

stitute of Electrical Engineers, a member of the Institute of Electrical Engineers of Great Britain, and a member of the Engineering Institute of Canada. Mr. Chace recently organized "Research and Development, Ltd.," a Manitoba corporation which proposes to initiate new industries based mainly upon the natural resources of the province.

H. W. APPLETON, formerly with Robert W. Hunt & Co., Ltd., and recently works manager of the Toronto Plate Glass Importing Co., has joined the staff of Burns & Roberts, Ltd., Toronto.

LIEUT. CHAS. L. COULSON has been appointed city engineer of Welland, Ont. He went overseas with the 98th Battalion, and is now in England, but will be discharged from military duties without delay.

B. F. LAMSON, of the Welland ship canal engineering staff, has been appointed assistant city engineer of St. Catharines, Ont., to succeed D. H. Fleming, who recently resigned in order to accept an appointment at Owen Sound.

GEORGE ROGERS HECKLE, formerly general manager and chief engineer of the Raymond Concrete Pile Co., Ltd., and the Ambursen Hydraulic Construction Co., of Canada, Ltd., Montreal, has opened offices at 120 Broadway, New York City, and will engage in private practice, specializing in hydro-electric developments and general foundation work.

MAJOR CECIL EWART, of Edmonton, Alta., has returned from overseas on the "Melita." Major Ewart has been in France with the 8th Battalion, Canadian Engineers, since April, 1917, engaged in the construction of standard and light gauge railways, bridges, etc., for the 2nd British Army. Major Ewart has been mentioned in despatches and was awarded the D.S.O. Just before enlistment, Major Ewart was engaged on railroad construction work in the west with the J. D. McArthur Co., Ltd., and for ten years previously was with the engineering staff of the G.T.R.

CHLORAMINE AND CRENOTHRIX

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In carrying on the experiments upon the action of chloramine on crenothrix it was impossible to plate the treated water on media, as is done with ordinary water

bacteria, since no medium has been discovered upon which it can be surely grown.

Chloramine was first tried on water from the University well, which furnishes an iron-bearing water already inoculated with crenothrix. The first tests demonstrated in duplicate 800 cc. samples, the germicidal action of 1 ppm. available chlorine in freshly prepared chloramine. At the end of a week there was no growth in the treated samples, while control samples, untreated, showed an abundant reddish growth on the bottom.

In later series 11-liter samples were used: one set with chloramine in amounts equivalent to 0.5, 0.75 and 1.0 parts per million; a second with bleaching powder equivalent to 1 part available chlorine per million. Control samples stored without treatment showed an abundant growth at the end of one week. At the end of three weeks water treated with bleach alone showed a velvet growth, identified as crenothrix by microscopical examination. Samples treated with 1, 0.75, and 0.5 parts per million of available chlorine in chloramine gave no growth at this time nor within six months thereafter. The odor in the last-mentioned samples was pleasant, noticeably better than that of untreated or bleach treated samples; nor was there at any time a noticeable taste, save in those which had received the largest application of chloramine (1 part per million), in which there was a slight flavor as of chloramine. In the controls and in bleach treated waters taste and odor were offensive.

These tests were repeated with similar results. Chloramine addition corresponding to 0.5 part per million was effective in preventing development of crenothrix; the residual matter did not become offensive even after prolonged storage.

These results, gotten in a small way, indicated that the acute troubles arising from crenothrix in iron-bearing waters may be eliminated by the germicidal action of chloramine, thus reducing the problem of treatment to one of iron removal without complications. It was intended to apply the experiment in a large way at the 2 million gallon plant of the Champaign-Urbana Water Company immediately after the conclusion of the first experiments. There was at the time (January, 1918), difficulty in commanding a supply of ammonia and of reliable "bleach."

CONSTRUCTION NEWS SECTION

Readers will confer a great favor by sending in news items from time to time. We are particularly eager to get notes regarding engineering work in hand or proposed, contracts awarded, changes in staffs, etc.

ADDITIONAL TENDERS PENDING

Not Including Those Reported in This Issue

Further information may be had from the issues of *The Canadian Engineer* to which reference is made.

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BRIDGES, ROADS AND STREETS

Brantford, Ont.—The estimate of expenditure to be made on the system of county roads has been submitted to the County Council, and is divided as follows: Road construction, County, \$39,072.64; province, \$44,581.75. Bridge construction