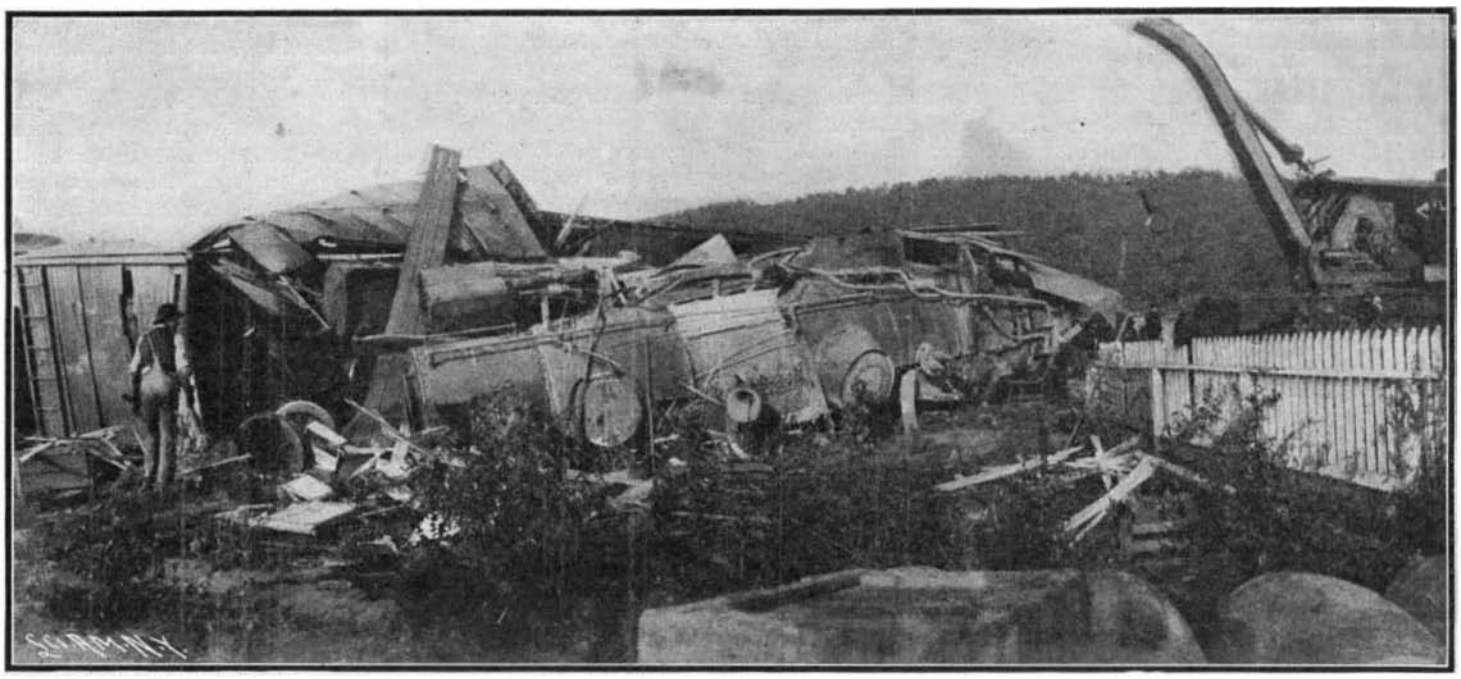
TRAIN WRECKED BY COLLISION WITH DYNAMITE.

BY W. L. RADCLIFFE.

On Friday afternoon, September 23, just as an eastbound freight on the Baltimore & Ohio Railroad was approaching North Branch, a little station five miles east of Cumberland, Md., a teamster with a two-horse wagon, hauling a load of 800 pounds of dynamite, attempted to cross the track. Unfortunately his team was just a trifle too slow, and the on-rushing locomotive struck the rear end of the wagon, hurling it nearly a hundred yards along the track. The terrific explosion almost totally demolished the nine houses in the little hamlet, threw the heavy locomotive a hundred feet from the track, completely turning it around, and reduced seven loaded freight cars to kindling wood in a twinkling of an eye. One of the brakemen was instantly killed; seven other persons were seriously hurt, and the engineer, one of the oldest and most skillful employes of the Baltimore & Ohio, was found in the demolished cab of his engine unconscious, with the scalding steam and water pouring over him, but still firmly gripping the throttle. He died while being removed to the hospital.

The signal tower, in which were the Baltimore & Ohio operator and his brother, was completely wrecked, and its occupants were badly cut by the glass and splinters.

The windows of nearly every house within half a mile of North Branch were shattered; while the explosion was plainly heard and the concussion felt in Cumberland, five miles distant. Strange to say, the horses which were attached to the ill-fated wagon were not injured at all. The driver was rendered unconscious by the explosion, but received no other injury. The wagon was totally annihilated, and the only part of it which could be found was a tire from one of the wheels, which was discovered wrapped as tightly around a neighboring telegraph pole as though fastened there by a blacksmith. The dynamite was being hauled to the camp of McArthur Brothers, who are constructing a portion of the Wabash Railroad. Their commissary department, offices, and hospital were badly wrecked. Considering the great destruction of property caused by the catastrophe, it seems almost a miracle that the loss of life was so small.



TRAIN WRECKED BY COLLISION WITH DYNAMITE.

TESTING MACHINES AT THE BOSTON INSTITUTE OF TECHNOLOGY.

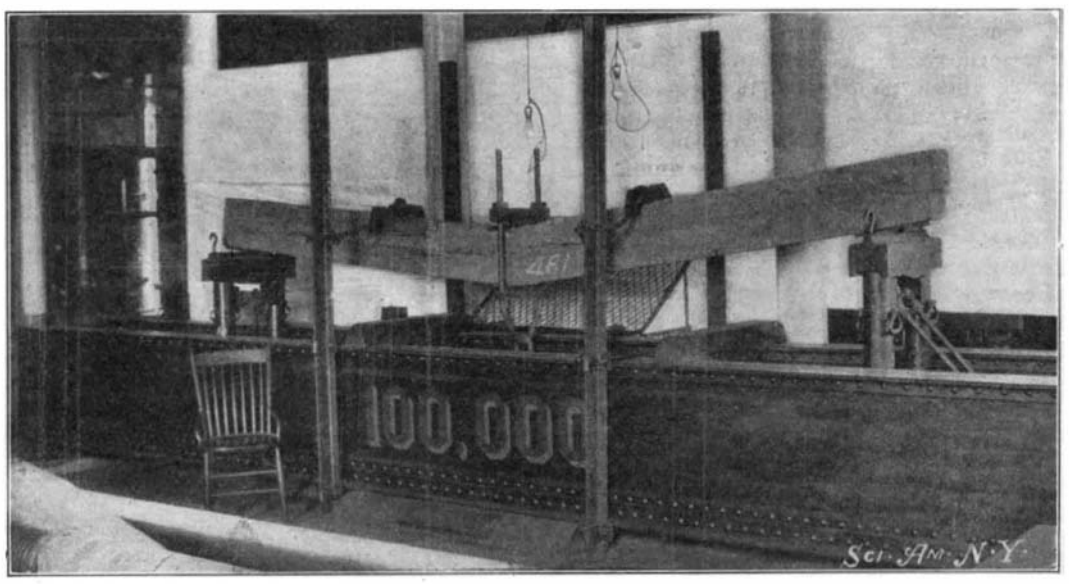
BY DAY ALLEN WILLEY.

Within the last few years some very interesting apparatus has been utilized at the Massachusetts Institute of Technology, to determine the strength of materials when subjected to strain under various conditions. The installation of this machinery originated with Prof. Gaetano Lanza, who has been conducting such experiments for a period of years. Prof. Lanza at first made tests with small pieces of wood, iron, and other substances. His experiments were attended with such success that it was decided to work with material of sizes regularly utilized in building and other operations, such as wooden beams, arches, columns of brick and stone masonry, and shafts and pillars of iron and steel. The different tests, which are applied by means of the apparatus now in use, are to determine the tension, compression, transverse strength, torsion, impact, and repeated stress.

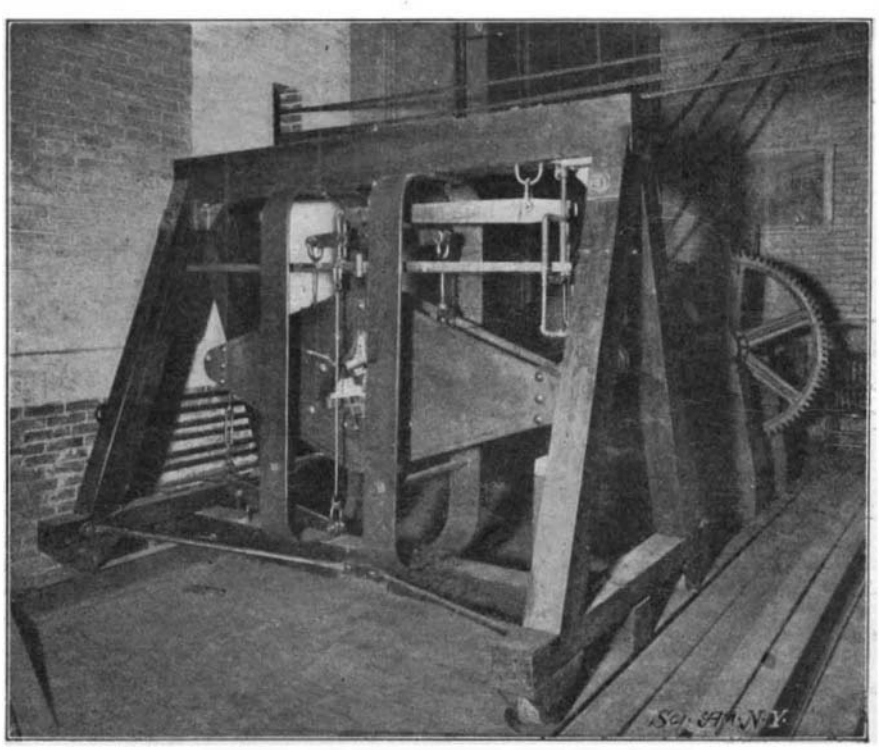
For the purpose of determining the strength of masonry in various forms, the test laboratory is equipped with an arch-testing machine, representing a capacity of 400,000 pounds. It can be utilized in connection with an arch having a maximum length of ten feet and a minimum rise of one in ten. As is indicated by the photograph, the machine consists of a framework of eye-beams and plate girders, through which pass a series of rods. The testing load is applied by two hydraulic rams, each of 100 tons capacity. The upward reaction of the rams is against a system of scale levers, which weigh the load. The downward force of the rams is taken by the series of two-inch steel rods, which pull down on the I-beams, used to distribute the load to the blocks. The latter are of wood, one foot in length and of a width proportionate to the size of the arch, being fitted to its top. The thrust of the arch is measured by noting the extension of four of the three-inch steel rods. These have been tested, and the moduli of elasticity determined, so that each rod indicates the load it is carrying by measuring its stretch. This stretch is measured to one ten-thousandth of an inch in a length of one hundred inches. The casting at the right hand of the machine rests on the I-beam frame. The left-hand casting, against which the arch bears, is mounted on rollers 17½ inches in diameter, so as to allow the three-inch rods to stretch to the extent required. The photograph shows the machine in operation with an arch of brickwork.

The principal transverse test-

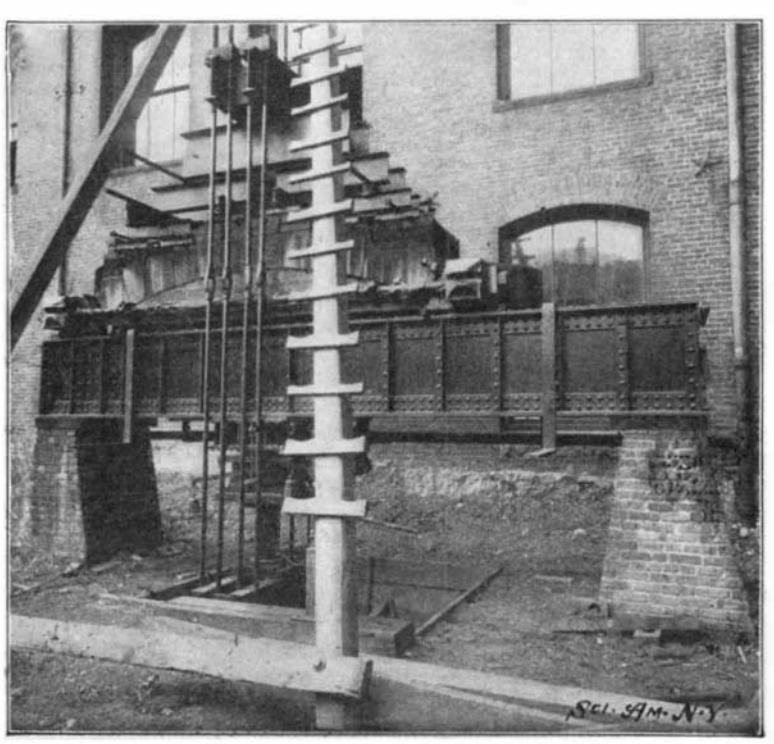
(*Continued on page 282.*)



TRANSVERSE TESTING MACHINE; CAPACITY, 100,000 POUNDS.



MACHINE FOR TESTING TORSIONAL STRENGTH.



ARCH TESTING MACHINE; CAPACITY, 400,000 POUNDS.