

mines of Chemnitz in Hungary, the reduction works at Freibourg in Saxony, and at the celebrated Morro Velho mine in Brazil. It consists in placing the crushed ore along with the proper quantity of quicksilver and a number of iron balls of about 1 inch in diameter in stout wooden barrels, which are made to revolve by machinery for a number of hours, after which the amalgam is taken out, and retorted over in the usual way. For a more detailed description of this process, we refer our readers to J. A. Phillip's great work on the "Mining and Metallurgy of Gold and Silver," or to Dr. Lamberne's treatise on the "Metallurgy of Silver and Lead," published in "Weale's Rudimentary Series."

There is another method of separating gold from its concomitant minerals, by the agency of chlorine gas, but as it is only applicable to clean gold in clean quartz, and fails where much lime or magnesia is present in the gangue, our description of it must needs be brief. The crushed and roasted ore is slightly damped, and placed in wooden tubs lined with a coat of pitch, a stream of chloride gas is then introduced at the bottom, and continued till the whole mass is permeated. The vessels are then closed, and suffered to remain in that state for several hours, when the gold is found to be converted into a chloride. The tubs are then filled with water which dissolves the chloride. It is then drawn off into suitable vessels, and the gold precipitated by a solution of protosulphide of iron. Though this process is somewhat more expensive than simple amalgamation, it is more satisfactory in some cases; especially for the treatment of concentrated sulphurets, as it takes out 95 to 98 per cent. of all the gold contained in the ore, while the best managed amalgamation will not take more than 70 per cent. This process is also preferable when gold occurs in combination with silver and copper, as by it the metals can be obtained in a separate form, and in a state of great purity.

GRAND TRUNK RAILWAY.

No public enterprise ever set on foot in this country, has been so conducive to the development and material progress of Canada as the Grand Trunk Railway. It represents an expenditure, mostly of English capital, amounting nearly to ninety millions of dollars, disbursed in the opening of a grand leading railway artery, from the eastern to the western limit of the Provinces of Ontario and Quebec. Instead of being shut up in winter, much as Manitoba now is, these provinces were provided in the construction of the Grand Trunk, with an outlet and an inlet, always open, affording ready access for

freight and travel to the outside world. It gave us a main line, with which the numerous short and cheap roads can connect, and so distribute the incalculable advantages of railway facilities to the remotest and hitherto almost inaccessible districts of Canada.

All these facts are so well understood that it is only necessary to recount them because unscrupulous and disappointed politicians do not hesitate to drag this enterprise through the mud of their party jealousies, whenever it suits the purpose of the hour; to denounce it as a "nuisance," and a failure; to decry its credit and damage its reputation in every possible way. The Grand Trunk has often passed through this ordeal, so that recent assaults have not even the grace of novelty to hide their manifest malevolence; it has been found scarcely possible to cover even with a thin veil of plausibility, their positive untruthfulness and indecency.

It is not the province of this journal to take part in the discussion of domestic politics, but we failed to see what the country can gain by any of its trading or financial institutions being made the subject of party strife. It is of the utmost consequence that the Grand Trunk should be made as efficient as capital and skill can make it. Its defective condition might inflict serious injury to merchants by damaging or delaying the transport of their goods, and what is much worse, might entail destruction of life. That our great rail-highway is not what we hope to see it, must be admitted; at the same time we insist that any discussion as to the best mode of raising its condition and giving greater efficiency to its administration, cannot be conducted with any prospect of good results, if engaged in as a side-issue in a political struggle. The policy of systematic opposition and depreciation, which is followed by those who regard this line as though it were but an outpost of their enemy—the present Government of the Dominion—can only tend to aggravate existing difficulties, and to embarrass and obstruct the efforts being made to give greater efficiency to this really national enterprise.

The Directors' report for the half-year ended June 30th, states the gross receipts for that period at £704,567, or £29,946 greater than in the previous half year. In this way the traffic has been steadily rising during the last decade, till it now promises soon to reach the immense annual aggregate of £1,500,000 sterling, or over seven millions of dollars. If the road, with such a revenue, could be worked at anything like the usual rate of expenses on English railways, the profit would be something handsome. But that is not to be anticipated, at least for many years to come.

When comparisons are made, as they often are, between the working expenses of the English railways and those of the Dominion, a number of most important considerations are left out of sight. English railways do not have to compete with the low freights and fares and luxurious accommodation of the leading American lines—a kind of competition to which any trunk line in this country is necessarily subjected. With expenses of necessity much greater, the Grand Trunk does not obtain more than from one-third to one-half the fares charged by an English railway for a much lower average of accommodation and comfort in travelling. The great English lines, for instance, obtain coal at a little over a dollar a ton for the use of their engines. Compare that with what is paid here for fuel and see the disparity; other important items are in the same proportion. A warmed carriage on a Canadian line is far more comfortable than the best of first-class English coaches, which are never warmed however cold and damp the weather may be; yet, in this country the same rate only is charged for the best accommodation as is paid in England for seats in those mere dog-kennels called "third class." The density of population in England, and the large mass of rich persons who travel much for pleasure, gives them a traffic vastly in excess of ours. There, too, the roadway, plant, staff of officials, are all utilized to the utmost, while on the Grand Trunk enormous stretches of permanent way lay between stations over which nothing rolls but through traffic; yet for this plant must be maintained and officials retained, the services of which are only occasional. The English lines, too, run the year through with hardly any hindrances from the weather; here, not only are there constant difficulties from this source, but the whole traffic for some months is depressed to a very low average, both for passengers and freight, during which period heavy expenses are entailed in keeping the permanent way open and safe.

Every effort is, we are convinced, being put forth by the management to give greater facility to public travel and traffic. Since the commencement of the present year the rolling stock has been increased by 12 locomotives, 40 passenger and emigrant cars, and 320 freight cars. The fast trains run since the beginning of summer have proved a boon, especially to business men. A large quantity of steel and iron rails have been laid down, so that the track is in a better condition than ever before.

We have not hesitated to criticize the management of the Grand Trunk in the past nor shall we fail to do so in the future if the occasion demands it; but to belittle every