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PROGRESS OF THE BROOKLYN BRIDGE.

The several views of the New York approach to the East River Bridge, shown below, will give a better idea of the magnitude and present condition of this portion of the great work than any amount of verbal description.

At this writing but one small arch of masonry lacks completion. The only other gap in the magnificent viaduct is at Franklin Square, where Pearl street is to be spanned by an iron bridge, and it is probable that the contract for this portion of the work will have been given out before these lines are printed.

The construction of the superstructure of the main bridge has been delayed, owing to the grave difficulties encountered in producing and shaping the steel. The trusses called for

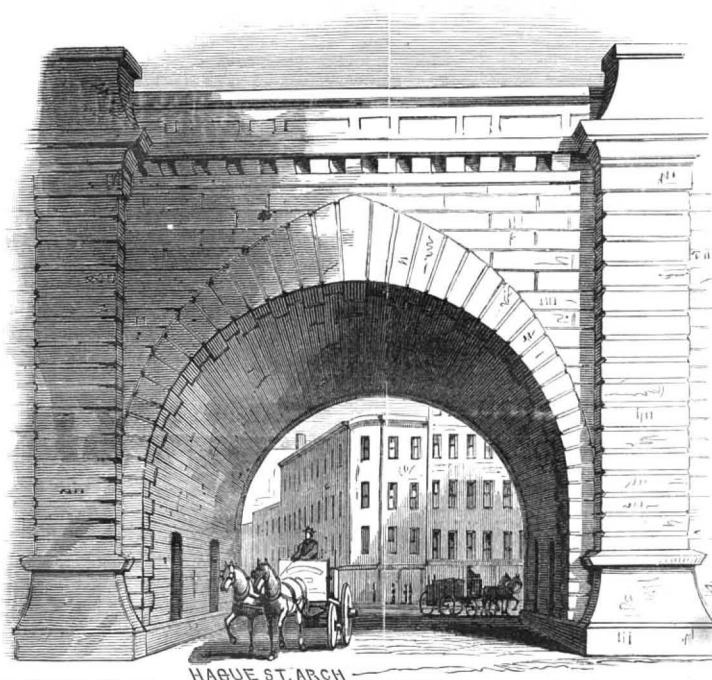
larger bars of steel than had ever been produced in this country, and special machinery had to be constructed for the purpose. And when this had been done it was found that much greater engine power than had been anticipated was required for the rolling of the bars. Another source of delay was the different behavior of steel from iron while in process of shaping, necessitating repeated alteration of the rolls before some of the more difficult forms and sizes could be exactly and uniformly produced. All these engineering and mechanical difficulties have now been surmounted; all the forms and sizes that the structure will require have been made, and are now being delivered more rapidly than the material can be used. It is expected that a large stock of material can be accumulated in the yards by the piers during

the winter months, so that as soon as the weather will permit the erection of the superstructure of the bridge can be pushed with the utmost speed.

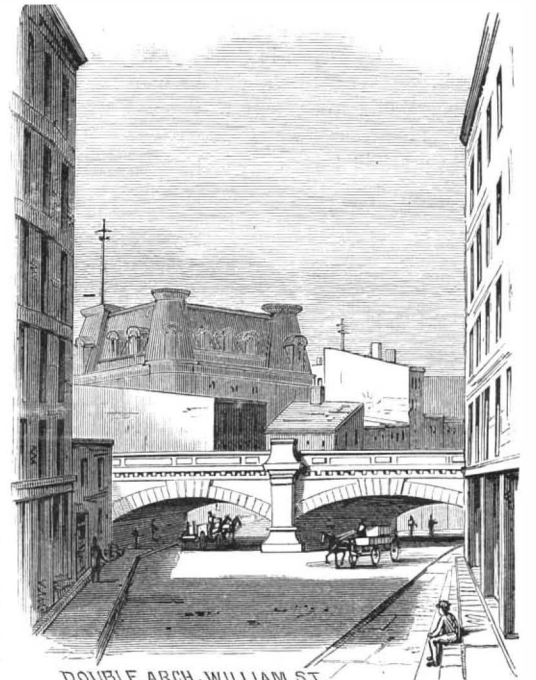
The great cables and other supporting elements of the structure are complete and ready for the attachment of the superstructure with its suspenders and stays. For some distance on each side of the towers the suspenders are already in place; and it is probable that during the remaining winter months several forty-foot sections of the truss work will be swung into position landward and riverward from each of the towers; but it will scarcely be prudent to push the work further until the stormy season is at an end. The erection of that portion of the superstructure within the towers will be begun the first week in January.



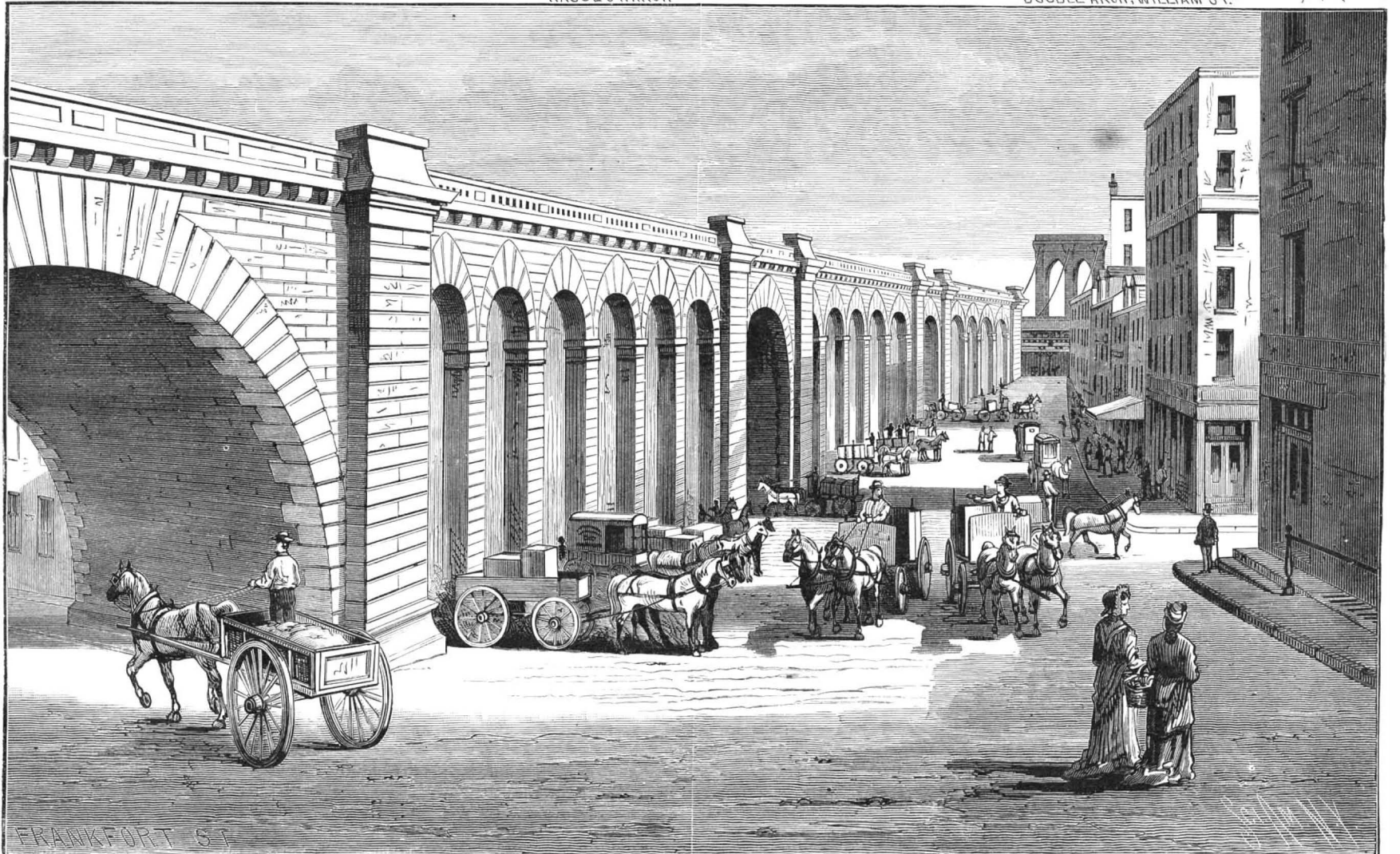
LOOKING DOWN HAGUE ST.



HAGUE ST. ARCH.



DOUBLE ARCH, WILLIAM ST.



FRANKFORT ST.

NEW YORK APPROACH TO EAST RIVER BRIDGE.

By the beginning of spring, unless some altogether unexpected disaster occurs, here or at the steel works, there will be in readiness a sufficient amount of material to allow the work to be pushed with the utmost rapidity. Four gangs of men will be employed at each tower, two building shoreward and two toward the center of the river. In this way the increasing strains upon the towers will be equalized, and the lengthening structures on either side kept properly balanced. The material will be raised at the towers, and conveyed to the extremities of the working on temporary railways.

With the facilities which are at command for handling the material, and the large number of men that can be employed, the engineers are confident that the five thousand tons of metal which the superstructure will require can be put in place during the next twelve months.

The timber for the wooden portion of the roadway is now being prepared by a process of creosoting. No official action has yet been taken with regard to the means to be employed in handling passengers and freight; it is probable that a cable system, similar to that in use in San Francisco, will be adopted.

The Rose of Jericho.

At the last meeting of the Royal Botanic Society, Professor Bentley called attention to the peculiar properties of the so-called Rose of Jericho, pointing out that during the dry season it becomes coiled up into a ball, and is blown about the dry, sandy deserts of Egypt and Syria for many months; but at the first shower of rain its leaves expand, and it becomes apparently revived as if its life were renewed. If placed in water, or in moist sand or earth, it opens out in a similar manner; and it is so sensitive to moisture that it indicates by similar changes in its leaves the presence or absence of moisture in the atmosphere, and thus acts as a natural vegetable hygrometer, in the same way as a bunch of seaweed will become hard and dry in fine weather, and soft and leathery in damp or rainy weather. In this case it is the salt which is present in the leaves that is acted on; and it is quite possible that a similar explanation of the phenomenon in the case of the Rose of Jericho might be found if the plant were subjected to careful analysis. As the first Rose of Jericho was brought to England as long ago as 1597, it is time that the cause of its curious properties was discovered. The rose has been called a vegetable barometer; but this is evidently incorrect, as it is influenced by the hygrometric and not the barometric state of the atmosphere.

The Steam Engine Governor.

The great importance of strong and efficient steam engine governor connections is illustrated by the fatal accident which took place Nov. 18, at Messrs. Howard and Boulough's iron works, Accrington, Eng. It appeared at the inquest that one of the bevel wheels which drove the governor had broken, and the consequence was that the engine "ran away." The men in the grinding shop ran out of the place, and they were followed by those in the smiths' shop, and from all parts of the works. Five grindstones flew to pieces, and the fragments were hurled through the roof and fell on to the smiths' shop, demolishing a portion of that roof. One piece, weighing about six cwt., flew half the height of the chimney and alighted on an anvil, behind which a smith was at work. The man who was killed was sharpening an axe, and did not make off when the other men did. Some very narrow escapes took place. The engine ran for three minutes after the steam had been shut off, and turned all the shafting. The engine tender was at dinner at the time the accident occurred.

Hot Sand a Good Bed Fellow.

The comfort which a hot water bag or even a hot brick may afford a person on retiring, chilled, is very great, and beyond this, the use of some such warmth-producing appliance is useful as a health preservative and restorative. But one of the most convenient articles to be used as a bed warmer and in a sick room is a sand bag. Get some clean, fine sand, dry it thoroughly in a kettle on the stove, make a bag about eight inches square of flannel, fill it with the dry sand, sew the opening carefully together, and cover the bag with cotton or linen cloth. This will prevent the sand from sifting out and will also enable you to heat the bag quickly by placing it in the oven, or on the top of the stove. After once using this you will never again attempt to warm the feet or hands of a sick person with a bottle of hot water or a brick. The sand holds the heat a long time, and the bag can be tucked up to the back without hurting the invalid. It is a good plan to make two or three of the bags and keep them ready for use.

Telegraphic Progress in China.

The U. S. Consul-General at Shanghai, China, informs the State Department at Washington that the Emperor of China has given permission for the construction of a telegraph line from Shanghai to Tientsin, a distance of 1,200 miles. The route will be from Shanghai to Chinkiang, thence along the line of the Grand Canal to Tientsin. A short line of about 70 miles will also probably be constructed by the Viceroy at Nankin to connect the capital of his province with the main one at Chinkiang. The work of setting the poles and laying the wire will be begun early next spring. It is estimated that the work will cost \$500,000.

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PROGRESS OF THE BRUSH SYSTEM OF ELECTRIC LIGHTING.

The ancient saw anent the share of milk obtained by the still suckling seems to be pretty well borne out in the progress of the Brush system of electric lighting. A dozen systems, so-called, have made more noise and have attracted more newspaper attention; but while they are for the most part still "promising," the Brush system has been quietly taking possession of the field. How far this is due to the superior business management of the company controlling the Brush patent it is impossible to say; the indications are, however, that the remarkable success of the Brush system is mainly due to the practical genius of Mr. Brush in meeting the requirements of outdoor or large room lighting with an efficient generator, and a lamp which is so simple in construction, so automatically regular in action, and so easy to keep in order, that practical business men can afford to use it. It is perhaps the least ornamental in appearance of all lamps, but it gives the light required, and calls for comparatively little care. On the score of economy the users of the lamp profess to be well satisfied; and the rapid and largely extended adoption of the system, abroad as well as at home, would seem to justify the favorable judgment which those who have tried the lamp have freely expressed with regard to its practical value.

The latest list of prominent users of the Brush light embraces twenty-five rolling mills, iron and steel works, machine shops, car works, wire works, and the like; twenty saw mills, paper mills, oil works, printing houses, and other factories and manufacturing establishments; twenty woolen, cotton, linen, and silk factories, several of them employing over a hundred lights each; a dozen mines, smelting works, etc.; more than a dozen large wholesale and retail stores, using from six to sixty-four lights; a dozen public parks, docks, summer resorts, and the like, including a mile and a half of river front and docks at Montreal; circuses, colleges, hotels, steamers; and large numbers of city lights in San Francisco, St. Louis, Chicago, Cleveland, Detroit, Grand Rapids, and other cities, besides New York and Brooklyn, where a hundred or more lights are already in use. The contracts of the company in San Francisco called for the erection of about a thousand lamps by the beginning of the current year. Wabash, Indiana, claims the credit of being the first large town to adopt the electric lamp for general illumination, four Brush lights, of 3,000 candle power each, on the court house dome, sufficing for the outdoor needs of the entire town of 10,000 inhabitants.

The company formed in London to introduce the Brush light there have already placed two hundred lights in various parts of the city, and have ordered from Cleveland nearly as many more, contracts having been signed for the lighting of the Houses of Parliament, Charing Cross Station, Ludgate Hill Station, Blackfriars' Bridge, St. Paul's Churchyard, and other conspicuous places. Even the extremely conservative British Admiralty has taken kindly to the Yankee invention, 432 lights having been purchased for the use of the Royal Navy. Mr. Brush is now making a 40-light machine (80,000 candles) designed to throw the entire current into one huge lamp, which has been ordered for the British torpedo service. The carbons for this artificial sun will be as large as a man's arm, and the light, when directed by a projector of corresponding size, will of itself be a formidable weapon of defense. With a proper system of curtains it will be possible to flash upon an approaching enemy a sudden glare of light that will be little less than blinding.

A less imposing but more admirable application of this light, and one that is being rapidly adopted, is in connection with locomotive headlights. The generator is operated by a small engine taking steam from the boiler and placed opposite the air compressors of the Westinghouse brakes. By attaching the reflector to the forward truck the light may be thrown so as to illuminate the track ahead even when rounding curves. It is obvious that the same machine which supplies the headlight will also furnish a current for illuminating the cars.

Wherever the electric light has been brought fairly into competition with gas for lighting large rooms or open spaces, it has given a good account of itself in comparisons of cost. In very many cases, however, any comparison with gas is out of the question. With gas it is simply impossible to do certain kinds of work at night, or to do it as rapidly and well as by daylight. With the electric light night production is brought up to the level of day production. The gain of one night's increased production will often pay the cost of electric lighting for months. Practical business men are not slow to appreciate advantages of this sort. The question with them is not how much will the electric light cost, but can the light be depended on for steady, uniform, certain operation, without requiring too much expert attention? The ability of the Brush lamps to meet such practical requirements would seem to be the secret of its substantial progress.

ON AIDS TO HEARING.

Until within a few years the old-fashioned ear trumpet was the sole reliance of deaf persons as an aid to hearing, but since the invention of the telephone much more attention has been given to the subject of sound, its production, and distribution. Especially after the public announcement of the misnamed microphone and its ability to enable a person to hear a fly walk at a distance of a mile or more, was the attention directed to devices for the benefit of deaf persons,