ing veins exposed on the surface and similar geological conditions. The ore exposed on the Silver Queen was richer than that on the Townsite, but the area of silver-bearing formation was more restricted on the Silver Queen property, so that a comparison of these two properties is legitimate.

The Silver Queen property was sold to the Silver Queen Mining Company for $810,000 cash. This meant that this amount of capital had to be expended to acquire the property before any ore could be taken out.

In the case of the Cobalt Townsite property, instead of selling it for a large cash payment, which could easily have been obtained, the T. & N. O. Ry. Commission leased the property to the Cobalt Townsite Mining Company on a long time lease (999 years) exacting a payment of $50,000 cash bonus and a royalty on all o extracted.

In the former case the purchaser had to pay the whole $810,000 cash before there was any chance of a return, while in the latter case only 1/16th of this amount had to be paid to begin with, and the further payments were only made as the ore extracted was sold. These royalties to date have amounted to $279,482.72.

The Railway Commission expects to receive further royalties from this property in the future, but the operating company only pays these on receipts from sale of ores. It does not have to assume the responsibility of a large cash payment at the commencement of operations and consequently its capital is left available for development work and the fairness of the arrangement to both parties concerned is obvious.

The royalties received by the T. & N. O. Ry. Commission from its mining leases to the 31st October, 1914, are as follows:

Cobalt Townsite	$279,482.72
City of Cobalt	100,791.13
Right of Way	272,109.17
Nancy Helen	6,126.60
Mining Corporation of Canada	8,405.60
Total	$666,915.22

A number of other mines at Cobalt pay royalty directly to the Government on certain special arrangements, but these have nothing to do with the T. & N. O. Ry. Commission. Thus, when the Crown Reserve mine was sold by the Government, a clause was attached to the deed of sale whereby the Crown Reserve Company paid a certain amount of cash for the property and in addition pays a royalty of 10 per cent. on all ores shipped, the valuation being the gross value at the collar of the shaft. A similar clause was attached to all sales of lots in the Gillies Limit.

The mines paying royalty directly to the Ontario Government are shown in the following statement:

O'Brien, $700,966.07; Crown Reserve, $771,883.44; Hudson Bay, $326,806.35; Chambers Ferland, $26,-256.60; Hargraves, $1,200.00; Waldman, $777.48; Wyandoh, $1,421.72; Provincial, $6,735.14; total, $1,836,-049.84.

The above royalties are paid on the following bases:

O'Brien Mine.—Fifteen per cent. of the net profits as ascertained on the basis of the Mining Tax Act (R.S.O. 1914, ch. 26, sec. 5). The royalty at first was at the rate of 25 per cent. of the value of the ore at the pit's mouth (less surface costs) but was reduced in 1913.

Crown Reserve Mining Co.—Ten per cent. of the value of the ore at the pit's mouth.

Hudson Bay Mines.—Ten per cent. of the net profits as ascertained on the basis of the Mining Tax Act. The rate charged at first was 15 per cent. on the net smelter returns, but was reduced in 1913.

Chambers Ferland Mining Co.—At first 25 per cent. of the value of the ore at the pit's mouth, as in the case of O'Brien Mine. Afterwards reduced to 25 per cent. of the net profits on the basis of the Mining Tax Act; and in 1912 the royalty was abolished, reserving to the Crown the right, in case of rich ore being found in quantity, to impose the royalty up to the extent of 25 per cent. on the net profits as above.

Hargraves Silver Mine.—Same as Chambers Ferland.

Waldman Silver Cobalt Mining Co.—Ten per cent. of the value of the ore at the pit's mouth.

Wyandoh Mining Co.—Ten per cent. of the value of the ore at the pit's mouth.

Cobalt Provincial Mines.—Ten per cent. of the value of the ore at the pit's mouth.

The Peterson Lake Mining Company has divided its property up into 10 acre lots and has leased a number of these lots to independent mining companies on a royalty basis. Thus the Seneca Superior and the Gould are working leases from the Peterson Lake Company paying the owning company 25 per cent. on all ore shipped, calculated on the gross smelter returns. In these cases the royalty is paid to the Peterson Lake Company and none is paid to the Government. Only Bonanza veins can pay on such a basis.

The Ontario Government collects a revenue from mining companies throughout the Province through the operation of the Mining Tax Act. This is a tax, however, and not a royalty, and is calculated on the basis of 3 per cent. on all profits above $10,000 annually.

COAL GAS RESIDUALS.

Coal gas residuals form the bases of many industries. Owing to the great development of by-product coke ovens and gas plants in Germany and the application of modern chemistry to the utilization of their by-products, these industries have largely been controlled by that country. In the readjustment of industrial and trade conditions after the war, it is desirable that as many of these industries as possible be established in Canada and in other parts of the British Empire.

There are two large by-product coke ovens in Canada which produce 67 per cent. of our coke output. These plants are situated at Sault Ste. Marie, Ont., and at Sydney, N.S. Since the outbreak of war, the latter plant has been installing a benzol recovery plant, but, in western Canada, there are numerous beehive coke ovens which do not save any by-products whatsoever. Again, while large quantities of tar are recovered from local gas plants, no industries have been established for the refining, separation and use of the products obtainable from it.

Not only is the saving of the by-products from the coking or carbonization of coal a measure of conservation, but the sale of these residuals is the means of reducing the cost of production in a degree corresponding to the efficiency of the recovery methods adopted and the market value of the products.

This subject is of special interest at this time on account of the effect of the war on the industries dependent on aniline dyes and because the English lyddite and French melinite explosives are made from carbolic acid, a coal tar derivative. A new explosive, trinitrotoluene, is attracting even more attention. It is made from toluene, which is found in the benzol obtained by distillation from tar or in ordinary coal or coke-oven gas.—W. J. D.