$5,000,000. Soulanges canal, 14 miles long, was commenced in 1892, and finished in 1899 at a cost of about $7,000,000. The new Welland canal will be the largest in Canada, and will cost probably $50,000,000. The Trent canal was recently finished at a cost af about $15,000,000. The Georgian Bay canal scheme has been discussed for many years, and it is stimated to cost about $100,000,000. The Federal government control six canal systems, the total length of the waterways being about 1,600 miles, but the actual canals measure 117 miles. The volume of traffic in 1917 was 22,000,000 tons.

Town planning was probably not even thought of in 1887, but is now almost a profession. The enormous extension of railways gave birth to a great number of new villages and towns. Many of these were laid out on almost identical chessboard lines, regardless of local topography, particularly in the west, and were lacking in individual features. Mr. Elliott-Cooper, in his presidential address at the Institution of Civil Engineers in 1912, remarked that "A few of these perhaps would not affect the traveller much, but when 1,000 miles, covering 125 towns of this description are passed, it takes all the sublime diversity of the scenery of the Rocky Mountains to soothe his irirtated nerves." Engineers are now more inclined to consider the æsthetic side of town planning, and some day we hope to see model villages springing up adapted to local conditions and requirements, and possessing pleasant and useful features. Wireless telegraphy was commercially unknown in 1887, and Canada sent its first message by wire to Britain in 1907.

Role of the Engineer

Enough has been stated to indicate the immense progress that has been made during the last thirty-three years. It is manifest that engineers have played an important role in the development of the country, and a profitable hour could be spent in listening to papers on the lives and achievements of eminent Canadian engineers. Significant is the absence of engineers in parliament and municipal councils, and it would be to the benefit of the country if engineers were given an opportunity by these authorities to consider schemes involving the expenditure of public money. Engineers should take a more prominent part in state politics for the reason that a large number of questions that are intimately associated with the welfare of the people are of an engineering character or closely allied to it.

The foregoing observations lead us back again to the status of the engineer. Even if a legal status was granted to us now, I think our position in respect to public recognition will depend largely upon the services we render freely to the community, and the publicity we invite. We may continue to attend to our own particular businesses with cloistered assiduity and subconsciously enjoy the satisfaction that we have done our best for our employers. But this will not be adequate to satisfy the general public that we deserve fuller appreciation; we must bid for it and not wait for it.

One more point, and that is the fraternal relations amongst engineers. Etiquette and ethics are useful as beacons to guide our footsteps, but I firmly believe that a solid brotherhood of professional engineers will do much more. Mutual assistance and respect in all professional matters would be a splendid slogan for our society to adopt.

That the Lethbridge-Northern irrigation project to bring water to 100,000 acres north of Lethbridge is feasible, is the opinion of Geo. Anderson, irrigation engineer, who has been engaged by the provincial government to report on various schemes now contemplated in Southern Alberta. As the irrigation district for this project had already been organized and the trustees elected, it was the first so receive Mr. Anderson's attention. Accompanied by the provincial minister of public works, Mr. Anderson recently inspected the district. Construction will likely be started early this year. Mr. Anderson will later report on the project in the vicinity of MacLeod and others that have been outlined and upon which surveys have been partly completed.

HOW CAN LABORATORY TESTS OF CONCRETE MATERIALS BE MADE OF GREATER VALUE TO THE FIELD ENGINEER AND CONTRACTOR?

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WHY are the results of tests and recommendations of the laboratory given so little consideration and so often disregarded by field engineers and users of concrete? That the field engineer and the contractor do not fully accept the tests and the advice of the laboratory, whether really good or bad, must be admitted by any one who is familiar with conditions in the laboratory and in the field.

Off the job, the practical user of concrete may give respectful attention to the advice from the laboratory, but on the work, he is inclined to forget the procedure outlined for his guidance and return to his usual practice which he feels is satisfactory and has given him good results in the past. Beyond question, the disregard of such advice may in some cases lead to inferior work, but owing to the meagre amount of testing of field concrete which is done, inferior work resulting from such a policy may never properly be impressed upon the responsible party.

Co-operation Necessary

Concreting processes have for the most part been developed through years of practice in the field, rather than by work in the laboratory, and the field engineer is disinclined to make any changes in his methods which will result in any great variation from his usual practice. Without much aid from testing laboratories, good concreting practices have been developed as a result of years of experience, and from the engineer, down to the foreman on the job there is a tendency to avoid any changes in procedure which may disarrange the old established methods, or seem to increase concreting costs.

Such an attitude on the part of the field engineer and contractor is sometimes due to expensive experiences which have resulted from the use of materials and methods which have been recommended by the laboratory. Unworkable mixtures may have been specified which resulted in bad work, delays, and increased costs, or the following out of such advice may have required changes on the job in materials or plant equipment which increased costs with no apparent improvement in the quality of the work. One or two such experiences are certain to cause laboratory advice to be shunned, and case the engineer to fall back on well tried methods derived from experience, which he knows will furnish satisfactory results without unreasonable expense.

That such a disregard for laboratory tests and recommendations is often justified can be made clear by a consideration of the practices, and lack of practices which are employed in laboratory work. While it is not claimed by testing engineers that laboratory methods are complete and entirely satisfactory, this does not obviate the fact that the field engineer's disregard for laboratory tests and conclusions can be blamed to lack of progress in developing laboratory methods of testing, and in applying in laboratory practice a knowledge of the obstacles and adverse conditions which the latter must meet and overcome "on the job."

Uniformity of Tests Desirable

To begin with, testing laboratories are not in accord as to what methods of tests should be employed in determining the value of any given materials for use in concrete.

An inspection of reports of tests indicates the lack of agreement among different laboratories as to what tests should be made, and what methods should be employed. In planning a series of tests, consideration may be given to proportions, method and time of mixing, consistency, size and shape of test specimens as well as special tests, such as colorimetric, hardness of particles, silt, etc. There is little agreement as to whether materials should be proportioned by weight or volume, how weight per cubic foot of aggregate should be determined, what portion of the sand should be classed as silt, or how its quantity should