

seen any of this kind; but in regard to the manner of making them, and their operation, we presume they cannot be better described than in the language of Prof. Norton, who during his residence in England and Scotland, made drainage a subject of particular investigation. We copy from his lecture on draining, before referred to in this article:

"It is a simple round pipe, made in lengths like the first, and for the cross drains of not more than an inch and a-half in the diameter of the bore. These can be made much cheaper than the other kind, as they are smaller, and all in one piece. They are not more than half the weight of the old fashioned tile and sole, and therefore an additional saving is effected on the transportation. The trench for their reception is also much smaller, being at the top just wide enough to allow the trencher to work, and cut at the bottom with a narrow tool, to exactly the proper size for the reception of the pipe. The pieces are simply laid end to end, and wedged with small stones when necessary. The water finds its way in at the joints. Many have expressed doubts as to the operation of these drains, thinking that water would scarcely penetrate into so small a channel, through such minute apertures. No difficulty has been experienced in any case. One gentleman, residing in the south of England, who has employed these small pipe tile in draining exceedingly stiff clays, laying them at the depth of three feet, and ramming the clay hard down, offered a premium of £100 to any person who would keep the water out of them. These tiles, of both varieties, are made by machinery. The clay is worked in an ordinary pug mill, such as used in brick-making, care being taken that no stones are present; it is then forced through a die of a circular or horse-shoe shape, according to the kind of tile intended to be made. It passes through in a continuous stream, which is cut off into the proper lengths by hand, or by a little apparatus connected with the machine."

It affords us pleasure to state that the Hon. John D. Lafield, of Oaklands Farm, near Geneva, has lately imported from England, one of the most approved machines for making tiles. It is Scragg's patent. It has received two prizes of £20 each, from the Royal Agricultural Society, and the Highland Agricultural Society, as the best tile machine exhibited at their shows. We have received from Mr. Delafield the following remarks in reference to the machine—"It

was made by Scragg, of Cheshire, England. It is of the largest size, and embraces every improvement to the present time. This machine works the clay and screens it, so as to remove all stones and other substances—it is then carried forward by the machinery, and passed through dies of any required form or pattern, and delivered at the end of the table, ready for the kiln. The dies which accompany the machine, will produce drain pipes of 1, 1½, 2, 2½, 3, 5, and 6 inches bore. Horse-shoe tiles, rising 2½ and 4 inches, with soles to match the tiles—semi-cylinders of 8 and 11 inches in diameter. A pattern has also arrived for a new form of pipe, with a foot attached. This is a new feature, and, as it seems, an improvement. The machine is arranged also for making ridge tiles and pan tiles for roofing.

"As soon as the machine is put into work, I will send a specimen of each tile to the Agricultural Rooms. It is probable that it may be in operation by June, and then drain tiles will be furnished for not over ten dollars per 1000, and I hope in good time to see them delivered for a less cost. We cannot yet form an accurate calculation, but we are sure not to exceed \$10 per 1000.

"I hope to cause the works to be erected close to the canal, that a ready delivery may be made to distant farmers.

"In procuring this machine, I have been much favored by the gentlemanly attentions of Mr. John Girdwood, of Chirk Castle, Scotland, who interested himself much and earnestly in the erection of this particular kind. I am also under obligations to Prof. Norton, who first brought this machine into notice in this country in one of his lectures, and through whom I received an introduction to Mr. Girdwood."

As to the *expense of drainage* in this country, no precise statements can at present be made. When machines for making tile shall have been brought into full operation here, and all other branches of the business become fully understood and systematised, the cost will be reduced. But Mr. Johnston, near Geneva, whose draining operations have been several times spoken of in our pages, states that at the cost which he has incurred, twenty-eight cents per rod, the investment is the most profitable he has made on his farm.

We are not prepared to lay down any definite rules as to the *distance apart* which drains should be laid. This must depend on the *condition of the land*. In many fields,