GEOLOGICAL SURVEY OF CANADA.

PRACTICAL TRIALS IN GAS MAKING.

Requisites of a gas-coal.

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The most important requisites of a gas coal are :—1st. That it contains a large amount of volatile combustible matter (gas);—2d. That this volatile matter be of good illuminating power, and as free as possible from sulphur, and—3d. That the coke furnished by the carbonization of the coal be bulky, and at the same time firm, (*i. e.* not inclined to be granular.)

The importance of the first requisite, will be evident to all. The percentage of volatile matter in true coals usually employed in gas-making, is from 25 to 40 per cent., and in cannels it rises to 60 or 70 per cent.

The true bituminous coals of this district which are now being worked, average, according to the latest analyses, as given in the first Section of this Report, about 28 or 29 per cent. of volatile matter; the content of the hardest being 20.46 per cent., and of the softest being 38.84 per cent. The oil coals, oil shales, and a single cannel range higher in gas-content, the stellarite reaching 68.38 per cent., and Lawson's cannel 41.18 per cent., which last figure is not, however, a high percentage of volatile matter for a cannel. That the percentage of volatile matter, given by analysis in the small way, is not always a true index of the value of a gascoal, will be seen by a reference to the analyses of the Foord-pit coal, which stands nearly at the head of the list of Pictou (true) coals, as a gasproducer. The percentage of volatile matter appears rather low in this case, in fact so much below what would be expected from so good a gas-coal, that I am inclined to suspect that the samples analysed in the small way, were not fair averages of the produce of this colliery.

Quality of gas.

Gas-content.

That the gas produced from the coal be of good illuminating power, is most important, will also be seen, though from the fact that the standard of illuminating power can easily be raised by the addition of a few per cent. of some rich cannel, or substance of the character of the stellarite, many coals, which produce gas of a low standard, but in large quantity, (if they coke well,) are often used as gas coals. The stellarite has been used to raise the standard of illuminating power of gas from other coals; as are also, torbanite, albertite, cannels, and many oil shales. To instance a case of this kind, I may state that Mr. Thompson, of the Pictou Gas-works informs me that when using a coal giving *per se* 15-candle gas, he adds 10 per cent. of Leshmahagow cannel, in order to raise the gas to the standard of 18 candles.*

• The standard candle in testing gases, is of spermaceti, burning at the rate of 120 grains to the hour. To compare the illuminating powers of gases, the light given by a standard burner burning five (5) cubic feet per hour of the gas under examination, is compared with the light of one of these standard candles, the result giving the candle-

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