

fraction over 23c. per ton, the total charge against the ore milled being \$1.71 per ton; the Alaska-Mexican Gold Mining Co., whose total cost per ton of ore mined and milled was \$1.726; and the Alaska United Gold Mining Co., operating the Ready Bullion and the 700 ft. mines, in which the costs were respectively \$1.97 and \$1.68. In the latter mine the costs of mining approached very close to those in the Atlantic, being only \$1.097 per ton. This remarkable result is due of course very largely to the practical absence of dead work, but when the remoteness of its situation is considered, together with the high costs of labor and provisions, it stands as a unique achievement, reflecting the greatest credit upon the intelligent management of the mine. It is indicative not only of successful dealing with the larger engineering problems presented, but also of careful attention to the minutest details of operation. There is no item too small to merit consideration in mining practice if the best economic results are to be obtained. It is by scrupulous watchfulness over the little things as well as the great that expenses can be brought down, and in this way only. A mine manager who cannot tell how much dynamite and steel is being used per ton of ore and of rock extracted, who does not keep his accounts so as to be able to analyze his costs to the last detail, is in no position to achieve reforms and reduce the charges against his marketable output, and we believe that many Canadian mining companies have much to accomplish in this direction.

Ontario Bureau of Mines Appointment.

As was anticipated, the promotion of Mr. Thomas W. Gibson, former secretary of the Bureau of Mines of Ontario, to succeed to the position of Director left vacant by the resignation of Mr. Archibald Blue, has taken place. The appointment should bring general satisfaction to those interested in the mining development of that Province. Mr. Gibson is personally a gentleman of high attainments, courteous and tactful. His long connection with the Bureau has given him an intimate acquaintance with the resources of Ontario, such as few persons have had an opportunity of acquiring. He is not, as we said in a previous issue, a mining man, and we are aware that the opinion has been expressed in many quarters that a technical training should be an essential qualification for the incumbent of this office. In this we are not disposed to concur. A technical man is more apt to prove arbitrary in his dealing with the questions which have to be determined by the Bureau, and to be out of touch with the great body of non-technical men who are chiefly interested from a financial standpoint in the development of the mineral industry. In the long run we believe that the Bureau will be likely to be administered more satisfactorily by such a person as Mr. Gibson than by a professional man. On the other hand, we do think that it would be to the interest of the Province and of the Bureau if there were a professional mining engineer regularly appointed as an advisor who should guide the Bureau in matters where technical knowledge is required.

Typhoid Fever in Mining Camps.

Some time since the War Department of the United States secured a special report on the subject of typhoid fever in mining camps, with especial reference to the disastrous ravages of the disease at Cape Nome. The authority of the Department in such matters is limited to territories, the separate states having supervision over sanitation within their own confines. The inquiry, however, should set other countries to thinking, for the prevalence of typhoid in mining camps is a conspicuous phenomenon all the world over. The outbreak at Cape Nome was of course due to the exceedingly congested population of the place, and to the entire absence of sanitary precautions. The pollution of drinking

water under such conditions was inevitable. Although typhoid germs may be carried in the dust, the chief cause of infection is the contamination of the sources of water supply. In camps where much underground mining is carried on, the installation of modern water supply and sewerage systems has not always removed the difficulty. It is furthermore conspicuous that, in such cases, the victims are almost invariably the miners working underground. Under these circumstances it is natural to suppose that the infection occurs in the mines. The miners are accustomed, where the waters are free from acids, to use the streams which issue from the walls for drinking purposes. As provision for proper sanitation is usually not made, portions of the mine very commonly become dangerous centres for the propagation of disease germs. In factories and other industrial works the law prescribes rules touching such questions, which are rigidly enforced, and it is surprising that so little attention has been paid to the same matter in mines. The Province of Ontario has taken the initiative in protecting its miners against imperfect sanitary conditions below ground, prescribing rules similar to those imposed upon factories. It is a good move, and should set an example to others of a much needed reform.

Technical Schools.

Canada has now three technical schools of the first rank, which are turning out mining engineers. The technical departments of McGill University may be considered fully developed, and on a par with the best in America; the School of Practical Science in Toronto is mainly devoted to its efforts to mechanical and electrical instruction; while the School of Mining at Kingston is particularly strong on the side of mining, having this year added greatly to its equipment, placing it on a high level in the point of ability to give thorough practical training. All this is highly encouraging, indicating a demand for special instruction to which Canada is promptly responding. It is a measure, in a certain sense, of the growth of the mineral industry in the Dominion, for young men are impelled to enter upon such courses from seeing around them opportunities to make successful careers in these special lines. But this does not imply that these Canadian institutions are destined to supply the home demand. Of engineers, perhaps more than of any other class, it may be said that they are citizens of the world. They go everywhere, regardless of nationality and of national boundaries. We cannot keep our own at home, nor can we keep others out. The only protection of the engineer is ability. It is not only the man who knows, but the man who can do, that is wanted. It is the broad man, who can take a full view of the world's work, who knows men, and can look deeply and understandingly into economic conditions, who is able to use his special training to the best advantage, and rise to positions of high responsibility. Such men are few, but it is just such men that it is the proper function of the University to turn out.

Now it is a significant fact that the positions of highest responsibility in great mining companies of this and other countries are not held as a rule by technical men. There are brilliant exceptions, but we anticipate that no one will deny that the rule works as we have said. We state what we see, while believing that it should be otherwise. There is no reason why technical men should not generally be promoted to the control of our great industrial undertakings, except that other men are found more capable of performing the peculiar duties required. One of our American contemporaries, commenting upon this recently, took the ground that it was generally best to confer the management of such enterprises upon men of business training, with technical advisors at hand to solve the scientific problems presented, but held in check and prevented from making economic mistakes by the business head of the concern. But it is perfectly clear that it would be more advantageous if the ability to manage great works were combined with technical knowledge and skill. That such is not the