WATER SUPPLY IN SOUTHERN ALBERTA

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In a general discussion of water supply it may be profitable to call to mind some of the general principles governing the distribution so that from them, or such as can be brought before us, we may gain profitable subjects for discussion. The first to present itself is that for a continental area the source of supply is the condensation of the moisture derived from the evaporation from the sea. This is distributed unevenly commencing with a greater rainfall near the coasts and on the highlands and less on the interior lowlands. The greater fall on the highlands is to a large extent distributed by various channels over the lowlands. Gathered into lakes or exposed on the surface it is largely again evaporated and distributed by rain clouds to other areas so that even for comparatively small areas the water supply may be considered as being largely dependent on the rainfall, reinforced by the run-off from adjacent areas (streams, etc)., and partly on the general humidity of the air. That is the area of light rainfall is under greater loss by evaporation into the dry atmosphere than is the area in which the rainfall is more abundant.

Amount of Rainfall: In the area represented by the southern plains the condition seems to be that of a general light rainfall and a period of dry winds in the summer months. That the evaporation from this area is very great can be shown by a careful measurement of the streams, showing the amount of water leaving the area in comparison with the recorded amount of precipitation. The figures may be available and it is merely an impression that the amount evaporated is 9-10 or more of the amount falling on the surface. This loss in a country not overly supplied suggests one very pertinent enquiry, what can be done to restrain or retard that loss? The evaporation through growing plants or animals is the form most desired, but to do that it must be stored. The storing or saving of the rainfall is then submitted as one of the principal items for discussion and the following brief notes are submitted:

Evaporation and Run-off—Before the prairie surface has been broken the run-off from the closely compacted sod would seem to have been at its maximum. Over much of the prairie areas this run-off did not at once reach the streams, but gathered in all the hollows and formed the great series of sloughs that were so common a feature. These were generally shallow basins and formed great evaporating pans whose areas were constantly changing. The water held thus for short periods was absorbed by a limited area surrounding these basins and but a small part of the rainfall seemed to have been utilized. The cultivation of the soil must affect the amount of run-off by a great absorption and would be shown in the decrease in the sloughs. Whether this preliminary soaking of the soil prevents or retards evaporation would be dependent a great deal on the question of the preparation of the surface. Before the grain or grass became long enough to form a shade and break for the drying winds, the evaporation would be very great, but the practice of dry farming methods aims at not only preparing the soil for receiving this moisture, but by compacting the surface prevent the evaporation. It would seem that if this could be perfectly done the subsoil should gradually become more moist. The storage of rainwater should be made in view of this possible loss in the air and cisterns and artificial ponds made deep rather than broad.

Run-off—As the amount which does not penetrate into the soil is at first a very large per cent. of the rainfall, and rapidly evaporates, the catching and storing of it does not mean the robbing of the streams to the extent that at first glance might be supposed. The prevention of evaporation is the principal consideration and as said before should indicate deep cisterns rather than wide shallow troughs. The deep cuts made by our streams suggest the easier points at which to establish reservoirs by damming and should form one of the principal subjects of discussion.

Surface Wells—Where the rainfall is absorbed to any great extent in the soil, that is enough to accumulate in the porous layers beneath, wells are readily found at comparatively shal-