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Railways.

GREAT WESTERN RAILWAY.

The original line from which the Great Western has sprung ran from Hamilton to London. The original intention was to introduce the narrow gauge; but the Canadian Parliament, having the general question of gauge under discussion, resolved to extend no aid to roads not adopting the 5 feet 6 inch gauge, which it saw fit to make the uniform gauge of the Province. State aid was indispensable, and so the wide gauge was adopted, against the judgment of those interested in the line. On the completion of the through line, the company built an extension from Hamilton to Toronto; one from London to Sarnia; and another from Harrisburg to Galt; while they came into possession (as mortgagee) of the Galt and Guelph Railway. At the time of the oil excitement, they built an extension from Wyoming (on Sarnia Branch) to Petrolia, tapping the productive oil region, from which a very heavy traffic has been steadily enjoyed—the shipments last year having reached an aggregate of 120,000 brls. In 1857, the parties constructing the Detroit and Milwaukee road becoming embarrassed and unable to complete and equip their line solicited aid from the Great Western Company, who eventually furnished £250,000, on condition that its control should be invested in the Great Western. The total capital expenditure on the entire property of the company (including the D. & M.) amounted January 1, 1869, to $25,005,434. The main line extended from the Suspension Bridge, Niagara Falls, to Windsor, on the Detroit river, a distance of 229 miles. At Suspension Bridge it is connected with the New York Central Railroad by means of the Suspension Bridge, which was opened for trains in March, 1855. At Windsor, the connection is formed with the Michigan Central and Detroit and Milwaukee railroads by means of ferry steamers, the width of the river being over one-half a mile. The steamers which at present transfer the passengers and freight consist of two first-class vessels. One is an iron double-ender steamboat, 240 feet in length, which takes over a whole passenger train on its two tracks, or 14 freight cars. The other is a large wooden steamboat, with a spacious saloon-deck, and eating-room, on which passengers only are transferred. Besides the main line, the following branches are worked by the Great Western Company. 1. The Erie and Niagara Railway—Fort Erie opposite Buffalo, to Niagara—31 miles. 2. The Toronto Branch—Hamilton to Toronto, where a connection is formed with the Grand Trunk Railway—39¼ miles. 3. The Galt and Guelph branch—Harrisburg to Guelph—27⅛ miles. 4. The Sarnia branch—Komoka, west of London, to Sarnia, opposite Port Huron—51 miles. 5. A line from the Sarnia Branch, at Wyoming, to the oil region of Petrolia – 5½ miles.

The main line leaves the Niagara river at an elevation of 326 feet above Lake Ontario. It gradually descends to the level of the lake at Hamilton, where grain and general freight warehouses are erected on the wharf. The line then steadily rises till the summit level is reached, 88 miles west of the Suspension Bridge, where the elevation above Lake Ontario is 762 feet. From thence it again gradually falls till it reaches the Detroit river at Windsor. The steepest grade is that ascending to the west from Hamilton, averaging 50 feet per mile for 10 miles. From Komoka westward, for 100 miles, the line is nearly level, and there are 57 miles of this length in a single straight line.

The company's grounds in Hamilton embrace 30 acres, having a frontage of a half a mile on the bay, with nine feet of water at the docks. The Rolling Mill, 120x135 feet, employing 126 men, and working night and day, has a capacity of 7,000 tons (70 miles of track) per year. In 1853-4, the track from the bridge to London (one-half of main line) was laid with the Bridge (or U) rail of Welsh (Ebbevale) manufacture. Such has been the tenacity of this rail, that the last of the stock is now being cut up. Subsequent importations from the same locality proved very inferior—especially that laid in the third rail in 1866, 13,500 tons, which on account of its brittleness, is already being cut up, reworking expelling the cinder and developing the fibre. It was this rail—bought at a high price, with the best expectations—that yielded so fatally to heavy traffic last winter. Two facts should also be borne in mind, in considering the general question of improved rails. On all our roads the dead weight (of rolling stock) has at least doubled since 1860—that is, mileage has doubled; so that a rail which lasted eight or nine years then will fail much sooner now. Moreover, as traffic increases, not only the weight of rolling stock has to be increased, but also the speed of trains, so that there may be no crowding of cars, causing dead locks at stations. As matter-of-fact, even on our best managed roads, freight trains almost as a rule, fall behind, giving passenger trains time to pass; so that, instead of running at the schedule rate of 12 or 15 miles per hour, they not unfrequently nearly double that speed. Under conditions such as these, the necessity of reworking old rails into new, containing a large proportion of the best new iron (with liability, even then, to laminate) and the consequent inconvenience of frequent changes and renewals of the track, together with the increasing difficulty of securing good new iron rails at any price, have led this company, in common with the most of those in the States, to experiment with (or, rather, to introduce) steel rails on an extensive scale. In the reworking of rails, Mr. Reid finds that the pig ordinarily obtained from England is no longer suitable, and experiments are making with American varieties. Among these the Acadian (Nova Scotia) puddled is proving very superior—two pieces being introduced in the head, making 33 per cent of the weight of the rail. This iron is of the nature of a semi-steel, fine grain and excessively tough, free from danger of breakage under low temperature, and having high welding quality. Eighty tons of rails with heads of this iron have just been introduced. Hitherto there has been used a propertion of old car wheels mixed with selected brands of English pig, puddled and worked in the ordinary way—with results not altogether satisfactory. Profiting by the results of experience among us, the company now anticipate securing a very superior head by using Lake Superior charcoal iron hardened by mixture with common brands. Since the opening of the mill in 1864, various systems of reworking have been tried on a large scale, and their results tested under trains