

it such as that of the navigation of Hudson's Bay, which, however many may believe in it, has never yet been accomplished in a way to suit the requirements of modern trade. The country is an easy one to build through and construction can be carried on both well and rapidly. The promoters expect to be assisted by both the Dominion and Provincial Governments. The Dominion Government has already given aid to the Colonization Railway Co., a line projected from near Port Arthur westward over the same territory, in part, as is covered by this scheme. Arrangements will probably be made for the amalgamation of the two companies. Application will be made to the Dominion Government for power to bridge the Rainy River to the American side. A branch is projected to connect with the Canadian Pacific Railway at Rat Portage. The scheme is backed by great capital, influence and experience, numbering its promoters some of the best known Canadian and American capitalists and railway builders.

GRAND TRUNK G. W. DIV. SHOPS.

THE following account of the Great Western Division shops at Hamilton is condensed from the *Railroad Gazette*:—

The shops at both places are well built and lofty, the walls being of stone and white brick respectively. The shops at Hamilton are well equipped with tools, cranes, etc. In one erecting shop two overhead travelling cranes are used, one for each end of the engine being lifted. The crabs, etc., were made by Messrs. Wren & Hopkinson, of Manchester, England, while the girders were made in the railroad shops.

The Great Western bought some 200 new engines at the time it changed gauge, and while these engines have hitherto cost little to keep in repair, they are now all simultaneously in want of heavy repairs, new boilers and fire-boxes, etc.

The Darby crown sheet is used on many of these rebuilt engines, and is found to give excellent results. It is said that engines with this form of crown carry their water very steadily, and that it does not rise and fall in the glass as in engines fitted with either direct stays or ordinary crown bars.

This division has for many years made all its new engines at the Hamilton shops. The regular standard boiler has direct stays, and the top of the box is rounded with curves of large radius, so that the direct stays enter both the casing-plate and the crown-sheet nearly at right angles.

The locomotive driving axles are made slightly larger in the wheel-seat than the journal, and slightly larger in the eccentric and collar-seat than in the wheel-seat, the different diameters being united with a fillet. The centre of the axle is left rough from the hammer, and is somewhat smaller than the journal. This method of proportioning an axle is slightly more expensive than the usual plan of shouldering down the axle where it enters the wheel, but makes a stronger axle, as it avoids the wheel shoulder at the back of the wheel-seat.

Some four-wheel coupled switching engines are nearly completed. The front end of the engine is carried on a four-wheeled truck, and the hind end on a Jewell two-wheeled or pony truck. This truck has been much used by the Rhode Island Locomotive Works. The centre bearing is formed of a plate with ridged corrugations. Two tapered corrugated rollers are interposed between this plate and a corrugated plate placed on the truck bolster. The latter plate is V-shaped, the sides sloping toward the centre. The truck works with little friction, and is kept central in a manner similar to the Bissell truck, but the interposition of rollers between the surfaces lessens the friction, while the corrugations oblige the rollers to revolve when any movement takes place, and retains them always in their proper position. Were plain rollers used, they might get flat by wear and pressure, and would then work with considerable friction.

These engines carry their water (1,800 American gallons), partly in the saddle tank over the boiler and partly in a tank under the coal space and over the hind truck. They would appear to be a useful engine for working local trains, especially on such a local line as the Great Western. The worst grade, Copetown, rises directly west from Hamilton at from 45 ft. to 54 ft. per mile for 11 miles. With the exception of another grade near Niagara Falls, of 33 ft. to the mile, the rest of the line is practically level, and therefore only four-coupled engines are used.

The Grand Trunk proper and the numerous lines now part of the system have, however, very heavy grades, and therefore Mr. Wallis, the Superintendent of Motive Power, has adapted a Mogul with 18 by 24 cylinders and 62-in. wheels for a standard freight engine, and a plain six-coupled engine with 56-in. wheels for switching. Fire-brick arches and a large deflector in the fire-door are used on the Grand Trunk, and the fire-door is generally kept open while running, but neither brick arch nor deflector is used on the Great Western Division.

Mr. C. R. Donville, the Superintendent of Machinery, finds, contrary to the general opinion, that the brick arch does not materially lessen smoke, or diminish the number of leaky flues. With the brick arch, the dust collects round the leakage and adheres to the flue sheet, forming a deposit which would in time choke up the flue orifice. It must then be scraped off, and this cannot easily be done with the brick arch in the way.

A new spark-arrester will shortly be tried on this line. The deflector plate, and base of the smoke-box and inside of the smoke-box door will be formed of cast-iron plates with chilled ridges with sharp edges. It is anticipated that the sparks will strike the saw-like teeth or ridges and will be pulverized until they are fine enough to escape through the netting.

The usefulness of the car works at London are much crippled by three of the main shops having been burned down nearly two years ago. Though the walls of two shops are still standing, no effort has been made to roof them and replace the machinery and shafting, and the work is carried on partly in temporary

shops and partly in the open air, while a little new machinery has been placed in the smith's shop.

The car wheels are made in the locomotive shops at Hamilton, a careful record being kept of the mixtures used for each day's work, with specimens of the drills, generally about $\frac{3}{4}$ in. deep. As the date of casting is placed on each wheel, the exact mixture used in any wheel which fails can be readily ascertained from the record. Wrought-iron spoke wheels 42 in. diameter with steel tires and Mansel fastenings are used under parlor and dining cars.

Mr. McIlwaine, the Master Car-Builder, has been experimenting with a view to obtain a better light in cars than that given by the ordinary style of lamp. It was not considered desirable to go to the expense of electric light or gas, and the Rochester style of lamp, which answers well for household purposes, is unsuitable for the draughts in passenger cars. He, however, has now obtained some lamps from Adams, Westlake & Co., of Chicago, which gives 63 candle power on a consumption of three pints of oil.

The Baker heater is generally used on all first-class cars throughout the Grand Trunk system, but the addition of salt has been found so troublesome that the Baker system is now used with fresh water only. The fires are kept alight from the time the cars leave the shop until they return to it, and wherever the cars stand for some hours arrangements are made whereby a watchman or some other appointed person visits the car at intervals and keeps the fire alight.

THE PRINCE EDWARD ISLAND RAILWAY.

IN the *Railway Age* is a long and exceedingly interesting account of the Prince Edward Island Railway. Its tone is rather patronizing, but, on the whole, good natured, and so far as our information goes, the statements made in it are accurate. The tone is that usually adopted by Americans in speaking of affairs on this side of the line, but little by little they are learning better, as little by little they find out that in almost everything worth mentioning, except numbers and some classes of public luxuries, such as great public libraries &c., we have the advantage of them. The following is clipped from the article referred to:—

To the credit of the Dominion Government be it said that it has not for a moment permitted, nor does it intend to permit, this little road to degenerate in the least degree. In fact, the policy which seems to prevail is based on the true foundation idea that "what is worth doing at all is worth doing well." Now that the road has been built and equipped it would be most unwise, even wicked, to neglect its physical welfare. Little by little its road bed has been improved, its rolling stock perfected and increased, its bridges renewed and strengthened, until its condition can best be described by saying that it is in keeping with the magnificent island it has rendered habitable.