to two Siemens 35 h.p. motors which receive their power from the supply mains from the city's central power station. These pumps lift the water to the elevated tank, a height of upwards of 110 feet. They will ordinarily draw from the storage reservoir, but the piping arrangements will permit water to be drawn direct from the Caron gravity main. In addition to this, either pump can draw from either side of the reservoir. Finally the piping system will permit of water being fed (without pumping) from the reservoir or from the gravity main into the city's distributing system, either of which would give a moderate pressure over all of the city except the highest parts. If desired, the elevated tank may be cut out and the pumps made to discharge direct into the mains. The motors are equipped with Cutler-Hammer switches operated by a float in the elevated tank. This is intended to keep the tank practically full at all times. The pumping station is supplied with a heating boiler with circuits through the reservoir and the riser of the elevated tank to provide against unusual frost conditions.

The Elevated Tank.—The elevated tank is a steel structure of 75,000 gallons capacity, and is carried on four posts. It is provided with a riser 6 feet in diameter. The bottom is elliptical in section. The tank is provided with a mercury pressure indicating gauge and with floats operating the motor switches in the pumping station. The elevated tank, the Moose Jaw pumping station, and the storage reservoir stand in close proximity on what is practically the highest ground in the vicinity of the city.

As stated previously, the infiltration gallery, the headworks pumping station, the pressure main and the headworks reservoir were all done by day labor. The Wm. Newman Company, Limited, Maurice S. Holmes, and the Moose Jaw Construction Company, Limited, were the contractors for the laying of the gravity pipe line, the pipe itself having been supplied by the National Tube Company through the United States Steel Products Company. The storage reservoir and the Moose Jaw pumping station were constructed by the Moose Jaw Construction Company, Limited. George T. Horton, of Chicago, supplied the elevated tank. Drummond, McCall & Company supplied all valves, fittings and specials. The mechanical equipments at the headworks and Moose Jaw pumping stations were supplied by the Canadian Böving Company, Limited, and the Canadian Fairbanks-Morse Company, Limited.

At the present time the infiltration gallery is laid for only about half its contemplated length, and the system of deep wells across the valley to tap the lower supply has not been constructed. The reason for this is that it was considered best to test out the supply this winter with only part of the gallery in operation. Then, if the conditions require it, the balance of the gallery and the deep wells are to be constructed next season. It is quite likely that the present works will be extended so as to include the whole of the development originally contemplated at the headworks.

The Canadian Pacific Railway, the Canadian Northern Railway and the Grand Trunk Pacific will all be active one way or another on the southern part of Vancouver Island. Following that will be expansion further up the Island, so prospects are good.

There are differences in Vancouver over the Canadian Northern Railway agreement, which will shortly be voted on by the people. At the meeting of the board of trade on Tuesday last, a resolution was carried asking that the people vote against the proposition. It is not probable that the board of trade will be seriously heeded in this matter, for the agreement seems to be supported about the city.

COAL STORED UNDER WATER.*

For some time past the attention of those responsible for the control of large industrial and engineering concerns has been centred upon the problem of effectively storing large quantities of coal so as to avoid, or at any rate minimize the risk of spontaneous ignition, and at the same time prevent undue deterioration in quality. As has been frequently pointed out, coals of the bituminous gas-making type (i.e., coals containing about 30 per cent. of volatile matter) are usually found to be affected to a far greater extent than the less volatile steam coals. The unsatisfactory aspect of the whole question, however, is that there is no definite means by which it is possible to ascertain whether or not a certain coal is one which must be regarded with suspicion. In fact, it frequently happens that a stack of apparently harmless coal will heat up without the slightest warning. Hence the only course open to the cautious engineer is to assume that any and every class of coal is liable to ignition, and to subject each consignment—whatever its tendencies—to similar conditions of storage.

The more common method is merely to dump the coal in large stacks, at the same time observing certain well-established rules and ordinary precautions; but another plan, which, however, is seldom adopted in this country, is to submerge the whole stack in a suitable reservoir of water provided for the purpose. This system is viewed with considerable favor by American engineers, and whenever it has been adopted the additional first cost has been found to be more than balanced by the benefit gained in the form of less deterioration, and, of course, perfect freedom from fire. It was originally suggested by a dock engineer who carried out a number of experiments on pieces of coal which had been accidentally split during transference from ship to shore, and which were subsequently recovered from the river bed. This coal, part of which had probably been submerged for some considerable period, showed on analysis a surprisingly small amount of deterioration, and the same results were obtained when experiments were made with larger amounts. In some cases the dredged coal had been immersed for at least ten years, and even then it was found to have lost little of its original value; while in the case of samples immersed for about three years the deterioration was estimated to amount to less than 3 per cent. This is, of course, a remarkably low figure when compared with that for ordinary bituminous coals stacked in the open in this country, for they invariably show a decrease in value of from 5 to 8 per cent. in the course of 12 months. In more tropical countries, and in climates in which variations and extremes of temperature are abnormal, the loss is naturally very much greater. For instance, coal of the Navy type stored in Hong-kong is said to suffer to the extent of from 20 to 40 per cent. If this is the case with a steam coal, the corresponding amount of deterioration of a bituminous coal would be a somewhat serious consideration.

Advantages of Wet Storage.—If it were possible to maintain an equable and moderately low temperature throughout a coal stack there would probably be little trouble with spontaneous firing, and it is in this respect that the wet method is superior to any other. Nowadays coal stocks kept in hand by industrial concerns are in many cases far too large to be provided with shelter from the weather, and are consequently subjected to varying conditions of snow, rain, frost, and sun. When submerged, however, the material is protected more adequately than if it were housed; and, no matter what are the weather conditions, the variation in temperature of the mass will be comparatively small. It is now generally

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