conditions presenting themselves, and by the personal knowledge of the engineer, but it is well to emphasize the special precaution advisable in repeating any one sample, and the preference for cutting samples on both sides rather than for repeating the original cut.*

(To be continued.)

A MARKET FOR CANADIAN LEAD IN JAPAN.

The Canadian Government's commercial representative in Japan writes as follows:—

Having received an inquiry recently as to the probable prospect in Japan for the exportation of lead ores from British Columbia, I have made investigations on this subject. My information is to the effect that it will be difficult to do this unless the ore is sufficiently low in price to leave a margin of profit after paying freight and other charges. The fact is that the three or four principal Japanese firms who are doing the smelting and refining of lead are mine owners themselves, and have their plants at the mines, which, as a rule, are inconveniently situated as regards transportation by water.

The only refinery that is situated at a convenient seaport is one at Osaka, owned by the Mitsu Bishi Kaisha. The refinery has, however, been established for the refining of copper produced at the company's mines. That of lead is done only as subsidiary work. As will be gathered from the figures following, there has been a gradual falling off in the production of lead in Japan in recent years. This is not owing to the scarcity of lead to be mined, but because of the less remunerative nature of mining on account of the depreciation in value of silver and lead, and also the comparatively low price of imported lead, which chiefly comes from Australia. In consequence of this, some of the lead mines have suspended working while others are being worked only irregularly.

The mining people here seem inclined to the belief that the importation of lead ores to be smelted and refined in Japan will not pay. The following Japanese firms, who are engaged in coal, copper and lead mining, have their own smelting and refining works:

Takata Shokai, Yaesucho, Tokyo; Mitsu Bishi Goshi Kaisha, Yaesucho, Tokyo; Mitsui Bussan Kaisha, Kayabucho, Tokyo; Sumitomo & Co., Tokyo.

PRICES OF VARIOUS METALS.

The following were the standard prices of the various metals in the Yokohama market during December, 1904:

Zinc sheet	per	133 lbs.	$ 5 70
" for roofing	"		5 00
Brass plate	"		24 00
Lead (Australian)	"		4 50
Tin	"		42 00
Copper plate	"		29 00
Spelter (best)	"		8 25
" (medium)	"		6 50
Tea lead	"		6 40
Sheet lead	"		4 75
Paints, white zinc 4 tins, each containing 25 lbs.			9 40
Paints, white lead 4 tins, each containing 25 lbs.			6 25
Paints, red lead 4 tins, each containing 25 lbs.			6 00

* For a comprehensive discussion of sampling, with mathematical demonstration, reference is made to Mr. Rickard's article, op. cit. pp. 723-728.

IMPORT DUTIES ON METALS.

The import duty on metals is as follows:—

Zinc, block, ingot and slab	per	133 lbs.	$ 0 28
" sheet	"		0 70
Brass plate	"		3 40
Lead, pig, ingot and slab	"		0 21
" sheet	"		0 49
" pipes and tubes	"		0 55
Tin, block, ingot and slab	"		1 68
" plate and sheet	"		10 p.c.
Yellow metal, sheet	"		2 00
Copper, plate and sheet	"		3 60
White zinc	"		1 00
Lead paints	"		1 00

The duties mentioned above include the increases to be made on lead after July 1, 1905, as war taxes. Zinc sheet No. 2 and tin lead are free from duty.

LEAD AND ZINC.

The import of lead and zinc during four years ended 1903 was as follows:—

Lead, block, ingot and slab.

1900	$463,576
1901	438,114
1902	255,356
1903	313,047

Zinc, block, ingot and slab.

1900	$343,040
1901	115,279
1902	127,500
1903	200,984

Zinc plate No. 2.

1900	$298,404
1901	254,752
1902	390,934
1903	354,859

Lead is chiefly imported from Australia and the United States, and zinc and zinc plate from Germany, Belgium and Great Britain.

OUTBURSTS OF GAS AND COAL AT THE MORRISSEY COLLIERIES, BRITISH COLUMBIA.*

By JAMES ASHWORTH.

Introduction.—Whilst the writer was in British Columbia a few months ago, Mr. R. G. Drinnan, the general superintendent of the collieries of the Crow's Nest Pass Coal Company, Limited, favoured him with the particulars of unusually large outbursts of gas and small coal, in the No. 1 mine at Morrissey. The mine is situated about ½ mile east of the terminus of the Morrissey branch line of railway, and about 4,000 feet above sea level (about north latitude 49 deg. 15 ft., and west longitude 114 deg. 56 ft.)

All the seams of coal worked at these collieries crop out at the surface; and at the No. 1 mine, the seam is a very soft, non-bituminous coal of irregular thickness, varying from 14 to 40 feet. The seam, dipping north-eastward at an angle of about 25 degrees, has a strong roof and floor. It probably cor-

* Trans. Inst. M. and M.