

The locomotive built by Stephenson in 1832 for the Laprairie and St. Johns road had cylinders 10"x14":—the recent ones built by the Can. Pac. Ry. have cylinders 19"x22".

One result of the Basic process for direct conversion of iron into steel, is to give a commercial value to the slag for agricultural purposes. This slag, which is known as the "Thomas" slag, contains 10 to 25 per cent. of phosphoric acid, averaging about 16 per cent. It is ground into a fine meal, and sold at a cost of about one-third that of superphosphate in Germany, where 400,000 tons are now used annually for this purpose, and is said to contain as great a quantity of phosphoric acid as the superphosphates. This by-product of steel manufacture has an interest for us as exporters of apatite.

### MINING ENGINEERING.

Canada contains such a vast mineral area in proportion to her population that with the exception of coal upon her sea coasts, no extensive mining has yet been accomplished. Her productions, however, embrace all the precious and commercial metals and minerals, excepting precious stones and tin. Gold, silver, copper, lead, iron, slate, apatite, graphite, gypsum, asbestos, antimony, arsenic, mica, petroleum, salt, and barytes have been worked. Zinc, nickel, petroleum, antimony and bismuth are known to exist. Besides other minerals used for chemical manufactures, manures, pigments, refractory materials in soapstone, fire clay, kaolin, sandstone, grinding and polishing materials, whetstones, infusorial earth, and polishing powders, as well as materials for construction, including marble, granite, slate, flagstone, hydraulic lime, etc., and many applicable to fine arts and jewellery, from lithographic stone to jaspers and agates.

The total coal and lignite bearing area, surveyed and partially surveyed, is nearly 100,000 square miles. Anthracite has been found on Queen Charlotte Island, where is the only known deposit on the Pacific coast. It is being worked also in the National Park near Banff. The Wellington coal on Vancouver Island is considered the best on that coast, and is selling at \$10 per ton in San Francisco; the cost at the mine dock is, however, \$4 per ton. Coal is extensively worked at Lethbridge in Alberta, N. W. T., on the main seam of the Bow River deposit, which deposit is estimated to contain 330,000,000 tons.

The amount of coal raised in Nova Scotia in 1886 was 1,682,924 tons, on Vancouver Island, 326,636 tons. In Nova Scotia a vertical