to be talked about."

We shall quote again from this letter in another connection.

As we leave this brief mention of his college career, we have no thought of derogating from the honor of any other graduate of that great seat of learning when we say that the proudest name upon its roster is that of Alfred Noble; and Ann Arbor can set before its students no higher professional inspiration than the story of Alfred Noble's life and work.

We have now reached the period when that life's work began in earnest, and the years that follow are full of action and achievement.

We turn again to the record, which reads:

"From June to September, 1870, he was engaged on harbor surveys on the eastern shore of Lake Michigan and the western shore of Lake Huron. In October, 1870, he was put in charge of the work at Sault Ste. Marie, Mich. In 1873 it was found necessary to build a new canal lock at the Sault and to dredge and straighten the channel of St. Marys River, and Alfred Noble was placed in charge of the work as U. S. Assistant Engineer under General Godfrey Weitzel, of the U. S. Engineer Corps. In this work, which occupied nine years, he practically designed and supervised the construction until completion of one of the present locks, known as the Weitzel Lock. The lock embodied new features that attracted the attention of engineers both at home and abroad. Most previous locks had been filled by admitting water through slides in the upper gates, and the water was released in the same way through slides in the lower gates."



It is appropriate here to quote from Mr. Joseph Ripley's letter under date of June 5th, 1914:

"The lock Mr. Noble built at the 'Soo' was named for Godfrey Weitzel \* \* \*, and he always gave Mr. Noble full credit for his part in the work at the 'Soo'. (See Johnson's Encyclopedia, article on St. Marys Falls Canal, which was written by General Weitzel.) When the first boat, *The City of Cleveland*, was locked through to the Lake Superior level, the occasion was made quite an event, and about twenty engineer officers were present. Mr. Noble did not ride with the officers on the steamer, but stayed on the wall, watching locking operations. I heard Major (later General) Roberts, author of 'Roberts' Parliamentary Rules', congratulate General Weitzel on the completion of the greatest lock in the world, a work which would be a great personal honor and give renown to General Weitzel personally and, through him, be credited to the Engineer Corps and add much prestige to it. General Weitzel replied that 'Alfred Noble deserved all of the credit for designing and building the lock'. \* \* \*

"When General Sherman made a tour of the Western forts, Mr. Noble was directed by General Weitzel to meet the party on arrival at the 'Soo' and to show them about the lock work. Mr. Noble delegated his assistant, Mr. Davock, to meet General Sherman while he (Mr. Noble) went up to the head of the canal and stayed there all day, so as not to put himself at all forward in the presence of so notable a man."

These are two instances of the modesty which clothed the man like a distinctive garb; but the last one raises the question, is modesty a justification for disobedience of orders? General Weitzel ordered Mr. Noble to meet General Sherman; that order was disobeyed. This, however, is the only instance of insubordination of this man who respected rightful authority and honored the law.

On May 31st, 1871, he married Miss Georgia Speechly, of Ann Arbor, Mich. One son survives this union, and truly Frederick C. Noble has a proud heritage in his father's name and fame. Of his married life we, who compile this memoir, have no record, nor is it essential or even appropriate that we should have; but we know that Alfred Noble maintained in the seclusion of his family life the same true and admirable character that is known to us in his career.

We will not (from now on) follow step by step the upward strides which he made, until he reached the highest distinction which could come to any man in the Engineering Profession, any further than to note the date and the character of each attainment in usefulness and honor; but we will make a part of our presentation letters from distinguished men whose association with him peculiarly fitted them to record their appreciation of his work.

*Enters Railroad Work in West.*—In August, 1882, the canal being practically finished, he resigned from the Government service to become Resident Engineer on the construction of a railroad bridge across



the Red River at Shreveport, La., the late L. G. F. Bouscaren, M. Am. Soc. C. E., Chief Engineer. In March, 1883, he resigned this position to accept a similar one on the Northern Pacific Railroad, then nearly completed as to track laying, on the construction of a bridge across Snake River, at Ainsworth, Washington Territory, the late General Adna Anderson, M. Am. Soc. C. E., Chief Engineer. In September he was put in charge also of the replacement of a timber bridge over Clark's Fork of the Columbia, near Belknap, Mont. Both bridges were completed about the middle of the following year. In September he was put in charge of the construction of foundations of a high trestle across Marent Gulch near Missoula, Mont.; and in October of the foundations of a bridge across St. Louis Bay at Duluth, Minn. The Marent Gulch Viaduct was completed in June, 1885, including superstructure and new foundations. The St. Louis Bay Bridge was completed in May, 1885, according to original plans, and the construction of an additional draw-span was started in July. From August to October of this year was spent at Trenton, N. J., inspecting the ironwork for the draw at the shops, and from October to the following January, 1886, he was supervising its erection. In February, 1886, he was in New York City, in the office of the late George S. Morison, M. Am. Soc. C. E. During March and April, he was inspecting bridge manufacture at Buffalo, and in May was inspecting iron at Pottsville, Pa. He then returned to New York in June. He visited Omaha Bridge in July, and then went to St. Paul for temporary duty with the Northern Pacific Railroad as Acting Principal Assistant Engineer. In September he went to Pittsburgh to inspect ironwork.

*Washington Bridge.*—In October, 1886, he resigned to accept an appointment as Resident Engineer of the bridge across the Harlem River at 181st Street, New York City, since known as the Washington Bridge. The late William R. Hutton, M. Am. Soc. C. E., was Chief Engineer.

*Cairo Bridge.*—In July, 1887, he resigned to accept an appointment as Resident Engineer of the Illinois Central Railroad bridge over the Ohio River at Cairo, Ill., the late George S. Morison and Elmer L. Corthell, Members, Am. Soc. C. E., Chief Engineers. This bridge was opened for traffic on October 29th, 1889.

*Memphis Bridge.*—In November, 1889, he assumed charge, as Resident Engineer, of the railroad bridge over the Mississippi River at Memphis, Tenn., the late George S. Morison, Chief Engineer. This bridge was opened for traffic in May, 1892.

*Partnership with Mr. Morison.*—On the completion of the Memphis Bridge, he entered a limited partnership with the late George S. Morison in Chicago, which lasted until April 30th, 1894. During this term he was Assistant Chief Engineer of the bridge across the Missis-



ssippi at Alton, Ill., and of the bridges across the Missouri at Bellefontaine, Miss., and Leavenworth, Kans.

*Enters Private Practice.*—On the expiration of the partnership, in April, 1894, he established an office in Chicago and entered general practice as Consulting Engineer. During the first two years of his practice, he was connected with various constructions, including the regulating works of the Chicago Main Drainage Channel, a power canal at Sault Ste. Marie, the foundations of a bridge across the Harlem River, New York City, foundations of office buildings in the lower part of Manhattan Island, and a wharf at Tampico, Mexico.

In April, 1895, he was appointed by President Cleveland as a member of the Nicaragua Canal Board. The board visited Central America, examined both the Nicaragua and Panama Canal routes, returned to the United States, and completed its work in November, 1895.

In July, 1897, he was appointed by President McKinley a member of the United States Deep Waterway Commission, to make surveys and estimates of cost for a ship canal from the Great Lakes to deep water in the Hudson river.\*

In June, 1899, he was appointed by President McKinley as a member of the Isthmian Canal Commission, which was charged with the determination of the best canal route across the Isthmus. The Commission visited Europe, examined the data relating to the Panama Canal collected in the office of the French Company, in Paris, and visited the Kiel, Amsterdam, and Manchester Ship Canals.

In the spring of 1898 he was appointed by William R. Day, then Assistant Secretary of State, as arbitrator in a dispute between a citizen of this country and the Government of San Domingo. He visited that Republic, returning to New York a few days before the declaration of war with Spain.

In the fall of 1900 he was appointed a member of an engineer board to advise the State Engineer of New York concerning the plans and estimates for a barge canal across that State.

In November, 1901, the city authorities of Galveston, Tex., appointed him as a member of a board of engineers to devise a plan for protecting the city and suburbs from future inundations. This board reported a plan involving the building of a solid concrete wall more than 3 miles in length and 17 ft. in height above mean low water, the raising of the city grade, and the making of an embankment adjacent to the wall, the whole to cost about three and a half millions of dollars.

In November, 1901, Mr. Noble formed a partnership with Ralph Modjeski, M. Am. Soc. C. E., for the purpose of engineering the Thebes Bridge over the Mississippi River at Thebes, Ill.; and the

---

\* *Engineering Record*, April 25th, 1914, p. 466.



corporation representing the several interests, for which that bridge was to be built, engaged these gentlemen, thus associated jointly, to design and build that bridge. From that time until January, 1905, Mr. Noble, without neglecting any of the other great engineering works with which he was identified, devoted a great deal of time to this bridge, one of the most massive and imposing of the many now spanning the Father of Waters.\*

From 1902 to 1909 Mr. Noble was Chief Engineer of the East River Division of the New York extension of the Pennsylvania Railroad, and was in entire charge of this most difficult piece of work, involving as it did a very accurate survey across Manhattan and the construction of the foundations of the Pennsylvania Station, of the land tunnels, and of the East River Tunnels.

In 1905 he was appointed by President Roosevelt a member of the International Board of Consulting Engineers for the Panama Canal. This board was commissioned to advise the President and the Congress of the United States concerning the type of the canal. Its work has passed into history, and the lock canal across the Isthmus is to-day a monument to the wise counsels of five Americans who, through a minority report, convinced the President and the Congress that a sea-level canal should not be considered. Of the membership of that board all but Alfred Noble survive, and each of the twelve survivors is ready to bear testimony to the splendid work which he contributed to the labors of the board and to recognize the potency of his influence in bringing about the results, of which, as a people, we are proud to-day.

Nor did his work in connection with the Panama Canal end with the life of that Board of Consulting Engineers, for his advice was later requisitioned in connection with vital problems in its construction, such as Gatun Dam and the lock foundations.

During the four years, from January, 1910, until the time of his death in April, 1914, Mr. Noble's work in private practice covered a broad field. He was called on for advice twice by the United States Government and twice by the Canadian Government, he was twice employed by the City of New York as consulting engineer, and acted as consulting engineer for various corporations, reporting on ten different water-power projects. All of the foregoing involved careful studies in what is commonly referred to as the theoretical side of engineering. An evidence of the breadth of his experience is the fact that during the same time he was employed on nine different occasions by contractors on large construction works to advise them in regard to the so-called purely practical questions involved in carrying out their works.

In addition to all of the above, he found time during this period to undertake, in a public-spirited desire to benefit the Profession, a

---

\* Fuller details are given in the Appendix.



large number of gratuitous tasks, such as serving on various committees. The amount of time and labor which he gave to this work was very great, amounting to about one-third of his total time. This will be appreciated only by those who were associated with him.

In behalf of the United States Government, he went to Honolulu to examine and report upon the Pearl Harbor Dry Dock. He spent several months in making a study of this problem, in the very thorough manner which was one of his most notable characteristics, and submitted a voluminous report to the Secretary of the Navy.

After the completion of the plans for the New Welland Canal he was employed by the Canadian Government to report upon all the plans and the projects as a whole. His report on this work to the Minister of Railways and Canals was dated May 13th, 1913. He had, previous to this, advised the Canadian Government on the foundations for the new Quebec Bridge, after the fall of the old bridge and while the plans were being drawn up for the new structure just prior to the letting of the contracts.

He was engaged on New York City work from October, 1909, until his death. The city made use more particularly of his ability as an expert in tunnel matters, first, on the many miles of tunnel for the Catskill Aqueduct north of the city and the deep tunnels under the Boroughs of Manhattan and Brooklyn and the East River, and, secondly, on the subway tunnels, especially the four East River tunnels known as Routes 33 and 48.

The first of the water-power projects involved a study of the regulation of Lake Superior for the Michigan Northern Power Company. This problem covered four years of continuous work, and the report, filling three large volumes, is now filed with the International Waterways Commission. A surprisingly large proportion of this work was done by Mr. Noble personally; if he had a weakness, it was in this habit he had formed of doing possibly too much work himself.

He visited California twice to examine and report upon projects for the Big Meadows Dam for the Great Western Power Company, and gave a large part of his time, extending over a year, to the study of a power development on the Susquehanna River. He also made a study of an extension of the plant at Niagara Falls; a study of power possibilities on the St. Lawrence River; and a report on a plant at Grand Falls, New Brunswick.

Aside from the 160 million dollars, more or less, which will be the cost of the Catskill Aqueduct, and which he cannot be said to have passed upon as a whole, the value of the work referred to him for his judgment during the four years totals nearly 100 million dollars. This is mentioned only as giving some idea of the magnitude of the responsibilities which were placed upon him, and as an indication of the value placed upon his judgment.



It is almost past believing that all this work should have been performed by one man in 52 years; and that of those 52 years three were given to military service in time of war. Such a record attests the wonderful mental and physical power of the man, his steadfastness to duty, and his ability to endure the strain of such a life. There is enough in that record to have made several men great, had those activities been equally apportioned to them.

Now let us record the honors which he won so worthily and wore so modestly:

*Honors Conferred.*—

President, Western Society of Engineers, 1898.

President, American Society of Civil Engineers, 1903.

Honorary Member, Institution of Civil Engineers, Great Britain, 1911.

President, American Institute of Consulting Engineers, 1913.

Degree of LL.D., University of Michigan, 1895.

Degree of LL.D., University of Wisconsin, 1904.

Awarded John Fritz medal for "notable achievements as a civil engineer", 1910.

Awarded Elliott Cresson medal of Franklin Institute for "distinguished achievements in the field of engineering", 1912.

*Other Distinctions.*—

Member of Tau Beta Pi.

Chairman, Joint Conference on Uniform Methods of Tests and Standard Specifications for Cement, 1914.

Member of Special Committees of American Society of Civil Engineers, reporting on Uniform Methods of Tests of Cement, 1885 and 1912.

Chairman of Special Committee to Investigate Conditions of Employment of, and Compensation of, Civil Engineers, 1913.

Presented general report on "Dimensions to be assigned, in any given country, to canals of heavy traffic. Principles of operating. Dimensions and equipment of the locks" to the XIIth International Congress of Navigation, at Philadelphia, 1912.

Member, Board of Managers, American Society of Mechanical Engineers, 1912-14.

Vice-President, Engineering Section, American Association for the Advancement of Science, Annual Meeting, 1914.

(Died before he could serve; succeeded by F. W. Taylor.)

33d degree Mason.

Vice-President, Engineers' Club of New York.

Director, American Highway Association, 1912-13.



*Membership.—*

American Society of Civil Engineers.  
 American Society of Mechanical Engineers.  
 Canadian Society of Civil Engineers.  
 Western Society of Engineers.  
 Institution of Civil Engineers.  
 American Institute of Consulting Engineers.  
 Permanent International Association of Navigation Congresses.  
 American Highway Association.  
 Engineers' Club of New York.  
 University Club of New York.  
 Century Club of New York.  
 Chicago Club.  
 Chicago Engineers' Club.  
 Alpha Delta Phi Fraternity.  
 Various national and local scientific and economic organizations.

These all were his, but no word of his ever betrayed pride in their possession, although he prized every manifestation of the love, esteem, and honor with which his fellow-men regarded him.

*Bibliography of Papers and Discussions.—*

In *Transactions*, Am. Soc. C. E.:

Bank Revetment on the Lower Mississippi, Vol. XXXV.

Canals from the Lakes to New York, Vol. XLV.

"Experiments with Appliances for Testing Cement," Vol. IX.

Liverpool Dock Improvements, Vol. LII.

Nicaragua Canal, Vol. L.

"Report of the Committee on a Uniform System for Tests of Cement," Vols. XIII, XIV.

"Final Report of the Special Committee on Uniform Tests of Cement," Vol. LXXV.

"The Development of the Commerce of the Great Lakes," Vol. L.

"The Effect of Freezing on Cement-Mortar," Vol. XVI.

"The New York Tunnel Extension of the Pennsylvania Railroad, The East River Division," Vol. LXVIII.

Underpinning of Heavy Buildings, Vol. XXXVII.

"Tables for Obtaining Horizontal Distances and Differences of Level from Stadia Readings," by Alfred Noble and William T. Casgrain, 1870.

General Report (International Navigation Congress, 1912) on dimensions to be assigned, in any given country, to canals of heavy traffic. Principles of operating. Dimensions and equipment of locks.

Railway Tunnels of New York City, *Journal*, Franklin Inst., April, 1913.



Presidential Address (on Engineers in Public Service), Am. Inst. Cons. Engrs., January, 1914.

Address to Stevens Institute Alumni (on Panama Canal), Stevens Institute *Indicator*, April, 1909.

#### MARKED CHARACTERISTICS OF THE MAN.

*Modesty.*—We have spoken of his modesty, and would further emphasize it by a few quotations:

“Not the least of his great virtues was inherent modesty, \* \* \*. Not long after entering on his engineering work he was offered a professorship, under conditions which led him to look upon the offer with favor, but his friends of those days—of which I am proud to have been one—felt that Noble was destined to become an active participant in the great construction work of his profession, to a much greater extent than his natural modesty permitted him to admit, and fortunately our counsels prevailed.”—(A. Mackenzie, Hon. M. Am. Soc. C. E., Maj.-Gen. (*Retired*), Corps of Engrs., U. S. A.)

“While Mr. Noble undoubtedly understood and knew of his marked ability, he never appeared to realize that he excelled or to assert it, but had a quiet, unassuming, reserved, and kindly personality which was most attractive.”—(Joseph Ripley, M. Am. Soc. C. E.)

“He was probably one of the most modest men in the Profession, and never failed to accord to his chief all credit for the conception of the work and the principal administration of it.”—(William H. Burr, M. Am. Soc. C. E.)

“In his case, the boy was father to the man. He was modest, kindly, industrious, and capable, as boy and man.”—(Justice William R. Day.)

#### *Industry.*—

“He always came to the office first and usually left last. No matter how some of us tried to be on the work ahead of him, we always found Mr. Noble there, \* \* \*. No work was too trivial or too irksome for him. Nothing was neglected or passed over.”—(Ralph Modjeski, M. Am. Soc. C. E.)

“Throughout the whole laborious operations of the first Isthmian Canal Commission, Mr. Noble bore his full share from the beginning to the end, and his services aided much in giving to the report its high value.”—(William H. Burr, M. Am. Soc. C. E.)

“His professional work upon this [Isthmian Canal] Commission was of a very high order. With untiring industry he mastered the details of every branch of the investigation, and then with sound judgment and judicial temperament he reached conclusions which could not be shaken. \* \* \*.

“My subsequent association with Mr. Noble, aside from the Panama Canal, related particularly to the hydraulics of the Great Lakes, and confirmed me in the conviction that, for the solution of any engineering problem involving long and careful analysis, he had no superior.”—(O. H. Ernst, M. Am. Soc. C. E., Brig.-Gen. (*Retired*), Corps of Engrs., U. S. A.)



"While at the 'Soo', Mr. Noble did the work of three or four expert engineers. He worked twelve to eighteen hours every day."—(Joseph Ripley, M. Am. Soc. C. E.)

"So frankly honest was he, that his whole life was an open book from the time he quietly entered upon his chosen profession at the Sault Ste. Marie Canal—while still a student—up to and through his career as a world-known master."—(A. Mackenzie, Hon. M. Am. Soc. C. E., Maj.-Gen. (*Retired*), Corps of Engrs., U. S. A.)

*Ability to Handle Men.—*

"His treatment of his subordinates was exceedingly kind without being lenient. Always ready to help with word of advice or to turn up his sleeves and join in the work if he saw he could help."—(Ralph Modjeski, M. Am. Soc. C. E.)

"He chose his assistants with care, and required a great deal of them, although not as much as he demanded of himself. When he had once given a man his confidence, he was entirely willing to leave to him the carrying out of his instructions, and such suggestions as he made were always conveyed in a kind, generous manner, which made it a delight to talk over any point with him."—(Henry Goldmark, M. Am. Soc. C. E.)

"When several hundred men were employed on the work [at the 'Soo'], he knew and called every one by name, and could tell the value of each man as a workman. He was always pleased to find any employee taking special interest in his work, and would cheerfully aid in furthering that interest by explanation, by teaching, or in other ways. \* \* \*. He was a great and most successful leader. It was no wonder that all his employees were loyal to him, willing to give the uttermost possible to acceptably serve him."—(Joseph Ripley, M. Am. Soc. C. E.)

*Cheerful Serenity and Kindly Humor.—*

"With his great qualities and achievements, he had a gentle vein of humor that made him the most agreeable of companions."—(Mr. Justice William R. Day.)

"He was not only the experienced professional man, but most gracious and invariably kindly in his relations with every member of the Commission. He was patient in times of difficulty, and frequently lightened the troubles of many unwelcome conditions by bits of quiet humor in which he was wont to indulge."—(William H. Burr, M. Am. Soc. C. E.)

"During the trip there were some trying experiences from wind and weather, but throughout these, as well as during the sunshine, Mr. Noble displayed the same kindly good humor and thoughtful consideration for others that characterized all his relations with his fellow-men."—(James H. Brace, M. Am. Soc. C. E.)

"Throughout these expeditions [Nicaragua and Panama] Noble's equanimity never for a moment deserted him. His sweetness of disposition and generosity of temper endeared him to all."—(O. H. Ernst, M. Am. Soc. C. E., Brig.-Gen. (*Retired*), Corps of Engrs., U. S. A.)



*Sense of Obligation.*—

The largest obligation received loyal discharge from him, and the least was never forgotten nor neglected.

“Another characteristic incident: When Mr. Noble was going to Panama, he asked me to keep his club dues paid, ‘For’, he said, ‘I should not like to be posted as delinquent, and again I should dislike *not* to be posted if I deserved it.’—(Ralph Modjeski, M. Am. Soc. C. E.)

*Generosity.*—

“He was generous. By accident I have learned of several instances where he has contributed considerable sums of money regularly for one or more years where employees have been injured, or who had dependent families sorely in need of assistance.”—(Joseph Ripley, M. Am. Soc. C. E.)

“He was most scrupulous and generous in money matters. Always ready and desirous to give more than he received, not only in money matters but in everything else.”—(Ralph Modjeski, M. Am. Soc. C. E.)

“In addition to all of the above, he found time \* \* \* to undertake, in a public-spirited desire to benefit the Profession, a large number of gratuitous tasks, such as serving on various committees. The amount of labor which he gave to this work was very great, amounting to about one-third of his total time. This will be appreciated only by those who were associated with him.”—(S. H. Woodard, M. Am. Soc. C. E.)

“He was generous and kindly, and more considerate of others than he was of himself. \* \* \*. I remember a little incident which occurred about a year ago, shortly before the change in the City’s administration. He told me he could see that there was to be a strong cry for economy in all of the operations of the City, and that, whether it was advisable or not, strong pressure would be brought on our Board for a reduction of expenses, and so he suggested that, as he was the last of the three Consulting Engineers to be appointed he would retire, in order that the others might not be disturbed. Neither the members of the Board nor I would listen to such a proposition, as we believed that his counsel was too valuable to lose at a time when the work was to be put under test, and his services might be very necessary.”—(J. Waldo Smith, M. Am. Soc. C. E., Chief Engineer, Board of Water Supply, New York City.)

*Faithfulness.*—Just one instance, characteristic of the man:

“In the death of Alfred Noble the American Highway Association has lost its greatest and most useful member. \* \* \*. He attended the founders’ meeting, and was there elected a member of the Executive Committee, on which he served to the time of his death. During the four years that he served on this committee he never missed a meeting.”—(Logan Waller Page, M. Am. Soc. C. E.)

A greater than all has said: “He that is faithful in that which is least is faithful also in much.” The law of faithfulness is not limited by magnitude; it obligates from the least to the greatest, from the greatest to the least.



## SPONTANEOUS EXPRESSIONS OF SORROW AND OF SYMPATHY.

"The name of Alfred Noble will live in our memories, and in history, with those who possessed the finest qualities of heart and intellect."—(Charles S. Carter.)

"My relations with him for many years past had been very close, in connection with the New York tunnel work in which we were so closely associated. He was a man for whom every one entertained the highest respect, not only for his professional ability and talents, but for his many endearing personal qualities as well.

"The Profession has sustained a great loss in Mr. Noble's death, and I beg to assure you of the very deep sense of loss which I feel personally."—(Samuel Rea, M. Am. Soc. C. E.)

"I first knew him as the great engineer, but came to know him also as the biggest, broadest, and most human man with whom I ever came in contact."—(Paul G. Brown, M. Am. Soc. C. E.)

"Like every one else that knew Alfred Noble, I not only admired him as a man and as an engineer, but had for him a real deep affection as a friend, and I feel that I too have suffered a loss to-day."—(William Barclay Parsons, M. Am. Soc. C. E.)

"He stood for nothing but the straight, unvarnished truth, and I am sure there was not a man who knew him but felt he was the better for having known him and the better for following him."—(James Forgie, M. Am. Soc. C. E.)

"There has been nothing that I have felt more than his death; he was so good, kind, generous, always thinking of your comforts."—(George Kemp.)

"I, too, have keenly felt the loss of my great, good friend and chief, for the death of your father was a sad personal bereavement to me, the severing of an acquaintance of thirty-eight years.

"Alfred Noble was my ideal of a man, a grand character embodying the best traits of human intelligence and personality. He measured up to the perfect standard of a Chief Engineer, with full technical and practical ability, ready with right expedients, always successful, with never a failure, with unassuming modesty, with a living honesty of intent and deed, bright and spotless as sunlight, and an inborn gift of leadership which inspired loyalty to him and his work in every employee, however humble or important the position occupied might chance to be, and imbuing a spirit of service willing to go to the limit of uttermost endurance. I recall the tribute paid by a noted speaker in 1871 to the memory of a beloved teacher, and the words fittingly describe Mr. Noble's kind, gifted and forceful personality:

'Ah! one I saw and still can see,  
As a picture dim he seemeth to me  
By the hand of a Master painted.  
Around the picture a halo clings,  
And the face that memory backward brings  
Is like the face of the sainted.  
A richer wealth than the gold of fools,  
A wiser wisdom than dwells in schools,



A nobler honor than place confers,  
And a power a Prince might boast was his.  
So deeply cultured in word and thought,  
Each taste and talent so finely wrought,  
So ran the purity of his life,  
So sweet the harmony of its strife,  
So grand the result of his being's task,  
The world for ages was greatly blessed.'"

—(Joseph Ripley, M. Am. Soc. C. E.)

"Somehow, it seemed hard to think he was gone, and that it ought not to be. I was an admirer of him and attached to him in kindly feelings of long acquaintance. He was to me a remarkable man, whom I counted as one of the few really great men I have known; and I always rejoiced in learning of the deserved recognition of him by others. While he undoubtedly understood and knew of his marked ability, he never appeared to realize that he excelled, or to assert it; but had a quiet, unassuming, reserved and kindly personality which was most attractive to me. He was really a man that none knew but to love and none named but to praise. It is a gratification to remember that he won appreciation and distinction in his life work and did his life work grandly. To us who knew him so long, his going leaves a special sadness, and I can particularly understand the feeling of lonely sorrow and great loss of a close friend in your case. I deeply sympathize with you; and join with you in the sentiment that one of the grandest, and most useful, men of this country has gone."—(J. H. Steere.)

"His services to the City and State were permanent and lasting, and he will be greatly missed by the many friends who fully appreciated his high character."—(William R. Willcox.)

"It is very possible that you have never heard my name, but as it was a great privilege for me to know your father, I want you to know that I am one of a legion of men who owe to your father a debt of gratitude. The great simplicity, truth, honor, and ability which Mr. Noble stood for was not only an inspiration to me, but has done a great deal to establish and re-establish my faith in my fellow-men."—(Walter F. Dillingham.)

"He was one of those great men whose modesty, gentleness, and kindness vested his greatness with a charm, and made all those who knew him love him as a man as strongly as they admired him as an engineer.

"His loss makes a huge gap in our ranks, as in our hearts, and it is hard to realize how it can ever be filled."—(R. S. Buck, M. Am. Soc. C. E.)

"It was a very great pleasure to me to have met your father, for I esteemed him very highly as a man and as an engineer."—(J. S. Langthorn, M. Am. Soc. C. E.)

"A great loss to the Engineering Profession and to the community."—(F. W. Carpenter.)

"Since chance has thrown us together, and I have had the pleasure of knowing him rather intimately, I have been struck with admiration



for his great abilities and his splendid character as a man.”—(Josephus Daniels.)

“I am mourning the best of men and the best of friends.”—(Ralph Modjeski, M. Am. Soc. C. E.)

“It is impossible to think of any one in the Profession who will be more sadly missed.”—(Arthur S. Tuttle, M. Am. Soc. C. E.)

“I cannot express to you what I feel, in the loss of your noble father, and can only say now that his life has been an inspiration to all those who have had the good fortune to know him, as I have.

“Let me add that while his presence has gone, his personality will ever be a precious memory to us.”—(Eugene W. Stern, M. Am. Soc. C. E.)

“I esteem it a great privilege to have known him and to have been, even to so small an extent as I personally have been, associated with the one man who in my opinion outranked all the other engineers in this country. His splendid character and honor have been a great influence for good in the Profession, and we will all miss that fine guiding spirit very greatly. \* \* \* In his death there still remains to you and to us the memory of one of the finest men that ever lived, finishing his course in the full possession of all his powers and at the summit of his fame. What can any one of us desire for himself better than that.”—(J. Vipond Davies, M. Am. Soc. C. E.)

“I am greatly shocked by your announcement of the death of Mr. Alfred Noble. I have found great satisfaction in the fact that during my term of office as President of the A. S. M. E. Mr. Noble sat at our Council Board. Meeting him there gave me the first opportunities I have had for gaining his acquaintance. I, of course, knew of his work as an engineer and of the fine reputation he has always sustained as a man; but as my acquaintance with him increased, and as I came under the influence of his personal charm, I appreciated as never before the significance of his presence at our meetings and, in a larger way, of his life among men.”—(W. F. M. Goss.)

“Mr. Noble was not only one of our great engineers, but the highest type of man in every respect, and his quiet, lovable ways endeared him to all. He will be greatly missed, and it will be very difficult to fill the position he has occupied in the engineering world.”—(Ambrose Swasey.)

“He was certainly one of the greatest men in our Profession, and his unassuming personality, coupled with his wonderful achievement, should make him a model for all of us to follow.

“I know of no single man who, it seems to me, will be a greater loss to our Profession.”—(Fred. W. Taylor.)

“I am desired to inform you that at the first Meeting of the Council of this Institution after the death of our distinguished Honorary Member, Mr. Alfred Noble, the following Resolution of Condolence was passed:

“Resolved: That the Council record the deep regret with which they have learned the death of Mr. Alfred Noble, Honorary Member, who always evinced the warmest interest in the affairs of The Institu-



tion since he was elected a Member in 1901.”—(J. H. T. Tudsbery, *Secretary*, Inst. C. E.)

“As a classmate of my father’s at the University of Michigan, his name is familiar to me from my earliest recollection, and my personal acquaintance with him, dating from my first employment in Nicaragua sixteen years ago, was a source of great pleasure to me. I value greatly the opportunities that I have had to know him there and in Panama, and later in this city.”—(Henry Welles Durham, M. Am. Soc. C. E.)

“I knew him well, and he was a splendid man. We will all miss him very much.”—(Ralph Peters.)

“Although an entire stranger to you, I trust you will permit me to express my profound and sincere sorrow because of the death of your honored father, the late Alfred Noble, than whom I never knew a finer gentleman or better engineer. Truly we have lost our best.

“My acquaintance with him was but slight, \* \* \* and although I have met him but seldom in recent years, I have cherished the memories of my slight association with him, and never failed whenever I saw his name to experience a thrill of pleasure as I recalled the genial face and pleasant smile of him who, above and beyond all his other rare qualities and attainments, was always four-square to every one.”—(W. L. Smith.)

“I feel it myself a great deal. I had known him for over thirty years and feel more admiration and affection for him than I can tell.”—(Edwin Duryea, Jr., M. Am. Soc. C. E.)

“Many of us, who had the privilege of association with your father sympathize with your sense of separation and loss. We loved and respected him as a man and a counsellor. \* \* \* His fine, long record of usefulness has been and will be an inspiration to many.”—(Alfred Douglas Flinn, M. Am. Soc. C. E.)

“I know of no one who had a higher regard for your father than I had, and I shall miss him greatly. He was a man who lived up to his name, and his loss is world-wide.”—(Louis H. Barker.)

“I cannot refrain from telling you of the great admiration I had for your father and the high affectionate esteem I, and all others who knew him, had for him.”—(Daniel E. Moran, M. Am. Soc. C. E.)

“Your father was great, not only in respect to his achievements, but also in that he commanded the love and honor of every one whose privilege it was to know him.”—(Waldo C. Briggs, M. Am. Soc. C. E.)

“We have always considered Mr. Noble one of the big, strong, capable men in this country, and as such, he won the esteem and admiration of every one, including ourselves.”—(Bradley Contracting Company.)

“I believe that the world had lost in your father its foremost civil engineer, and we all feel that we have lost a valued personal friend.”—(S. P. Brown, M. Am. Soc. C. E.)

“I am very sorry to hear of the death of Alfred Noble. He was the dean of American engineers and has left a record of brilliant usefulness upon which it is inspiring to dwell. I had at one period much



official relationship with him and came to respect him most highly as a man and as an engineer. His professional advice in respect to the type of the Panama Canal and the security of the foundations of the Gatun Dam was followed by the Government and has been vindicated completely by the event.”—(Wm. H. Taft.)

“I have for many years held Mr. Noble in high esteem, both as a man and as an engineer. The country is under great obligations to him for his wise and far-sighted course in relation to the Panama Canal. As a member of the International Board of Consulting Engineers, assembled by President Roosevelt in 1905, he threw the weight of his long experience and acknowledged engineering ability in favor of a lock as against a sea-level canal and wrote the report of the minority members of that body, in which the plan of the canal as constructed was outlined. As a member of a special commission of three sent by President Roosevelt to the Isthmus in 1907 to make a special investigation of the lock and dam sites, his signature to a report declaring the foundations safe and stable had great effect in reassuring public confidence.”—(George W. Goethals.)

“I had the honor and pleasure of knowing your father, and the opportunity of seeing and understanding some of his splendid traits of character.

“He has been so highly regarded and in so many cases loved by those associated with him, that the human sides of his life shine out as well as do his attainments in his Profession.”—(William F. Ford.)

“I believe that every one who had the privilege of knowing your father will feel that he has lost a friend. I have been trying to think of another man in the Engineering Profession who is or has been so universally respected, admired, and even loved as was your distinguished father. My own association with him has been such that I have received a profound impression, not only of his great ability, but of his lovable personal qualities, and I am quite confident that I am simply one of a vast number of engineers and men of other professions who feel the same way.”—(Nelson P. Lewis, M. Am. Soc. C. E.)

“I send you my deepest sympathy in your great bereavement, and assure you of the same from every member of our Profession as well as the innumerable personal friends who like myself have felt the high privilege and honor of friendship with your father, a great and noble personality and the most successful and eminent engineer of this generation.”—(Frank W. Skinner, M. Am. Soc. C. E.)

“For over twenty years I have watched Mr. Noble’s career with interest, and know that, to the younger members of the profession, he has always been a source of inspiration.”—(E. G. Haines, M. Am. Soc. C. E.)

“Your father was the acknowledged Dean of our Profession in this country, and I have always felt that it was a privilege and an inspiration to have worked under him.”—(T. Kennard Thomson, M. Am. Soc. C. E.)

“I wish to write you a few words of appreciation of your father and the kind fortune that threw me with him at various places, four or five years altogether, in the period 1883-1892. At Snake River and



Second Crossing, I felt that I knew him intimately, and it was a pleasure to renew this friendship some years later at Cairo and in this city, and in the past twenty years I have felt a keen satisfaction in his successes and in the eminence he attained in his Profession, a satisfaction the greater because I knew there was nothing fortuitous about his success, which came as a natural tribute to his high character and great ability, hidden though they were beneath exceeding modesty.

"During the past ten years I have twice been East and on each visit stopped over for the purpose of seeing your father. On both occasions he was out of town and I failed to see him, much to my disappointment. I feared what has happened would happen—that I would not see him again. I wish that the happiness that came to him in his success had not been clouded by your mother's illness. In a letter written some years ago he mentioned his disappointment and sorrow that in later life he could not realize his early ambition of giving her some compensation for the nomadic, and in some ways most unsatisfactory, life that is apt to be the lot of a civil engineer for the first half at least of his active career."—(Sanford Morison.)

"I have known and admired your father for many years, and cannot speak too highly of his ability and of his personal qualities. There are few men in the country to whom the Nation owes a greater debt for large service rendered."—(Charles Whiting Baker.)

"We who have passed the meridian of life have met in our journey many men whom we respect for what they have accomplished, and among them a few whom we respect for what they have done and love for what they are, and your father was one of these latter to me, and I know that he was so regarded by a host of others.

"It was a painful shock to me when I learned, only this morning, that he had joined the silent majority. I feel that I have lost a true friend and the Engineering Profession its foremost American representative."—(Isham Randolph, M. Am. Soc. C. E.)

"As one of the thousands of engineers who knew and loved and admired Alfred Noble, I tender you my sincerest sympathy."—(Onward Bates, Past-President, Am. Soc. C. E.)

"I send you my deepest sympathy for the loss of our Profession as well as the innumerable personal friends who like myself have felt the high privilege and honor of friendship with your father, a great and noble personality and the most successful and eminent engineer of this generation."—(Frank W. Skinner, M. Am. Soc. C. E.)

"For over twenty years I have watched Mr. Noble's career with interest and know that to the younger members of the Profession he has always been a source of inspiration."—(E. G. Haines, M. Am. Soc. C. E.)

"Your father was the acknowledged Dean of our Profession in this country, and I have always felt that it was a privilege and an inspiration to have worked under him."—(T. Kenneth Thompson, M. Am. Soc. C. E.)

"I wish to write you a few words of appreciation of your father and the kind fortune that threw me with him at various places, four or five years altogether, in the period 1883-1892. At Snake River and



## APPENDIX.

PAGE.

Resolutions adopted by the Board of Direction of the American Society of Civil Engineers.....	1376
<i>Engineering News</i> Memoir, April 23d, 1914.....	1376
<i>Engineering Record</i> Memoir and Dr. Raymond's Biography, April 25th, 1914.....	1379
Biography by Dr. Rossiter W. Raymond.....	1380
"Proposed Memorial", June 18th, 1914.....	1385
Resolutions adopted by the Joint Conference on Uniform Methods of Tests and Standard Specifications for Cement.....	1386
<i>Journal</i> , American Society of Mechanical Engineers, May, 1914, Memoir.....	1387
Resolutions adopted by the Council of the American Society of Mechanical Engineers, October 9th, 1914.....	1389
Resolutions adopted by the Library Board of the United Engineering Societies.....	1390
Letter of Eugene W. Stern.....	1391
"    " Judge Edgar O. Durfee.....	1392
"    " Joseph Ripley.....	1393
Sketch by Joseph Ripley.....	1394
Letter of Joseph Ripley.....	1396
"    " Brig.-Gen. Alexander MacKenzie.....	1397
"    " Ralph Modjeski.....	1397
"    " Brig.-Gen. O. H. Ernst.....	1399
"    " Justice William R. Day.....	1399
"    " James H. Brace.....	1400
"    " J. Waldo Smith.....	1402
"    " Charles P. Light.....	1403
"    " William H. Burr.....	1404
"    " Robert Ridgway.....	1406
"    " Henry Goldmark.....	1407
"    " Logan Waller Page.....	1408
"    " Ralph Modjeski.....	1409
"    " Hugh L. Cooper.....	1410
"    " James Forgie.....	1410
"    " Chas. Warren Hunt.....	1414



RESOLUTIONS ADOPTED BY THE BOARD OF DIRECTION OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, JUNE 2D, 1914.

"Whereas: By the death of Alfred Noble, the Engineering Profession in America has lost its most prominent member, and

"Whereas: Mr. Noble has been connected with this Society for forty years, and has served upon its Board of Direction for nine years, as Director, Vice-President, President, and finally as a Past-President, be it

"Resolved: That the Board of Direction of the American Society of Civil Engineers acknowledges the indebtedness of the Profession to this wise counselor, active and tireless worker, who, during his connection with this Board and subsequently, gave ungrudgingly and unselfishly so much of his valuable time for the general good, and be it further

"Resolved: That this Board desires to spread upon its records its sense of profound sorrow in the great loss, not only to the Profession of Engineering, but to the world, of one who by his strong and intellectual personality, earnestness of purpose, sterling honesty, and great heart, has set an example for Engineers of the future, and in so doing endeared himself to all with whom he came in contact."

MEMOIR FROM *Engineering News*, APRIL 23D, 1914.

"The American engineering profession looked up to Alfred Noble.

"The news of his sudden death will bring a sense of personal loss to thousands of engineers who had never met Mr. Noble personally, but who appreciated the great public service which he had rendered and realized that his great ability and strong personality had done much to raise the engineering profession in public esteem.

"Elsewhere in this issue, in presenting to our readers a recent portrait of Mr. Noble, we have given a brief record of his life and professional achievements. It is fitting, however, that something more should be said in this place concerning the unique public service which Mr. Noble rendered. We believe it is within bounds to say that there are few men to whom the people of the United States owe a greater debt of gratitude for important services rendered at a time of crisis than to Alfred Noble.

"In 1895, Congress was on the point of passing a bill providing for a government guarantee of the bonds of the Nicaragua Canal Co. There was a very strong sentiment in favor of the passage of the bill among members of both the House and Senate. The assurances held out were that the entire cost of building a ship canal across Nicaragua connecting the two oceans would be only \$65 000 000. There were, however, in Congress, a few statesmen who were not swept off their feet by the great pressure exerted in favor of the passage of the bill. They put forth the plea that before the United States should lend its credit to the enterprise it should investigate the project through a board of engineers of its own selection.

"This proposition was so entirely reasonable that it sufficed to defeat the bond-guarantee bill. In its stead an act was passed creating the Nicaragua Canal Commission, to be composed of one engineer



from the Army, one from the Navy, and one from civil life. This Commission with a very small appropriation and a very limited time in which to work, was required to report as to the feasibility of the Nicaragua canal enterprise. President Cleveland appointed as the members of that Commission, Colonel (afterwards General) William Ludlow from the Army, Mordecai T. Endicott from the Navy, and Alfred Noble from civil life.

"The situation was one which demanded engineers of ability with sufficient independence to form their own opinions and not be swerved from a straight course by the strong influences brought to bear by the corporation whose plans were under investigation. The report made by this commission showed that the advantages of Nicaragua as a canal route had been greatly over-estimated and that the cost of building a canal there would be far greater than the estimates made by the canal company.

"Those interested in the Nicaragua Canal enterprise adopted every possible means to discredit the report; but they were never afterward able to command a large measure of public support. The sound advice of these engineers saved the nation from lending its credit to a private corporation which, if it had undertaken the Nicaragua work, would have inevitably met failure.

"The second great opportunity of Mr. Noble to render public service came when in 1899 Congress created the Isthmian Canal Commission, with instructions to find the best possible route for a ship canal across the Central American Isthmus. Mr. Noble was appointed one of the members of this commission and he and the late George S. Morison were recognized as its leading engineers. Without doubt, Mr. Noble's large experience, tactful firmness, and ability had large influence in determining the conclusions of the Commission.

"It was this commission which after two years of surveys and investigation recommended that the United States should adopt the Panama route. The experience which has been gained since that time has fully confirmed the wisdom of the recommendations made by that commission.

"It was seven years later when Mr. Noble had the opportunity to render what was, without doubt, the greatest public service of his life. The government had started construction work on the Panama route, and the question came up for decision as to whether a sea-level canal or a lock canal should be undertaken. To advise upon this momentous question, President Roosevelt created an International Commission of engineers, made up of five eminent members of the engineering profession representing foreign countries and eight prominent American engineers.

"As most of our readers will remember, all the foreign engineers and three of the American Engineers united in a majority report advising the construction of a sea-level canal. Five American engineers with Mr. Noble at the head stood out in favor of a lock canal. We say 'Mr. Noble at the head', because from his strong experience in connection with the lock at Sault Ste. Marie, he was better able than any engineer upon the commission to speak authoritatively with respect to the construction and operation of great ship canal locks.



To Alfred Noble's discerning wisdom and independent judgment and to his willingness to stand in a minority in defense of what he believed to be right, the country owes it to-day that it did not undertake what we now know would have been the folly of a sea-level canal at Panama.

"In the struggle which followed the submission of these two conflicting reports, Mr. Noble's ability and strong forceful personality had much to do with the final decision by which those in authority rejected the majority report and adopted that of the minority.

"In reviewing these three great public services rendered by Alfred Noble to the nation it will be universally agreed that his name deserves high prominence in connection with our greatest national engineering work, the Panama Canal. It detracts nothing from the honor due to those who have borne the burden and heat of the days and years during the long period of construction at Panama to give honor to the great engineer whose sound judgment and incorruptible integrity enabled the nation to steer a straight course in undertaking this hugest of engineering feats and avoid the disgrace attendant upon disastrous failure.

"It can be said of Mr. Noble, without fear of contradiction, that he won his way to the foremost position which he occupied as the leading American civil engineer of his time by sheer force of ability. Mr. Noble was always a quiet and modest man, absorbed in his professional work. He never tried to advertise himself nor attempted to put his professional work in any way on a commercial basis. The great responsibilities which were laid upon him came to him because he was a man who inspired confidence in both his ability and his integrity.

"For a dozen years in his early professional career he worked steadily, patiently and practically unknown as an assistant engineer on government work; but it was the experience which he gained there, even more than that which he gained in fields of other engineering work, which in later years, enabled him to solve correctly the vast problems which were laid before him in connection with the Panama Canal enterprise.

"We may not take space to speak at length here of his other great works as an engineer, such as the Pennsylvania terminal in New York City. It is worth while, however, to emphasize the high regard in which he held his profession. Much of his time in recent years had been devoted to work for the benefit of the profession in connection with the engineering societies of which he was a member. Last year, he was President of the American Institute of Consulting Engineers and he had been for two years one of the Managers of the American Society of Mechanical Engineers. In 1903 he was President of the American Society of Civil Engineers.

"One of the last pieces of work which he undertook and to which he had devoted a great amount of time and energy was in connection with a joint committee of the national engineering societies organized to frame a model code for the registration of engineers. Mr. Noble was the chairman of this committee and he devoted to the task a great amount of painstaking thought. It was characteristic of the man that



with all the great responsibilities laid upon him, he was willing to give liberally of his time and energy to benefit the members of his profession."

MEMOIR FROM *Engineering Record*, APRIL 25TH, 1914.

"Alfred Noble, master civil engineer, universally respected because of his ability, loved and honored by those who knew him, died in New York, April 19. Apparently in vigorous health, despite the attainment of the Scriptural years, he was stricken rather suddenly during the first week in April. On April 9 it was deemed advisable to perform an operation and though he rallied for a time his condition hardly became encouraging.

"His early career and his experience until the close of his work on the Pennsylvania Railroad's improvements in New York were recounted admirably by Dr. Rossiter W. Raymond, secretary-emeritus of the American Institute of Mining Engineers, when the John Fritz medal was presented to Mr. Noble on Nov. 10, 1910.

"Since the close of the period covered by that biography, Mr. Noble has been in general consulting practice, serving also on retainer as consulting engineer for the New York Board of Water Supply. For this service his experience in tunneling, in the building of masonry structures and the examination of foundations proved invaluable. His knowledge of foundations, too, brought him a most important retainer last year from the Federal Government. Great difficulty was experienced in the construction of a drydock at the Naval Station, Pearl Harbor, Hawaii, ending in the eruption of the bottom and the stoppage of the work. Mr. Noble was sent to Hawaii to advise as to the method by which the work should be completed.

"Among the other large works which had recently engaged his attention was the enlargement of the Welland Canal, upon which he reported for the Canadian Government, thus linking his name with another of the world's great waterways. The Public Service Commission of the First District, New York, which is building a \$165 000 000 subway system, also called him into consultation.

"Many honors conferred upon him by his colleagues are recounted in Dr. Raymond's biography. Following his selection for the John Fritz medal, the highest American honor for an engineer, he was selected an honorary member of the Institution of Engineers of Great Britain, a distinction enjoyed by no other American engineer. In 1912 the Franklin Institute awarded him the Elliott Cresson medal.

"In recent years he was particularly interested in anything affecting the status of engineers and it was largely through his influence that the American Institute of Consulting Engineers entered so actively into public affairs. This organization within the past year addressed communications to the President of the United States, the Governor of New York, and the Mayor of New York City, urging the appointment of engineers to such public offices as their training particularly fitted them for. Activity was displayed, too, on the licensing of engineers and Mr. Noble, as a representative of the Institute, journeyed more than once to Albany to plead for proper legislation."



BIOGRAPHY OF ALFRED NOBLE BY DR. ROSSITER W. RAYMOND, ON THE OCCASION OF THE PRESENTATION OF THE JOHN FRITZ MEDAL TO MR. NOBLE AT THE HOUSE OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS ON NOVEMBER 30TH, 1910.

"Alfred Noble was born in 1844 at Livonia, Wayne County, Michigan. His father, Charles Noble, was a farmer, like most of our pioneer settlers in the West. But he and his fellow farmers made of their adopted State a notable center of intelligence and industry. When Alfred Noble was born Michigan had been but seven years a State of the Union; yet she had already begun that course of material and intellectual culture which soon placed her in these respects abreast of the most favored sections of the country. A splendid public-school system, crowned with numerous excellent high schools and colleges, and a great University represent one of these achievements. What wonder that this farmer's boy, taught in the district free school and the village high school, dreamed of the University, as the gateway to an honorable professional career!

"Yet in him, as in so many American boys at that time, and, I doubt not, at *this* time, there was one passion stronger than personal ambition—the love of country. When the first call to arms was sounded by Lincoln, Alfred Noble was too young to be accepted. But in August, 1862, when he was eighteen years old, answering the more important call, and volunteering, not for a brief, easy and victorious campaign, but for long, hard service of the Union, he enlisted as a private in the Twenty-fourth Michigan regiment.

"Oh, those Michigan farmers' sons, who far from home, and defending not the soil of their own State, but the wider, grander cause of the nation, grimly, loyally, saw the thing through, until the last straight furrow had been plowed and the last field sowed for the harvest of peace! In the West and in the East are the honored graves of a host of them who fell by the way; but not who survived. The Twenty-fourth Michigan belonged to the sorely tested and grandly faithful Army of the Potomac; and through three terrible years Alfred Noble served with his regiment in the famous First Corps of that Army, consolidated, after Reynolds fell at Gettysburg, with the Fifth Corps under Warren. During the first day at Gettysburg, this regiment lost 300 in killed and wounded, out of the 460 who went into the fight. The figures speak for themselves, and what they mean, perhaps only an old soldier fully understands.

"At the close of the war, Mr. Noble was discharged with the rank of sergeant, and his patriotic duty having been well done, he resumed the purpose of his youth. His record as a veteran, together with his proved character and capacity, secured for him a clerical position in the War Department, which he filled for more than a year, earning the money, and by diligent use of his leisure time, acquiring the necessary scholastic preparation for a university course. In this way he more than fulfilled the requirements for a freshman, and in September, 1867, he was admitted as a sophomore into the University of Michigan, where he was graduated in June, 1870, as civil engineer. Yet, during these three years, he was obliged to earn his expenses as a student by much outside work, as recorder on the U. S. Lake Survey,



as clerk, and afterward as assistant engineer in river and harbor work on the east shore of Lake Michigan.

"After his graduation, Mr. Noble continued his work on the harbor surveys conducted on Lakes Michigan and Huron by the U. S. Corps of Engineers, and in 1870 was placed in local charge of the improvement at Sault Ste. Marie. This position he retained for twelve years, a period covering the construction of the great masonry lock at the Sault, at that time by far the largest canal lock in the world. In 1882, after its completion, Mr. Noble resigned his position to become resident engineer for Mr. G. Bouscaren in the construction of the truss bridge over the Red River at Shreveport, La. Early in 1884, he was appointed general assistant engineer of the Northern Pacific Railroad, of which the late General Adna Anderson was then chief engineer. During the next three years Mr. Noble had charge of the building of important bridges, including the truss bridge, with draw, over the Snake River, near its junction with the Columbia, the bridge over Clark's Fork of the Columbia River, the bridge over St. Louis Bay on Lake Superior, and also the foundation and construction of the Marent Gulch viaduct, near Missoula, Montana.

"In August, 1886, Mr. Noble removed to New York, to become and remain until July, 1887, resident engineer in the erection of the Washington steel arch bridge over the Harlem River, under the late W. R. Hutton as chief engineer. He then took charge for Messrs. Morison and Corthell of the erection of the bridge at Cario, on the Ohio River. This brought him into association with the late George S. Morison, whom he served in the erection of the great cantilever bridge over the Mississippi at Memphis, and other bridges at Bellefontaine, Leavenworth, and Alton. Mr. Morison's high opinion of his colleague and assistant is matter of record.

"It is worthy of note that in this continuous activity of nearly 25 years, Mr. Noble had neither won nor sought a newspaper reputation. He had never been advertised as chief engineer of anything. He had merely done his part, loyally and efficiently, in every enterprise with which he had been connected, impressing himself upon his superiors and associates as a man of thorough training, wide experience and absolutely trustworthy character. A reputation thus acquired wears well. Engineers were not surprised when, in April, 1895, he was appointed by President Cleveland a member of the first Nicaraguan Canal Commission. Of Mr. Noble's work in that capacity, and of its important results, I shall not here speak. Nor can I, in the brief time at my disposal, discuss his work as a member of the Isthmian Canal Commission of 1899, which resulted in the adoption by our Government of the present scheme of the Panama Canal. When this subject came up for discussion in Congress, Major W. H. Wiley, a member of the House of Representatives, presented a letter from Mr. Noble, stating clearly and tersely the argument in favor of a lock-canal. This letter was printed in the 'Congressional Record', and is said to have influenced decisively the action of both Houses.

"But I must go back a little in order to mention what seems to me to be one of the greatest, if not the very greatest, of the engineering investigations with which Mr. Noble has been connected. I refer to the labors of the U. S. Deep Waterway Commission appointed in



1897 to conduct surveys for a deep waterway from the Great Lakes to tide-water. This body spent half a million dollars in its investigations; fixed 21 feet as the most economic depth; proved the most practicable route to be *via* Lake Ontario and the Oswego and Mohawk rivers; examined by borings, etc., every part of that route, and determined the nature and cost of the work (in every particular except the price of the private property to be purchased or condemned for it) so accurately that a contractor might safely have based his bid for any section upon its report. I have never encountered in the literature of engineering, and I doubt whether that literature contains a discussion so thorough, exhaustive and conclusive. Before that report had been prepared the estimates of engineers—I mean such guesses as engineers sometimes permit themselves to make—had varied by a hundred million dollars as to the cost of the proposed waterway; and it is my impression that even this wide variation did not bring them within a hundred millions of the truth. Be that as it may, the report of this commission, published in 1900, will always remain a monument of professional thoroughness and a model for professional imitation.

“Among other engineering enterprises with which Mr. Noble was connected at this period, I may name the great seawall, built to protect the City of Galveston, Texas, against a recurrence of the disastrous flood of 1900, and the bridge across the Mississippi at Thebes, Ill., which was erected by him in partnership with Ralph Modjeski. Moreover, he has been employed as consulting engineer in connection with the difficult problems presented by the foundations of some of the lofty office buildings of New York City—structures which certainly need to be planned with more care and knowledge than ordinary architects and builders bring to such tasks.

“But the latest of Mr. Noble’s labors is also, perhaps, the most important. He was appointed in 1902 a member of the Board of Engineers directing the operations of the Pennsylvania Railroad Company (through auxiliary corporations in New York and New Jersey) in tunneling under the North and East rivers, and under the borough of Manhattan, establishing a great railway-station on Seventh Avenue. The plans approved by this board, and executed under its direction, have been so fully described in recent papers before the American Society of Civil Engineers and the American Institute of Mining Engineers as to need no recapitulation here. Mr. Noble, besides serving as a member of the board, was, as chief engineer of the East River Division of the Pennsylvania, New York and Long Island Railroad, directly in charge of the construction of the tunnels from Seventh Avenue under Manhattan and East River to the portals on Long Island, the approaches from the east, and the immense terminal yard at Long Island City. This part of the great undertaking is reported to have cost more than \$30 000 000. One thing I believe I may safely say—that the difficulties encountered in the quicksands and the decayed and fractured gneiss pierced by the tunnel under the East River were much more serious, though much less widely reported in the newspapers than those presented by the glacial silt which forms the bottom of the Hudson. True to his



record, Alfred Noble advertised neither his trials nor his triumphs, but simply finished his work without interlocutory appeals to the public. At the end of 1909, that work being done, he resigned his position as chief engineer. The directing board of engineers, having concluded its work, had closed its offices, and, I believe, ceased to exist six months earlier. Such a quiet, business-like, unboastful termination of a colossal engineering enterprise was worthy, in its simplicity, of the great men who planned it and the great men who carried it out.

"Perhaps I may be allowed to say that, in this particular work, Mr. Noble came nearest to the heart of us mining engineers. For several years he and his associates made of New York and its vicinity one of the greatest mining camps in the world. True, in all their tunneling they were only making a hole—not extracting gold or silver or copper from it. Yet, can we say more for most of our mining tunnels? Do they not too often leave us with the hole only as a net result? After all, we mining engineers do not control the commercial results of our borings and excavations. Yet we are often unjustly held responsible for such results, and we cannot but congratulate this mining engineer, whose employers ask only that he shall put his job through and will look for their dividends afterwards, not to the contents of the hole, but to the use of the hole itself. In other words, Mr. Noble has been, in this work, an ideal mining engineer, unhindered by the assayer, the millman, the economic geologist, the mining law or the stock market. We greet him, not without a touch of envy, as our brother!

"In this connection let me voice the opinion of mining engineers as to the manner in which Mr. Noble conducted, under land and sea with the minimum of disturbance to the surface, his extensive operations. Some of us (I among the number) have suggested from time to time, with the freedom of those who were not responsible for the results, ways in which this work could be still more quietly and safely done. But all of us agree that in these respects such work never has been better done and we have sense enough to admire and praise the man who directed it.

"Mr. Noble's merits have been recognized in various ways by those whose judgment he would most highly value. In 1895 his university conferred upon him the honorary degree of Doctor of Laws, an honor which was repeated in 1904 by the University of Wisconsin; in 1898, he became president of the Western Society of Engineers; in 1903, he was elected president of the American Society of Civil Engineers (of which he had been made a junior in 1874 and a member in 1878). His membership in the ancient Institution of Civil Engineers of Great Britain certifies his professional standing abroad. And we have elected him a member of the Engineers' Club of New York City in testimony that he is not only an eminent engineer, but a congenial companion and a true friend. Yet I fancy that not one of these distinctions—perhaps not all of them put together—will outweigh in his esteem the honor conferred upon him to-night, with the hearty professional approval, and the personal esteem and affection of American engineers!"



## LETTER FROM WILLIAM H. TAFT, EX-PRESIDENT OF THE UNITED STATES.\*

"I am very sorry to hear of the death of Alfred Noble. He was the dean of American engineers and has left a record of brilliant usefulness upon which it is inspiring to dwell. I had at one period much official relationship with him and came to respect him most highly as a man and as an engineer. His professional advice in respect to the type of the Panama Canal and the security of the foundations of the Gatun Dam was followed by the Government and has been vindicated completely by the event."

## LETTER FROM GEORGE W. GOETHALS, M. AM. SOC. C. E., COL., CORPS OF ENGRS., U. S. A., CHAIRMAN AND CHIEF ENGINEER, ISTHMIAN CANAL COMMISSION.\*

"I have for many years held Mr. Noble in high esteem both as a man and as an engineer. The country is under great obligations to him for his wise and far-sighted course in relation to the Panama Canal. As a member of the International Board of Consulting Engineers, assembled by President Roosevelt in 1905, he threw the weight of his long experience and acknowledged engineering ability in favor of a lock as against a sea-level canal and wrote the report of the minority members of that body, in which the plan of the canal as constructed was outlined. As a member of a special commission of three sent by President Roosevelt to the Isthmus in 1907 to make a special investigation of the lock and dam sites, his signature to a report declaring the foundations safe and stable had great effect in reassuring the public confidence."

## LETTER FROM SAMUEL REA, M. AM. SOC. C. E., PRESIDENT, PENNSYLVANIA RAILROAD.\*

"It was with the deepest regret that I learned of Mr. Noble's death. My relations with him had been very close for many years during our association on the important New York tunnel work for the Pennsylvania Railroad. He was a man for whom everyone entertained the highest respect—not only for his personal ability and talent but for his modest and lovable personal characteristics. In my judgment the profession has sustained a great loss in Mr. Noble's death."

## LETTER FROM E. L. CORTHELL, M. AM. SOC. C. E.\*

"From twenty-five years of professional association with Alfred Noble my judgment is that, considering all his sterling qualities, he has had very few equals in those solid, reliable traits of character that make for usefulness of a high order to the civil engineering profession and to the world at large."

## LETTER FROM J. WALDO SMITH, M. AM. SOC. C. E., CHIEF ENGINEER, BOARD OF WATER SUPPLY, NEW YORK CITY.\*

"In the entire engineering profession there is probably not another man whose death would be more sincerely mourned than that of Alfred Noble. Above everything, he was a man and beloved by all who came in contact with him, a man to whom every one in trouble might go

---

\* To *The Engineering Record*.



and gain something from the wealth of his experience. He was the most conscientious engineer I have ever known. He never rendered snap judgment, even on matters of small importance. Any advice given or judgment rendered was always the result of the most careful consideration. Material things of the world were, with him, always a minor consideration and he repeatedly refused lucrative engagements for the sole reason that he felt that he could not give them the study and the attention which they demanded. His advice was sought not only by the young, struggling engineer, but also by those of wide experience, not in engineering matters alone, but in any matter where experience and good judgment were desirable. He had the greatest breadth of mind and his keenness of vision caused him to see problems in their true light. His acquaintance was world-wide, and his death will be regretted by thousands of engineers who have at some time or other come under his influence. My intimate association with the late Charles L. Harrison brought me into close touch with Mr. Noble and I cannot express by words my appreciation of his influence and of his help. I trust that his influence may live after him."

LETTER FROM JOHN F. WALLACE, PAST-PRESIDENT, AM. SOC. C. E.\*

"In the passing away of Alfred Noble our Profession has lost one of its best and highest representatives—the leader in his special work, true to his friends, a gentleman, a man in all that the word implies. He has left a vacancy in our ranks that cannot be filled."

PROPOSED MEMORIAL TO ALFRED NOBLE;

TRIBUTES FROM BROTHER ENGINEERS AND CO-WORKERS.

At the meeting of the Board of Direction of the American Society of Civil Engineers on June 2d, 1914, the Secretary presented the following report:

"TO THE BOARD OF DIRECTION  
OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS:

"The undersigned, appointed at the last meeting to consider the matter of a proposed Memorial to the late Alfred Noble, Past-President, Am. Soc. C. E., beg leave to report as follows:

"That, in the opinion of your Committee, such a Memorial is desirable, and should be undertaken by this Society, and should be on no small scale. Your Committee suggests that the Civil Engineers of the world be asked to subscribe to the funds for this purpose, and that the Memorial take the form of an appropriate bronze statue to be erected in some suitable place.

"In view of the fact that much of Alfred Noble's professional practice was National in character; that he was an adviser of Presidents, and consulted in some of the most important engineering work of the country, your Committee believes that such a recognition of him personally, and of the Profession of Engineering, would meet with universal approval.

"It is therefore the opinion of your Committee that the Capital of the Nation is the proper location for such a statue, and that the

---

\* To *The Engineering Record*.



Congress, or other body in authority, be requested to provide a suitable site. Your Committee, therefore, makes the following recommendations:

"(1) That this Society undertake the erection, in a suitable location, of a Statue to the memory of Alfred Noble—the Engineer and the Man.

"(2) That the Board of Direction immediately set aside the sum of one thousand dollars (\$1 000) as the first subscription toward the necessary funds.

"(3) That the funds for this purpose be secured by subscription from the Engineers of the World.

"(4) That a Committee of five be appointed by the Board, in whose hands the carrying out of the project be placed.

"Yours respectfully,

"T. KENNARD THOMSON, *Chairman*,  
J. H. EDWARDS,  
CHAS. WARREN HUNT."

The recommendations of the report were adopted as the action of the Board, and the President was authorized to appoint a Committee, with power to carry out the suggestions made.

The President subsequently appointed as such Committee: Onward Bates, Chairman, Robert Moore, Samuel Rea, Samuel H. Hedges, F. H. Newell, and Chas. Warren Hunt, Secretary.

#### RESOLUTIONS ADOPTED BY THE JOINT CONFERENCE ON UNIFORM METHODS OF TESTS AND STANDARD SPECIFICATIONS FOR CEMENT.\*

"The Joint Conference on Uniform Methods of Tests and Standard Specifications for Cement hereby records with profound sorrow the irreparable loss sustained in the death of its Chairman, Mr. Alfred Noble, and its deep gratitude for the privilege of having known and been associated with one who was the exponent of the highest ideals as a man, as a citizen and as an engineer.

"Mr. Noble has given much to the engineering profession and his unselfish work in the development of the methods of testing cement has been of incalculable value. Many of his contributions to the Engineering Profession, to be found in the *Transactions* of the American Society of Civil Engineers, relate to this branch of engineering. He was a member of the Special Committees of this Society which presented reports on Uniform Methods of Tests of Cement in 1885 and 1912.

"The members of this Conference find themselves unable to adequately express their loss. This intimate association with Mr. Noble has left in the memory of each member an indelible impression of his patient, sweet, endearing nature, of his simple, forceful, dignified personality, and of the grandeur of his character."

\* The Joint Conference is composed of Messrs. Arthur P. Davis, Olaf Hoff, Richard L. Humphrey, Asa E. Phillips, Clifford Richardson, George F. Swain, George S. Webster, and Rudolph J. Wig.



## MEMOIR FROM THE JOURNAL OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, MAY, 1914.

"There passed away on April 19, 1914, in New York City, Alfred Noble, an esteemed member of our council and a man whose loss will be deeply felt and deplored not only by the engineering profession of which he was one of the most distinguished members, but by everyone who had the good fortune to know him.

"He had a very interesting career, and the story of his life, if adequately written, would be typical of that of many of the great men and builders of this nation.

"He was born August 7, 1844, at Livonia, Wayne County, Michigan, where his parents resided on a farm. His early education was received in the district school of his native place, and during his spare time he worked on the farm.

"In 1862, when only 18 years of age, he enlisted in the Civil War in the 24th Michigan Volunteer Infantry. From that time until 1865 he served in the Army of the Potomac, taking part in all of the hard and desperately fought battles which that army engaged in against Lee and Stonewall Jackson. At Gettysburg his regiment lost a very large percentage of its numbers. At Chancellorsville, it was by the merest accident that his brigade was not captured by Stonewall Jackson's men, but he was lucky in serving through the war without being wounded, and was mustered out of the service in June 1865 with the rank of sergeant. He then prepared to enter the University of Michigan, and in 1867 became a sophomore, graduating in 1870, with the degree of C. E. He received the degree of LL.D. from his alma mater in 1895, also from the University of Wisconsin in 1904.

"From 1868 to 1870 he was assistant engineer on river and harbor work on the Great Lakes. From 1870 to 1872 he was in charge of improvements on St. Mary's Falls Canal and St. Mary's River. During this time the first great masonry lock at the Sault, then by far the largest canal lock in the world, was built. On completion of this work he became resident engineer on the construction of an important bridge at Shreveport, La., over the Red River.

"From 1883 to 1886 he was general assistant engineer on the Northern Pacific Railroad, and from 1886 to 1887 resident engineer on the construction of the Washington Bridge over the Harlem River, at that time the largest arch bridge in existence.

"From 1887 to 1894 he was resident engineer on the construction of several very large and important bridges over the Mississippi at Memphis and Alton, over the Missouri at Bellefontaine and Leavenworth, over the Ohio at Cairo.

"He was appointed a member of the Nicaragua Canal Board by President Cleveland in 1895. This board visited Central America and examined the route of the Nicaragua Canal and also the Panama Canal and then returned to the United States, completing its work November 1, 1895.

"In June 1899 he was appointed by President McKinley a member of the Isthmian Canal Commission which was charged with the selection of the best canal route across the American isthmus, and it



has been substantially on the route selected by this commission that the Panama Canal has been constructed. While on this commission, Mr. Noble with his colleagues visited Europe to examine the existing canals there, and the data which the French Canal Company had in Paris, and also made several trips to Central America to examine more fully the various canal routes.

"In 1905 he was appointed by President Roosevelt a member of the International Board of Engineers to recommend whether the Panama Canal should be constructed as a sea-level or a lock canal. This board consisted of thirteen members, of whom five were nominated by foreign governors. Mr. Noble was one of the minority of five Americans who recommended the adoption of the lock plan. Their views were adopted by the Government and the canal has been built in accordance with their recommendations. In March 1907 he was one of the three appointed by President Roosevelt to visit the Panama Canal to investigate the conditions regarding the foundations of some of the principal structures. This duty was completed in a few weeks. He was obliged to decline a similar appointment two years later.

"From the very inception of the plan by this country to build an Isthmian Canal, and from the commencement of the preliminary investigations and surveys, to the adoption of the final plan and the beginning of the actual construction of the Panama Canal, Mr. Noble was continuously identified with the project and deserves as much credit for the solution of the engineering problems as any other one who has been connected with this great work.

"In July, 1897, he was appointed by President McKinley, a member of the United States Board of Engineers on Deep Waterways, which made surveys and estimates of cost for a ship canal from the Great Lakes to deep water in the Hudson River.

"In November, 1901, the city authorities of Galveston, Texas, appointed Alfred Noble along with Henry C. Ripley and General Robert, as a board of engineers to devise a plan for protecting the city and suburbs from future inundation. They recommended the building of a solid concrete wall over three miles long and seventeen feet in height above mean low water, the raising of the city grade, and the making of an embankment adjacent to the wall; the whole to cost about three and a half million dollars, which plan has since been carried into effect.

"From 1902 to 1909 Mr. Noble was chief engineer of the East River Division of the New York extension of the Pennsylvania Railroad, and was in entire charge of this most difficult piece of work, involving as it did, a very accurate survey across Manhattan, and the construction of the foundations of the Pennsylvania Station, of the land tunnels, and of the East River tunnels which were very troublesome.

"Since 1909 he has been engaged in general practice as a consulting engineer, the firm name being Noble and Woodard. Probably the most important work dealt with was in relation to the dry docks built for the United States Government near Honolulu. He was also for a time consulting engineer to the Quebec Bridge Board, also consulting engineer for the Board of Water Supply, New York City,



and for the Public Service Commission of the First District of the State of New York.

"He was a past-president of the Western Society of Engineers, the American Society of Civil Engineers, and the American Institute of Consulting Engineers. He was elected to the Council of this Society in 1912 and had served several years on the Library Committee.

"In 1910 he was awarded the John Fritz Medal for notable achievements as a civil engineer, and in the same year was elected an honorary member of the Institution of Civil Engineers of Great Britain, a distinction which no other American has had. In 1912 he received the Elliott Cresson Medal of the Franklin Institute in recognition of his distinguished achievements in the field of civil engineering.

"Mr. Noble was deeply interested in anything affecting the status of the engineering profession. His unfailing good humor, his kindness and sweetness of disposition, his sound common sense and good judgment, his youthful mentality, his quick and very sure perception, and his modesty, invariably impressed his colleagues with whom he worked on many committees, and commissions in which he was so active.

"He possessed a combination of strength, gentleness, tact and discernment rarely met with. He was universally respected by all who had any business dealings with him. The plain workman, the man with the pick and shovel, the contractor under him, the highly trained technical engineer, or the president of a great corporation, all appreciated the nobility, simplicity, and rugged honesty of his character. His personality was such as to evoke the faithful and enthusiastic loyalty of his subordinates, and the deep, strong, and lasting affection of all those who were honored with his friendship.

"At the funeral services on the evening of April 21, the Society was represented by Jesse M. Smith, Past-President and member of the Council; Leonard Waldo, Chairman, and E. G. Spilsbury of the Library Committee, Charles Whiting Baker, Rudolph Hering, J. Waldo Smith, C. M. Wales, W. L. Saunders, and Calvin W. Rice, Secretary."

#### RESOLUTIONS OF THE COUNCIL OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, ADOPTED OCTOBER 9TH, 1914.

"In the death of Mr. Alfred Noble, the engineering profession has lost one of its greatest members, one of its wisest associates, and one of its most modest scientists.

"Mr. Noble was a man of generous impulses, always interested in the success of younger engineers, always ready to help them with advice, and to put before them an opportunity for their success. He was without the slightest professional jealousy, and so in love with his chosen calling that he always hailed the achievements of others with delight because engineering had by them been advanced and the world benefitted. His personality was most charming and The American Society of Mechanical Engineers will long miss his delightful talks and wise advice at its Council meetings, where he was a most welcome member. He may be aptly described as a lovely man, full of



gentleness and dignity, and yet possessing a forceful character which fitted him so well as a cherished adviser.

"It may not be generally known that Mr. Noble had an influence in the decision of Congress to abandon the sea-level plan and adopt the lock system for the Panama Canal. The subsequent events have shown the wisdom of Mr. Noble's advice. A member of Congress and a personal friend of Mr. Noble asked him to state his reasons for advising the lock system in the form of a letter. This was done in a most concise form and was read in the House of Representatives, and thus became incorporated in the Congressional Record, with the result that it convinced the members, and by a large majority they adopted the lock system. Copies of the Record marked at Mr. Noble's letter were given to each Senator, and the argument was equally convincing, so that the Senate confirmed the House action by a large majority.

"A glance at Mr. Noble's history will be most edifying to a young engineer as it will be gratifying to his hosts of friends.\*

\* \* \* \* \*

"He was married May 31, 1871, to Miss Georgia Speechly, of Ann Arbor, Michigan. They had one son, Frederic Charles, a graduate in Engineering of University of Michigan, 1894, now following his profession in New York City.

"There is little to add to this epitome, but it shows the forceful character of Mr. Noble throughout. He won the various honored and honorable positions he so ably filled by merit and perseverance, and his career, cut short in this untimely manner, is an encouragement to every young engineer and a stimulus to the exercise and cultivation of those manly and fearless qualities in the possession of which Mr. Noble so excelled and which have so firmly established him in the affections and admiration of all engineers."

#### RESOLUTIONS ADOPTED BY THE UNITED ENGINEERING SOCIETY LIBRARY BOARD, ON MAY 7TH, 1914.

ALFRED NOBLE.

1844-1914.

"Earnest boy—Youthful patriot—Full-serviced soldier for the Union—Determined student—Teacher—Discerning and courageous engineer—Safe adviser in great enterprises—Receiver but not seeker of highest honors—Friend and up-builder of young men—Guardian of the honor of the Engineering Profession—Organizer of this Library Board.

"Others have been impressed with the compass of Alfred Noble's scientific imagination, whether shown in the mid-Pacific docks, or in the choice of a continental passageway or in the water system of a great metropolis, or the sinuous frames on which the commerce of our nation is woven, will spread afar the record of his great engineering career; but it is for us, his messmates at the club, his comrades in our council for the diffusion of most useful knowledge, to see as well as we may at this close vision and with dimmed eyes, and to testify to that great soul which we know was with us, and which we shall increasingly feel has gone.

---

\* Here there is a brief history of Mr. Noble's career, which will be found on pp. 1380-82.



"He earnestly believed the spreading branches of this tree which he planted here with us would bear increasingly richer food for the minds of men, and that as the centuries pass on future generations will say that together we builded better than we knew. To quote his own words—

"'Our Library is coming out all right. I will help you all I can. I shall not be with you at the next meeting for I have some important work to do. I go a-fishing'

and with that smile on his face, which has since become a benediction, we saw him for the last time.

"Would that some sculptor had preserved for us, and for those who knew him less, the unfathomable smile, the gentle humor, the roused dignity, the life below the outward surface of that fine face.

"His three score and ten years of life of greatest attainment seemed the embodiment

"'Of toil unsevered from tranquillity;  
Of labor that in lasting fruit outgrows  
Far noisier schemes, accomplished in repose  
Too great for haste, too high for rivalry.'

"To his tenderly loved wife and to their son, to whom the Angel of Light has brought the message of final promotion, we speak our deep sympathy in this grievous sorrow of separation.

"We are comforted to think that in their spiritual hearing, as in ours, must be echoing the words

"'Well done, good and faithful servant, enter thou.'

"'There lies not any troublous thing,  
Nor sight nor sound to war against thee more,  
For whom all winds are quiet as the sun,  
All waters as the shore.'"

---

FROM E. W. STERN, M. AM. SOC. C. E.

"Replying to your letter of May 1st, I willingly send you whatever information I have regarding Alfred Noble.

"I gave most of the facts I knew to *Engineering Record* and this information was embodied in the issue of April 25, 1914, copy of which I enclose you herewith.

"Dr. Raymond of the American Institute of Mining Engineers is the one man who knows Mr. Noble's war history, and I believe he could give you more facts than what are given in the above article.

"As you know, Mr. Noble was very loath to speak of his war experiences, and it was during the course of the last three years of rather close acquaintanceship with him that from time to time I was able to glean a few incidents. It appeared to me that he wanted to forget the Civil War. The humorous side he was more inclined to dwell upon. He never wore a Grand Army button, to my knowledge. He told me the following incidents:

"Some years ago, when he was Resident Engineer on the Memphis Bridge, a man wearing a Grand Army button, claiming to have been a Colonel or Brigadier General during the War, came to see Mr. Noble about some matter or other in connection with some material



he was selling—I think it was paint—‘He told me’, said Mr. Noble, ‘That he had been at Chancellorsville’, and mentioned a certain incident which I knew did not agree with the facts, which I told him. He seemed rather astonished at my information on this point, and asked me how I knew, and I told him that I was there. He asked me to what Army Corps I belonged, and what rank I held. ‘I am the last surviving member of it’, I said. He seemed curious to know, and I replied, ‘The great Corps of Privates’.

“On another occasion, in talking with him about the requisite qualities of a good soldier, he said, ‘Ability to withstand hunger, fatigue, and hard marching, were very essential qualities, but to be a good runner was also often a very useful attribute.’ At Chancellorsville, had his brigade not been swift-footed, including his Brigade Commander, they would have been encircled in Stonewall Jackson’s flank attack, and along with 10 000 others been made prisoners of war.

“I was often impressed with a quality he had of being able to listen very carefully and then to give an opinion very quickly afterward. This innate faculty, together with his splendid ability in handling men was no doubt developed by his war experiences. He frequently made use of a remark which impressed me on this point. In speaking of individuals he would sometimes say that such a one ‘had the qualities of mind essential in a capable military leader; namely, of being able to listen carefully, think quickly, act promptly, and be nearly always about right.’

“Of Stonewall Jackson he said that there was no Corps Commander in the Northern or Southern Armies who was to be compared with him. He stood in a class by himself.

“Of the war, he said that it might have been avoided.

“Of course you know more of him personally than I do, so I shall not go any further.”

FROM EDGAR O. DURFEE, ESQ.

“Yours of the 25th inst. asking me to give you certain data relative to the late Alfred Noble was received.

“I have known Alfred Noble as long as I have known anybody. His farm home was about a mile from the farm on which I was brought up, and I saw him very often. Some of the time we attended the same district school and the winter of 1861 attended the graded school in Plymouth where we were in the same class in higher algebra. From his earliest school days he always excelled in all of his studies. He was very studious, and as a boy was the same as a man, always truthful and always lived up not only to the letter but to the spirit of his promises. One little thing illustrates his character in that regard. He was eighteen years of age on the seventh day of August, 1862, on which day he enlisted in Company C, Twenty-fourth Michigan Infantry. His mother was thoroughly imbued with the idea that card playing was the greatest vice in the army—although we of the rank and file learned that the games played there were only euchre and old sledge. She asked him not to play cards, and he promised her he



would not play cards while in the army. He lived up to this promise strictly, although he watched the boys play and learned more of cards than most of them, and as much as any of them. As soon as he was discharged from the army, July 1st, 1865, he joined with the other boys in the card games above referred to.

"His life on the farm was the usual boy's life, hard work and very little play. His school life until he went into the army was confined to the district school in his neighborhood and the graded school in Plymouth some three and a half miles away. In the army he did his duty at all times and during a part of 1864 was an orderly on the staff of General Warren then commanding the Fifth Army Corps and was discharged as a sergeant. He returned home and went to work on his father's farm in the harvest field. This work, he informed me afterwards, did not strike him as his particular line of work and he was anxious to do better. He went, I think, in July to Washington, D. C., and obtained a clerkship in the War Department where he remained two years, in the meantime studying so that in 1867 he entered the University of Michigan in the Engineering Department—Sophomore year—graduating in 1870. During his first two years as I learned, although I was not in college with him, he did not attend the University more than half of the time, being employed at other times in river and harbor work carried on by the Government in order to procure means to pay his expenses in college. He spent his whole time in college during his senior year. Probably all of the professors in his department at that time are gone and I do not know of any of his classmates now living who are handy to get at. My impression is that Justice Day of the United States Supreme Court was a classmate and intimate friend of Mr. Noble's and he could give you more valuable information as to his college course than I can.

"I think he was the best boy and man I ever knew, taking him all in all. He was very quiet, not given to boasting, was a warm friend, and had as fine a sense of humor as any person I ever knew. I am sure that everybody who came in contact with him as a boy and man was his friend.

"I think the foregoing will give you sufficient points in his early life as well as any particular details that you will want. You can no doubt work it out so that it will be readable."

LETTER FROM JOSEPH RIPLEY, M. AM. SOC. C. E.

"Replying to your favor of May 25, 1914, I will send you a synopsis of Mr. Noble's life at Sault Ste. Marie, Mich., at as early a date as possible.

"As you are undoubtedly aware, Mr. Noble served in the Civil War, enlisting on his eighteenth birthday as a Private in one of the Michigan regiments. After the close of the War, he served as a clerk in Secretary Stanton's office for a couple of years. I suggest that you write to Mr. Noble's cousin, Mr. W. Durfee, who enlisted at the same time he did and who has been Judge of Probate in Detroit, Mich., for over thirty years, as he can give you full particulars of Mr. Noble's army service."



## SKETCH BY JOSEPH RIPLEY.

"Alfred Noble, the pre-eminent engineer and man was born at Livonia, Michigan, August 7, 1844. His parents, Charles and Lovina D. Noble, were prominent among the intelligent farmers who settled in that part of the State. Mr. Noble's fine physique was well developed by his boyhood life on a farm and his educational training was well grounded during the short term attendance of the country district and village schools. Enlisting as a private in the 24th Michigan on his eighteenth birthday, Mr. Noble served three years in the Army of the Potomac, taking active part in many battles. At Gaines' Mills he was in the rear guard protecting the retreat of the federals and five times during the day, while busily firing, found himself with a squad of about six men at the very apex of the defense with the rebel advance charging within fifty feet of them. One night while on sentry duty after a hard day's march, and with his system filled with malaria, combined with the sleepiness of a growing youth, drowsiness overcame him, but an alert comrade on the next post awakened him just a moment before discovery by the officer on round of duty and thus escaped being shot the next morning with another sentinel who had been found sleeping at his post in the presence of the enemy. Mr. Noble was mustered out as sergeant. His army service also included nearly two years' service as clerk in the office of Secretary of War Stanton, and while in Washington he prepared for entrance in the University of Michigan. He attended class recitations fourteen months of the four years' course, as he was employed during the working season of each year on Government work, principally at Milwaukee, but also at several harbors along the eastern shore of Lake Michigan and on the survey of Lake Superior, at a salary during his junior and senior years of one hundred and fifty dollars a month. Mr. Noble received the degree of Civil Engineer with the class of 1870. The honorary degree of LL.D. was conferred by the University of Michigan in 1895 and by the University of Wisconsin in 1904. He was placed in local charge of the proposed canal and river improvements at Sault Ste. Marie, Michigan, in the fall of 1870. Mr. Noble married Miss Georgia Speechly of Ann Arbor, Michigan, on May 7, 1871, and their only child, Mr. F. C. Noble, is a distinguished engineer now in charge of one of the five field divisions of the subway construction by the City of New York. While at the 'Soo', 1870-1882, Mr. Alfred Noble designed and built the Weitzel lock, St. Marys Falls Canal. It was a bold undertaking, for in lift and size it was a wide departure from any existing locks. Previous lifts in locks had been limited to about 10 ft., the 'Soo' lock provided for 20 ft. at extreme lift. It was 515 ft. long between hollow quoins, 80 ft. wide in the chamber narrowing to 60 ft. at the gates and with depth of 17 ft. of water on the miter-sills. The masonry was the finest of its kind ever built in this country. The filling and emptying culverts located under the floor of the lock, the gate hangings and the hydraulic operating machinery were all new features. The gate and valve engines have been in constant use every season since 1881, and have worked easily, efficiently, and rapidly, without any failure and without repairs except the annual repacking of the cylinders and occasional renewal of minor parts such as bolts and cables. Among other improvements to the canal was the deepening,



widening, and straightening of the old State Canal, the replacement of the paved side slopes with vertical walls of timber revetment, and the building of a movable dam consisting of a swing-bridge carrying a modified form of a Chanoine wicket, which was designed by Mr. Noble for a barrier against Lake Superior in case of wreckage of lock gates.

"The survey of St. Marys River, extending from Lake Superior to Lake Huron, a distance of 65 miles, was made in 1879, and the Lake George route was deepened from that of 12 to a navigable depth of 17 ft. and the narrow, tortuous channel was materially straightened and improved to a general width of 300 ft.

"Mr. Noble was in charge of operating the canal for a year and a half.

"The expenditures on the canal and river improvements made by Mr. Noble totaled about \$3 000 000. His salary was gradually increased to the munificent sum of three thousand dollars a year. He resigned in August, 1882, to accept a position as Resident Engineer under Mr. Bouscaren on construction of the Shreveport, La., bridge at a salary of twenty-one hundred dollars a year.

"While at the 'Soo', Mr. Noble did the work of three or four expert engineers. He worked twelve to eighteen hours every day and his only vacations were taken during the last three years of his stay there when he spent about a week of each year trout fishing along the east shore of Lake Superior.

"He was a remarkably fine mathematician, a rapid and accurate computer, an expert draftsman and penman, and had the gift of writing concise, plain, and accurate statements and reports.

"He had the engineering sense to grasp the broad and controlling feature of a great work and the rare faculty of also grasping all the intricate details pertaining to the problem. Whenever a question was asked him about any part of the lock work, he could give at once a correct statement without stopping to think it over before being able to recall the particulars and their related bearings. When several hundred men were employed on the work, he knew and called every one by name, and could tell the value of each man as a workman. He was always pleased to find any employee taking special interest in his work, and would cheerfully aid in furthering that interest by explanation, by teaching, or in other ways. He was always pleasant, genial and sympathetic. He insisted on honest integrity, industry, clean and pure living in a man. He seldom spoke disparagingly of any person. I only knew of three men whom he personally disliked, and those three he believed to be dishonorable and hypocritical. He was generous. By accident I have learned of several instances where he has contributed considerable sums of money regularly for one or more years where employees have been injured, or who had dependent families sorely in need of assistance. I have known him to be tried by all kinds of aggravating conditions and subjected to most trying annoyances, but his wonderful patience mastered them all, only once have I seen him thoroughly angry, and then he showed it only by his silence, limiting his remarks to 'yes' or 'no' for three days. He was a great and most successful leader. It was no wonder that all his employees were loyal to him, willing to give the uttermost possible to acceptably serve him. No military officers could possibly obtain such service from men under their command."



## LETTER FROM JOSEPH RIPLEY.

"Replying to your request of May 25 for a short synopsis of Mr. Noble's activities at Sault Ste. Marie, I am enclosing herewith a statement relating to his work at that place, and some other information relating to him, leaving it to you to cull out such parts as you may desire to use.

"While Mr. Noble undoubtedly understood and knew of his marked ability, he never appeared to realize that he excelled or to assert it, but had a quiet, unassuming, reserved, and kindly personality which was most attractive.

"I first met Mr. Noble in 1872 and have had intimate acquaintance with him since 1876. Those of us who have been attached to him in the kindly feelings of long acquaintance counted him as one of the few really great men we have known, and believe that one of the grandest and most useful men of this country has gone from us.

"The lock Mr. Noble built at the 'Soo' was named for Godfrey Weitzel, who was the ablest and broadest of all the officers in the Corps of Army Engineers, and he always gave Mr. Noble full credit for his part of the work at the 'Soo'. (See Johnson's Encyclopedia; Article on St. Marys Falls canal, which was written by General Weitzel.)

"When the first boat, *The City of Cleveland*, was locked through to the Lake Superior level, the occasion was made quite an event, and about twenty engineer officers were present. Mr. Noble did not ride with the officers on the steamer, but stayed on the wall, watching locking operations. I heard Major (later General) Roberts, author of 'Roberts' Parliamentary Rules', congratulate General Weitzel on the completion of the greatest lock in the world, a work which would be a great personal honor and give renown to General Weitzel personally and, through him, be credited to the Engineer Corps and add much prestige to it. General Weitzel replied that 'Alfred Noble deserved all the credit for designing and building the lock'. Other officers present joined with Major Roberts in strenuously objecting to General Weitzel's statement saying that he (General Weitzel) was entitled to all the credit and honor for the success as he had the entire responsibility and would have had to have taken all the blame and discredit if there had been a failure. General Weitzel forcibly remarked that his risk or any one else's as to the failure part did not count for anything, because he had Alfred Noble for his Engineer.

"When General Sherman made a tour of the Western forts, Mr. Noble was directed by General Weitzel to meet the party on arrival at the 'Soo' and to show them about the lock work. Mr. Noble delegated his assistant, Mr. Davock, to meet General Sherman while he (Mr. Noble) went up to the head of the canal and stayed there all day, so as not to put himself at all forward in the presence of so notable a man.

"You are of course familiar with Mr. Noble's experience on bridge work in his practice as Consulting Engineer and also with the part he had to do with the movable dam located near the head of the Water Power Canal at the 'Soo' and the Remedial Works located across the head of the Rapids. His study and report on the hydraulic conditions



resultant in the change of the regimen of the river due to the construction of the Power and Ship Canals at the 'Soo' was a complete treatise on the intricate problems relating to river and lake reservoir hydraulics.

"Mr. Noble's one recreation was trout fishing, and every year since 1902 he has spent from two to six weeks in camp along the north shore of Lake Superior with a small party of old associates. Each outing trip greatly benefitted his health and the last time I saw him, on March 31, he planned the details of the anticipated trip in July.

"I suggest that the 'Western Society' or else the 'American Society of Civil Engineers' publish a memorial volume for Mr. Noble."

FROM A. MACKENZIE, HON. M. AM. SOC. C. E., BRIG.-GEN., U. S. ARMY.

"Your letter of September 3d reached Washington during my absence in Europe and itself became something of a wanderer, taking some time to come into my hands.

"I grieve over Noble's death: though our lives lay apart for many of the last years of his life, memory and occasional happy meetings kept fully alive the strong bonds of friendship, which were established back in the Seventies, when we were first thrown together and worked side by side in Detroit and at the 'Soo'. None of his legion of friends found more pleasure than myself in watching Noble rise to the top round of his profession and at the same time win the hearts of all through his personality.

"So frankly honest was he, that his whole life was an open book from the time he quietly entered upon his chosen profession at the Sault Ste. Marie Canal—while still a student—up to and through his career as a world-known master.

"Not the least of his great virtues was his inherent modesty, which, as is known to many of his friends, threatened at an early day to draw him to a different line of engineering work from that to which he proved himself so perfectly adapted and in which he succeeded so grandly. Not long after entering on his engineering work he was offered a professorship, under conditions which led him to look upon the offer with favor, but his friends of those days—of which I am proud to have been one—felt that Noble was destined to become an active participant in the great construction work of his profession, to a much greater extent than his natural modesty permitted him to admit, and fortunately our counsels prevailed.

"No life's record brings to the individual or to the Engineering Profession more honor than that of Alfred Noble."

FROM RALPH MODJESKI, M. AM. SOC. C. E.

"Although I had met Mr. Noble as early as 1887, I did not come into close contact with him until 1892. He was then resident engineer of the Memphis Bridge and I was one of his numerous assistants. It was then that I came to love the man for his great and unusual qualities. He always came to the office first and usually left last. No matter how some of us tried to be on the work ahead of him, we always found Mr. Noble there. His treatment of his subordinates was ex-



ceedingly kind without being lenient. Always ready to help with word of advice or to turn up his sleeves and join in the work if he saw he could help. No work was too trivial or too irksome for him. Nothing was neglected or passed over. His great accuracy and quickness of figures were proverbial.

"It was my good fortune to occupy with Mr. Noble the same office in the Monadnock Building in Chicago from 1900 until he was called away to New York on the Pennsylvania Tunnel work. In 1901 we formed a partnership under the firm name of Noble & Modjeski, and were given the contract for the engineering of the Mississippi River Bridge at Thebes, Illinois. Previous to that Mr. Noble was on the Deep Waterways Commission and later designed some regulating gates and other work for Sault Ste. Marie Power Company.

"During the constructing of the substructure, Mr. Noble and I took many trips to Thebes together. On one of those trips we had a drawing-room. As Mr. Noble was a very large and an older man than I, I insisted he should take the large bed and I slept on the narrow couch. On the return trip, however, Mr. Noble sneaked into the drawing-room very early and went to bed on the couch. I noticed the manœuvre too late, and no amount of persuasion or pleading could make him give up the couch for the larger bed. This is given as characteristic of the man.

"Another characteristic incident: When Mr. Noble was going to Panama, he asked me to keep his club dues paid, 'For', he said, 'I should not like to be posted as delinquent, and again I should dislike *not* to be posted if I deserved it'.

"Our partnership continued until the opening of the Thebes Bridge in May, 1905. As mentioned above, Mr. Noble moved to New York to take charge of the Pennsylvania Tunnels in 1902. Even after that date, he visited Thebes from time to time and aided me with his valuable advice in completing the work.

"He was most scrupulous and generous in money matters. Always ready and desirous to give more than he received, not only in money matters but in everything else.

"I know of no instance when Mr. Noble declined to see anybody who called on him, or to discuss with any one even the most trivial subjects. He never refused to give advice when asked for it, even on purely personal matters, and my experience has been that his advice was always good. He gave it very clearly, being apparently able to grasp the situation at once and his reasoning was always convincing. Yet when, on very rare occasions, he was mistaken, he never hesitated to admit it. Although always very busy he never made his callers feel it. On the contrary, he was always leisurely and kind when talking with them.

"When work was slack he studied or classified his engineering data and worked always. His knowledge of engineering matters was most thorough and was not confined to one branch of engineering only. Bridge work, water-power, harbors, canals, tunnels, railroads were, one might say, his specialties.

"He was a great man and a great engineer. When I think of an ideal to work up to, both as engineer and as man, Noble comes to my mind first of all."



FROM O. H. ERNST, M. AM. SOC. C. E., BRIG.-GEN., U. S. A.  
(Retired)

"I first came into close association with Mr. Noble in 1899 when the Commission was created to examine and report upon all the routes for a ship canal across the Isthmus between North and South America. Besides Mr. Noble and myself the members of the Commission were Admiral J. G. Walker, U. S. Navy; Gen. Peter C. Hains, U. S. Army; Hon. S. S. Pasco, formerly U. S. Senator from Florida; George S. Morison, C. E.; William H. Burr, C. E.; Lewis M. Haupt, C. E., and Prof. Emory R. Johnson. The elaborate investigations which the Commission had to make involved long journies in Europe and Central America in which the members were brought into remarkably close personal intimacy. In the journey to Central America and over the Nicaragua and the Panama routes, they lived for several months as a single family, and had every opportunity for observing the personal as well as professional characteristics of each other. The public accommodations were rarely sufficient for a party as large as ours, and the opportunities for the display of selfishness or bad temper were constant. Throughout these expeditions Noble's equanimity never for a moment deserted him. His sweetness of disposition and generosity of temper endeared him to all.

"His professional work upon this Commission was of a very high order. With untiring industry he mastered the details of every branch of the investigation, and then with sound judgment and judicial temperament he reached conclusions which could not be shaken. Mr. Morison, himself one of the most eminent engineers in the U. S., said to me one day that Noble would be a good man to build the canal. This is a fair illustration of the esteem in which he was held by his colleagues on that Commission.

"My subsequent association with Mr. Noble, aside from the Panama Canal, related particularly to the hydraulics of the Great Lakes, and confirmed me in the conviction that, for the solution of any engineering problem involving long and careful analysis, he had no superior."

FROM WILLIAM R. DAY, ESQ.

"I have your favor of the 24th ultimo, and am glad to know that the National Engineering Societies of this country have appointed a committee to prepare a suitable memorial to the late Alfred Noble.

"It was my privilege to be a classmate of his in the University of Michigan, where we graduated together in the class of 1870. I have met him from time to time since, and have known of the great career which he has had in his profession, and am glad to know that it is the opinion of his associates that he was among the first engineers of this country.

"I well remember when Alfred Noble came to the University of Michigan, where he entered the Sophomore class in 1867. He was somewhat older than the rest of us, and, in my opinion, far more able than any of us. He had had three years' experience in the army, and those who knew him there said that he had been a faithful and valiant soldier. I do not think any of his classmates ever heard him speak of his army career. He probably regarded it as merely a part of his duty, and not a thing to be talked about. Moreover, he was at all



times the most modest and retiring of men. Those of you who knew him, I think, will have marked this characteristic.

"I was with him on a number of occasions after he had become a famous engineer, and know that he was ever reluctant to have any exhibition of special honor to him, when, as everybody knew, he deserved it.

"As I say, he was older than the most of us, and I think his army experience had matured him at an earlier age than men usually reach a proper view of the responsibilities of life. In college, while he was always friendly, kind, and helpful, his time was given to the faithful pursuit of his studies when he was not employed, as he was at times in his college course, in government work.

"In his case, the boy was father to the man. He was modest, kindly, industrious, and capable, as boy and man. I need hardly say to you that he had particular aptitude for the science of engineering, and unusual skill in the higher mathematics. While he was easily, in my opinion, the first man in our class, I do not think there was any of his fellow-students who had the slightest feeling of envy or jealousy toward him. By common consent he was our intellectual leader. We all liked him, and the more we emulated his example and tried to reach his attainments in scholarship, the better it was for us.

"The last time I saw Alfred Noble, was at the great Michigan banquet in New York in 1911, when as a member of the New York committee he did very much to make that function the great success it was. With his great qualities and achievements, he had a gentle vein of humor that made him the most agreeable of companions. In person, as you know, he looked his part, and was a most attractive man. To have known him and had his friendship is one of the most pleasant and valued recollections of my life. I was much saddened to learn of his death, and, as I have said, I am glad to know that the profession which he honored is taking measures to provide a permanent record of his great career."

FROM JAMES H. BRACE, M. AM. SOC. C. E.

"While thoroughly appreciating all the benefits of several years' close connection with Mr. Noble in some of his later works, the writer likes best to think of a month's vacation spent with him in fishing and sailing or rowing along the solitary north shore of Lake Superior.

"The happiest years of Mr. Noble's life were doubtless those in which he was employed at and about Sault Ste. Marie, Michigan. When he first went to live there, the country was very much isolated, particularly in the winter season, as there was then no railroad nearer than Cheboygan on the Southern Peninsula. After navigation closed the only means of communication was overland either by sleighs or on snow shoes. Mr. Noble frequently had to make the trip overland to Detroit on Government business.

"In the summer he often found it necessary to make surveys along the beautiful shores of the St. Marys River and through the bush that even yet covers most of the back country. In those days he occasionally found time to make short fishing trips along the rugged shores of the great lake to the north. It was here, too, that he formed some of his



most intimate friendships, partly among the residents of the town, and partly with his associates.

"After he had made an assured success in his profession, Mr. Noble formed the habit of spending a month or six weeks every summer along the northeast shore of Lake Superior. A sort of informal club was composed of his old friends of earlier years. Among these were Chase Osborne, George Kemp, Judge Steer, and Joseph Ripley.

"A comfortable outfit composed of a sail boat, row boats, tents, etc., was gathered together at the 'Soo'. Mr. Noble spent much of his spare time from early spring planning for this trip.

"He took especial pleasure in a friendly rivalry with George Kemp in seeing who could secure, for a present to the other, the most novel or outlandish fly or other device supposed to be attractive to trout.

"Mr. Noble liked well to bring his friends of later years on these trips and one could not please him better than by genuinely enjoying the outing. The guides and cooks were obtained from among the Indians and half breeds living near the 'Soo'. Many of them were well known to Mr. Noble, and had formerly been employed under him on the construction of the Weitzel Lock.

"On this occasion the actual trip took about three weeks from the time of leaving Sault Ste. Marie to the return to Michipicoten Harbor. During this time the party was continually out of touch with civilization, as no mail, telegrams, or telephone messages could reach it. Here Mr. Noble took complete relaxation from his usual cares and duties, and this was practically the only time through the year that this was the case.

"It was by no means an idle time, however, for there was the early plunge in the cold water of the Lake, then breakfast and a prompt start for the day's business. If the party was to move, camp was broken at once. The day was fully occupied either with fishing or traveling.

"Mr. Noble took especial delight in properly rolling his blankets in the way he had learned to do in the Army. As fond as he was of fishing, nothing could induce him to go out when there was an ample supply for food for two or three days in advance.

"During the trip there were some trying experiences from wind and weather, but throughout these, as well as during the sunshine, Mr. Noble displayed the same kindly good humor and thoughtful consideration for others that characterized all his relations with his fellow-men.

"In the long twilight after supper, Mr. Noble could sometimes be induced to talk of his war experiences. He was very reluctant at all times to discuss this subject. He seemed to believe that it was every good citizen's duty to serve, then when the war was over, go about his regular business as though nothing had happened; that the country owed him nothing for his services, and that there was no good in keeping up the old spirit.

"The most vivid impression, however, was that of the earnestness of purpose that actuated both Mr. Noble and the members of his Company that was mainly recruited from the farming district adjacent to Detroit. There was apparently no glamour about it. They knew exactly what they were fighting for, believed in the right of their



cause, did their utmost in a humble way for its success, and most of the original Company were more than glad, when that cause had triumphed, to return to the ways of peace.

"Mr. Noble also gave some idea of his struggles for an education, both before leaving home and after the war was over.

"He commented quite freely on many of his associates, and although some of his experiences must have been unpleasant, he was always generous in his praise of their good points.

"In conclusion one could not come back from these few weeks of close association with him in this solitary region without feeling a lasting influence for good."

FROM J. WALDO SMITH, M. AM. SOC. C. E., CHIEF ENGINEER, BOARD OF WATER SUPPLY, NEW YORK CITY.

"I beg that you will excuse me for the delay in answering your letter of October 24, asking me to contribute information which might be of assistance to you and the other members of the committee in preparing a suitable biography of the late Alfred Noble, with particular reference to his work in connection with the Board of Water Supply.

"Mr. Noble accepted appointment as one of the Consulting Engineers of the Board of Water Supply in September, 1909, at the time when the Pennsylvania Railroad improvements in New York City were nearing completion. Previous to this, he had been repeatedly urged by Mr. Bensel, the President of the Board, and myself to investigate certain special conditions, but he advised us that he felt that all his time and energy belonged to the Pennsylvania Railroad, and refused to entertain any offers made to him. This was characteristic of the man—conscientious almost to a fault, always rendering a high order of service, and refusing to devote his energies to, or do, anything which would detract from his usefulness on the particular work which he had in hand, no matter how strong the financial inducement might be.

"At the time Mr. Noble's services were sought, some misgivings had arisen in the minds of the members of the Board as to the practicability and ultimate success of the tunnel underneath the Hudson River between Storm King and Breakneck Mountains, and a bridge crossing the river at that point was being considered somewhat seriously. The Commissioners all agreed that they were entirely satisfied to be guided by the advice and conclusion which Mr. Noble might reach after making a careful investigation of the whole subject. By reason of his long experience in the design and construction of large bridges, as well as his recent experience in connection with the Pennsylvania tunnels, and more particularly because of his sound judgment, exercised only after the most careful study of all the details and conditions, he was ideally fitted to undertake such a task. For myself, I was prepared to place absolute confidence in his findings, because through my intimate knowledge of his work here in New York, as well as my close association with him, through the late Charles L. Harrison, I had been very strongly impressed by the soundness of his judgment, the breadth of his knowledge of engineering matters and the care with which he pursued his investigations, and



was convinced that he would render an absolutely impartial judgment and not be swayed by prejudices or any political considerations. His report to the effect that every expedient should be exhausted before the deep pressure tunnel was given up practically settled all questions which had been raised.

"His advice was most valuable in connection with many of the details of the design and construction of parts of the work, particularly in connection with the large pressure tunnel (18 miles in length) running under the City of New York and the large dams at Ashokan and Kensico. He never rendered snap judgment on any problem or question. His advice was given only after painstaking consideration and careful study of all the details and conditions. He would never attempt to give advice on any matter for which he was not thoroughly fitted by experience. His attitude was always one of helpfulness, and he gave largely of his store of experience and skill without price to any one seeking information.

"If there was a wreck or failure, he did not condemn the whole structure; he sought to save what was good and would stand the test of sound engineering principles and design. He possessed a very keen intuition, and was not unmindful of practical considerations of business or even political conditions that surrounded any problem, but his findings were never tempered by prejudice. He was always constructive, always working for something better; he was never destructive.

"Mr. Noble was not demonstrative. He talked but little, but what he did say was always very much to the point. He was generous and kindly, and more considerate of others than he was of himself. He hated deceit and misrepresentation in every form. I remember a little incident which occurred about a year ago, shortly before the change in the City's administration. He told me he could see that there was to be a strong cry for economy in all the operations of the City, and that, whether it was advisable or not, strong pressure might be brought on our Board for the reduction of expenses, and so he suggested that, as he was the last of the three Consulting Engineers to be appointed, he would retire, in order that the others might not be disturbed. Neither the members of the Board nor I would listen to such a proposition, as we believed that his counsel was too valuable to lose at a time when the work was to be put under test, and his services might be very necessary. It is undoubtedly true that there was no other man in the Profession who was held in higher esteem or who was so generally liked and respected."

FROM CHARLES P. LIGHT, ESQ.

"It is very hard to write an appreciation of a man as modest as Mr. Noble was, this very trait having the effect of keeping one from saying a good many things that he might have otherwise given expression to. He endeared himself to all of us through the deep interest that he took in the work of our Association. The demands upon his time were multitudinous, yet he never missed a meeting of the Association. Mr. Saunders of the Ingersoll-Rand Company, gave voice to a sentiment concerning him that I most heartily concur in, it being as follows:



## "OBITUARY

"Alfred Noble

"At three score years and ten a useful life  
Has run its course. And as we think of him  
The Sorrow and the flowing tears of friends  
Are turned to joy that such a one as he  
Has lived and wrought. Here was a man who led  
In building up, a mind endowed to see  
And think and do in all the larger things,  
A Captain leading men on Nature's fields  
To win in building monuments of peace.  
This Engineer has shattered Nature's works  
To make the world a better dwelling place  
For all of us. His life was gentle and  
No thought of self within him dwelt. He won,  
Scarce knowing why, the plaudits of the world.  
Upon his monument let it be writ:  
He was an Engineer. He was a Man."

FROM W. H. BURR, M. AM. SOC. C. E.

"My acquaintance with Mr. Noble began when he was engaged on the work of construction of the Washington Bridge across the Harlem River at New York City. This, however, was but a casual meeting on two or three occasions at most. My close acquaintance with him began only after he had completed the Memphis Bridge and had returned to Chicago to commence his independent consultation practice. I remember particularly meeting him in Chicago in December, 1896. We talked much about the foundations of the Memphis Bridge on which he had recently been engaged and for the success of which, it may properly be said, he was mainly responsible. It was not in accordance with his nature to make such a statement, but I write it as being just to him.

"He was probably one of the most modest men in the Profession, and never failed to accord to his chief all credit for the conception of work and the principal administration of it.

"The conception of the design of the Memphis Bridge, both superstructure and substructure was, of course, Mr. Morison's, and he was responsible for the general administration of the work, but I think it may be properly said, without in any way detracting from the credit due to the chief, that there were exigencies in the course of the substructure operations when Mr. Noble's presence and personal supervision and his fine engineering judgment were literally the saving of more than one threatening situation.

"At the period when he was engaged on this bridge he had reached mature age and had enjoyed abundant opportunity, through experience in many important works, to develop a well-trained judgment effective for the wide range of engineering operations for which he was noted during the last twenty or more years of his life.

"It was but three years later when the first Isthmian Canal Commission was appointed by President McKinley with Mr. Noble as



one of its members. His fitness for this Commission was greatly enhanced by the fact that he had already been a member of the Nicaragua Commission for the purpose of examining and reporting upon the Nicaragua route for a ship canal between the Atlantic and Pacific Oceans.

"The work of this first Isthmian Canal Commission extended over about a year and three-quarters, although it had official existence for about two years longer.

"It was as a colleague on this Commission that I came to know Mr. Noble most intimately. The work of the Commission was of a pioneer nature. Little was authoritatively known of the Nicaragua route and grossly exaggerated statements, to say the least, regarding the French work at Panama had greatly obscured knowledge of the Panama route. It was the duty of this Commission, therefore, not only to make the most thorough physical examinations of the Nicaragua and Panama routes, but also to visit Costa Rica and the Isthmus of Darien. Large engineering forces were at work for many months in both Nicaragua and Panama, securing data by surveys, borings, and other examinations which required extended treatment subsequently at Washington in the preparation of the report. In all this work in Central America and at Panama, and subsequently in the reduction and preparation of data in Washington, Mr. Noble was skillful, wise and tireless. He was not only the experienced professional man, but most gracious and invariably kindly in his relations with every member of the Commission. He was patient in times of difficulty, and frequently lightened the troubles of many unwelcome conditions by bits of quiet humor in which he was wont to indulge.

"He was one of the most companionable of men and while he could express himself with vigor whenever occasion might demand it, his nature was to accomplish his purposes through quiet and gentle procedures. In fact, he may properly be characterized as a gentleman in the best sense of the word.

"Although he would have been one of the last men to assert the possession of mathematical ability or of mathematical tastes, as a matter of fact, on a number of occasions, I have seen him exhibit greater power of mathematical analysis than is found among most engineers. It became necessary in preparing the report of the first Isthmian Canal Commission to consider the treatment of some hydraulic questions of magnitude and of much more than ordinary difficulty. Some of this work came under the scrutiny of Mr. Noble, and his treatment of the requisite analysis did credit to his mathematical ability.

"I saw the same quality exhibited in connection with some preliminary work for the Barge Canal of the State of New York while I was a member with him of a Board to which some questions connected with that work had been submitted. This analytic quality of Mr. Noble's mind, I think, has not often been recognized, even by many of those of his own profession who knew him well. It is of interest in connection with the deprecatory observations usually made regarding the possession of mathematical capacity by engineers. The possession of that faculty certainly did not trench seriously upon the excellence of Mr. Noble's engineering judgment.



"Throughout the whole laborious operations of the first Isthmian Canal Commission, Mr. Noble bore his full share from the beginning to the end, and his services aided much in giving to the report its high value.

"After becoming a member of the Isthmian Canal Commission he resided uninterruptedly in New York City, and my acquaintance with him was continually close until his death. During the last four years of his life we were associated on the Board of Consulting Engineers of the Board of Water Supply of New York City, Mr. John R. Freeman being the third member. This professional work included much deep tunneling for which Mr. Noble was finely equipped by his experience in the construction of the East River Pennsylvania tunnels and the tunnels connecting them with the Pennsylvania Station. This work, like all that he had done before, was characterized by great thoroughness. Whenever a problem arose his treatment of it was characterized by a patient thoroughness which could scarcely fail to lead to effective solution of any troubles which might be encountered. It seems to me that he possessed a capacity for deliberate and searching consideration of all the elements of engineering problems seldom equalled by any member of his profession. I have thought that this was largely due to the mathematical quality of his mind to which I have already alluded, but which seldom found expression by mathematical formulæ.

"He possessed unlimited stability and poise of mind. He could not be surprised into a conclusion not justified by his judgment, and it was unthinkable that he should reach an unwise conclusion through crude impulse. In endeavoring to find what qualities gave him the prominent position in the profession which he held, I think one must look chiefly to his perfect stability of character and judgment, his kindly nature unfailingly exhibited to all those with whom he came in contact, his uncompromising right principle, and his fine analytic capacity which he brought to bear on all engineering questions. He was not a man equipped with what may be called a brilliant searchlight of genius, challenging admiration by his phenomenal mentality and thus becoming an acknowledged leader of men in spite even of opposition. Alfred Noble was not of that type. He won his position of professional prominence by the more substantial and never failing qualities of personality and character and by his kindly good will, which always made him attractive. He was not a leader in the aggressive sense of the word, but the profession of which he was so long an honored member accorded him a high position because he had won it by the excellence and real worth of all that he did and was."

FROM ROBERT RIDGWAY, M. AM. SOC. C. E.

"Some time ago Mr. J. Waldo Smith showed me your letter to him of October 24, 1914, requesting him to contribute information to assist you and other members of the committee to prepare a biography of the late Alfred Noble, and suggesting that I might be able to contribute something as well. He has also given me a copy of his reply of December 10th, which is so complete regarding Mr. Noble's



connection with the Board of Water Supply work that I can add nothing to it.

"I presume you know that Mr. Noble was retained by the Public Service Commission for the First District, State of New York, on the recommendation of its Chief Engineer, Alfred Craven, M. Am. Soc. C. E., to act as consulting engineer to him. This appointment became effective November 1, 1912, and terminated with his death. He entered upon his duties with the conscientious thoroughness that was so characteristic of him, and his advice was a great assistance in solving some of the large engineering problems of subway design and construction in connection with the execution of the Dual System of Rapid Transit for New York City. Particularly is this true of his work on the specifications and features of design for the new East River tunnels and their connections which are a part of the Dual System. Each tunnel, or rather pair of tunnels, will consist of two single-track cast-iron-and-concrete-lined circular tubes of a type generally similar to the present subaqueous transportation tunnels about this City. The tubes for the Interborough Rapid Transit Company's system will extend from Whitehall Street, Manhattan, to Montague Street, Brooklyn; those for the New York Municipal Railway Corporation's system will run from Old Slip, Manhattan, to Clark Street, Brooklyn. I presume you have whatever details you may need of these tunnels, but if not, I will be pleased to furnish them if you desire me to do so. The engineering features of the contracts and specifications and the general designs were prepared under the direction of the Chief Engineer by Mr. Alfred Noble's son, Frederick C. Noble, then Engineer in charge of our Sixth Division, which included the East River Tunnels, and they were carefully reviewed by Mr. Alfred Noble, and in their final form are the result of his advice. His experience with the construction of the Pennsylvania Railroad tunnels under the East River gave added value to his advice. These contracts have since been let to the Flinn-O'Rourke Company, Inc., at the bid price of \$12 444 725.

"You have known Mr. Noble so long and so well that anything I might say about his personal characteristics would simply confirm what you already know. He was considerate of the honest opinions of others, and was always ready to give full credit to his subordinates, including the laborers in the workings, for whatever of good they suggested or accomplished.

"He was intolerant, however, of incompetency and pretense.

"If there is any further information you desire that I can furnish, please command me. I am sorry this letter has been delayed, but when I read Mr. Smith's letter to you I was under the impression it gave you all the information that I could give you. It occurred to me only recently that perhaps what I have told you of his work with this Commission might be of interest to you."

FROM HENRY GOLDMARK, M. AM. SOC. C. E.

"As suggested by you, I consulted with Mr. F. C. Noble with regard to the data desired in connection with the life of his father. There were a few dates as to which I was able to make Mr. Noble's



notes more complete. I do not know that I can add very much to such information as you already have.

"My own acquaintance with Mr. Noble dated back to the early 80's. At that time he had recently left the government employ and was with the Northern Pacific Railroad, engaged in active construction. I was inspecting the ironwork for a bridge at the south crossing of Clark's Forks, while he was in charge in the field. This bridge was designed by Mr. Geo. S. Morison. I was even then greatly struck with the manner in which Mr. Noble followed up every detail on this bridge. From 1888 to 1892, Mr. Noble was resident engineer for the Memphis Bridge, while I was stationed at Kansas City as Bridge Engineer for the Kansas City, Fort Scott and Memphis Railroad and allied lines. Mr. Geo. H. Nettleton, President of both Companies, and one of the finest men I ever met, often spoke to me about Mr. Noble, expressing his admiration for the latter's high qualities. The way in which he handled that big bridge was a revelation to me, especially his thoroughness and the total absence of friction in the organization. While the plans were made elsewhere, the successful completion of this difficult work was due very largely to Mr. Noble.

"It was not until 1897 that I worked directly under Mr. Noble, when he was one of the United States Board engaged on plans and surveys for a ship canal between the Great Lakes and New York Harbor.

"He was very anxious that the subject of lock gates should be thoroughly investigated from a broad, practical standpoint, and was quite willing that ample time should be spent upon this study. I am sure those engaged on it would never have had the perseverance to finish the laborious task except for Mr. Noble's own example.

"Apart from his very lovable personal traits, I have never met any one who, as an engineer, combined an infinite capacity for detail with the broad, common-sense view of the points involved in an engineering undertaking. While not without prejudices and strong opinions, he was always willing to discuss debatable points, and was readily convinced when the weight of the evidence called for a change of opinion. He chose his assistants with care, and required a great deal of them, although not as much as he demanded of himself. When he had once given a man his confidence, he was entirely willing to leave to him the carrying out of his instructions, and such suggestions as he made were always conveyed in a kind, generous manner, which made it a delight to talk over any point with him.

"Personally, I have felt his loss severely, and the world is to me poorer since the chance of meeting him from time to time has gone."

FROM LOGAN WALLER PAGE, M. AM. SOC. C. E.

"In the death of Alfred Noble the American Highway Association has lost its greatest and most useful member. It was not alone through his eminent reputation as an engineer, or the mere lending of his name to the undertaking, that made the Association succeed. Before the founding of the Association was decided upon, Mr. Noble's sound advice and inspiration guided the few interested in the movement to direct their efforts along practical and useful lines. He



attended the founders' meeting, and was there elected a member of the Executive Committee, on which he served to the time of his death. During the four years that he served on this committee he never missed a meeting. The last meeting that he attended was in Detroit, Michigan. He made the long trip from New York City to Detroit and return for the sole purpose of attending this meeting, and at a real sacrifice to his private interests.

"When the Joint Congressional Committee on Roads, Congress of the United States, invited the Executive Committee of the Association to advise it in regard to Federal aid legislation, Mr. Noble attended the hearing and submitted to a long cross-questioning on the subject.

"These few examples of his generous and continued effort are given to illustrate the deep interest he took in work of a purely public service character. Not only did he give freely of his time and best judgment to the affairs of the Association, but he was always liberal in his financial support. He also drew many of his friends, who were among the most eminent men in the country to the councils of the Association. He was many times asked to accept the presidency of the Association, but, in his modest way, declined to accept any position of prominence, saying that he could serve the Association just as well on its Executive Committee as he could as its president. The loss of his counsel, advice, and deep interest has been the greatest blow the Association has sustained."

FROM RALPH MODJESKI, M. AM. SOC. C. E.

"In answer to your recent reminder as to information regarding Mr. Noble's connection with the Thebes Bridge, the following may be of use.

"Mr. Noble and I formed a partnership for the purpose of engineering the Thebes Bridge over the Mississippi River at Thebes, Illinois, in November, 1901, at which time we were engaged jointly to design and build that bridge. From that time until January, 1905, Mr. Noble devoted a great deal of time to preliminary work on that bridge, and to designing of the substructure. There had been a tacit understanding between us that Mr. Noble would take care of the design of the substructure, leaving the superstructure largely to me. In January, 1905, he was called away to Galveston in connection with the new sea wall, and while there he received a proposition from the Pennsylvania Railroad to take charge of their East River Tunnel in New York. He did not wish to accept that proposition until he had ascertained that it would be acceptable to the railroads who were building the Thebes Bridge, and to myself, and until he received assurances from the Pennsylvania Railroad that he would be permitted to come to Thebes from time to time, to supervise the work in a general way. He finally made arrangements to that effect, and left for New York in February, 1902. He came to Thebes from time to time during the construction of the bridge, and devoted considerable time to making a final settlement with the contractors for the substructure.

"I feel that to Mr. Noble's wide experience and wisdom is largely due the success with which the work was carried on to its completion,



and it was mostly due to his great tact that the very complicated situation with the substructure contractor—due to delays caused by high water and other circumstances—was finally settled in a manner satisfactory to all concerned.

"The bridge was completed in April, 1905, at which time our partnership was automatically dissolved."

FROM HUGH L. COOPER, M. AM. SOC. C. E.

"American Engineers will be universally shocked as the news is conveyed to them of the death of Alfred Noble, a man who has been honored with the presidency of the American Society of Civil Engineers, and who in his lifetime achieved a far greater honor in the universal respect in which he was held by every one who knew him or knew of him.

"It was not my good fortune to know Mr. Noble personally, except in a very casual way, but his life work has been an inspiration and an exalted example to me for twenty-five years, as I have no doubt it has been to hundreds of other engineers.

"Growing out of this feeling, it has occurred to me that it is a very opportune time for the engineering profession in some unusual way to recognize the value of his services to the world at large, as well as to engineering. Can we not now inaugurate a strong movement having for its purpose the erection of some suitable monument or memorial illustrating in some degree to generations to come the great work Mr. Noble performed and the loss the nation suffers in his death?"

FROM JAMES FORGIE, M. AM. SOC. C. E.

"I am honored by a request from Mr. Modjeski, Chairman of the Biographical Committees of three engineering Societies, as a one-time Britisher representing the Institution of Civil Engineers (in America), to give a contribution in writing to the memory of Mr. Noble. It includes tributes by the following British Engineers—Mr. Charles M. Jacobs, Mr. E. W. Moir, Sir Maurice Fitzmaurice, and Mr. Henry Japp, who all have kindly permitted me to incorporate them in this memoir.

"Some people, maybe the weaker of us, are greatly influenced by the lives of others, in youth, maybe, by a biography such as the 'Lives of the Engineers' (Smiles); and again in youth and in manhood, by actual touch with the real lives of men. I must confess to this weakness, and among not a few Engineers of rare good character and technical ability it has been my good fortune to know, profit by their example, and work with, and which include those highest in the Engineering profession here and in Britain, there is none more dear than the late Mr. Alfred Noble. I was closely associated with him socially and often professionally for about twelve years and to me he embodied all the manly qualities.

"Any one who knew Mr. Noble is restrained from eulogy regarding him for two reasons: first, his character, to which obituary may do and usually does injustice, and, second, because of the disfavor he



would view our biographying him. For the common good of us all and future generations of engineers, this restraint must be laid aside.

"I have received from Mr. Chas. M. Jacobs, who was associated with Mr. Noble on the great Pennsylvania Railroad extension into New York City, his appreciation of the characteristics of Mr. Noble. It follows:

"'What do we live for if it is not to make lives less difficult for each other' (George Eliot).

"'That was the spirit of Alfred Noble in my personal experience during daily intercourse with him from January, 1902, to March, 1910, the time we were associated Chief Engineers, as well as Members of the Board of Engineers on the Extension of the Pennsylvania Railroad into New York City and Long Island.'

"'In all my experience, extending for a period of over 40 years, I have never been in contact with one so singularly independent and with such simplicity of character.'

"'One of the chief characteristics of his great professional attainments was the painstaking care which he devoted to the minutest detail of the subject under consideration, and his research on the many questions and new conditions that had to be dealt with.'

"'I have sat for hours, I may say days, with Mr. Noble, taking under consideration the multitudinous phases of the complex questions that were involved in order to reach a solution of the problems before us on the Pennsylvania work. He had to be absolutely convinced of the correctness of every detail before a final decision was reached.'

"'I can say here that, at our last meeting, the fact that during the entire period of our association, not a single word of anger or harsh criticism had passed between us was mutually a matter of sincere congratulations.'

"'As a man he was of the highest standard of honour and integrity, and was the very personification of humility. I can only add my testimony to the fact that the United States of America, and the profession generally, have lost one of the most distinguished Engineers of this generation.'

"To those, young and old, who knew Mr. Noble, the memory of his character and professional methods will remain fresh and helpful.

"Because of the character influence of Engineers of the past on the lives of following generations of engineers, one cannot but hope that by some means Alfred Noble's exemplary and vigorous life may be presented to future generations of engineers in such a way as to be helpful and encouraging and serve as a reminder that the 'right' can never be 'wrong', despite consequences of following one's conscientious judgment.

"Perhaps no engineer of foreign training was for so long a time continuously in touch with Mr. Noble, professionally and socially, as myself, with the result that, of the many blessings of fellowship enjoyed here, none has been of more moral value to me than this association with him.

"To illustrate his most sensitive fairness, permit the following: He consulted me, for not more than two hours at the most, on a



certain matter with which I happened to be also familiar and, to my surprise, sent me a check for half his fee, which, to satisfy his pride, I had finally to accept.

"He was an aristocrat of honor, but an autocrat toward those who, while knowing better, did not exercise it. Much may be said, and rightly, of his tolerance, helpfulness, and keen sense of humor, but it should not be forgotten that he in no sense overlooked a wrong.

"Mr. Noble was always an unstinting admirer of the oldest association of Engineers, 'The Institution of Civil Engineers', long before that body did him the honor of election as its Honorary Member in America. Those who have read the biography of Telford, the first President of the Institution, and who knew Mr. Noble will find a considerable similarity of character in these men. May I also say his brevity and pungency of speech recalled to my mind the manner and character of the simple and great British Engineer of our times, Sir Benjamin Baker.

"While Mr. Samuel Rea, President of the P. R. R. Co. proposed making the dinner of the Members of the Institution of Civil Engineers in America an annual event, it is to Mr. Noble we members owe the inception of the first one given in honor of Professor Unwin (then President of the Institution) at the University Club, New York City, on September 12th, 1912, during a visit to this country. This annual event affords as much pleasure to the Institution in London as it does to those who actually share in it.

"At the University Club on August 29, 1912, it was my good fortune to be the only foreign-born guest on the occasion of a dinner assemblage of Engineers given in honor of Mr. S. B. Williamson, Engineer in charge of the Pacific Division of the Panama Canal. This was five days after the passing, on the 24th, of the Panama Canal Act of 1912, in which exemption from tolls of coastwise vessels was among other matters enacted. In his address, at this dinner, and as first speaker, Mr. Noble, jealous of the honor of his country, stated in a most unqualified way that such exemption, no matter how desirable or undesirable it might be, was in direct contravention of the Hay-Pauncefote treaty. As every one knows, the honor and good sense of the country prevailed, and Mr. Noble lived to see this exemption part of the Act rescinded.

"Mr. E. W. Moir, who really won his spurs as an Engineer in this country on the old Hudson Tunnel in 1890, and who, as a Partner and Chief representative of the Contractors on the construction of the tunnels under the East River for the Pennsylvania Railroad Company, had to transact much business on this scheme with Mr. Noble, sends the following:

"'I duly received your latest appeal for some remarks on our mutual and dead friend Noble. I think I have already said that my admiration for him is very great indeed. I will make some effort to put something on paper that will be worthy of him. I am afraid, however, anything that I can say will not add to the high opinion his countrymen have already of him and of his works.

"'He was certainly one of the finest types of manhood that I ever met, either in the United States or anywhere else: able, kindly,



strong-minded, sticking to his opinions with great determination no matter how persuasive the arguments on the other side, and very thoughtful of others and generous in his dealings with them. I should say he was much the same type of character as Abraham Lincoln.

"I spent a few enjoyable days in camp with him, sleeping in the same tent on the North Shore of Lake Superior; and perhaps one gets to know a man much more intimately if one practically shares the same bed in the wilds, than by months of association in a city like New York, with all its distractions and intensity of human endeavor.

"We went through some very strenuous times together when we were building the East River Tunnels—a most trying job for the nerves—and while we had some differences of opinion on Engineering matters, we never differed enough to alter our mutual friendship in the slightest degree."

"Sir Maurice Fitzmaurice, C. M. G., a Member of the Council of the Institution of Civil Engineers, sends the following tribute.

"I only had the pleasure of knowing Mr. Noble for about five years and only met him on five or six occasions. I was always struck by his great sincerity and the extremely fair way in which he examined any questions put before him. I felt that I should be quite satisfied to take his opinion as an arbitrator on any question which might be in dispute in which I might be one of the parties. I say this not only on account of his professional qualities, which were as well recognized in Great Britain as in the United States and Canada, but also on account of his fair mind and common sense.

"When a vacancy occurred among the Honorary Members of the Institution of Civil Engineers, some five years ago, I had the honor and pleasure of proposing Mr. Noble to fill the vacancy, and this nomination was unanimously accepted by the Council of the Institution and confirmed by the Members. We were very proud to have him as an Honorary Member, and only regretted that he filled that position for such a short time."

"Mr. Henry Japp, Chief Engineer and Director for the Contractors of the P. R. R. East River tunnels, who submitted to the rulings of Mr. Noble on this work, sends what he calls his point of view; it is as follows:

"Noble by name and noble by nature, like all great men, he was entirely unassuming, patient, painstaking and hard working; kindly, generous and unselfish; capable of meeting any obstacle and overcoming it; strong and reliable; courageous and never compromising with what he considered wrong."

"Mr. Noble's technical missives were composed of the fewest possible words, and what was left unsaid was equally as forcible as the 'said', and now and again, but in consonance, contained a touch of humour between the lines.

"While the greatest factor in the preservation of, or criterion as to, the safety of investment is the character of management personnel, of no less value is the character of an advisory Engineer. It was Mr. Noble's wealth of simple, robust, honest character which made



him so valuable a technical advisor and a great asset to a great country. Such value has been concisely expressed:

"'We put too much faith in systems and look too little to men.' (Disraeli).

"'The worth of a State in the long run is the worth of the individuals comprising it.' (J. S. Mill.)

"Mr. Noble's value is amply demonstrated by his works, also by the affectionate admiration of Engineers and others. It was the greatest privilege to have known him as an unconscious example and a helpful friend."

FROM CHARLES WARREN HUNT, SECRETARY, AM. SOC. C. E.

"I am glad to pay, however inadequately, my tribute to the memory of Alfred Noble.

"My term of office as Secretary of the American Society of Civil Engineers began in January, 1895, and during that year Alfred Noble was elected one of its Directors. Five years later he became Vice-President (1900-1901), was elected President in 1903, and subsequently, as Past-President, served as a Member of the Board for six years (1904-1909), he was therefore a Member of the Board of Direction for ten years, the last nine of which were (with the exception of 1902) continuous.

"To sum up in a few words his influence in shaping the policy of the Society during that period, which was one in which a number of difficult situations arose, would be impossible; but it may be said that he gave to all his duties the benefit of his great capacity for detail, and that his broad and wise views, which were never expressed without careful and painstaking deliberation, and were always delivered in that modest, unassuming and convincing manner so characteristic of him, seldom failed to prevail. It seems to me that the key-note of Alfred Noble's nature, as shown in his attitude toward Society affairs as well as in all other relations of life was unselfishness.

"It was my good fortune, not only to have been thus associated officially with Alfred Noble, but to have shared with him several vacation trips, at times having been in camp with him alone for weeks, and this close contact gave me opportunity to form a correct estimate of his remarkable character.

"Of his professional ability, which was conspicuous, much will doubtless be written by others more familiar with the details of his work than I. The qualities in him that I like best to remember were his gentleness, genuineness, geniality, quiet humor, thorough sympathy with, and readiness to help others, by kindly advice or otherwise, wherever and whenever such help was asked or appeared to him to be needed.

"I feel that I owe much to him, and am proud to say that he was my friend.

"Doubtless there have been men of greater genius in some particular direction, men who were perhaps more deeply read, perhaps more broadly educated, men who, in their generation, have been more in the public eye; but as I am writing this I have tried to think of



all the attributes of which a man would wish to be possessed, and have endeavored without success to find one which was not a feature of his character.

"Alfred Noble was the best balanced, most lovable, most dependable, most useful man I have ever known. To meet him even casually was always a pleasure; to have known him intimately was a great privilege."

his father, at Staunton, Va., on June 17th, 1849. He was descended from the Scotch-Irish of the Shenandoah Valley, of Virginia, on both sides of the house. His father was William Frazier, of Staunton, an alumnus of Yale College and the University of Virginia, whose forbears came to Virginia from Ulster, Ireland. His mother was Sue Massie Lewis, of the sixth line of descendants from John Lewis, founder of Augusta County and Staunton, and his wife, Margaret Lynn Lewis, the daughter of the Laird of Loch Lynn in Scotland. John Lewis also came to Virginia from Ulster, Ireland; his sons, Gen. Andrew Lewis, Col. Charles Lewis, and Col. William Lewis, were conspicuous in Colonial and Revolutionary wars. Mr. Frazier was descended from Col. William Lewis (who was called the "Civilizer of the Border" during Colonial times), and his beautiful wife, Anne Montgomery.

His early education was under the direction of Dr. Junius, a French tutor at Oakenwold. Later, he went to Washington College, at Lexington, Va., and was there prepared for the University of Virginia under Gen. Robert E. Lee, then in charge of the college; he was a classmate there of Mr. Julius Kruttschnitt. He received his engineering education at the University of Virginia, and was a classmate of the late Samuel Spencer, M. Am. Soc. C. E.

Mr. Frazier was engaged on the location and construction of the Alabama Great Southern Railway, and the Chesapeake and Ohio Railway in the early Seventies, and was later associated with the late L. G. F. Bouscaren, M. Am. Soc. C. E., in the construction of the Cincinnati Southern Railway. He was also connected with the location and construction of many other lines of railroad.

In 1882, he was made General Superintendent of the Chesapeake and Ohio Southwestern Railway, with headquarters at Louisville, Ky. It was there that he married Miss Caroline Robinson, in 1887. In 1889, he was sent by the late Collis P. Huntington, F. Am. Soc. C. E., to the Southern Pacific Railway, and, under Vice-President Towne, was Superintendent, at various times, of most of the important divisions. At the request of one of the Directors of the Southern Pacific Railway, who was also interested in the Toledo, St. Louis and Western Railway, he became General Manager of that road for two years. He was then made General Manager of the California North-ern, and returned to San Francisco.