To cover the roofs 486,385 square feet of felt are used, equal to 11 acres; and to complete the whole of the glazing requires 553,000 super feet of glass, which weighs 247 tons, and would cover 12¾ acres.

THE MACHINERY DEPARTMENT OF THE EXHIBITION OF 1862.

CLASSES 5, 7, 8, AND 10.

No. I.

The business of the machinery department, in classes 5, 7, 8, and 10, is, perhaps, the most onerous of all the business of the classes into which the industrial products are to be distributed for Exhibition.

The supply of steam to work the numerous machines which are to be in motion, is to be furnished from a number of large double-flue boilers, 30 feet in length, of 50 nominal horse power each, to be supplied by Messrs. Hick & Sons, of Bolton, sufficiently powerful to work the whole of the machinery in motion at once, without any necessity for stopping any portion of it, or of working parts of the machinery alternately. The disadvantage of an under-supply of steam in former exhibitions was strongly felt, and it has been the aim of Her Majesty's Commissioners, in this particular, to have an ample supply of steam for every demand, without restriction. The steam from the boilers, which is to be of 70 lbs. pressure per square inch, will be conveyed through large pipes down the passage of the western annex, which is to contain all the machinery in motion; the extent of steam pipe will be unprecedented in engineering practice. The annex is nearly 1,000 feet in length from north to south, and the boiler-house will be built at a distance of at least 100 feet from the north end, near the Kensington road. There will be two lengths of pipe about 900 feet each, and a third and shorter length, which, with the junctions required, will amount to a total length of upwards of 2,500 feet, for the ramification of steam pressure throughout the annex. It is not intended by Her Majesty's Commissioners to erect steam engines specially for the services, but to make free use of the numerous and various steam engines which will be exhibited, the intending exhibitors of which generally are desirous to have them put in motion. The steam pipe will be provided with expansion-boxes at frequent intervals, to take up the unavoidable expansion and contraction of metal pipes subjected to heat and cold alternately, and they will be thickly clothed in felt, and bedded in ashes, sand, or other non-conducting substance, so as to prevent loss of heat by radiation and condensation of steam within the pipe. Such a provision, though essential and highly important, is by no means so difficult to mature as appears to have been assumed by certain writers for the press; indeed, the proportion of steam lost by condensation may be reduced to a very small fraction, by the expedient of superheating it before it leaves the boiler-house, and drain-cisterns will be provided at suitable spots for the reception and collection of the water precipitating within the pipes.

The exhaust steam, discharged from the numerous steam engines at work in the annex, will be intercepted by large return exhaust pipes, laid parallel to the steam pipes, and conducted back to the shaft or chimney attached to the boiler-house, into which it will be discharged. Thus, the whole operation of the steam, conducted to the steam engines and back again, will be conducted without noise or nuisance; and the spectacle which would otherwise be presented of numberless clouds of spent steam escaping from the various engines through the roof of the annex, according to the usual routine of worshops, will be wholly prevented. The exhaust pipe, like the steam pipe, will be fitted with expansion-joints and drain-cisterns.

The gross area of the western annex is little more than four acres, or about 180,000 square feet; of this area 16,000 square feet are to be set apart for branch refreshment rooms, about 70,000 square feet for the exhibition of foreign machinery, and about 90,000 square feet for the machinery of the United Kingdom. An additional area of 20,000 square feet will probably be reserved in the eastern annex for the exhibition of machinery.

Miscellaneous.

Railways of the World.

There are 31,800 miles of railroads in the United States, of which there are 20,688.51 in the free and but 11,111,43 in the slave States. The total cost of the entire lines has been $1,192,302,015. Last year there were only 631 miles built, against a previous annual average of 2,000 miles. But although the construction of roads decreased, the traffic on all the northern roads was greater than on any previous year. The condition of our railroads is favorable at present.

The length of railways in operation in Great Britain and Ireland is 10,750 miles 300 miles of which were built last year. Their entire cost of construction amounts to £355,000,000 (about $1,775,000,000). There are 5,801 locomotives, 15,076 passenger carriages and 180,574 freight cars used on these railways. Last year they carried 163,435,678 passengers, 60,000,000 tuns of minerals and 20,500,000 of general merchandise.

France has 6,147 miles of railway, worked by 3,000 locomotives; 3,500 miles of new lines are being constructed. Total cost of completed lines $922,200,000.

Prussia has 3,162 miles in operation; Austria 3,165 miles; the other German States have 3,239 miles; Spain has 1,450 miles; Italy, 1,350; Rome, 50; Russia, 1,289; Denmark, 262; Norway, 63; Sweden, 288; Belgium, 965; Holland, 308; Switzerland, 600; Portugal, 80; Turkey, 80; Egypt, 204.

In the British colonies, there are 1,408 in the East Indies; Canada, 1,826; New Brunswick, 175; Nova Scotia, 99; Victoria, 183; New South Wales, 125; Cape of Good Hope, 28. Making a total of 14,277 miles in operation in the British Empire; the entire cost of which has been $2.086,765,000.

In Mexico there are 29 miles of railway; Cuba, 500; New Grenada, 49½, (Panama Railway); Brazil, 111; Chili, 195; Peru, 50; Paraguay, 8.

The total length of railways in the world is 69.733 miles. Their estimate cost is about $5,877,200,000. Nearly one half the length of lines belong