

study of the flow, which, dependent on natural conditions, varies not only with the season and year, but also with the topography and character of the drainage area. Primarily, all water carried by rivers comes from precipitation. Of this a portion evaporates, a portion enters the soil, and is either absorbed by plant growth, or, by ground flow reaches the rivers or lakes, while the remainder finds its way into streams as surface flow or run-off.

*Precipitation.*—While the record of the run-off from a drainage area is of first importance in the question of power development, the records of the precipitation are also of extreme value, inasmuch as, if of a more extended period than those of the run-off, they indicate the high and low range of flow which may be expected. In like manner, precipitation records, in a drainage basin in which no discharge measurements are available, can be used for the estimation of the flow based on the precipitation and run-off records of an adjacent area.

Throughout the southern portion of the province of Manitoba, such records have been obtained by the Meteorological Service of the Marine and Fisheries Department, and these records are tabulated below.

It is well known that the precipitation not only shows a variation from season to season, but, also, that a record extending over a few years is not sufficient to give the mean annual precipitation; for this purpose, a period or cycle of long term should be considered. As there are only a few stations in Manitoba at which long term records have been obtained, it is necessary to carry out some system of compensation for the shorter records of the adjacent stations. The records of the precipitation at the long term stations have the same general features from period to period. Assuming that the variations in precipitation are similar at both long and short term stations, the precipitation at the short term stations has been estimated from the records at an adjacent long term station. The precipitation, together with the duration of the record, is given for various stations throughout the province. The ratio of all short term records has been computed from the nearest long term station, as tabulated, and a compensated annual mean for the station has been calculated.