was being used for fuel for drilling purposes, the flow seemed somewhat less than the previous year. Mr. Williams would not allow the well to be gauged, however, although it was still blowing into the air through a one-inch pipe.

"While Mr. Williams' statement may have been somewhat optimistic, yet it is reasonably certain that the well was not making more than his estimate, *viz.*, 840,000 cubic feet. Now, in line with Orton's hydrostatic theory of underground pressures, and knowing the difference in elevation of the Dakota Sand at Pelican and its nearest outcrop at Boiler Rapids to be very close to 500 feet, the pressure would theoretically be 260 lbs. per square inch in the Dakota Sand at a depth of 820 feet at Pelican. This coincides very well with Mr. Williams' report of 225 lbs., and it is believed that probably the pressure was not much higher in 1897 than it is at present. However, the flow of gas from this well has decreased very greatly, according to the reports of those who make yearly trips down the Athabasca River. There is no certain way of estimating the original flow of this well when drilled 17 years ago. However, in the writer's judgment, an eight-inch hole at a pressure of 260 lbs. would not produce more than a maximum of 5,000,000 cubic feet per day from a sand of the character of the Dakota. In other words, an average flow of 2,900,000 cubic feet per day for 17 years. This may be regarded in the nature of a maximum figure and is very approximate, due to our assumption of a fairly constant pressure at all times. However, in a sand as uniformly coarse as the Dakota, with a uniform dip to its outdrop at Boiler Rapids, it is difficult to imagine a much greater pressure to exist at Pelican than one equal to the hydrostatic head, due to the difference in elevation of the sand at the two points. In all fields far removed from the out-crop of the gas-bearing formation, where many wells are drawing from the same area, a drop in pressure of from 30 to 100 pounds per year is the rule. But with one well only draining the district, and other conditions such as at Pelican, I believe we are safe in the assumption that the pressure was never much above 260 lbs., the flow decreasing due to the greater distance through which the gas must now travel to reach the well."

Taking the amount of gas which escaped daily at 2,900,000 cubic feet, a simple calculation shows that this amounts to 17,994,500,000 cubic feet in 17 years. The average price for natural gas in Canada in 1913 was 15 cents per 1,000 cubic feet, which would give $2,700,000 as the value of the gas wasted. Even if this estimate be reduced by 50 per cent., the waste still remains enormous and inexcusable.

Furthermore, another point must be borne in mind in connection with these supplies of natural gas, and that is that the gas often travels for long distances underground and a waste at one point affects not merely the supply in its immediate vicinity, but often exhausts the supplies of gas in the entire field underlying a great tract of country, so that it is not merely the area about the point of escape which is affected but the whole surrounding region whose potential development is seriously impaired by the destruction of one of its great natural resources.

With the single exception of Ontario, no province in the Dominion at the present time requires gas wells which are not being used to be plugged, and this province has further reduced the waste in the area under its jurisdiction by levying a tax of two cents per thousand feet with a rebate of 90 per cent. for the gas that is actually used. The Dominion Government and all the provincial governments should at once pass enactments requiring all gas wells which have been abandoned or are not in use to be plugged. Legislation similar to that in force in Ontario should also be passed by the Dominion Government and the other provinces requiring the payment of a royalty on gas with a suitable rebate for the gas actually used. Natural gas, when discovered, enters into direct competition and supplants coal which pays a royalty to the government and the rebate, if properly adjusted, makes waste unprofitable and, therefore, tends to stop it.

The public should also be brought to realize that there are many forms of waste against which it is difficult to legislate but which are none the less disastrous. Among these may be mentioned the custom of selling natural gas at a flat rate of so much per burner per month instead of at so much per 1,000 cubic feet. The inevitable tendency of this, as seen in Medicine Hat at the present time, is to allow the gas to burn all day, seeing that it costs no more to do so, while at the same time it is easier to let it burn than to turn it out, and the spectacle of gas blazing throughout the day conveys a general suggestion of the abundance of a product which one can afford to waste so lavishly. No company manufacturing coal gas sells it in this manner since they clearly recognize that if they did so the gas would certainly be wasted and all profits would disappear. Natural gas should always be sold at a definite rate per thousand cubic feet. Furthermore, since natural gas has not, as a general rule, a very high illuminating power, the best and most economical results are obtained if, instead of burning a large number of jets as open flames, a relatively smaller number are used with incandescent mantles, which greatly increase the illuminating power of the gas.

Economy may also be practised when the gas is used for the development of power. Thus 80 to 130 cubic feet of natural gas are required to develop one horse-power per hour when the gas is burned under a boiler and the steam produced is used for driving a steam engine of the ordinary type. The same power can be developed with a consumption of 9 to 15 cubic feet per hour in a gas engine of equal reliability and the same cost of maintenance. Hence a great saving can be effected if the gas is employed directly in a gas engine.

It must always be remembered that the prevention of waste in the case of our mineral resources is the only true conservation.

FATALITIES IN COAL MINES.

The fatalities in coal mines in the United States in 1914 were 334 less than during the preceding year, the total fatalities being 2,451 as compared with 2,785 for 1913.

The principal causes of accidents that show a material decrease were: coal-dust explosions, 96 per cent.; haulage, 11 per cent.; and falls of roof and pillar coal, 10.6 per cent. The net decrease, in underground fatalities was 365, or 14 per cent. This is equivalent to saving one life every day during the year.

There were 331 fatalities due to gas explosions as compared with 91 in 1913, making a net increase of 240. Of the total gas-explosion fatalities, 261 were due to four serious explosions. There were slight increases in accidents due to explosions and electricity. There was also a net increase of 26 fatalities in shaft accidents, or 42 per cent., while on the surface, the net increase was five, or about 3 per cent. The net decrease for the year for both underground and surface accidents at coal mines as compared with 1913 was 12 per cent.