

Few people understand what a great amount of water is held by different kinds of soil. It has been found by actual experiment, that a cubic foot of sand will retain from twenty-seven to thirty-two pounds

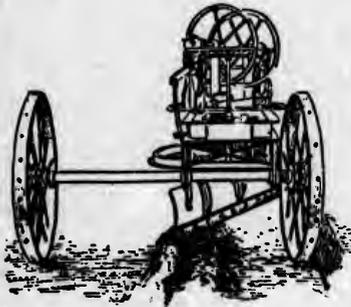


FIGURE 11.

Showing "angle ditch" at side of roadway being cleared and opened by the use of a road machine. These machines are great savers of time, labor and money, and will open ditches, clean out weeds and rubbish, and give proper shape to a country road quickly and more uniformly than can be done by hand work.

In most soils this water evaporates very slowly and we cannot prevent the formation of mud except by drainage.

Many miles of road are on low, flat lands and on springy soils, and are, for many weeks in the year, underlaid by a wet sub-soil. Whenever frost heaves the roadway, and in coming out makes it bad for any length of time, it is a sign that it needs underdraining. In all such cases, and, indeed, in every case, where the nature of the ground is not such as to insure quick drainage,

of water; loamy clay, about forty-one pounds; stiff clay, forty-five pounds, and "humus" (soil formed of decomposed animal or vegetable matter), over fifty pounds. In other words, the weight of water in a cubic foot of humus, is more than one and eight-tenths the weight of the same earth in a practically dry condition, while the weight of water in a cubic foot of loamy clay is about one-half the weight of the entire cube.



FIGURE 12.

Showing form of under drain made with field stones. The ditch is first dug and carefully graded at the bottom; then large flat stones are carefully placed at the bottom so as to form a clear passage of good size for the flow of water. The ditch is then half filled with rough field stones (with small sizes on top), and on these a layer of sod is placed with the grass side downward. The rest of the ditch is filled with earth. If sod is not to be had, fine brush, hay or straw may be used instead.