

The percentage of precipitation that reaches the streams, that is the percentage of run-off to rainfall, after evaporation, transpiration, etc., varies greatly with the nature of the drainage area, and may be anywhere from 40 to 60 per cent., and less or more in exceptional cases. There is also variation with meteorological conditions. After a long dry period a very heavy precipitation may not show much in the streams, while after a wet season a smaller precipitation may give a much larger run-off.

The requirement then for river regulation is to retard and conserve the water after rain-fall or snow-fall, and this is done either by forestation, including timbered swamp areas as forest, and is most effectively and to the best general benefit done in this way; or by storage on a large scale. Ground water, which for its up-keep depends so directly on forest area, is one of the most important features of general benefit due to forestation. Various towns in the Ontario peninsula, for instance, and fairly large centres of population, depend for their water supply on deep wells. Impair the supply of ground water and the water available from such wells must inevitably be largely reduced.

All larger streams normally originate in mountains or uplands, and the relatively most important areas for up-keep of the flow of a stream are the mountain slopes or upland drainage areas proximate to its source. To have such areas in forest is therefore of the first importance. In older countries, in Europe, this is effectively done, and in the United States the Federal Government is now, in the Appalachian and White Mountains Bill before Congress, giving particular attention to this question. In Germany the forest covers 26 per cent. of the surface, mountain slopes and headwaters of streams being as much as possible in forest, and, incidentally, the forests are one of the most prolific sources of public revenue. The Ontario Peninsula, only a short time ago (not much over 50 years for the greater part of it) one of the most densely forested areas in either temperate zone, now shows, as far as can be ascertained from the Government returns, which are very defective, under 15 per cent.—it is actually probably nearer 12 per cent.—of the surface as woodland. With deforestation stream flow in the Peninsula has greatly changed. Spring floods are very much higher, and there are floods on heavy rains, while during the season of minimum flow many streams, which were formerly considerable throughout the year, practically disappear.

Practically no topographical survey, further than a little unimportant work along the frontiers by the Department of Militia and Defence, is on record for the Ontario Peninsula. The elevations of all railway stations, however, and they are fairly well distributed, together with other general data, give a