# Charles Conrad Schneider

By Paul L. Wolfel*

C. C. Schneider, who died at his home in Philadelphia on Jan. 8, 1916, was born at Apolda, in the Duchy of Saxony, Germany, in the year 1843. At an early age he entered a machine shop, where he served an apprenticeship as a preliminary to his engineering education. In 1864 he graduated from the Royal School of Technology, at Chemnitz. After his graduation he spent a few years in his native land and came to this country in 1867. His first employment in his adopted land was at Paterson, N. J., where he served for about three years as designer at the Rogers Locomotive Works.

Mr. Schneider was quick to perceive the large field for development that lay in the branch of the profession that he subsequently adopted, and he chose it as the principal study of his life. His name will be prominently associated with those members of the profession who have done so much during the past forty years to study the science and perfect the art of structural engineering.

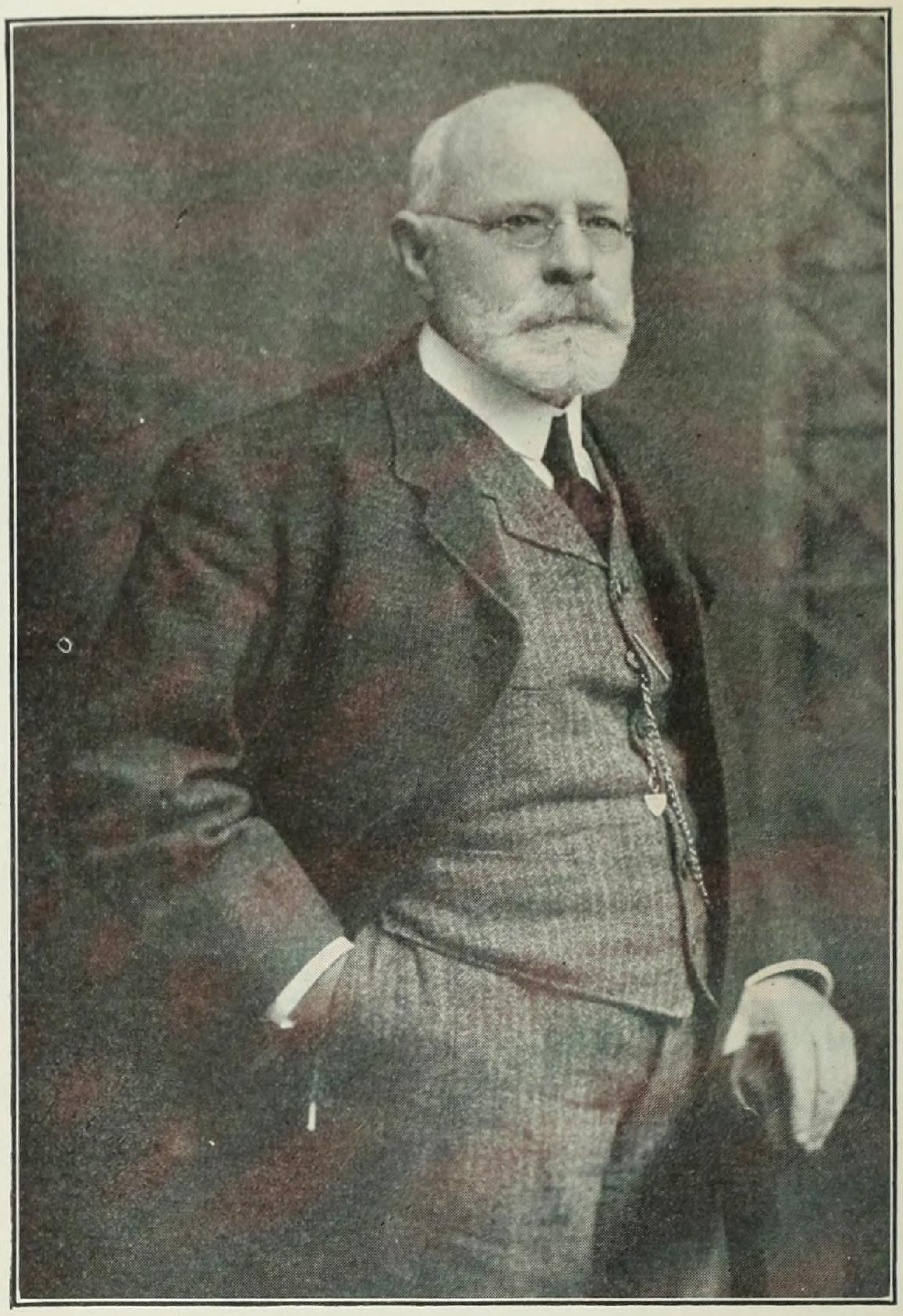
His first work in this line was with the Michigan Bridge and Construction Co., of Detroit, where he remained about three years. In 1873 he came to New York City, to take the position of Engineer-in-Charge of the engineer's office of the Erie Railroad Co., under Octave Chanute, Chief Engineer. While in the service of the Erie, one of his duties consisted in checking strain sheets and plans submitted by bridge companies. At that time this was not a general practice; railroads generally depended upon the bridge companies for the correctness of their designs. Another duty consisted in instructing inspectors. At that time experienced inspectors could not be obtained and work was generally accepted without inspection. For this reason young men employed in the office, who showed some practical ability, were selected for that purpose, and taken to some of the shops where work was in progress and given practical instruction.

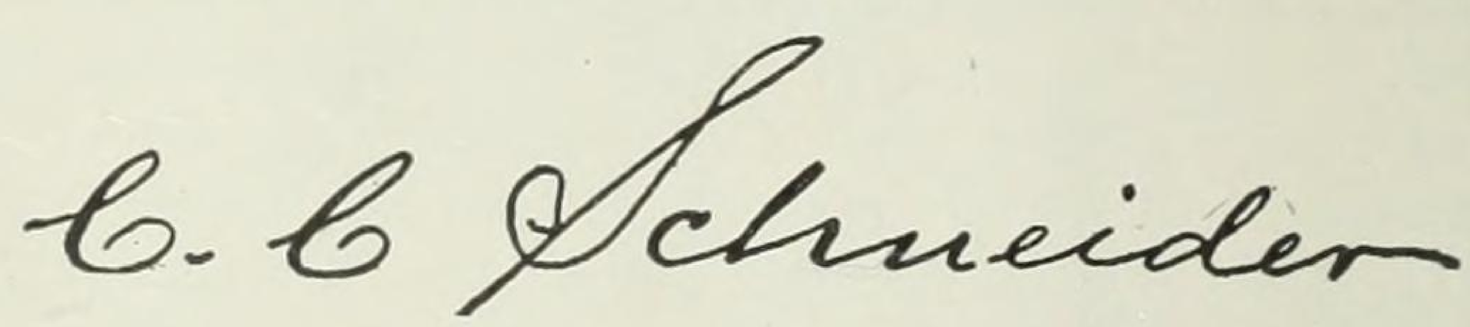
The year 1873 may therefore be considered as the period at which systematic bridge inspection was commenced. The bridges which were contracted for in 1873 were let on the competitive lump-sum basis, which was then the usual practice. This, however, did not prove very satisfactory, as each bridge company at that time had its own type of truss. It was concluded that the only way to obtain a reasonable uniformity in all bridges was to have the plans prepared by the engineers of the railroad and Mr. Schneider was given that duty.

In 1874 the bridges which were needed during that year were designed by the railroad company's engineers and the work let on a pound-price basis. This was probably the first instance where bridgework was let by the pound.

In 1876 he was engaged with the Board of Engineers appointed by the Long Island Bridge Co. to pass upon competitive plans for a railroad and highway bridge across the East River, to connect Long Island with New York City. It was the intention to locate this bridge between 76th and 77th St., the location being selected as the narrowest point in the East River, requiring spans of only 734 ft. across the west channel and 618 ft. across the east channel. The project, however, was not carried out at the time on account of the financial embarrassment of the company. After this work was finished he was engaged by the Delaware Bridge Co. as a designer.

In 1877 Mr. Schneider opened an office as consulting engineer in New York City and for several years was engaged in connection with various important enterprises of that period. In 1879-1883 he was associated with the late George S. Morison on the Plattsmouth, Bismarck, Blair and Rulo bridges across the Missouri River and the Snake River bridge at Ainsworth, Wash. In the years 1882 and 1883 he designed the cantilever bridge over the Fraser River for the Canadian Pacific Ry. and the Niagara River cantilever for the Michigan Central R.R. These two bridges stand among the first of the modern type of cantilever. Mr. Schneider's name will always be associated with the development of this type of structure.






Many other important works were of his design, notably the extensive wooden viaduct at Marent Gulch on the Northern Pacific and the Stony Creek viaduct on the Canadian Pacific Ry. He also designed the anchorage for the Statue of Liberty in New York Harbor. In 1886 he was awarded the first prize for the design of a bridge over the Harlem River at New York, intended for the site of the present Washington arch bridge.

In 1886 the A. & P. Roberts Co., of the Pencoyd Iron Works, Philadelphia, added a bridge and construction department to its iron-manufacturing plant, and Mr. Schneider became associated with these works in that year

*Chief Engineer, McClintic-Marshall Co., Pittsburgh, Penn.

as Chief Engineer. The works developed very rapidly and within twelve years from their origin had a productive capacity of 8,000 tons per month, which largely exceeded the output of any bridge shops elsewhere.

In 1893 the Long Island Railroad Co. took an interest in the project of a bridge over the East River at Blackwell's Island, previously referred to, with a view of establishing a terminal in New York City. Work was actually commenced, and competitive designs for the bridge were invited in 1894. The bridge was to accommodate four railroad tracks, with approaches and a terminal station west of Second Ave., New York City. The plans adopted by the Long Island & New York Bridge Co. were the designs of Mr. Schneider, for the Pencoyd Iron Works, to which company the contract for the entire steel superstructure of the bridge and approaches was awarded in March, 1895. Considerable work had been done on this bridge on piers and foundations, complete detail drawings of the superstructure made and a portion of the material rolled, when on account of the death of Austin Corbin, President of the Long Island R.R., the company again became disorganized.

In 1900, when the American Bridge Co. was formed, Mr. Schneider was elected Vice President, in charge of engineering, which position he held until 1904, when desiring to be relieved of some of the burden, he was retained by the company as Consulting Engineer, devoting a portion of his time to private practice. He remained with the company as Consulting Engineer up to the time of his death. During this time he was also employed by the Canadian Pacific Ry. as Consulting Engineer. After the collapse of the Quebec Bridge in 1907, he was called in by the Canadian Government and made a very exhaustive report on this matter in 1908. In 1911 he was appointed by the Canadian Government a member of the Board of Engineers for the building of the new Quebec Bridge, which position he retained until his death.

Mr. Schneider has been a frequent contributor to the proceedings of the engineering societies and to the technical journals. In 1886 he received the Rowland prize from the American Society of Civil Engineers for his paper on the Niagara cantilever bridge. He also received the Norman medal in 1905 for his paper on "The Structural Design of Buildings," and again, in 1908, for a paper on "Movable Bridges." These, together with his "Standard Specifications for Railway and Highway Bridges" and volume of "Standard Details" for the American Bridge Co., form a part of his contributions to technical literature.

When Mr. Schneider wrote his first specifications for the Pencoyd Iron Works, he for the first time put his impact theory to practical use. This method of figuring has been adopted by a large number of railways and also by the American Railway Engineering Association in their specifications.

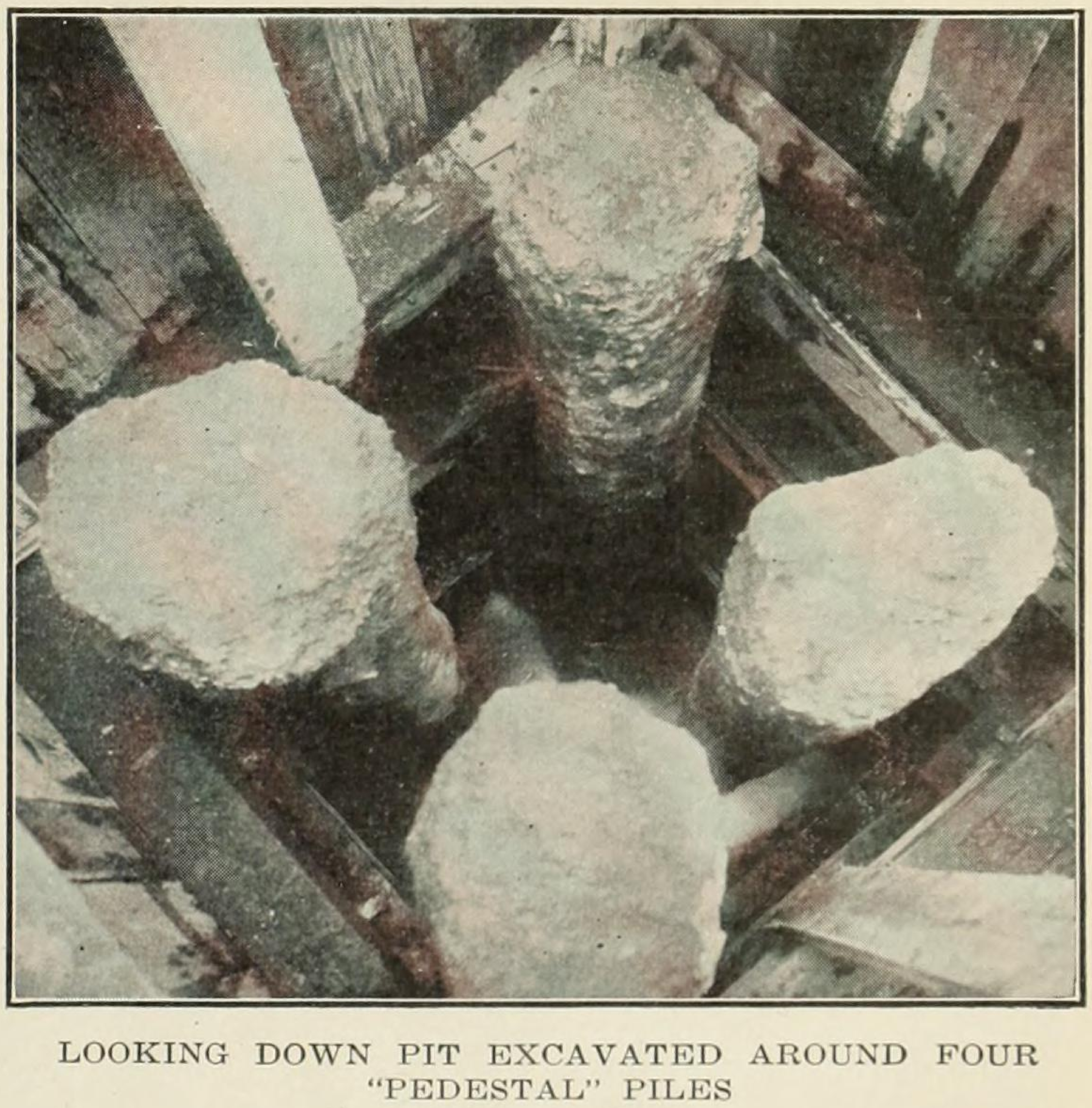
Mr. Schneider was a member of the American Society of Civil Engineers, American Railway Engineering Association, American Society for Testing Materials, the Verein Deutscher Ingenieure in Germany and the Engineers' Club in New York. He served as director in the American Society of Civil Engineers in 1887 and 1898 and was elected vice president in 1902 and president of the society in 1905.

He always stood out for good work, good designs and good details, and the present practice in bridge and structural work is greatly indebted to him for the high standard that has been obtained. He was most democratic in his ways and always ready to assist the young engineer by word and deed, and large indeed is the number of engineers today in responsible positions who owe these positions to his training and his advice. He was of a most lovable disposition and gained in the highest degree the respect of everybody who came in contact with him. His was a most useful life, well lived, an example and an inspiration to the profession that will live in the memory of all who had the privilege of knowing him.

## Pedestal Pile Shafts Exposed for Test Observation

In connection with the foundation work for a new building of the American Druggists Syndicate at Long Island City, N. Y., a test of the integrity of the shafts of cast-in-place "pedestal" piles was carried out by the contractor, the MacArthur Concrete Pile and Foundation Co., at the request of John W. Moore, Superintendent of Buildings, Borough of Queens, New York City.

Four piles, spaced on the corners of a 3-ft. square, were driven with the standard pile-forming apparatus and following the standard methods of the company. Each pile was approximately 20 ft. long and was driven to a resistance of eight blows per inch, with a No. 2 Vulcan steam hammer. The piles were driven one after the other with no intervening interval, at the rate of 30 min. to the pile. The soil consists of a surface fill of the trash



LOOKING DOWN PIT EXCAVATED AROUND FOUR "PEDESTAL" PILES

of an old dump, underlain by a thick marshy muck. The piles brought up on a sand stratum.

After the piles were all driven, the space was sheeted and the ground surrounding them excavated to a depth of 14 ft., or about 3 ft. above the top of the pedestal. As shown in the accompanying view, which is looking down the pit opened up around the piles, the pile shafts were all found to be of uniform section and apparently uniform density, indicating that the driving of one pile had not affected the section of the adjacent pile just driven.