

The Tech Engineering News

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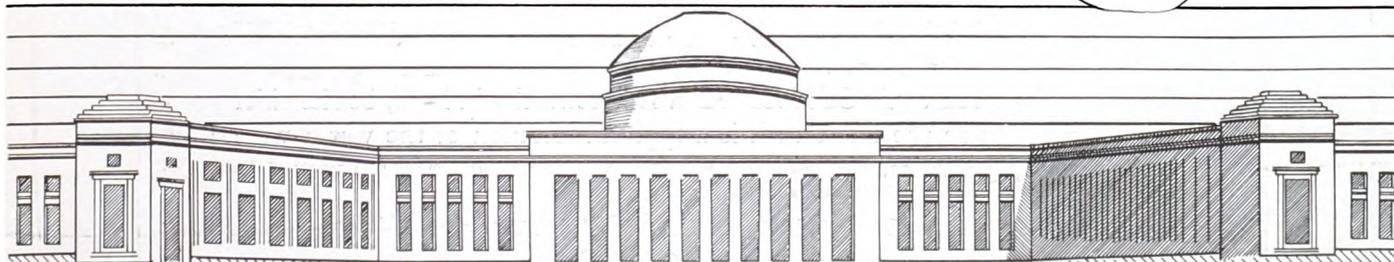
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EDWIN THACHER

By E. H. HARDER

Concrete—Steel Engineering Company, New York
Successors to Melan Arch Construction Company

Edwin Thacher, one of the pioneers of reinforced concrete in America, former Chief Engineer of the Keystone Bridge Company, originator of the cylindrical slide rule which bears his name, inventor of the first deformed reinforcing bar and an improved system of arch reinforcement, died Tuesday, September 21st, 1920, in New York City at the age of eighty.

Mr. Thacher, son of Dr. Seymour and Elizabeth Smith Thacher, was born in De Kalb, St. Lawrence County, New York, October 12, 1840, the youngest of four children. When he was quite young, his family removed to Hermon, New York, where they continued to reside until the death of the father in 1868.

After taking a preparatory course of studies at the Wesleyan Seminary, Gouverneur, New York, Edwin Thacher entered the Sophomore Class of the Rensselaer Polytechnic Institute at Troy in September 1860, and was graduated as a civil engineer, with high honors, in the Class of 1863. During the next five years he was successively assistant engineer of the Cedar Rapids and Missouri River Railroad in Iowa; of the United States Military Railroads, Department of the Cumberland, with headquarters at Nashville, Tenn.; and of the Louisville, Cincinnati & Lexington Railroad at Louisville, Kentucky.

In 1868 he accepted a position as assistant engineer of the Louisville Bridge Company, remaining in this position until 1870. After severing his connection with the latter company, he entered the service of the Louisville Bridge & Iron Company as Assistant and Calculating Engineer, where he remained until 1879, when he resigned to become Chief Engineer of the Keystone Bridge Company at Pittsburgh, Pa., in which capacity he served until 1887, when he became Chief Engineer of the Decatur Bridge & Construction Company at Decatur, Alabama. In the following year he was elected Vice-President and General Manager, and a few weeks following this appointment he became receiver for the company.

In the latter part of 1889, Mr. Thacher moved from Decatur to Louisville, Kentucky, where he established himself as a Consulting Engineer, and continued in this work until in 1894 he formed a partnership with Messrs. Keepers and Wynkoop at Detroit, Michigan. Subsequently Wynkoop resigned, and the business of bridge designing and constructing was continued under the name of Keepers & Thacher until the partnership dissolved in 1899. From that year until 1901, Mr. Thacher, individually, conducted a bridge designing and contract-

ing business. From May 1, 1901, to May 1, 1912, he was associated with William Mueser under the style and firm name of the Concrete-Steel Engineering Company, with offices in the Park Row Building, New York, N. Y.

For a few years after his retirement from the Concrete-Steel Engineering Company, Mr. Thacher maintained an office in New York City, attending largely to personal matters, and he then retired from all active business.

During the period from 1889 to 1894, when Mr. Thacher was occupied as Con-



EDWIN THACHER

sulting Engineer and Bridge Contractor, he designed and constructed bridges and viaducts for some of the leading Southern railroads, amounting to about two millions of dollars; also many highway bridges, including that across the Willamette River at Portland, Oregon. The piers of this bridge rest on piles driven and sawed off more than one hundred feet below the surface of the water.

It was early in 1895 that Mr. Thacher became interested in reinforced concrete bridge construction by becoming acquainted with the activities of Mr. Fritz von Emperger, who was then introducing the Melan System of reinforced concrete arches in this country. He soon became Western Representative of the Melan Arch Construction Company, under which name von Emperger transacted his business. The preliminary plans and specifications which had been made for the Melan bridge at Topeka, Kansas, were turned over to Mr. Thacher, who developed the final plans for this important structure as it was later built. His firm, Keepers & Thacher, made a successful

bid for the construction work, and built the Topeka Melan Bridge, at that time the largest reinforced concrete bridge in the world.

While continuing as Mr. von Emperger's Western Representative for some years, Mr. Thacher developed various novelties of his own in reinforced concrete arch design, which resulted in the well-known system of Thacher Arches—using two bars near the intrados and extrados of the arch, in pairs and disconnected. To this system of reinforcement he later gave his entire time, and built many bridges, among them several in Porto Rico, during 1899-1900.

In 1901, Mr. Thacher returned from Porto Rico where he had been in personal charge of two bridges of magnitude for the United States Military Government, having formed a partnership of Thacher & Connors two years previous for that purpose.

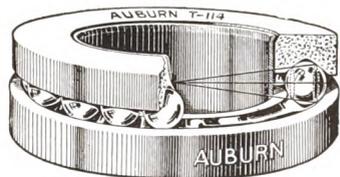
After May 1st, 1901, his partnership with William Mueser, then owner of the Melan Arch Construction Company, was formed for the purpose of utilizing jointly the Melan, von Emperger and Thacher methods of reinforced concrete arch bridge construction.

Mr. Thacher contributed many valuable papers to the American Society of Civil Engineers, and participated quite frequently in the discussions at the meetings of this Society. He occasionally lectured at Cornell University, and at other institutions of learning in the United States.

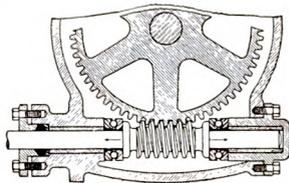
He was the inventor and patentee of the "Thacher Cylindrical Slide Rule." This widely used multiscale slide rule was devised by Mr. Thacher during or shortly after his Louisville period (having been patented November 1, 1881). Some years later he developed a 24 inch flat rule with improved scale arrangement to keep the result on the rule at all times.

It was about 1901 that Mr. Thacher first conceived the necessity of a rolled deformed bar for use in concrete steel construction. Prior to his invention of the Thacher Bar, the twisted square bar had been used widely. Tests had shown that, under stress, the twisted square bar had a tendency to untwist and, on account of its sharp edges, actually cut the concrete surrounding it. Mr. Thacher's first thought was to take a round bar and pinch or flatten it at short intervals. It was of primary importance, however, that such a bar should have a uniform cross section so further development of the "pinching" idea led to the final form of his well-known bar.

(Continued on page 16)



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EDWIN THACHER

(Continued from page 7)

Of Mr. Thacher's personality, his friend, Mr. Richard Montfort, Consulting Engineer of the Louisville & Nashville Railroad Company says: "He was one of the most democratic of men in character and habit, and possessed a personality that drew others about him. Loyalty was one of his prominent characteristics which endeared him to all his friends and associates. He had an affectionate and appreciative nature and was endowed with a strong constitution, his prominent characteristics being an indomitable will and untiring energy of purpose, with an ambition to master any proposition or problem which presented itself."

Mr. Frank C. Osborn, President of the Osborn Engineering Company, says: "I remained with him two years, learning more and more to admire him as an engineer, and to love him as a man. He was kindness itself, always considerate, and enjoyed assisting deserving young engineers."

His former partner, Mr. William Mueser, says: "Edwin Thacher was a fine mathematician, extremely thorough and careful in his calculations and conclusions. He loved to solve mathematical problems related to engineering, and would often sit nights to the early hours of the morning to find a solution rather than lay the matter over for another day. While a man of scientific thoroughness in engineering matters, Mr. Thacher was unpretentious, modest and almost shy in disposition. He was a generous friend at all times and ever willing to be helpful to those who came to him for assistance."

Examination of a large number of specimens of the steel deposited in arc-welded joints shows that this metal has mechanical properties like those of an inferior casting. In tension tests the metal showed low ductility, and all the specimens examined, about 70, showed evidence of unsoundness in their structure, tiny inclosed cavities, oxide inclusions, and lack of intimate union. The investigators, Henry S. Rawdon, E. C. Groesbeck, and Louis Jordan, conclude that this unsoundness is a necessary consequence of the method of fusion as now practised, and that it is responsible for the deficiency in ductility of the joint metal. Microscopic plates found in the ferrite grains of the metal, which are not removed by prolonged heating, are believed to have relation to the nitrogen content of the metal. They are called nitride plates, but are considered unimportant as the breaks in tension testing were not affected by them. The use of slight protective coatings on the electrodes did not appear to affect the mechanical properties of the arc-fused metal.

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