

the road may be vastly benefited by under drainage. An under drain clears the soil of surplus water, dries it, warms it and makes impossible the formation of deep, heavy, frozen crusts which are found in every undrained road when the severe Winter weather follows the heavy

Fall rains. This frost causes nine-tenths of the difficulties of travel in the time of sudden or long continued thaws.

Examine the pictures on pages and cover. Each shows a variety of ailments, but the chief trouble in each case is a lack of drainage. Thousands of miles of these impassable roads may be found for weeks at a time. Drainage is the fundamental necessity. There can be no good road without it.

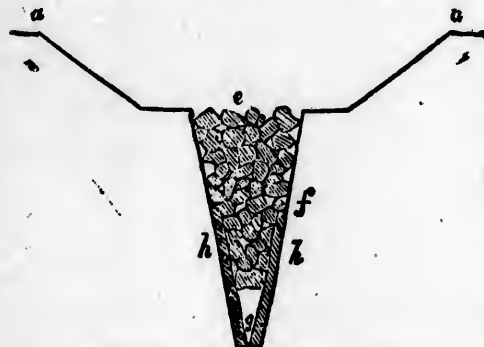


FIGURE 13 (added by Secretary).

Showing another form of under drain made with field stones where flag like stones are easily obtained. The drain is filled by two flags (*h h*) set up against its sides and meeting at the bottom, kept apart above by stones of any shape large enough not to fall in and obstruct the water way (*g*); above that by a layer of stone or clean gravel, then earth above (*f*) instead of stone, as shown.

Under drains are not expensive. On the contrary, they are cheap and are easily made, and if made in a substantial way and according to the rules of common sense, a good under drain will last for ages.



Use the best tools and materials you can get; employ them as well as you know how and wait results with a clear conscience. Slim fagots of wood bound together and laid lengthwise at the bottom of a carefully graded drain ditch will answer fairly well if stone or drain tile cannot be had, and will be of infinite benefit to a dirt road laid on