

The method outlined is that which is in use in the large copper ore and matte sampling works in New York; but, of course, it cannot be carried out in the case of quantities of ore which have to be sampled at the mine or any point except the sampling works. Nevertheless, all sampling should aim to approach as closely as circumstances will permit to this ideal method.

There was here a good deal of discussion concerning the proposed confederation or union of the different mining societies of Canada into one general association for the whole Dominion. The matter was referred to the Council.

G. E. Drummond then read a paper upon "The Canadian Iron Industry." (See on another page.)

In the evening the members of the Association held a banquet at the Windsor Hotel.

### CANADIAN SOCIETY OF CIVIL ENGINEERS.

A meeting was held on Thursday, December 21st, in the society's rooms in Montreal.

After the minutes of the previous meeting had been read by the secretary, the discussion on "A Cubic Yard of Concrete" was continued.

J. S. Armstrong, of St. John, N.B., wrote, making a few remarks upon the paper. He thought sand was scarcely an absolute necessity for the formation of cement, as some kinds had practically no sand in their composition at all.

Pres. Hannaford related an interesting experience of his own, which occurred in connection with the building of a bridge at Fenelon Falls. The piers were sunk in eight feet of water on a rock foundation, the casing measuring about 30 ft. by 14 ft. Enough concrete was put in to bring the rock up to an even surface. Everything worked extremely well until one morning the workmen found that they had not allowed for the rise of the water. The timber, with its bottom of concrete, floated on the water. This showed the strength of concrete.

Mr. Irwin thought it a pity that Mr. Perley had not said more about lime, which has been used from time immemorial. He believed in using native lime, if possible.

Mr. Peterson said that under stress of circumstances he had used the Canadian limes, but had found them fail, structures in which they had been employed having often fallen to pieces. The native cements when used under water were useless. The really cheapest thing to do was to use the best, viz., Portland cement. Whilst the native cements would not properly set under water, he had seen Portland cement set as hard as limestone with the thermometer at zero, and when the cement had been mixed with cold water and cold sand.

Pres. Hannaford remarked that what had been said regarding the setting of native cements under water was quite true.

Mr. Peterson said that when the Toronto Water Works were built in 1873, native cement was ordered. Part of the well was built late in the fall, and the other part in summer. In the following spring bits could be picked out from the former portion, so friable had it already become. The use of that native cement had cost many times as much as would have been necessary had Portland cement been used in the first instance.

Mr. Irwin said he had not meant to recommend the use of Canadian native cements.

Mr. Peterson said no doubt the Portland cements now made by some manufacturers here were really better than the Portland cements of England, but he had intended to refer to the old forms. England sent out her worst cement to the colonies. The material existed in this country, and he did not see why the required skill in mixing should not be forthcoming.

Mr. Smith wondered why the proportion of cement to sand need be so great, if the other ingredients were so strong in themselves.

Mr. Peterson remarked that he had found the proportion of 2 to 1 sufficient.

A short discussion then took place with regard to a paper by Alan Macdougall on "The Professional Status," which will be found elsewhere in this issue.

President Hannaford said that the point was whether the Civil Engineers should or should not convert themselves into a close corporation.

The meeting then adjourned.

The annual meeting of the Society took place, at Montreal, on Tuesday and Wednesday, January 9th and 10th.

There was a short session on Tuesday morning, but the business transacted was of a merely routine character. Tuesday after-

noon, members of the Society were invited by Messrs. Ross and Mackenzie to lunch at the new Power House, on William Street, after which they visited the various departments of this fine establishment, inspecting the boilers, machinery, etc. A description of the Power House will be found elsewhere in this issue.

The members then visited the works of the Royal Electric Company, where they were much interested, especially in the manufacture of the various electrical appliances. They then proceeded to the Engineering Building, McGill College, and amongst other things, witnessed various tests made by Prof. Bovey, upon the strength of steel and timber.

In the evening there was a banquet at the Windsor Hotel, which was much enjoyed by the members.

### WEDNESDAY.

On Wednesday morning the annual report of the Council was presented. This showed that the number of members was as follows: Honorary, 7; ordinary, 283; associate members, 133; associates, 60, and students, 150; total, 633.

There was considerable discussion as to the expenditure of \$800 in aid of the International Engineering Congress at Chicago.

The report was adopted.

Mr. Wragge suggested the payment of premiums for papers.

The report of the Committee on Professional Status was then received.

Alan Macdougall recommended slow progress in rolling the stone towards the goal by means of the lever of public opinion, which at present was in their favor. This would be better than any hasty action toward getting a close corporation. Civil engineers, members of this Society, ought to endeavor to raise themselves up to a high standard of honor and integrity, so that in future capitalists would be able to trust them, simply because they were members of such a high-toned Society.

Mr. Shanly did not recommend trying to get legislation until they were more sure of the result of such application.

Prof. Bovey wished to know whether provincial laws could be passed curtailing the rights already given to the Society by the Dominion Government.

Mr. Cunningham observed that the Society would have to define more narrowly the meaning of the title "Civil Engineer" before anything could be done with the charter. He thought that before they went to the legislature they ought to be sure that the legislature would not refuse them help.

Mr. Woolbank said the Provincial Legislature would probably not curtail their powers, but at the same time they might give the same powers to other bodies as well, which practically amounted to the same thing.

Prof. Bovey believed that each member should establish in the minds of the people a record for rectitude and honor, so that after a time only those who were members of the Society would really have any standing.

After some further discussion, it was resolved that the report on professional status be not included in the "Transactions," but be referred back to the Committee, the Committee to report not later than Nov. 1st, and that the report be distributed among members before Dec. 1st. It was also decided that the interim report of the Committee on the "Testing of Cements" be received and that the Committee be continued.

A draft report of the Committee on Professional Ethics was presented, but it being in a somewhat incomplete condition, it was decided that the Committee should have power to add to its number, and be required to report to the Council before October 1st.

The election for officers resulted as follows:—

President—P. A. Peterson, Montreal.

Vice-presidents—Herbert Wallis, Montreal; Alan Macdougall, Toronto; P. W. St. George, Montreal.

Treasurer—K. W. Blackwell, Montreal.

Secretary—Clement H. McLeod, Montreal.

Librarian—W. McNab.

Council—Prof. H. T. Bovey, J. Galbraith, H. N. Ruttan, P. S. Archibald, G. C. Cunningham, G. H. Duggan, W. Haskins, H. A. F. Macleod, J. T. Barnett, L. A. Vallee, H. Donkin, H. Peters, H. Abbott, G. H. Garden and O. Chanute.

The retiring president, E. P. Hannaford, gave an interesting address, in which he gave some useful information concerning the cost of various items in railway construction work, etc.

He then presented the Gzowski medal to Prof. J. T. Nicolson, for his paper on "The Transmission and Distribution of Power by Compressed Air."

It was resolved to apply to Government to make some provision for the establishment of bureaus for tests on cements, etc.