THE MEASUREMENT OF WATER

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Soil, water and climate are the three main elements in irrigation farming. Little difficulty is experienced in measuring soils for the reason that they overlie tracts of land which can be readily surveyed and the survey recorded. On the other hand, water and climate are very difficult to measure and record on account of their fluctuating character. As a rule water is in constant motion and the volume which passes a given point today may be quite different from that which flowed yesterday or will flow tomorrow. The same is true of climate. Rain and wind, heat and cold, not only vary with the seasons but with each day of the month and each hour of the day.

The people of Canada and the United States have reason to feel gratified that they possess so admirable a system of land subdivision, land surveys and land records. These form the chief interest to farmers living in a humid climate, but where irrigation is a necessity, water usually assumes prime importance. The reason for this is due to the fact that over the more arid portions of this continent the water supply is limited, while arable land of a very fine quality when irrigated, is abundant. The State of Nevada for example, has millions of acres of the finest kind of sage brush land, and an agreeable and healthy climate, but owing to the scanty rainfall only a small percentage of such land can ever be irrigated.

The precipitation in Western Canada is greater than it is in Nevada and some other western states, while the loss of water by evaporation is less. This larger supply of cloud water, coupled with greater natural conservation, gives to the western provinces of the Dominion, a large amount of water which can be utilized. It also follows that the more abundant the water supply the less is its value and the less is the necessity for its proper measurement and control. Notwithstanding these more favorable conditions as regards water, we believe the subject of more accurate measurement of irrigation water is deserving of the most careful consideration at the present time. Many arguments might be advanced in support of this belief, but the following may suffice:

(1) As time passes, the practise of irrigation is certain to be greatly extended throughout the provinces of British Columbia, Alberta and Saskatchewan. To secure reliable information concerning the water resources of these provinces in order to determine the feasibility of proposed irrigation enterprises and to safeguard capital invested therein, long-continued and systematic measurement of streams is a necessity. In this regard, the painstaking and efficient work carried on in recent years by the Water Branch of the Department of Lands of British Columbia, and the Hydrometric Surveys of the Dominion and the Province of Alberta, are to be commended. I might add that the stream measurement work of the United States in the far western