

SCIENTIFIC AMERICAN

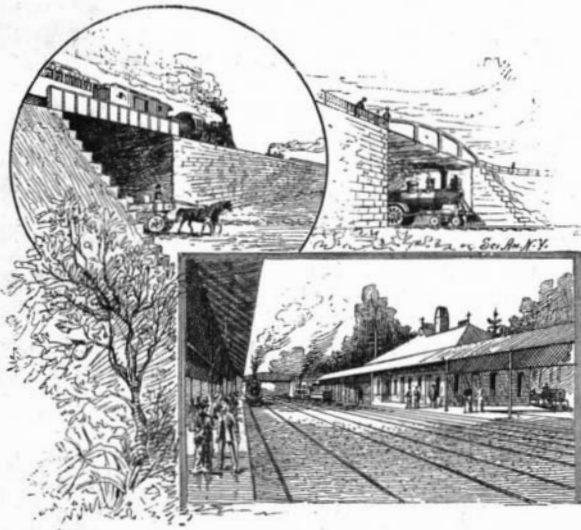
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STANDARD BRIDGES AND NEW STATION AT LARCHMONT.

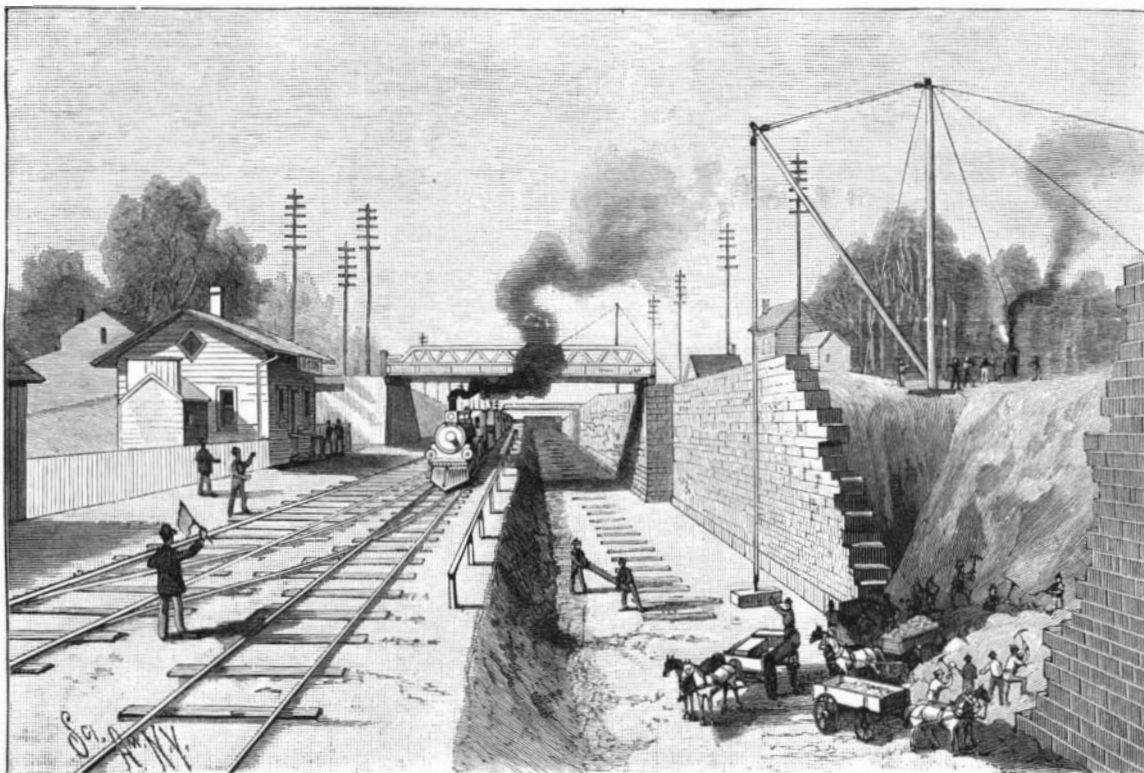
THE IMPROVEMENT OF THE RAILROAD APPROACHES OF NEW YORK.

It is probable that but few of the many thousand people who arrive or depart from the Grand Central Depot in this city realize how imperfectly provided the city of New York is with railroad approaches. The passenger systems of the New York Central, of the Harlem, and of the New Haven roads all come together at Mott Haven. At this point the Harlem River is crossed by an iron drawbridge. The bridge provides only two tracks, one for outgoing and one for incoming trains. Over this bridge

all the through passenger trains of these three roads have to pass. At any moment it may have to be swung open to permit vessels to pass up or down the stream.



PORTCHESTER—LOOKING WEST FROM STATION.

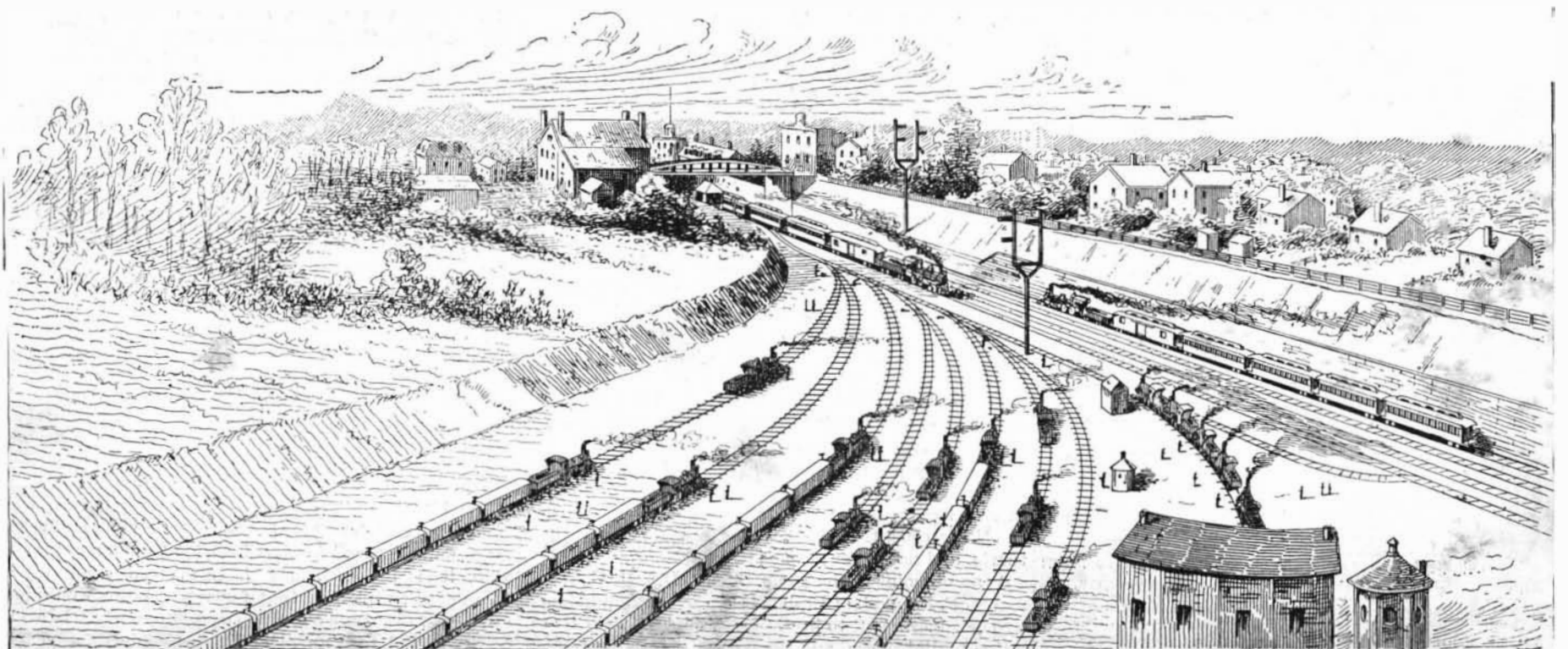


SINKING THE TRACKS AT MELROSE—LOOKING NORTH.

When the Harlem River ship canal shall have been completed, the case will be still worse, for the number of vessels going through the river will be greatly increased. It is not improbable that it will be necessary to construct a tunnel to supplant the bridge, and even were this done, it is far from certain that the depot facilities will be sufficient ten or twenty years hence.

The ideal railroad of the day has four tracks: two for through express and other rapid service, the other for freight and slower local trains. The New York, New Haven, and Hartford road, recognizing this fact, and having the insufficiency of the depot accommodations daily exhibited, have begun a series of operations designed to give them one of the model roads of America. At Mott Haven the first step has been taken in the purchase of a very large tract of land several acres in area for a freight yard. This is situated to the east of the line of Second Avenue, and the Second Avenue Elevated Railroad, curving to the east, runs through one corner. This territory abuts on the water, back of Randall's and Ward's Islands. A good depth of water exists along its very extensive pier line. This area is to be converted into a freight yard. The necessity for so large a space will be evident when it is known that as many as 1,500 freight cars have to be passed through the yard in a single day. Several docks with floats are provided for transshipping cars to the South or West. The floats are towed around the Battery to Jersey City or other points.

(Continued on page 134.)

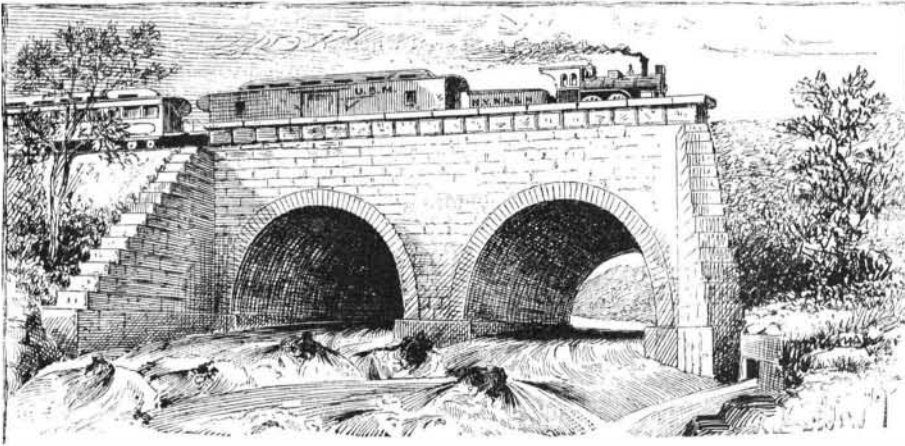


N. Y. & N. H. R.R. FREIGHT YARD AT NEW ROCHELLE—LOOKING WEST.

THE IMPROVEMENT OF THE RAILROAD APPROACHES OF NEW YORK.

(Continued from first page.)

The main passenger line crossing the drawbridge



MASONRY ARCHES OVER STREAM, MAMARONECK.

already spoken of runs north, and at Williamsbridge begins to sweep to the eastward, and then, passing through Mount Vernon and New Rochelle, goes to New Haven. From the Mott Haven yard a road called the Harlem River branch runs eastward close to the shore of the East River and Long Island Sound and meets the main line just to the west of New Rochelle. Thus up to this point there are four tracks, which begin at the Harlem River. Below the river, the road has to use the Fourth Avenue tunnel. Up to Williamsbridge it uses the same tracks as the Harlem road. The improvements illustrated in the present issue commence at the New Rochelle junction. One of the illustrations, taken from a point looking eastward, shows the beginning of what may be termed the new road. It consists of four parallel tracks, stone ballasted for their entire width. The old line contained a number of steep grades and sudden turns. The new line effects a great improvement in both these respects. The road is straightened out so as to reduce the curves, and also to shorten the distance run. The diagrams showing the new and old routes near Harrison and Rye are given as examples of the class of work done as regards alteration of line. The grades have been also much reduced. In places the level has been altered seven or eight feet. Grade crossings are also abolished. Where roads cross the track, iron bridges, as a rule, are used to carry the trains above the wagon roads, or to extend the wagon

The engravings show various scenes along the line of improvements, and the eastern limit of operations is seen at Portchester. Next summer the work will be extended beyond this point, and, in the near future, a four-track road will run to New Haven. Then the road will show probably the finest stretch of railway in the United States.

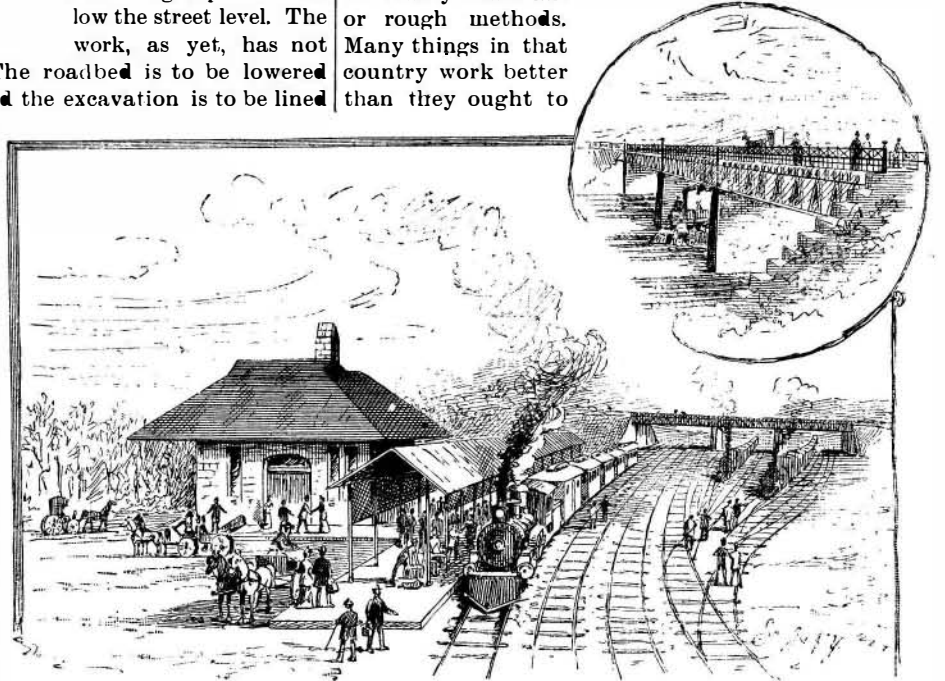
The New York Central road is engaged also in an undertaking of much importance. Starting at the natural grade, at Mott Haven, and returning to it just beyond Jerome Park station, the tracks used by the Harlem and by the New Haven road are being depressed below the street level. The work, as yet, has not progressed very far. The roadbed is to be lowered well below the grade, and the excavation is to be lined with cut stone masonry work. We illustrate the work in progress at Melrose, at which point the masonry has been carried to the highest point. This portion of the city is becoming so thickly populated that it was found imperatively necessary to abolish the many grade crossings.

The two undertakings described show that the railroad authorities realize the importance of providing for future growth of business. The Grand Central Depot has been already increased in size, but is now hardly adequate for its work. A slight increase in facilities has been effected by running the trains on the left hand tracks, as seen in the cut of Melrose. It is not impro-

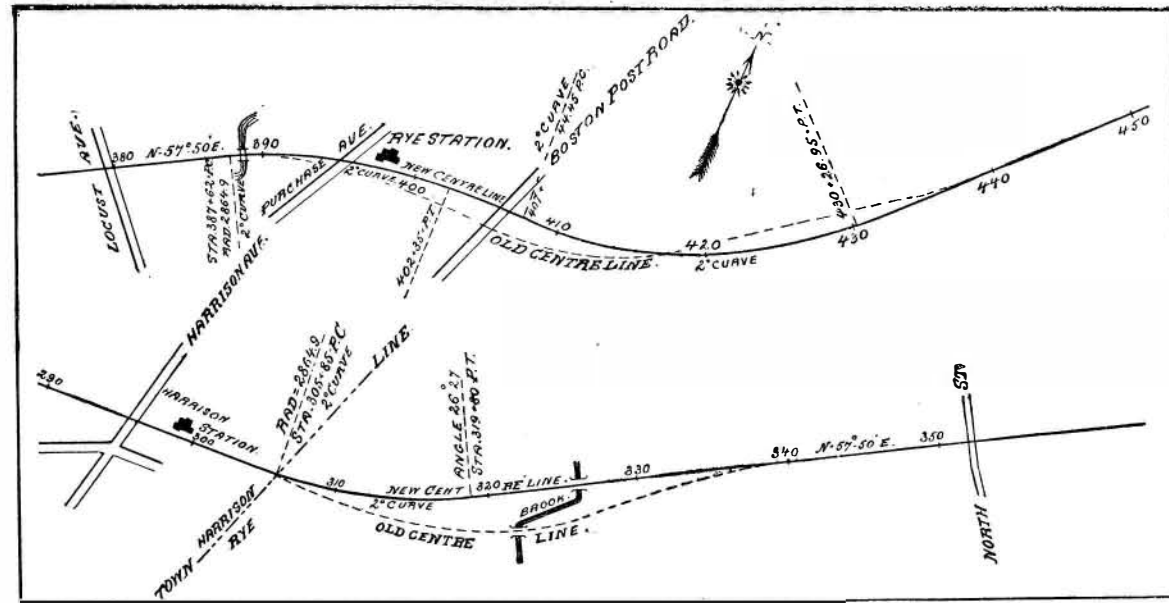
work or could work in any other country." After all, there is no better way of reaching perfection than through experiment and failure, and every one of the successes in electric railroading in this country has been won by the very finest qualities of grit, self-help, and shrewdness. Our motor engineers know something now about electric roads, and have laid the foundations of an enormous industry by their genius and perseverance.

Electric Railways.

The Electric World says that, one year ago, there were barely a score of electric roads in this country, and about another score were projected. To-day there are over fifty roads, and nearly seventy more are building or under contract. There is still plenty of room for improvement in the methods adopted, but the roads work and are certainly good enough to advertise the method as a success. We may well apply to this the language that Professor Bryce in his recent noble work on the "American Commonwealth" uses about some of our political conditions: "The Americans surpass all other nations in their power of making the best of bad conditions, getting the largest results out of scanty materials or rough methods. Many things in that country work better than they ought to



NEW STATION AT RYE, AND THREE-SPAN BRIDGE.



STRAIGHTENING THE N. Y., N. H. & H. LINE.

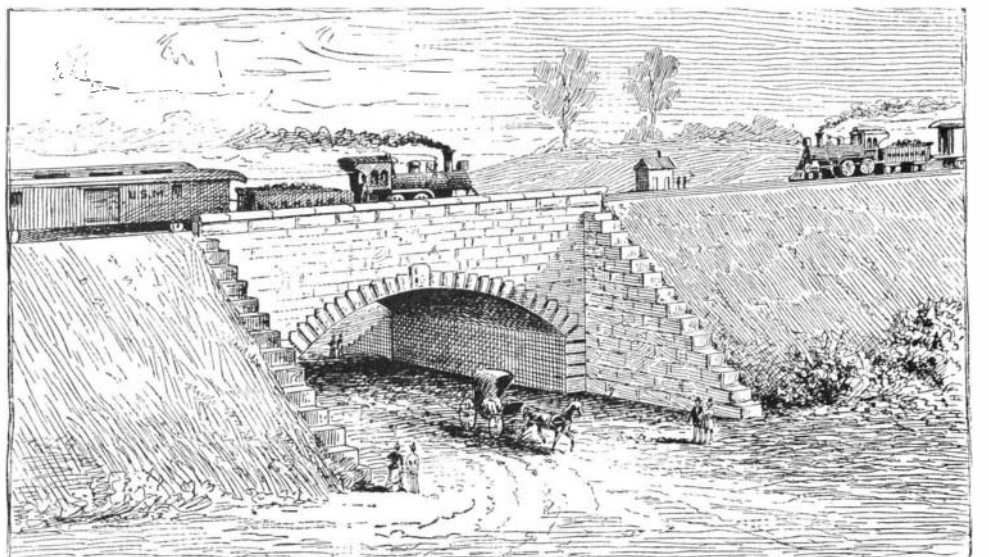
road across the track. Samples of the standard type of road and railway bridges are shown in one of the cuts. In some places masonry bridges already in existence have been utilized by being widened so as to carry the four tracks. Several examples of this exist at Mamaroneck.

In this way the work has been carried out as far east as Portchester. In the ten miles thus far completed there are no grade crossings. For all the important stations new stations have been erected. The entire line is run upon the block system, whose semaphores form a conspicuous feature of the road. They are actuated by signal men stationed in the towers at the side of the track. Each pair establishes a "block." When a train is to enter the block, the semaphore at the beginning is dropped, and at once raised to the danger point as the train passes. It is locked in this position, and cannot be dropped to indicate safety until the train has passed the next signal tower, and has left the block, and the next semaphore has been lowered. Each signal man is a telegraph operator, so that in case of an accident they can communicate with each other. Three miles is the greatest length of a block, but near New York it is much shorter. Trains can run with perfect safety on two or three minutes' headway.

vable that in a few years one or more new terminal depots will be erected on the further side of the Harlem River. The immense tract of land owned at Mott Haven by the New Haven road is very suggestive of a mammoth passenger depot.

Natural Gas.

In piping for long distance gas transit, the pressure loses 5 lb. per mile for the first 15 miles, and 2 1/2 lb. additional for each succeeding 15 miles, so says a Western authority. This means the loss of 75 lb. pressure at 15



MASONRY ARCH OVER HIGHWAY, MAMARONECK.