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INVESTIGATION OF CONCRETE-PROPORTIONING

TWO weeks ago eight engineers from various parts of the United States and Canada held what may prove to be one of the most important meetings in the history of concrete. Called as a special session of two sub-committees of the American Society for Testing Materials' concrete committee, this meeting is of historic interest in the engineering world in that it constituted the first definite co-operative step toward taking the proportioning of concrete materials out of the realm of the empirical and into the limits of science and certainty.

At the last annual meeting of the American Society for Testing Materials, Sanford E. Thompson, chairman of the committee on concrete and concrete aggregates, stated that there is no more important subject in civil engineering to-day than the finding of proper methods for proportioning concrete, and he intimated that it was high time that the guesswork be eliminated from plain and reinforced concrete construction. He argued that there is now a sufficient abundance of accurate data from independent sources to enable the committee to establish certain fundamental principles, the lack of which has hitherto caused most of the general fog surrounding the simplest problems in concrete proportioning, and he urged the society to take some definite steps along this path.

Largely as a result of Mr. Thompson's plea, the members of the concrete committee decided to try to establish whatever basic truths there may be underlying Prof. Abrams' fineness modulus and water-cement ratio theories and Mr. Edwards' surface area theory. Both of these gentlemen were expected to attend the Chicago conference, which was held at the Lewis Institute, November 17th and 18th, and Prof. Abrams was there, but unfortunately Mr. Edwards was snow-bound in Dakota while returning from an inspection of a bridge for the United States Bureau of

Public Roads. The arguments and data on behalf of the surface area method were ably defended, however, by H. F. Gonnerman, first assistant to Prof. A. N. Talbot of the University of Illinois; A. T. Goldbeck, engineer of tests, U.S. Bureau of Public Roads; and Roderick B. Young, of the engineering laboratories, Hydro-Electric Power Commission of Ontario.

The Bureau of Standards, which has taken a prominent part in the various discussions that have centered around the fineness modulus and surface area methods, was represented by J. C. Pearson. The chairman of the meeting was Cloyd M. Chapman, engineer of tests, Westinghouse, Church, Kerr & Co., Inc., who has taken a very active interest in both methods, and whose laboratory has conducted a considerable number of tests. The other sub-committee members present were P. J. Freeman, of the Pittsburgh Testing Laboratories, and Prof. M. O. Withey, of the University of Wisconsin.

Every one of the eight above-mentioned engineers have at their disposal the most modern laboratory facilities for concrete research and tests, and are in the best possible position for accomplishing some really revolutionary results by co-operative effort,—joint interpretation of pooled experience.

As a result of the two-day conference, it was decided that these eight and several other outstanding laboratories should join hands in the carrying out of a definite program of tests which was formulated at the conference, and the results of which will very likely throw considerable light upon some of the points now disputed by the advocates of one or the other methods of proportioning, and may also demonstrate that the fineness modulus and surface area theories are not so diametrically opposed as their sponsors still appear to believe. At least one investigator, Roderick B. Young, of the Hydro-Electric Power Commission of Ontario, believes that these methods are in harmony on all essential points. He brought out some interesting evidence to support his belief in a valuable article, "Analysis of Concrete-Proportioning Theories," which was published in last week's issue of *The Canadian Engineer*. Mr. Young summed up very concisely the outstanding points of both methods, and showed how the Hydro-Electric Power Commission's tests substantiate both the surface area and water-cement ratio theories.

The present schedule of co-operative tests has been designed to cover all points in dispute and includes the use of stone, gravel and slag and various combinations of these three materials, so that the laws formulated may be entirely general.

REPORT OF J. C. T. O. STATUS COMMITTEE

SEVERAL months ago the Joint Committee of Technical Organizations appointed a status committee, with H. G. Acres, hydraulic engineer of the Hydro-Electric Power Commission of Ontario, as chairman. This committee has just presented its report, which is published in full in this issue. It recommends legislation based upon somewhat different lines than the bill which was recently drafted by a special committee of the Engineering Institute of Canada and which was intended to serve as model legislation to be introduced into the various provincial legislatures.

It is claimed that the basic difference between the J. C. T. O. and E. I. C. bills is that the former is popular legislation and the latter class legislation. As proof of the fact that the J. C. T. O. bill is popular legislation, it is pointed out that it is applicable to any profession or even trade if so found desirable.

The E. I. C. is said to have attempted to legalize the definition of engineer, whereas the J. C. T. O. bill gives wide authority to duly constituted boards to say who is and who is not an engineer, without requiring those passed as engineers to fit any prescribed definition. In other words, under the J. C. T. O. bill an electrical engineer, for example, would be an electrical engineer merely because he was recognized as such by the board of governors of the electrical