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(Illustrated articles are marked with an asterisk.)

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Scientific American Supplement

No. 1117.

For the Week Ending May 29, 1897.

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THE PLANTING SPACES ON THE HARLEM SPEEDWAY.

We are informed by the Park Commissioners that steps are being taken to remedy the defects in the tree-planting trenches which have been built on each side of the Harlem Speedway, New York. By reference to our issues of February 6 and 13 it will be seen that these trenches consist of an inner stone wall, three feet high, adjoining the roadway, an outer wall five feet high, and a bottom of eight inches of concrete, except where the fill is of earth, when the concrete is omitted. We pointed out at the time that the construction of these masonry and concrete trenches was likely to defeat the very end at which they aimed, since they would prevent the spread of the roots, and would also retain the surface water that found its way to the bottom of the trench.

We are informed by Commissioner W. A. Stiles that the alterations which are to be made will be directed to securing drainage through the bottom of the trenches; the provision for securing two feet of good soil between the surface and the top of the trench wall and extending continuously from the tree line under the roadway, and, where practicable, under the sidewalk, and the perforation of the wall at various points where it is in course of construction. There is no doubt that these changes, if they are thoroughly carried out, will go far to remedy the harmful features of the work as mentioned above, and every one who has the beautifying of the city at heart will be relieved to learn that the matter has at last been taken in hand. At the same time no satisfactory reason has ever been given for the construction of this work, and we cannot but feel that it is due to the citizens of New York that some explanation should be forthcoming.

A NEW LOCOMOTIVE FOR THE PURDUE UNIVERSITY TESTING LABORATORY.

Our readers in general, and particularly those among them who are engaged in railroad work, will be interested to learn that the Schenectady Locomotive Works are building a second locomotive for use in the testing plant of Purdue University. The valuable work which has been done with the first locomotive during the past five years has been recorded from time to time in the railroad and technical papers, and the results have proved of great assistance both to the designer and the locomotive superintendent. The engine that was ordered in 1891 was fairly representative of the standard locomotive of ten years ago; but, in order to keep thoroughly abreast of developments, the authorities of Purdue decided to have built a more modern machine which should embody the latest ideas and practice. To this end the new locomotive will be built to carry a pressure of 250 pounds to the square inch in the boiler, and the cylinders will be detachable. Various diameters of the latter will be provided, so that the best ratio of cylinders to boiler can be determined. Bushings will also be provided for the low pressure cylinder, by means of which experiments may be made to determine the best ratio of high to low pressure cylinder. It will be possible to determine on the new locomotive the vexed question of the relative economy of the simple and compound types—a question which, judging from the contradictory reports from the various railroads, is very much in the air at the present writing.

THE LAUNCHING OF THE HOLLAND SUBMARINE BOAT.

On Monday, May 17, there was launched at the Crescent Shipyard, Elizabethport, N. J., an extremely interesting specimen of marine architecture, known as the Holland submarine boat. It embodies the results of some twenty years of experimental work on the part of the designer, who firmly believes that the submarine torpedo boat will prove to be the most deadly weapon of future naval warfare. The Holland, as she is called, is the first of her type ever built and launched. The government is at present building another and larger boat of the kind at Baltimore, and it was the long delay in completing the latter vessel that caused a private company to commence the construction of the Holland. The government vessel was described and illustrated in the SCIENTIFIC AMERICAN of April 25, 1896. She is 80 feet long, 11 feet in diameter, and is to be able to launch five torpedoes from a tube in her bow. The Holland is a much smaller boat, being only 55 feet long and 11 feet in diameter. She is to have a speed of 15 knots an hour when at the surface, and of from 8 to 10 knots when submerged. At the surface she will be run by a gas engine, and when submerged power will be furnished by electric storage batteries. With tanks filled and all the crew aboard there will be a reserve buoyancy of 600 pounds, and she is caused to sink by altering the pitch of the diving rudders, the forward motion of the boat and the downward pitch of the rudders combining to force her below the surface. The boat is maintained at the required depth by means of delicate automatic mechanism, similar to that used in the automobile torpedo.

The armament is extremely powerful, consisting of three 18 inch Whitehead torpedoes which are discharged through the bow, and also an aerial gun at the bow and a submarine gun at the stern. The former will throw a 100 pound dynamite shell a distance of one mile and the submarine gun will send its shells some 650 feet through the water. In attacking a ship the Holland would discharge her aerial gun when she was well within range and then, sinking beneath the shelter of the water, she would run up within say 1,000 yards of the enemy. Here she would rise to locate the target, and sinking again she would discharge her torpedoes, and passing under the ship, if this should prove to be necessary, she would discharge her rear gun to complete the work of destruction. The tests of the Holland will be commenced in a few days, and they will be watched with the keenest interest by the whole naval world. It is in this direction that the development of torpedo warfare promises the most effective results. The secrecy of submarine attack, the impossibility of locating the boat, and the swift and complete destruction it is capable of working, will undoubtedly render a successful submarine boat the most powerful and most dreaded weapon of the age. For the defense of our rivers and harbors it would be of incalculable value.

IMPROVED TRANSPORTATION FACILITIES ON THE DOCK FRONT, NEW YORK CITY.

West Street, on the Hudson River front, and South Street, on the East River front of New York, are heavily encumbered with a miscellaneous traffic which is chiefly composed of heavy drays and trucks, surface cars and ferry passengers. The former are continually coming and going between the freight houses and ferries and the business portions of the city, and thickly intermingled with these are the vast crowds that come and go to and from Jersey City and Long Island. The Board of Consulting Engineers of the Dock Department has reported in favor of improving the handling of freight and relieving the general congestion by building a four-track freight railroad along the dock front from Battery Place to Christopher Street on the North River and from the Battery to Corlears Hook on the East River. It is proposed to run the present surface tracks of the street railways on an elevated structure, and overhead bridges are to be provided at the cross streets for foot passengers. The plan seems to be well adapted to meet the necessities of the case. At present the only standard freight tracks in the lower part of the city are those of the New York Central Railroad which run through Hudson Street to the freight depot at Beach Street. The proposed four-track road will be provided with spurs running to the various freight sheds and landing stages, and the freight which is brought across the river in cars will be handled on the New York side with less labor and greater dispatch than under the present system.

THE IRON AND STEEL INSTITUTE ON AMERICAN COMPETITION.

We recently drew attention to the fact that our manufacturers have taken the leading position in the wire industry of the world. The success which we have achieved in this branch is only one feature of our general supremacy in the manufacture of iron and steel. At the recent annual meeting of the Iron and Steel Institute of Great Britain, a leading feature of the discussion was the increasing success of American competition. President Pritchard Martin, in the course of his address, referred to the enormous output of the leading American steel works. He pointed out that the Americans were far in advance of English engineers and builders in the uses to which steel was applied, and the point was illustrated by reference to the steel frame buildings which are rapidly springing up in all the great cities of the United States. He urged the necessity for lower freight rates, and claimed that the British industry was severely handicapped by the high cost of transportation. In this respect, the American and German manufacturers were favored by rates that are considerably less than those in England. This statement on the part of the president will explain in some measure the exceedingly prosperous condition of the English railroads as compared with our own. In the six months ending December, 1896, the leading English companies raised their rates of dividend by amounts varying from 5/8 to 1 5/8 per cent, some of them paying as much as 6 5/8 and 7 1/8 per cent to the shareholders at the close of last year.

THE MISSISSIPPI FLOODS AS FERTILIZERS OF THE SOIL.

We have more than once been asked by correspondents whether it is not a mistaken policy on the part of the government to attempt to keep the Mississippi within its banks, and whether it would not be better to allow the waters to overflow and deposit each spring a fresh layer of rich soil upon the land. Attention is drawn to the annual overflow of the Nile, upon the regular occurrence of which the people of the Nile valley depend for their crops. In reply it may be said that no just comparison can be drawn between the two rivers. The rise of the Nile is gradual and it rarely overflows its banks in the cultivated districts with any