

man would cut, lay pipes, and fill up, for the sum I have mentioned.

54. "As soon as the superfluous water disappears, air follows, and occupies the vacant interstices of the soil."

63. "It is admitted that a conduit of 2 inches bore would run off the heaviest rain in 48 hours from an acre of land." Parkes always holds as proved that a pipe of one-inch bore would do it, and he was right, we may be sure; but I never liked to use pipes of less than 1½ inch: the inch-pipe was too easily broken. The great lumbering pipes sold here weigh about ¾ too much.

63. "It is acknowledged everywhere that deep-drains—4 feet and upwards—are more efficacious and cheaper than shallower ones." I wish it was! I am afraid that, even in England, farmers have a hankering after a shallow (3 feet) drain. It is a great error, as I showed in volume 2 of this Journal, p. 113, to put down drains at a less depth than Mr. Barnard recommends here.

67. "Main-drains should be six inches lower than the side-drains." Here, I must disagree with the author. Such a fall would drive up the mud from the bottom of the main and infallibly choke it. Three inches are plenty, and this should be rather a slope than a sudden fall.

68. This paragraph is devoted to the mode of entry for the side drains into the main, and is in perfect accordance with my views.

74. Treats of what is known as Elkington's system of drainage, which was never used except for springs, and is long ago abolished.

77. Here is the point: "In order that drains may exert their fullest power, they must run straight up and down the greatest slope." Until this, and the rule that all water gets into the conduit from below, be thoroughly understood and embraced, it will be useless for anybody to attempt to lay out a system of drainage.

96. "The main should be finished throughout its whole length before the pipes are laid." Well, I have no objection to make, if the soil is not subject to cave in, but, for myself, I always have laid the main-pipes, and made the entrances of the laterals perfect as fast as I got over the distances between them, but then I generally had from 25 to 30 drainers at work at once, and could not let three-fourths of them stand idle.

106. Another great point: "When pipe-tiles are used, they must be placed firmly at the bottom of the drain without the drainer entering it." An engraving of the "pipe-layer," is given—fig. 28—the short piece I prefer to have a little sloped, that the pipe may slip off it more easily. To use it, the man stands across the drain with his face to its mouth, and walking backwards, threads a pipe on the short stem of the layer, gives the pipe a tap or two to fix it—perhaps, drops a pebble alongside the pipe, if the drain-bottom is a little wider than it ought to be—and the job is done, except filling in. Stephens, in his Book of the Farm, being used to the wide-bottomed drains orders the drainer to lay pipes with a trowel! No man should be allowed to set foot in a drain after the third draw of the spade is shovelled out. Working backwards the drainer with the semicylindrical tool (fig. 21), takes out the last 15 inches, for a space of say 6 feet; then, taking the draw-scoop (fig. 23), he perfects the bottom; the layer follows with the tool (fig. 28) as before described. It is lovely work, and I never was happier than when I was superintending a good gang of hands. By the bye, the semi-cylindrical spade (fig. 21.) should have a tread to it like that attached to the tramp-pick (fig. 22), a most useful tool, far superior for our purpose than the usual pick, or mattock, or pick axe, which ever local usage pleases.

I am glad to see that Mr. Barnard does not seem comfortable

about the use of the plough for opening drains. It is a *crux* to all beginners, but the author saw instinctively that what was saved by the plough was often lost by the plough—i. e. the tramping of the horses undid all the work and caused caving in, irregular depth, and all sorts of bores.

ARTHUR R. JENNER FUST.

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The Richmond County Agricultural Society will give a Bonus of one hundred dollars for a Stallion to stand in the county for service for the season of 1888. The Stallion to be a Coaching Horse or a Cleveland Bay, to be approved of by the Board of Directors and be shown at the Town of Richmond, Que., on the 17th of May, next, for such approval.

Further particulars on application to the undersigned.

JOHN MAIN, Sec.-Treas.

Melbourne, P. Que., 6th March 1888.

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