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ALKALI AND CONCRETE.

In the great Western plains of Canada timber is scarce and expensive. Many have looked to concrete to take its place, being considered cheaper and more lasting. The Reclamation Service of the United States has noticed that in alkali districts concrete very quickly disintegrates, and since districts from Winnipeg west to the Rockies are supplied by alkali waters, it is a question of great interest to our Canadian engineers doing work in the West.

In a paper read before the American Society for Testing Materials, Mr. Jewett mentioned one concrete culvert through which alkali water had been passing for about three months. On examination it was found that the concrete under the water was much softer than that above, and the concrete just at the water line was softer still.

An analysis of the water was as follows:—

	Milligrams per litre.
Calcium sulphate (Ca SO ₄)	1.690
Magnesium sulphate (Mg SO ₄)	6.870
Basic magnesium carbonate (MgH ₂ CO ₂).....	.305
Magnesium chloride (Mg Cl ₂)192
Potassium chloride (K Cl)20
Total solids	9.077
Weight after ignition	8.855
Loss on ignition222

From the analysis and the presence of a large amount of magnesium sulphate it would appear disintegration was caused in a manner similar to the disintegration by sea water.

In the case of sea water it is supposed that the lime of the cement decomposes the magnesian salts present in the water and the lime goes into solution and the magnesia is deposited in its stead, causing disintegration because of its greater bulk.

The solution of the problem will, from the engineer's point of view, be good construction. The placing of a surface coat compact and close. The selection of good water, sand and gravel high in silica.

For the chemist and the cement manufacturer other difficulties will arise.

THE ENGINEER'S EDUCATION.

If there is to be a profession of engineering as distinguished from the trade of engineering the education of the professional man must be broad and inclusive, such as will develop men of sufficient breadth and grasp to control large engineering works.