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CHEMISTRY IN ENGINEERING.

The field of the chemist is many times the magnitude it possessed a few years ago, and it is rapidly co-mingling with many of the branches of the engineering profession. With the exception of mathematics, and perhaps of physics, the science of chemistry stands closest, and as the manufacture of the materials used in engineering approaches perfection, the more pronounced is the handiwork of the chemist.

The production of iron, steel, and the alloys, for varied and special purposes, are examples. The constituents of each are selected in proper percentage by the chemist, and the rules-of-thumb are no more. The chemist furnishes the data whereby the engineer varies the chemical content of his materials to obtain the particular physical characteristics desired. The manufacture of cement is another striking example.

Equally important are the relations of the chemist and the engineer in the matter of water supply and the treatment of sewage. It is what the former finds in the nature and extent of impurities that determines the policy of the engineer in the treatment of the water supply. The utilization of nitrogen, of ozone, or of the much-indulged-in hypochlorite of lime or soda, to destroy bacteria; the introduction of copper sulphate (1 part to one million parts of water) to dispose of algae; the use of alum to precipitate suspended organic matter, without appreciable trace in any instance of the remedial substance in the clarified water—these are notable instances of the work of the engineer wherein he is dependent upon the chemist.

In the growing science of road engineering, with its many complexities; the selection and composition of the materials of construction; problems of water purification, and of the disposal of waste—a knowledge of chemistry is essential to the engineer in many phases of his work, and his engineering skill, supplemented by the expert assistance of the professional chemist, leads one to believe that the advancement of industry would be relieved of a considerable amount of its hazard if there was more of an outward acknowledgment of the interdependence of these two applications of science.

ONTARIO'S TEN-MILLION-DOLLAR ROADS.

Ontario is willing to spend ten million dollars during the next few years on road construction. But it wants one hundred cents' value for every dollar expended. The Commission which was appointed by the Government—Messrs. Magrath, Rankin and MacLean—are therefore going to more trouble in gathering information on roads than did any similar commission ever appointed. They are expected to devise a model system for Ontario—avoiding all the errors made by the State Highway Commissioners in the United States, dodging political "pull," keeping the lid tight on the "pork-barrel," and reducing maintenance costs to the lowest limit consistent with reasonable first cost.

The problems that are being considered by the Commission are included in three general classes—men, methods and materials. More specifically, they come under the headings of legislation, administration, finance, expenditure, construction and maintenance.

The most important part of the legislation is to keep the roads out of politics. To this end the Ontario Com-