

needle of which followed its owner like his faithful dog. Although the owners of such prospects are often pressed for money, it would seem to be money well spent, if in properly laying out the workings.

Ascending to prospects which are called mines, with all the dignity of a manager and staff, the plans will sometimes be found to be on several different scales, undated and unsigned, with no comprehensive view of the entire workings. The surveys, in which they originated, have been made by many different men, usually by anyone who could be spared at the time from more pressing duties. This leads the non-mining pilgrim to speculate as to where the responsibility is placed if reliance on the plans at any time causes the waste of a few thousand dollars. It seems to be by no means a universal practice to show the boundaries of the claims with reference to the underground workings.

Our traveller, if from the older countries of Europe, will not be long in a mining district of British Columbia, before he notices the important part which timber plays in the surface constructions. If, however, he expects to get any information as to working strengths of our native timbers in definite figures, he will be woefully disappointed. He will probably not have heard of the collapse of any trestles or buildings, even if long resident, and will conclude that the factor of safety or the factor of ignorance, as a recent writer puts it, is very high. In many cases he will be in error, for the constructions have not been designed at all, but the dimensions of a timber have been settled when the last one has been put in place, or have been made to conform to those of a timber which is handy. It is true that this method answers the purpose, but will it continue to do so? The wealth of timber is not inexhaustible; we have no system of forestry or replanting. Would it not be as well to have some reliable data as to the safe working stresses on our native timbers, while there is sufficient timber left to provide the test pieces?

Another thing which sometimes strikes the unprejudiced observer, on reaching the surface, is that the surface itself seems to be arranged in the interests of the man with the wheelbarrow. Of course gravity is usefully employed even in those mines which appear the most eccentric from an engineering point of view, but as the mines are usually situated on the sides of hills, on which it is difficult to retain a footing, the most modest gravity could not entirely escape notice.

The non-mining engineer, if of the mechanical variety, will find much to interest him. The abundant sources of water power, the scope of which has been so much increased by electric transmission, have rendered the steam engine, as a prime mover, to some extent, unnecessary in this Province, so that the water-wheel or turbine will attract attention.

The miner's inch is then unearthed by the engineer, perhaps for the first time. He will learn, possibly from an article in a back number of this journal, that the miner's inch is, by law, the flow of water under a certain head, through an orifice of certain dimensions, or a certain number of gallons per minute. He thinks that this will repay investigation and finds that the

alternative legal quantities of water are by no means the same. After puzzling the matter out for some time he very likely concludes that the alternative legal flow of water bear somewhat the same relation to each other that the astronomical full moon bears to the Paschal full moon of the English Prayer Book. If there is any one thing on which the engineer, who is not a miner, may congratulate himself, it is that he can claim no part in the possession and use of such an inch as the miner's inch.

The flow of water through various orifices and under different heads has been the subject of many careful and costly experiments so that there is no occasion to undertake new ones locally; but it seems to be time to amend the legislation on the subject so that it shall no longer be ridiculous.

On arriving at another mine our traveller perhaps finds that it is using steam power. He may have seen on the road an engine being freighted to its destination, destitute of white lead, grease or other preservative for the working parts. His morbid curiosity shifts to the source of this steam power and he finds it is to be cordwood. Being accustomed to think in pounds of coal per horsepower per hour, after inquiring as to the consumption of cordwood, he will ask the weight of a cord of wood. Failing anyone who can solve such a riddle, he is driven to seek information as to the evaporative efficiency of the cordwood of the neighbourhood or indeed of any cordwood. If coal is being used, he may in a few cases, get definite figures as to the efficiency of Island or Crow's Nest coal. In some cases, the mine is so situated that both coal and cordwood are available. It is stated that one or the other is cheaper. How, then, is this knowledge evolved? How useful the process of reasoning would be in other fields of engineering!

The sizes and types of the boilers and engines employed are determined in some cases by an accurate knowledge of the work to be done and the good judgment of the superintendent; in some cases by what the manufacturer thinks suitable to the case. There are honest manufacturers, and if the data supplied to them are accurate and sufficient, satisfaction will result, but occasionally the machinery certainly looks as if it were made to sell to mines—to sell only. The most curious cases are where the size and type are determined by what the old mining man "guesses" will fill the bill. The curious visitor will do well not to probe these too deeply.

Washing out boilers does not seem to be popular and generally speaking, the stitch in time which saves nine, is left too much to the engine driver or fireman. If you can get his private ear you will learn that, in former times he has minded boilers for fabulous periods which were never washed out, had stays renewed or blew up. Regular periodical inspections appear to have commenced with the passage of a recent Steam Boiler Act. The boilers are sometimes grouped to save the wages of a second fireman. These wages are said to be more than the loss by condensation in long stretches of poorly protected steam pipes; but in view of the vague answers to particular inquiries how is this solution of a matter of hard cash arrived at.