usually after the surface rainfall of one shower has long since run off. The gravitation water forms springs and ground water, which fill our streams and rivers in the long periods of drought or frost.

If the subterranean reservoirs are large, they can take in more water in the rainy seasons, thus lessening the danger of floods and ensuring larger, more enduring springs to bubble up during the droughts and frosts. When nothing but a thin layer of weather worn earth lies on the hard, impermeable rock, the water reservoir is of course small, and relatively little gravitation water can be held; a great deal of water runs quickly off; high water is soon reached and the few poor springs soon seal up and allow the rivers and streams to dry. If, on the contrary, the underground rock is furrowed and porous, the reservoir space is large and a considerable quantity of the rainfall can be taken up. The fear of flood is lessened and continuous springs feed the rivers and streams in dry or frosty weather.

The size of the water reservoirs for "sinking" water is therefore not dependent on the vegetation, but is established by the geology of each district. The best reservoir is, however, useless when the channels to it are stopped up. Here lies the chief influence of the forest on the surface flow.

When the ground is naturally thickly covered with plants, it has roots cutting through the soil. The roots form by their growth pipes and channels in the earth, so that it becomes looser and more porous. It is easy to see that the thin grass mantle of a pasture, with its small, weak roots which hardly make any impression on the earth, cannot loosen the ground. The small grasses and herbs of the pasture also offer very little protection, and any sign of a natural loosening of the earth is always destroyed by the continual trampling of the grazing cattle, so that the pasture ground always remains hard and impermeable. In the hay meadows conditions are a little better. The plants are larger, send their roots deeper, the hardening of the ground through the trampling of cattle is less likely, and during part of the year the high grasses protect the earth from the direct beating of the rain. In a thickly planted hay field a large part of the shower of rain is caught by the high, dense grass stems, the many stalks hinder the rapidity of the surface flow of the rainfall, whereby the sinking in of the rest of the water is made easier. Even more favourable is an uncultivated natural meadow.

If a district in Switzerland is no longer in any way cultivated, it soon seeds itself with larger herbs and bushes and finally, if left entirely to nature, becomes forest land. The roots of the forest trees penetrate into and loosen the soil, according to circumstances, to a depth of one, two or three metres. The surface of