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BRIDGING THE HUDSON AT POUGHKEEPSIE.

A glance at any map of the Eastern and Middle States will show the need of a bridge over the Hudson River at a point midway between New York and Albany. All traffic between the New England States and the West and South over either of the lines having a terminus at Jersey City is subjected to more or less delay, caused by crossing the Hudson at that point. The Poughkeepsie bridge, together with about twelve miles of road to be built between Poughkeepsie and Gardiner, will obviate this difficulty by making an almost direct route from Boston and Springfield to Scranton and the anthracite coal fields and Harrisburg. The advantages to be derived by the transportation of coal over this route, and by the passenger and freight traffic between New England and the West and South, are apparent.

The Poughkeepsie bridge has four piers in the river. These are of masonry resting upon timber caissons, which are dredged down to about 125 feet below high water. These caissons are 60 feet by 100 feet, with twelve pockets left open for dredging, and which will be filled with concrete after the caissons are sunk. The masonry will be built on grillages, 46 feet by 100 feet by 10 feet deep, with temporary sides. These will be sunk to rest on the top of the caissons, which will be 20 feet below high water. The masonry piers are 24 feet thick and 86 feet long, and their tops will be 30 feet above high water. From that level to the lowest point of the superstructure—100 feet—will be steel towers, 16 feet by 60 feet on the base and 16 feet by 30 feet on top, made of eight columns well braced together in all directions. The wind pressure provided against is 30 pounds per square foot upon the exposed surface of the spans and towers and the area of the trains. The spans are provided to carry a train load of 3,000 pounds on each track, headed by two consolidation locomotives of 85 tons each, with factor of safety of 5. The pressure on the caisson bases is about 3 tons per square foot, and the material upon which they rest is hard gravel. The principal changes from the original plan of this bridge, as designed some 15 years ago, are, substitution of steel towers for masonry, which diminishes the pressure on foundations very much; substitution of three cantilever spans of 548 feet each and two connection spans of 525 feet each for five disconnected spans of 525 feet each. This change enables the Union Bridge Company to erect the three cantilever spans without staging in the river. It also gives more waterway between the piers, and a clear height of 160 feet instead of 130 feet in three spans.

The superstructure will embody all the results of the latest and best practice. The following is a record of the test of an eyebar similar to those to be used in this bridge:

Ultimate strength, 66,445 lb. per square inch.

Elastic limit, 36,063 lb. per square inch.

Elongation in 8 ft., 21 per cent.

Elongation in 12 in. at point of fracture, 37½ per cent.

Reduction of area at point of fracture, 51 per cent.

All broke in the body of the bar.

These were tested on the Union Bridge Co.'s 600 ton testing machine at Athens, Pa., at present the most powerful testing machine in the world.

It is expected to pass trains over this bridge before December 31, 1887. When it is considered that the

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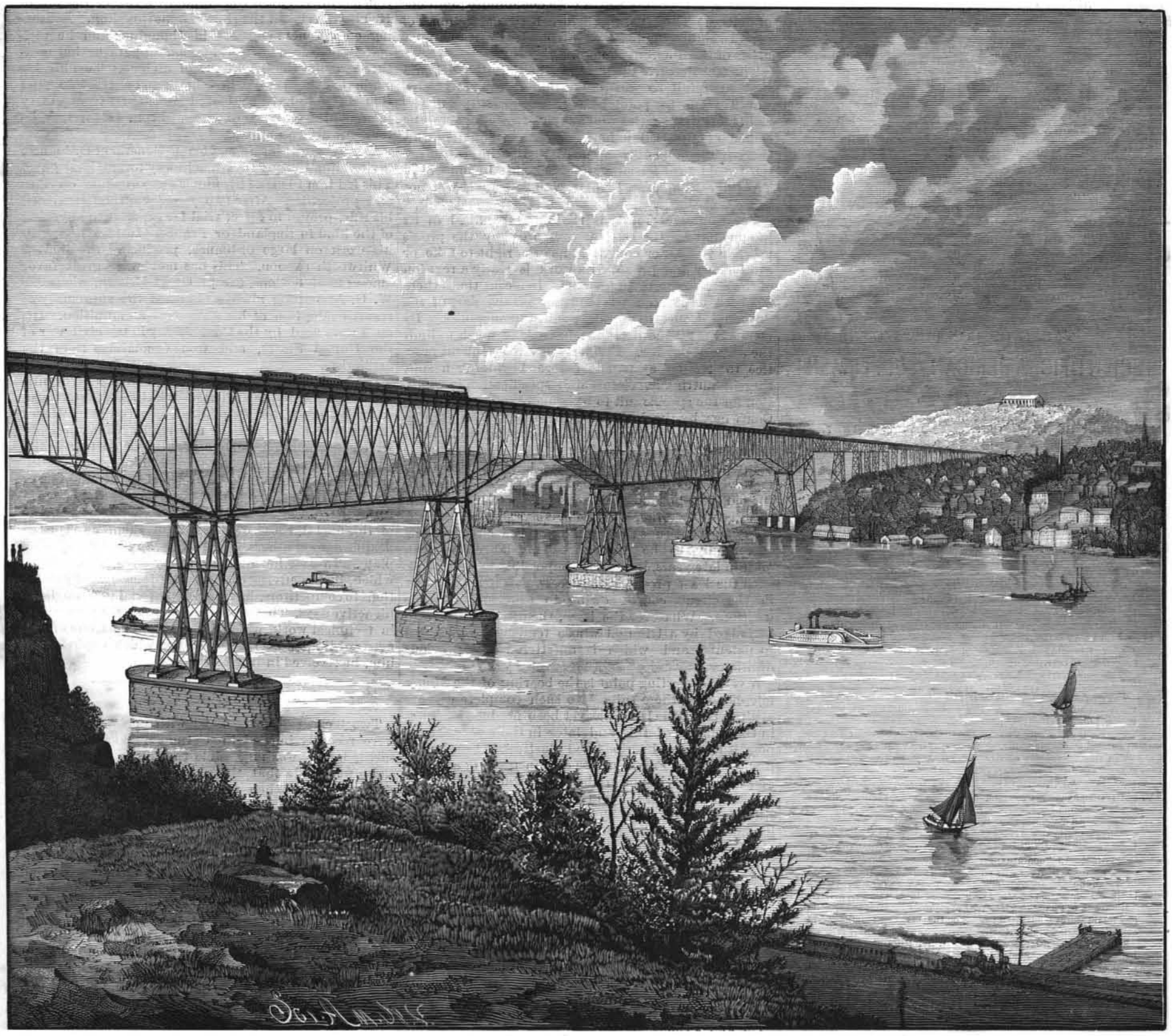

THE POUGHKEEPSIE BRIDGE OVER THE HUDSON RIVER.

is of circular form, and is made up of opposite heads connected by slats. Within the case is arranged the reel proper, which is provided with two heads, suitably connected together and mounted upon a shaft having bearings in the heads of the case.

One end of the shaft projects sufficiently far to receive a crank handle, by means of which the reel may be turned. By this construction there will be no necessity of raising the reel from the ground either to coil the pipe upon it or to remove it, while the slats need not be removed, as the pipe can be passed between any two of them. The reel is thus rendered more durable by not having to knock off the slats to pay out the pipe, and the whole is so fitted that it may be readily taken apart when required.

Honor the Inventor.

We regret that there is a disposition sometimes to speak sneeringly of the various patent devices that are brought to the attention of the public, and it is possible that there are also sneers for the inventors of these devices. While it is true that there are some cranks among inventors, and while it is true that many of the patent devices are crude and impracticable, yet each one represents an original idea, which, combined with the original ideas represented in other devices, has made our people the foremost on the earth. There have probably been some worthless inventions patented at Washington, and it is probable that ninety-nine out of every hundred have yielded no returns to the owners; but it is a truth nevertheless that there are very few of the whole of the vast number which have not served a noble purpose, the ideas contained in each having been at some time and in some form utilized in producing the perfected device, that works with greater precision and the apparent intelligence of the human will. It is not one inventor to whose genius is due the perfect machine of to-day, but it may be that the ideas of a thousand have been combined to produce that result, many of whom are dead, nearly all of whom are forgotten and their names unknown, save as they are written upon the musty records of the patent office.

Unaided by the genius of the humble and sometimes cranky inventors, the world with its billions of capital and its millions of strong and willing arms would have made but poor progress in bringing railroading up to its present state of perfection. The tremendous possibilities of the future are bounded only by the genius and the labor of inventors. There will be no lack of labor and capital, but all will depend upon the men who wear their lives out in making the practical application of an idea to which their genius has given birth. A few more efforts, and the thousand or so of geniuses and cranks miscalled "the patent car coupler fiends," but who are really angels in disguise, will give us a car coupler that annually saves many thousands of valuable human lives. A little more labor, and the inventors will give us a brake that will greatly lessen the number of collisions. A few more improvements, and we shall have such tunneling and grading machinery that, instead of going over and around mountains and hills, we shall go straight through and under them, giving us solid tracks without grades and curves; and in a word, instead of our trains making fifty miles an hour, we shall with greater safety make one hundred miles an hour, at just such time as it shall suit the convenience of our inventors to have us do so.

Then by all means let us give every encouragement and aid possible to inventive genius. Instead of contracting, let us enlarge in every manner possible the scope and usefulness of the patent office. Instead of sneering at the "crank" inventors of patent devices, let us honor them as the greatest benefactors of their race.—*Railway Service Gazette.*

Gen. Charles P. Stone.

General Stone, known as Stone Pasha from his services in Egypt, died in this city, January 24, of pneumonia. He was born in Springfield, Mass., in 1826. He graduated from the Military Academy in 1845, and served in the Mexican and civil wars. He resigned from the United States army in 1864, and in 1870 accepted a position under the Khedive of Egypt. His work in reorganizing the Egyptian forces received the highest praise. He resigned his commission in 1883. He was offered the command of the English expedition against El Mahdi, but refused it, as he could not obtain a sufficient allowance of forces. His work as engineer and director of the pedestal for the Statue of Liberty on Bedlow's Island, in New York Harbor, won him considerable notoriety. This was the last work of his life, being completed but a few months before his death.

A Chance for the Inventors.

"The man who will invent a connection for bell ropes which will not break glass can make a fortune," said one of the attaches of the car department of the Pennsylvania road to an expressionist. "We lose an enormous amount of plate glass each year by breakage through the use of the iron connections on bell ropes."—*Buffalo Express.*

BRIDGING THE HUDSON AT POUGHKEEPSIE.

(*Continued from first page.*)

river part of this bridge is equal to three cantilever bridges of longer span than that at Niagara, and of about the same height, and with three-fourths of a mile of viaduct on the shore, making in all about 1⅓ miles of double-track bridge, the task appears to be a great one; and yet it will be done. The cost of the bridge will be about $2,500,000.