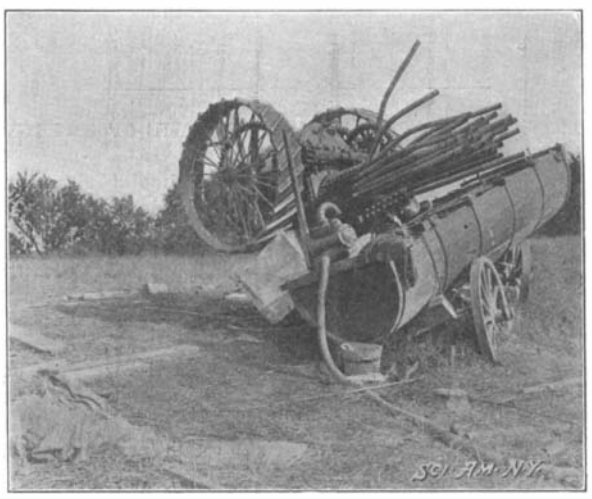
PORTABLE ENGINE BOILER EXPLOSION.

We present some views of a rather curious boiler explosion which occurred last month at Wauseon, Ohio. The accident happened to a 15-horse power, compound, threshing engine, which had been in use for about five years. The explosion occurred in the barrel of the boiler at one of the longitudinal seams which, on examination, proved to have been so much corroded that there was not more than 1-16 of an inch of the original shell left. The shell opened at this point and flattened out. At the same time the firebox, with most of the tubes, was torn loose from the smokebox and front end of the boiler, and turned a complete somersault backward on its tender, falling upon a man who had been sitting upon the tank at the moment of the explosion and killing him instantly. A boy who was standing immediately back of the firedoor was grazed by the rear end of the boiler, but received no fatal injury. The smokestack and front end of the boiler were blown over the straw stack formed by the thresher, and landed some 90 feet away The flywheel was thrown 60 feet to the right, while the cylinders and engine bed were thrown about 200 feet to the rear. While those who were responsible for the running of the engine claim that there was sufficient water in the boiler, it is generally believed that low water and corrosion were the cause of the disaster.

MOST POWERFUL EXPRESS LOCOMOTIVE IN GREAT BRITAIN.

There has been a remarkable development among British locomotive builders in the size and power of the engines which they have been turning out of late years. It was not so very long ago that 1,200 to 1,300 square feet of heating surface was the maximum for an English passenger engine; and there are to-day thousands of locomotives doing first-class service on English roads that do not have more than 1,100 or 1,200 square feet of heating surface in their boilers. The road which has made the greatest advance in the power of its engines is the Great Western Railroad, of which Mr. Dean has been the locomotive superintendent. The latest engine of his design is the huge affair which we herewith illustrate. While the heating surface would be large, even on an American road, it is not comparable to the boiler capacity of such engines as the latest express locomotives of the New York Central Railroad, which have 3,500 square feet of heating surface; but for an English road the 2,410 square feet of Mr. Dean's engine is altogether unprecedented. The engine is of the ten-wheeled, six-coupled, outside-connected type. The driving wheels are 80½ inches in diameter, and the loads on the wheels are equalized. The cylinders are another abnormal feature in this engine. They have a stroke or no less than 30 inches for a diameter of 18 inches. Ordinary English or American practice would give for a diameter of 18 inches a stroke of 24 or 26 inches. Both steam ports and exhaust ports have a circumference of 20½ inches, the width of the steam ports being 1⅝ and of the exhaust ports 2 7-16 inches. The barrel of the boiler varies in outside diameter from 4 feet 10¾ inches to 5 feet, the length of the barrel being 14 feet 8 inches. The outer dimensions of the firebox are: Height, 6 feet 6⅝ inches and 5 feet and ⅝ inch; breadth, 5 feet 6⅛ inches, and length, 9 feet. There are 287 2-inch tubes with a length of 14 feet 11⅞ inches. The area of the grate is 27.62 square feet. The working pressure is 200 pounds to the square inch, and the tractive force 21,734 pounds. We understand that the next engines of this class that will be built will have less heating surface by about 300 square feet.



FIREBOX AND TUBES THROWN OVER AND BACK UPON TENDER.

PORTABLE ENGINE BOILER EXPLOSION.

Dewar on England's Educational Needs.

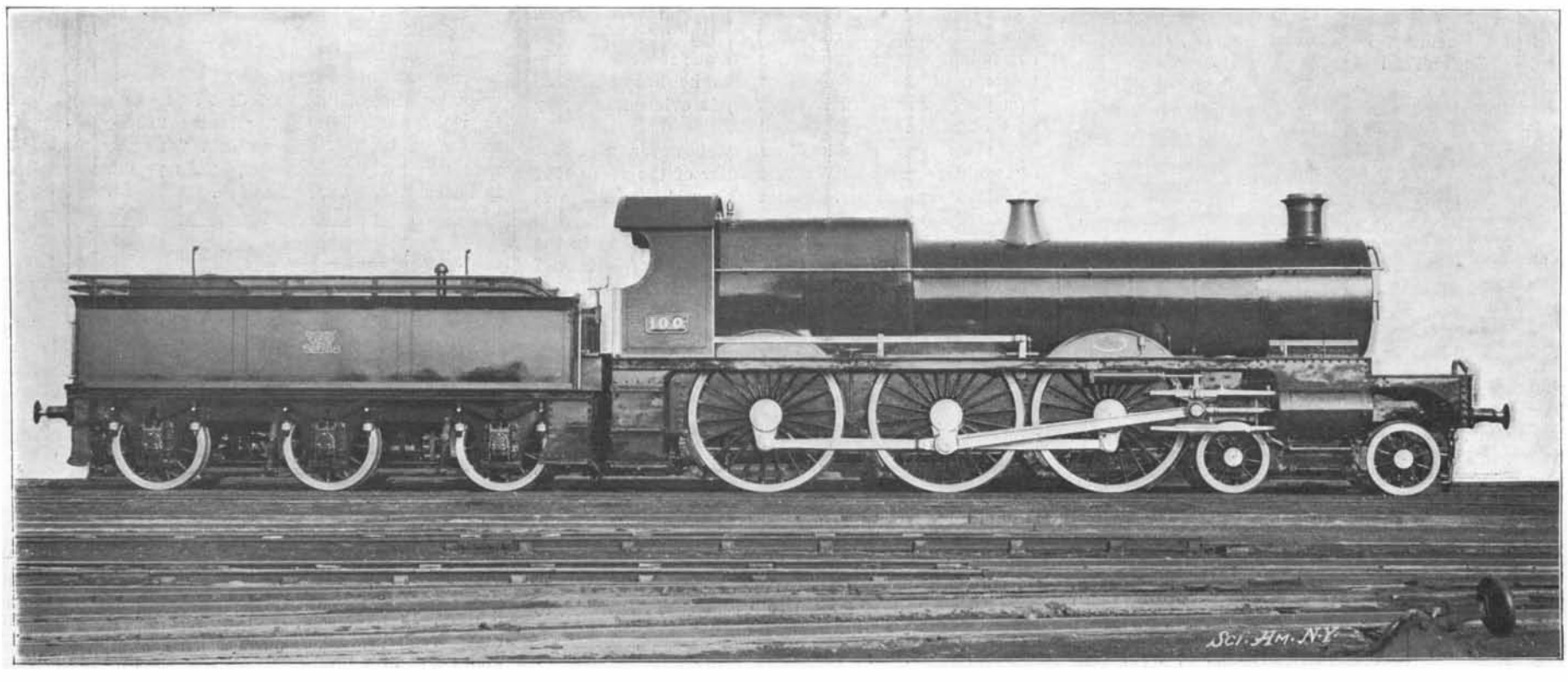
At the annual meeting of the British Association for the Advancement of Science, held in Belfast on September 10, Prof. Dewar made a stirring appeal for the improvement of the national system of scientific education. As an instance of the importance of science to a country he pointed out that the German chemical industries, which have grown up during the last seventy years, are worth £50,000,000 annually. Curiously enough, these chemical industries are founded on basic discoveries made by English scientists, discoveries never properly appreciated or scientifically developed in the land of their birth. Prof. Dewar believed that the crying need of the country was for education among the very classes which claim to be educated, and secondly among the laboring people. He eloquently remarked:

"It is in an abundance of men of ordinary plodding ability, thoroughly trained and methodically directed, that Germany at present has so commanding an advantage. It is the failure of our schools to turn out, and of the manufacturers to demand, men of this kind, which explains our loss of some valuable industries and our precarious hold on others. Let no one imagine for a moment that this deficiency can be remedied by any amount of that technical training which is now a fashionable nostrum. It is an excellent thing, but it must rest upon a foundation of general training. Mental habits are formed for good or evil long before men go to technical schools. We have to begin at the beginning.

"The really appalling thing is not that the Germans have seized this or that industry, or even that they may have seized a dozen industries. It is that the German population has reached a point in general training and specialized equipment which will take us two generations of hard and intelligently directed educational work to attain; it is that Germany possesses a national weapon of precision, which must give her an enormous advantage in every contest depending upon disciplined and methodized intellect."

The Industry of Algeria.

The wine industry at the present day constitutes the largest industry in Algeria. Until the last two years it had been going up by leaps and bounds, many large fortunes having been made. During 1900 and 1901, however, the price of wine steadily decreased on account of the abnormal yield in France, and great losses were consequently incurred by those who were forced to dispose of their vintage. The outlook of the wine grower in Algeria is much brighter this year, the crops in France having been greatly damaged by late frosts, wet, and severe hailstorms. The amount of wine exported from Algeria during 1897 was 781,558 gallons; in 1898, 796,049 gallons; in 1899, 945,879 gallons; and in 1900, 549,131 gallons. The other principal products are alfa, cereals, cork, vegetable hair, locust beans, olive oil, fruits, and vegetables, and Italian pastes. The area which alfa occupies in the three departments of Algeria is estimated at more than 12,000,000 acres. The principal district, called the "Alfa Sea," is 210 miles by 95 miles and is bounded on the north by the Tell, on the west by Morocco, on the south by the mountains of Ksowes, and on the east by the Hodna. The producing area is much greater than that actually cut; nevertheless, in order to prevent the loss which would result from bad working, the Governor-General issued an order in 1888 limiting the cutting, sale, and export of alfa. The average production of an acre of alfa is estimated at 8 cwt. after drying and sorting. In 1900 Algeria exported 1,650,235 cwt. of wheat, 1,188,153 cwt. of oats, 1,773,569 cwt. of barley, and 27,496 cwt. of maize. The barley is much in demand in Europe for malting purposes. Algeria produces excellent hard wheat, giving a flour rich in gluten, and consequently very good for the manufacture of Italian pastes and semolina. This industry is annually increasing; the existing works are enlarging and improving their machinery, modern methods of shop management are being introduced, and the output of the various establishments to-day rivals that of France and other countries.



Cylinders, 18 inches by 30 inches. Driving Wheels, diameter, 80½ inches. Heating Surface, 2410 square feet. Working Pressure, 200 pounds to the square inch.

MOST POWERFUL EXPRESS ENGINE IN GREAT BRITAIN.