

me to think that the depth and distances before mentioned would be sufficient for this country, as to all filling materials there can be no question but that there are none so durable and efficient as pipes or tiles, covered to a depth depending upon the porosity of the soil with small stones, gravel, or other porous material. Formerly, in Scotland, a great quantity of furrow draining was done with broken stone or gravel alone, which had a good effect. I think that such drains can be accomplished at less cost than the tile drains, and as there is any quantity of beach gravel on the front, which is excellent for the purpose, and back in the country many gravel beds of limestone to be found which would answer the purpose, such drains might be constructed in some kinds of soil with great advantage. I think pipes made in the shape of wheel boxes tapering to one end so that the small end would enter into the larger about half an inch or so. Tubes of this description would be cheaper than horse-shoe tiles as there would be no soles required, and taking less material and being more durable. I have seen drains constructed with such pipes which had worked satisfactorily for near a century.

I believe that a great portion of the heavy lands in Canada are growing wheat at a loss, owing to the superabundant moisture in the soil. I hold the opinion that if they were thoroughly drained and properly cultivated they would produce 50 or 60 bushels per acre with a great deal less labor and much less uncertainty than they now produce 25 or 30. I will close my remarks by giving a few extracts from practical men corroborating what I have advanced.

A farmer in Lanarkshire who thoroughly drained one half of a 4 acre field and left the other half undrained, in 1838 planted the whole field with potatoes, and from the drained portion realized £45, while the undrained only realized £13 per acre. Another instance of drainage—on the estate of Lord Hatherton under the direction of Mr. Bright; the soil was of a light nature resting on subsoil of stiff clay, the results are these—466 acres drained at an outlay of £1508 give a yearly increase of £135 or 29 per cent on the capital expended. Mr. George Bell of Aberdeen mentions the produce of potatoes on drained land to be 175 cwt. per acre, while that on undrained land of the same quality gave only 70 cwt. per acre, these are quotations from English works. I will now give an instance of two from our American neighbors. J. Johnson mentions that on drained land a crop of wheat, heavier says he, I never saw stand, was reaped from this ground; he draws his tiles a distance of three miles from the factory, and finds under draining to cost him about 30 cents per rod, and two rods distant asunder—or 22 dollars per acre, he finds horse shoe tiles objectionable from their liability to become filled from washing of the earth beneath them, and tubular tiles the only kind to be secure from this accident. J. G. Yeoman who has constructed nine miles of tile drain finds nearly an equal advantage on his light loam land, generally thought to be quite dry enough; the large amount of water discharged in one instance

at the road side from his tiles furnished a practical illustration of the need of draining, to those who observed it, stronger than all the books ever written on the subject valuable, as they may be; he brings his tiles from Albany 30 miles, and finds the drains to cost 40 cents per rod, about 3 rods apart, or 24 dollars per acre. Another farmer laid 12,000 tiles this spring, he says nothing pays so well as this business. Col. Sherwood of Auburn has laid 14,000 tiles and their benefit is already so obvious that he intends to lay more as fast he can. Judge Buell who laid two miles of tile drain procured them in Albany at an expense of 23 cents per rod for tiles alone, which afforded a passage for the water 4 inches square, he uses soles for the bottom.

Mr. J. WADE said, that Mr. Black had crowded a great deal of valuable information into the essay he had just read, and as Mr. B., had had a great deal of experience it might be implicitly relied upon.

There was no subject of more importance than draining to those who had springy or retentive soils, and though few farmers might be able to do all they wished, it was well to have a proper understanding of the subject, so that what they could drain might be done to the best advantage; one draw back to draining was a want of proper material to fill them with, he had never found a material that altogether pleased him. Horse shoe tiles used to be the great thing for filling drains with, but he believed they had now found that pipes fitted at the points with the collar did better, and could be made cheaper than tiles; he had used wood for pipes where he had drained, sawn one inch thick by three inches wide to set along the sides of the drain and a board four inches wide to cover on the top, but he thought that if he had laid any more drains with wood, he would use four boards, putting one in the bottom, as he found where the subsoil was loose the drains were apt to run out in places where they had much descent, and fill up where they were level, he had put in more than a mile of such drains on his farm, he found that in a field where about one-fourth used always to kill out when he had it in fall wheat, now since he had put drains in in the parts of the field that used to winter kill, now produced the best crop; he thought that at the present high price of land, those farmers that had money to invest would do better to invest it in draining and improving what they had, rather than to buy more land, as one hundred acres was easier managed than two hundred, and he believed that if properly drained 100 acres might be made to produce as much as 200 do now.

Wheat was killed by water standing on it in the spring, and there was no other method of getting rid of the water but by draining; he thought they would be encouraged to drain by getting pipes and tile at a cheap rate—in Britain they had a machine that enabled them to make pipes very cheaply; he thought that a good deal might be done at draining with machinery, so that little hand labour would be required.

Draining was regarded as at the foundation of all good husbandry in Britain, it was only at first