of water taken, including the bacteria count and the qualitative and quantitative estimation of B. Coli, according to standard methods, and such chemical examination as might be deemed necessary. Dr. Allan J. McLaughlin, of the U.S. Public Health Service; Dr. J. W. S. McCullough, chief health officer of Ontario, and Dr. John Amyot, professor of hygiene, University of Toronto, have been actively engaged in these bacteriological examinations during the past summer and have very recently submitted their report.

Mr. Frank S. Streeter, representing the United States, and Mr. Henry A. Powell, representing Canada, constituted a committee which, pending the above report, looked after the gathering of such testimony from parties interested as might seem desirable in forwarding the investigation.

The Commission's findings will, as stated, be published shortly. It is generally understood that while they are not alarming they will disclose conditions that will necessarily be remedied to conform to the health conditions stipulated in Article IV., above referred to, of the waterways treaty.

THE CORROSION OF WATER MAINS.

The subject of pipe corrosion is one which necessarily interests engineers and manufacturers in their efforts to obtain durability and long life in water mains. The paper by Mr. Hale, read before the American Public Health Association, and published in December 4th issue of *The Canadian Engineer*, and the article by Mr. William Ransom appearing in this issue, contain a great deal of valuable information concerning corrosion from various causes.

There is no difficulty in realizing the need for sound investigation and conference on the subject, as every waterworks engineer is naturally desirous to use materials that will be durable, and that will not impart any impurity to the water, nor furnish it with any deleterious property in its course of distribution.

Mr. Ransom refers to a particular instance where a new water main had been laid down and which, after a brief duration of service, became so pitted with rust that it was found necessary to remove a portion of the distributing system and replace it, the damage being caused by the presence of free sulphuric acid in the soil, due to the oxidation of iron pyrites. He also calls attention to the fact that corrosion by electrolytic action is often much more serious than is commonly thought to be the case.

Mr. Hale refers to numerous sources of corrosion to be found in both raw and treated waters, the action being more pronounced when the metal is clean and free from incrustation, which forms a protective coating, depending upon the nature of the water, delaying the corrosion and reducing the resulting percentage of iron in the distribution service.

A third writer on the subject, Mr. E. K. Rideal, in a paper to the Society of Engineers (England) strongly supports the electrolytic theory of corrosion. He expresses his belief that the theory is perfectly tenable when due attention is paid to considerations such as alterations in the solution pressures on crystal surfaces, and the phenomenon of passivity shown by iron.

According to Mr. Rideal, corrosion is due either to internally generated electric currents or to those from external sources. The theory is applicable to the problems of rusting in reinforced concrete, water-pipes and structural iron-work, as well as to the action of stray currents from street railway circuits, damp electric-light leads and telephone cables. In the light of that theory both the plating of iron with metals, or covering the surfaces with paints and varnishes, are to be regarded as means to an end, namely, to prevent the formation of local "corrosion cells." The effect of pitting in steel pipes is to be attributed to inclusions of slag and oxides of iron. Metallic coatings must be perfectly uniform in character, otherwise rusting may be augmented instead of retarded by such processes, while paints should be applied to clean surfaces and should possess certain definite characteristics, such as high specific electrical resistance, a pigmentary vehicle that does not readily liberate water during the process of aerial autoxidation and is not permeable to water vapor when thus oxidized, and pigmentary particles not widely separated from iron in their electrochemical potential.

LETTERS TO THE EDITOR.

Re "Stresses in Circular Pipes."

Sir,—With reference to Mr. Hogg's article on "Stresses in Circular Pipes," which appeared in your issue of November 13th, while I cannot offer any detailed discussion upon it, one or two points may be noted. Mr. Hogg has applied the ordinary formulæ for the arch rib to determine the bending moments in a thin circular pipe due to the hydrostatic pressures exerted by the water, which it contains when just full, and supported on a horizontal knife edge below the pipe. The effect of putting the water under pressure, as in the case of a conduit conveying water to a turbine seems to have been considered only as producing a circumferential tension in the ring. The influence of this tension in determining the changes in the vertical and horizontal diameters of the ring does not appear to be touched upon, and while Mr. Hogg may have satisfied himself that an effect of this nature is insignificant as compared with the deformations which he has calculated, it does not appear in the analysis. If the pressure is very great in the pipe, then the deformations due to the weight of water in the pipe are, as Mr. Hogg says, insignificant; while if the pipe merely contains water which is not under pressure, those deformations are the only ones to be considered. Not having investigated such effects numerically, as Mr. Hogg has probably done, I cannot venture a suggestion as to their relative importance in determining Δx and Δy, and it would be interesting to have the deformations worked out for a pipe, say 6 or 8 ft. in diameter, under different heads of up to, say, 200 feet. If Mr. Hogg has such data perhaps he will publish it.

There are some misprints to be noted. On page 696 in the first equation for M_D the integral should not contain the term $(1 - \cos\phi)$. The subsequent expression found by substitution for $\sin\phi\, dp$ is, however, correct. On page 689, the expression for dp in the right hand column evaluates to $\dfrac{-r\,(\frac{1}{2} + k)}{H + (1 + k)}$, and not as stated. On page 697

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in Fig. 3 there are too many x's and the text is not readily connected with the figure. I have not checked the analysis in detail, but as it follows along conventional lines