TABLE II.

No.	Organic sulphur.	Inorganic sulphur
1	37.86%	62.14%
2	56.59%	43.41%
3	71.56%	28.44%
4	83.16%	16.84%
5	85.23%	14.77%

We have thus clearly obtained a series of samples with gradually decreasing inorganic and increasing organic sulphurs.

There is also another way in which the total sulphur may be distributed, viz.: as volatile and fixed sulphur ; meaning of course, that sulphur which escapes during the coking process and that which remains in the coke. The method used in obtaining this information is to first determine the total sulphur in the coal and then the total sulphur in the coke produced from that particular coal. From this it is easy to calculate the amount of sulphur volatilized.

Table III. gives the figures thus obtained.

TABLE III.

No.	Volatile sulphur.	Fixed sulphur.
1	33.49%	66.51%
2	42.64%	57.36%
3	50.46%	49.54%
4	49.47%	50.46%
5	52.27%	47.73%

There is not the same regularity as shown in Table II, but there seems to be an increase in the amount of volatile sulphur in those samples having a high percentage of organic sulphur.

Now if the only sulphur votatilized was the one atom of sulphur in pyrites according to the above mentioned equation, we can calculate what the percentage of volatile sulphur should be ; because the sulphur called inorganic is assumed to be present as iron pyrites. So that if we take half the inorganic sulphur it should correspond with the percentage of volatile sulphur if the above supposition is true, and also if there is no organic sulphur volatilized.

The result of this calculation is given in Table IV.

No.	One half the Inorganic sulpher.	Volitate sulpher	Difference.
1.....	31.07	33.49	2.42
2.....	21.70	42.64	20.94
3.....	14.22	50.46	36.24
4.....	8.42	49.47	41.05
5.....	7.38	52.27	44.89

This would seem to indicate that when the inorganic sulphur was in excess the above supposition is approximately true, but that it does not hold at all when the organic is in excess. It seems rather strange why this should be so unless it is due to mass action.

I think we are perfectly justified in concluding that in the coking process a very considerable part of the organic sulphur is volatilized.

In 1907 Canada exported 7,419 tons of coal to the Hawaiian Islands. During 1908 only 1,548 tons were exported.

COAL-CUTTING MACHINES.

Mr. R. D. Bain, the Chief Inspector of Mines in the Durham District, England, states that there is an increase of 23 coal-cuting machines as compared with the previous year, the total now being 175 for the district. Both electricity and compressed air are used, but the larger number use compresesd air, as it is more easily handled, assists ventilation and is less liable to accidents in fiery mines, but the leakage is greater when working at a long distance from the face. With the eight-hour day established I anticipate a much larger use of coal-cutting machinery in collieries, as all labour-saving devices must be used to enable British coal-owners to compete with Continental mines, where labour is cheaper and the hours worked greater than in this country. It has been found in Rand experience that the loss of air is less when it is transmitted in large piping, the pressure being much heavier when small pipes are used, and this factor should not be lost sight of in the utilization of compressed air in collieries.

It has also been found that when the coal seams and other conditions are favourable, the output per man may be doubled when machines are used, while the cost of production is appreciably reduced and an increased value of the output per ton is obtained, the proportion of round coal being increased with machines by 25 per cent. Besides, the coal mined is firmer and in better condition, and a more regular line of face is obtained by machines, and fewer explosives are required in breaking down the coal.

Although coal-cutting machines were introduced in Great Britain 50 years ago, in 1902 there were only 166 machines used, while in 1907 there were 1,493 machines in use. In the United States of America there were 10,212 machines in use in 1906, and the percentage of the total coal mined by machinery was more than 30 per cent. Each machine used in the United States showed an average annual production of 11,638 tons, as compared with 8,630 tons in Great Britain. In the United States the total number employed in coal mines was 940,618 persons; in Great Britain a total of 1,059,028 persons were employed in the industry. With fewer men the United States produced 60 per cent. more coal than was produced in Great Britain, largely due to the more extensive use of coal-cutting machines and the larger output of coal per machine.

NEW MEMBERS—C.M.I.

The following gentlemen were elected to membership at a Council Meeting held on July 15th, 1909.

Members.

Anderson, Glenn, Mgr. King Edward Mine, Cobalt, Ont.
Bailey, Frank, Merritt, Nicola Valley, B.C.
Brown, H. L., Mgr. Silver Cross Mine, Giroux Lake, Ont.
Burnett, A.,B. C. Copper Co., Greenwood, B.C.
Cameron, John A., Nugget Mine, Giroux Lake, Ont.
Chipman, K. G., Geological Survey, Ottawa, Ont.
Colvocaresses, G. M., Mgr. Blackburn Mine, Box 607, Gow Ganda, Ont.
Dickerman, Allan G., 60 State St., Boston, Mass., U.S.A.
Fournier, A., Mgr. Selkirk Mining Co., Ltd., Box 474, Kaslo, B.C.
Graham, Chas., Box 269, Nanaimo, B.C.
Gray, F. W., Box 225, Sydney, N. S.
Groch, Frank, Box 780, Cobalt, Ont.