

the town. In the line there are 3 blow offs and 3 air cocks. For a distance of 800 ft. just before the end of the 20 in. pipe, there is a hill rising above the lake level; this had to be cut through to a depth of 23 ft. in order to get the pipe down to grade. At a place 1,300 ft. from the lake the trench bottom was found to be too soft to lay the 20 in. pipe on; so a platform of 2 in. plank was built for a distance of some 75 ft.

There are 25 hydrants, made by the Burrell-Johnson Iron Co., Yarmouth, N.S. The house connections are all made with $\frac{1}{2}$ in. lead pipe weighing 7 lbs. to the yard, and costing when laid in the trench about 12 cts. per foot. The service-pipes were laid to a depth of 5 ft., which, in Dartmouth, appears to be below the frost level. The sewerage system is divided into three sections, each having its own outfall. The principal outfall is a 20x30 in. concrete block, egg-shaped sewer, extended out into the harbor 30 ft., with a circular wooden box 30 ins. in diameter. Wherever two or more sewers meet there is a manhole, and every change of grade a lamphole and ventilator. The catch basins, of which there are 42, were designed by E. H. Keating, and are connected with the sewer by a 9 in. pipe, there being always a good fall. All catch basins and manholes are made of concrete.

A SURVEYOR'S OBSERVATIONS AND OPINIONS.

BY L. V. RORKE, D.L.S.

This paper, though containing my own ideas from a personal standpoint, I feel is but a repetition of what has been read time and again before you. If the title, a surveyor's "observations," were presented to a surveyors' association, they would look for a discourse on the magnitude, distance, and relative position of the polar star, sun, moon, or some other planet. But when presented to a mining association, it is expected that their minds will be directed to things that are earthly, if not "rocky."

The history of mining regions is very different, and seldom has the history of one been identical with that of another. Some mining districts have been developed soon after discovery and on a large scale, producing handsome rewards to the promoters and investors in a very short time. Others have been discovered and worked by slow stages, although drawing attention the wide world over, and still drag out a weary and lifeless existence over an extended period before thorough and practical operations take place, if ever. Amongst the latter kind are those that have not sufficient paying mineral to make them mining districts, and those that have good mineral in abundance, and are also comparatively easy of access, with many natural facilities, but which for some reason or reasons do not come to the front as mining districts in the true sense of the word, with scenes of bustling activity in practical work, and the smoke rising from hundreds of mines throughout their extent. Under this head the mining districts of Algoma and Nipissing must at present be classed.

The reason why this state of affairs exists in these districts will be fully discussed in other papers. I will confine myself, therefore, to a few of the observations made during the past few years. Almost all discoveries have been made in the "brulé," for the simple reason that the part of the country burnt over is much easier prospected than in the green bush. It is for the same reason, no doubt, that the great territory lying

between here and Hudson's Bay is yet unexplored, though we are led to believe from reports, both official and private, that it is not less rich in the more valuable minerals than our own immediate vicinity. It is quite evident that the majority of prospectors prefer to go upon and explore lands readily accessible to the outside world, and from which they can escape periodically and rest from their arduous life and refresh their wearied limbs. Nor is it to be wondered at either that they seek the best finds nearest to railway or steamboat communication, when such are the ones that most readily attract the attention of investors. However, I think that a sally into these more remote regions to the north will repay any prospector. There he will to a certain extent be on territory of his own. At least, he need have no fears of previous claims on any discoveries he may make. He would also be entitled to the benefit of sub-section 3, section 4, of the Mines Act, 1892, that gives exemption from royalty for fifteen years. If even by the sacrifice of one rich claim he induces capital to come to his aid, and a railroad is built into his now explored territory, he can hold or dispose of his other finds to advantage.

Many pass through this district hurriedly, and carry away the impression that to build twenty or thirty miles of railway means more than most mines are worth. True, air lines through this rugged country would be gigantic undertakings, but these are only necessary on short lines making seaboard connections over which through traffic passes, with a view of rapid transit, and even then would not repay the extra expenditure did not competition render it absolutely necessary. But very different are the requirements of a line to freight ore, timber and other natural products of this northern district. I do not think I have observed any territory where it would be more difficult to build a road than that traversed by the Canadian Pacific Railway. Then again, this twenty or thirty miles of road into unexplored territory would be the tapping of lands still more remote, and eventually pay as handsome a dividend as the mines to which it would act as an outlet.

WATER POWERS.

Whatever ideas one may form regarding the building of railways by a hurried look over the country, he cannot but notice the numerous water powers throughout its extent. Even without leaving the railway coach he can observe, while crossing the Spanish, Vermillion and Onaping rivers, a few of the great falls that occur along the different streams. It may be a glowing picture of the future, but I believe that ere long, in this fast advancing age of electricity, we shall see these several powers used for the generating and transmission of electric currents throughout the district, to the various mines and works, thus lessening the cost of mining, separating and shipping the ores of the country. We are frequently asked by outside parties who have heard of this part of Ontario as a mining district, what kinds of mineral are found here? Generally we reply by naming the most common, such as nickel, gold, copper and iron, without referring to the different other metals, some of recent discovery. Well, and are all these in paying quantities? is the next enquiry, which brings an answer somewhat as follows: They are not yet fully developed; the district is new, but judging from such development as has been done, from the tests made for finding the different ores, and comparing the results with other mining fields, there is a very encouraging