

### THE ENGINEERS' CLUB OF TORONTO.

A special meeting of the Engineers' Club of Toronto was held at their club rooms, King Street West, on Thursday evening, 22nd inst., with Mr. C. H. Rust, the newly elected president, in the chair. The attendance was large and included a number of the leading architects of the city. The business was confined almost exclusively to a discussion on "Concrete Construction". The subject was introduced by Mr. H. F. Duck, who stated in a general way the ingredients which should make a good concrete. In his opinion, 1 part of cement, 3 of sand and 7 of broken stone would make a thoroughly dense concrete if properly tamped. He was not in favor of using broken stone or ordinary limestone unless it was very carefully screened. Field stone was preferable and should be almost as fine as it was possible to get it. The quantity of water should be sufficient only to make the mortar of the consistency of damp leam of raw sugar. For concrete for dams and such work it was necessary to have a better quality of sand. Mr. Duck referred to the excellent quality of Canadian cement, stating that some tests which he recently made of Canadian and German cements had proven the former to be superior.

Mr. J. W. Barrett spoke particularly in reference to concrete work reinforced by expanded metal. A fine grade of concrete such as was required for floor construction should consist of one part of Portland cement, two of sharp sand, and five of clean boiler cinders. When properly tamped it became fairly solid concrete of great strength and capable of resisting fire admirably. He thought the failures of concrete work were in many instances due to faulty construction. If it were attempted to make a cheap concrete by reducing the quantity of cement, a weak concrete would be the result. He submitted the results of tests showing the fire-resisting qualities and strength of reinforced concrete in buildings. One of the objections to terra cotta construction was that the terra cotta and steel showed different degrees of contraction and expansion, whereas concrete and steel were almost identical in that respect. Replying to a question Mr. Barrett said that he would recommend expansion joints where the concrete was over 50 feet square. The King Edward Hotel, however, built of this construction, had no expansion joints. The new Market Building contained the largest open fire-proof floor on the continent, the floor space being 50,000 square feet. Here expansion joints over girders had been put in.

Mr. Burke said that his experience, with the Simpson Building in particular, had been that in concrete floors there was considerable shrinkage, causing cracks in the ceiling after plastering. The work to which he referred was not reinforced. He pointed out that concrete was a preservative of steel and that the tests made in the United States had proven that steel was unaffected by dampness in all cases where the brick-work was built in cement.

Mr. James McDougall said that he had found concrete to be invaluable in wet foundations. It was also economical as compared with ordinary stone construction. He was very favorable to concrete reinforced with expanded metal.

Referring to concrete arches Mr. Rust said that some years ago a railway company built a new bridge of 32 feet span with monolithic arches and the bridge was standing to-day in good condition. The Lake Erie & Detroit River Railway had constructed several large bridges of concrete.

Mr. J. T. Culverwell spoke of the use of concrete in the dams, locks, etc., of the Trent Canal. It was being used in the large lift lock.

Mr. E. B. Jarvis gave some particulars of the new industry which had been started in North Toronto for the manufacture of artificial stone, and Professor G. Mickle gave it as his opinion that a concrete made of cement and limestone would be incapable of withstanding great heat.

The cost of concrete construction was then brought up and instances cited to show the saving as compared with massive construction. In the building of bridges in Toronto, Mr. Rust thought a saving of \$7 per cubic yard had been made by the use of concrete. Machinery was used for mixing the concrete.

Mr. Duck said there was no reason, as some supposed, why concrete would not set in water. Tests of certain piers from one inch above water mark down to the footings, fifty feet under water, had shown a splendid concrete.

Following the discussion, a light luncheon was served, after which the preliminary arrangements were made for holding a curling match between the members of the Engineers' Club and the Ontario Association of Architects.

Mr. R. H. Gilmour, superintendent of the Canada Foundry Company, Toronto, recently tendered his resignation, and has been appointed superintendent of the Brooks works of the American Locomotive Company, Dunkirk, N. Y. He has been succeeded by Mr. J. W. Harkom, Richmond, Que., who was for many years in the employ of the Grand Trunk Railway, and latterly with the Canadian Pacific Railway. Mr. Harkom becomes general superintendent of the Canada Foundry Company and will have as assistant Mr. C. A. Barton, formerly superintendent of the Peterboro works of the Canadian General Electric Company. Mr. A. A. McCallum, late of the William Hamilton Company, Peterboro, has been appointed mechanical superintendent of the Canada Foundry Company.

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