

subject, and also by practical drainers, that the drainage of land can be most cheaply and effectually done by means of covered drains, which, as I have previously stated, may be constructed with various kinds of materials. Stones, wood, brush, tiles, &c, have all been used for this purpose—of which, however none have been found so effectual, durable, or so cheap at last, as tiles. But I would by no means discourage parties from using the other materials, if they cannot procure tiles at a reasonable price, or convenient distance.

Let us now turn our attention to a few particulars in connection with the practical operation of laying drains; as this is a point upon which a great deal of ignorance is displayed in many cases. This, as well as every other work in connection with the farm, requires to be done systematically and with whatever materials are used. In the first place persons unacquainted with draining operations ought to consider what they require to do, and in the next place how they ought to do it; and a few suggestions may be useful on this point.

I would beg to observe, that in commencing to drain a piece of land, in the first place, it would be necessary to find the depth of the water-bed, after which find out where you are likely to find the best out-let for your main drains. Then in what direction to run them in order to carry off the water most effectually from the minor or branch drains, and see that sufficient fall can be obtained to do so. Then form a plan upon which to construct your minor or branch drains—which ought to depend altogether on the lay of the land; and if possible run the minor drains, with or against the line of fall, and not across it, either straight or angling, which at one time was considered the best method, but which has of late years been proved to be a fallacy, because on slopes, it is a well known fact that the different strata of soils crop out toward the surface in many cases. Where the drains are run across the slope, or at an angle along the face of the slope, they frequently, although put down to the water-bed, have been known to lose more water than they conveyed. And the water thus lost would ooze out upon the surface where the hard strata under the water-bed crop out a short distance lower down the slope, or a few yards below the drain, where that hard strata came in contact with the surface soil.

We will now suppose that the engineering

or laying out of the drains has been done with due attention to system, fall, levels, &c, and that every main, sub-main, and minor drain, has been carefully staked out, and fall in each correctly ascertained. This in cases ought to be done previous to any commencement in digging, and if done properly will save a great deal of trouble from drains choking, or flooding, for want of fall.

Now in regard to the work of excavation it is now an established rule, that to be properly it must be at the outlet, so that whatever water may be met with can pass readily away, and the outlet should be kept high enough for that purpose. If there is much it might be best not to take the main drain out the full depth at first, because although they ought to be the first opened, they may be the last in which the pipes are laid, may cave in to a certain extent.

In opening drains the plow is frequently used for turning out the two first furrows deep, with good advantage, provided it is used with a good steady team by a good plowman who can guide the plow straight. If it is not done straight it would be the cause of a good deal of trouble, both in taking out the remaining portion of the soil and in laying tiles, but there is no doubt that it is a considerable saving if properly done. A ditching machine would be a great acquisition, if such a thing could be got up, but there have been none got up that has been found to answer a good purpose on hard clay, or gravelly soils, and I presume we will still to use the drain spades for some time to come, but I have no doubt that a machine for that purpose will eventually be constructed so as to do the work properly. I frequently see people in digging drains themselves a great deal of useless work, digging them too wide, or at a width of 2 feet at the top and a foot at the bottom, instead of a foot at the top, and from 4 inches at the bottom, so that a person can just be able to stand in them to lay the tiles with one foot before the other, by which would save half the amount of excavation. This can easily be done if the proper tools are used, which can now be got at all of the hardware shops, and will pay for themselves in a very short time where much digging is required to be done.

After the main and minor drains have been opened, commence to lay the tiles in the branch or minor drain. By doing so you