competitive rate with distant smelters, is not affected by the distance from the local smelters, but is uniform on lead ores irrespective of the point of shipment. The freight on the ore to the smelter is paid on the gross weight including sacks and moisture, while the miner only pays the combined freight and treatment charge on the net dry weight of the ore. With a not uncommon percentage of moisture of 10 per cent. and a freight rate of $5.00, this amounts to 50 cents per ton.

Let us proceed to ascertain what the local smelters realise, and what is included in their charges. As an example take an ore or concentrate carrying 65 per cent. lead with, say, 10 per cent. moisture and a freight rate to a British Columbia smelter of $3.50, which would be approximately descriptive of an important part of the lead ore produced in British Columbia.

Supposing that the mine ships gross weight of 2,200 lbs., of which moisture is 10 per cent. = 200 lbs., ore 2,000 lbs. The freight and treatment charge, according to 1901 rates, would be $19.00, and a deduction from the London price of lead for 90 per cent. of the assay contents, 1,300 lbs. less 130 lbs. = 1,160 lbs. at $1.00 per 100 lbs. = $11.70, total $30.70.

The smelter must pay freight on 2,000 lbs. ore and 200 lbs. moisture, total 2,200 lbs. at $3.50 = $3.85.

The freight, refining charge, selling cost, insurance and ocean freight, approximately on 1,170 lbs. lead at $1.50 per 100 lbs. = $17.55, total $21.40, leaving as treatment earned $9.30, and any little saving the smelter may make on metals over what he pays for, or less any loss of metals if his metallurgical results should prove unsatisfactory. While saying something of what is done to earn this $9.30 it will, perhaps, make the matter clearer if a comparison is made with the work done to earn the treatment charge on the principal ores of the Boundary Creek district, as the rates charged there are often quoted (sometimes by those who should know better) when complaining of the rates on lead ores. We have on the one hand deposits of ore so immense, and so easily mined, that a very large and regular output can be definitely relied upon and the most economical smelting arrangements made with the knowledge that such a plant will have an ample supply of ore for years to come, as an instance of which the Granby Company has installed and is preparing to install the necessary blast furnaces and other plant to treat 2,000 tons of ore a day from its own mine, and to bring the product up to the last stage before the electrolytic separation of the precious metals. On the other hand you have a variable uncertain tonnage of lead ores, varying in quantity from less than fifty tons a day at present to perhaps 400 tons a day at times, to be purchased in irregular quantities from a great number of mines scattered over the district, making it imprudent to invest in the necessary plant to treat the maximum output, as in that case a great part of the plant may be idle much of the time, making it necessary also to provide storage (not in one mass but in a number of bins for the different classes of ore) for the surplus output to provide, if possible, for the times when the output falls below the requirements of the smelter. In the one case there is an uniform grade of ore not dependent upon the admixture of any other so that it can be smelted as fast as it reaches the works, the loss of interest and risk of loss in prices minimized, and the works planned for the most economical operation; in the other a great variety of ores one dependent upon the other for economical smelting which, with the irregularity of supply, makes it necessary to carry large stocks of valuable ore and increases the necessary cost of handling, the loss of interest, and the risk of loss in prices. It might be thought that the smelter would equalise the losses on a falling market by gains on a rising market, but this is not the case, for while its receipts are likely to be in excess of its capacity when prices are high and its stock therefore increases, shipments from the mines diminish with low prices until the surplus is exhausted and the rising market finds it with empty bins and perhaps compelled to close down until it can accumulate a stock. The daily output at present, for instance, is not sufficient to keep one of the local smelters in operation. A German smelter will require, in agreeing to buy the output of ore from a mine, that a certain tonnage should be guaranteed, and will also limit the tonnage which it will accept. In British Columbia the lead ore contracts have been altogether in favour of the miner who has not usually guaranteed any definite tonnage, while the smelter has agreed to take the whole output of the mine. Next, the smelter buying the Boundary creek, or other copper ore, deducts from the New York price of refined copper about $100 per ton with which to pay the freight to New York, and the refiners deductions and charges which, instead of being less than the cost, as in the case of the deduction of $20.00 per ton of lead, gives him a margin of profit to help out his earnings for treatment.

Again, as regards cost of treatment, in the one case it is possible to make one sample and assay for a lot of several car loads, in the other almost always each car load forms a lot. Next, a furnace of such a size as would smelt 400 tons a day of Boundary Creek ore would be doing equally good work when smelting 100 tons per diem of a mixture of lead and dry ore accompanied by the necessary barren flux, which means that the cost per ton for interest on plant, management, clerical, assayers, foremen's salaries, etc., will be four times as much per ton in one case as in the other, without considering continuity as opposed to regularity of operation. Then, ore of the one class is ready for the blast furnace without any previous preparation, while almost all the lead ore now mined in British Columbia must be crushed fine, roasted in furnaces, then mixed with lime and made into briquettes, which operations cost about as much as the whole process of smelting the Boundary ore, increase the losses of values, and require additional expensive plant. Next, the Boundary ore requires no flux; for the other barren flux must be bought, which not only costs money itself, but costs money for labour, fuel, etc., to smelt it, and absorbs some of the