

one of our winter storms; or it may be part of a merely local air-movement, such as our summer showers usually are; or it may consist of a forced movement up the slope of a mountain-side. The question is, to what extent may the forest modify any or all of these movements, so as to affect rainfall?

First, as to the cyclonic movement, even if evaporation is increased over a forested area, the vapor is carried possibly hundreds of miles by the great horizontal movements of air in this class of storms; hence, increased evaporation over a forest does not increase the rainfall. Next, can the forest induce atmospheric conditions that will divert the storm-path? Theoretically, this seems impossible for great cyclonic areas, and doubtful even for local storms.

Secondly, as to storms of local origin, such as the thunderstorms, vapor formed from any region may be deposited again over that region. Hence, if evaporation is increased by the forest, it seems likely that rainfall also in the summer time, when local storms abound, may be increased. Referring now to the table of evaporation given above, we may see that evaporation from a forested region is less than that from sod or cereals, but more than that from bare soil. The substitution by the farmer of grass, root, and cereal crops for the forest in Ontario, would, therefore, tend to increase evaporation from the cultivated areas, and thus whatever effect the forest may have upon local rainfalls would be intensified by deforestation and cultivation.

As it does not appear probable that the forest on a mountain side can intensify the effect of the mountain in causing rainfall, we are forced to the theoretical conclusion that the effect of the forest in increasing rainfall can be but slight, and is probably in most regions nil. This theoretical conclusion is, on the whole, supported by such experimental data as have been obtained by the various investigators.

II. We come now to the consideration of the influence of the forest upon the distribution of the water-flow.

The forest controls the distribution of the water (precipitation) that reaches it, in the following ways:

- (1) By intercepting part of the rainfall.
- (2) By diminishing evaporation, within its own borders and beyond.
- (3) By transpiring large quantities of water, and thus diminishing the water-content of the soil.
- (4) By the influence of the forest-litter, (a) absorbing part of the precipitation, (b) offering a mechanical obstruction to surface flow and thus preventing run-off, (c) protecting the surface