Editorial

LOSS OF QUEBEC BRIDGE SPAN.

After having been raised only fourteen feet, the central span of the Quebec Bridge dropped into the St. Lawrence River last Monday morning, possibly owing to failure of one of the mooring pins.

While the accident is serious from a time and monetary standpoint, fortunately the loss of life was not heavy, according to telegraphic dispatches received at the time of going to press. It is thought that nine St. Lawrence Bridge Co. workmen are missing, but it is possible that this number may be reduced when more complete information is gathered. It is stated that the cantilever arms stand intact and uninjured, so that the accident probably means merely the loss of a million dollars more or less to the St. Lawrence Bridge Co. and possibly nine or ten months' delay in the completion of the bridge.

The members of the Quebec Bridge Commission and the officials and engineers of the contracting company have received the deep sympathy of the entire engineering fraternity; nevertheless, compared with the tremendous size of the undertaking, the loss is no more serious in proportion than has been the loss of many other spans during the course of erection of many other bridges throughout the world. How often have contractors lost smaller spans owing to breakages, stream conditions, or other unforeseen and practically uncontrollable happenings?

The designs for hoisting the span were unquestionably most carefully prepared, checked and re-checked a dozen times; the best American and Canadian bridge engineers were employed on the work; every precaution that could have been taken was, without doubt, observed and with presumably large factors of safety. The accident, whether due to the failure of pins, eye-bars, bracing, or other parts of the equipment, will undoubtedly be found to have been of such a nature as to cast no reflection upon any of the engineers connected with the work.

Mr. Phelps Johnson, Mr. Duggan and the other heads of the St. Lawrence Bridge Co. are made of sterner stuff than to be discouraged or disheartened by this accident, the character of which is not unprecedented in bridge erection. They will undoubtedly build another span and hoist it into place by the same or other means, probably taking even more elaborate precautions.

THE ENGINEER AND THE CHEMIST.

The war has upset many accepted theories, ideas and attitudes in various lines of thought and business. It has perhaps wrought a greater change in the relation of the engineer to the chemist than in other relations, because the European conflict has made such a great demand upon their combined efforts and ability. The sudden demand for materials both military and civil has brought these two great services into closer relation than could have taken place probably in decades in times of peace, and they have accomplished more under the stress and urgency of the situation than was sanguinely expected. Further, the importance of the co-operation between the engineer and the chemist and the results accruing from it cannot be fully appreciated at present. It was the close and correlated organized relation between these professions that was fostered by Germany in pre-war days, and which has enabled the enemy to be so strong. It produced wonderful results in the commercial prosperity of that empire, and to this measure of preparedness can be ascribed in a large measure the powerful resistance of the central empires.

Whilst engineers and chemists did much for our industries, it cannot be stated that they were trained with the view to co-ordinating their work. They were, as a rule, separate and distinct bodies, each with a particular sphere of their own. The war has revealed the weakness of such a condition, and the future will doubtless see a great change in this respect. Prof. F. G. Dounan, F.R.S., recently wrote on this subject with a powerful pen and employed strong argument to show the need for changes in our educational methods in the training of men who have adopted these professions. "Hitherto our chemists and engineers," he states, "have been kept apart with extraordinary disadvantages to both sides." "It is argued that the university chemist is too theoretical and does not understand practical matters." The reason given by Prof. Dounan is that the student is trained in the practice of molecular juggling; that is to say, the practice of the analyses and synthesis of chemical substances in the laboratory. It is exceedingly important that he should be also fully trained in the theory and practice of designing chemical engineering plant, not so much as an engineer, but in conjunction with him.

Whether these remarks apply with equal force to Canadian universities is not material to the contention that each profession should be promoted by the best possible training and that the two should be brought together into more intimate connection so as to achieve the greatest results. There is room to believe that the value of highest scientific attainments in chemistry, engineering and other lines has already been appreciated in Canada, but whether it is as great as might be desired is doubtful. The future of industrial development in Canada is linked closely with the utilization of raw materials by-products and waste materials which are not now fully made use of. The uses of coal and gas in the many processes associated with manufactures merit intense study and research so as to improve the conditions. Electro-chemical processes are bound to produce commodities for the use of man to a great extent that cannot now be anticipated. These offer the engineer and the chemist glorious opportunities. Every ordinary industry can be made to be more efficient by the adoption of more scientific methods. Even the smith at his anvil may do better if the services of science are enlisted. This is what W. H. Cathcart shows in his book on "The Value of Science in the Smithy and Forge." The difference between the old and the coming practice, as the reviewer stated, is that the first was based on rich and prolonged experience—what is often sneered at as the rule of thumb—while the second is positive and precise.