

Tiles are usually cut fourteen inches long, and shorten in drying, and burning, to about twelve and a half inches, so that with breaking, and other casualties, they may be calculated to lay about one foot each; that is to say, 1,000 tiles may be expected to lay 1,000 feet of drains.

To assist those who desire to manufacture tiles for sale, or for private use, it is proposed to give such information as has been gathered from various sources as to the cost of making, and the selling prices of tiles, in England. The following is a memorandum made at the residence of Mr. Thomas Crisp, at Butley Abbey, in Suffolk Co., Eng., from information given the author on the 8th of July, 1857:

"Mr. Crisp makes his own tiles, and also supplies his neighbours who need them. He sells one and a half inch pipes at 12s. (\$3) per 1,000. He pays 5s. (\$1.25) per 1,000 for having them made and burnt. His machine is Waller's patent, No. 22, made by Garret and Son, Leiston, Lymington, Suffolk. It works by a lever, makes five one and a half inch pipes at once, or three sole-tiles, about two inch. The man at work said, that he, with a man to carry away, could make 4,000 one and a half inch pipes per day. They used no screen, but cut the clay with a wire. The machine cost £25 (about \$125). At the kiln, which is permanent, the tiles are set on end, and bricks with them in the same kiln. They require less heat than bricks, and cost about half as much as bricks ere, which are moulded ten inches by five.

"Two girls were loading bricks into a horse-cart, and two women receiving them, and setting them in the kiln. They made roof-tiles with the same machine, and also moulded large ones by hand. The wages of the women are about 8d. (sixteen cents) per day."

At the exhibition of the Royal Agricultural Society, in England, the author saw Williams' tile Machine in operation, and was there informed by the exhibitor, who said he was a tile-maker, that it requires *five-sevenths as much coal* to burn 1,000 two-inch tiles, as 1,000 bricks—the size of bricks being 10 by 5; and he declared, that he, with one boy, could make with the machine, 7,000 two-inch tiles per day, after the clay is prepared. Of course, one other person, at least, must be employed to carry off the tiles. Mr. Denton gives his estimates of the prices at which pipe-tiles may be procured in England, as follows—the prices, which he gives in English money, being translated into our own:

"When ordinary agricultural labor is worth 50 per week, pipes half one and a half inch, and half two-inch, may be taken at an average cost of \$4 38 per 1,000. When labor is \$3 00 per week, the pipes will average \$5 00 per 1,000, and when labor is \$3 50, they will rise to \$6 25."

He adds: "In giving the above average cost of materials, those districts are excluded from

consideration, where clay suitable for pipes exists in the immediate vicinity of coal-pits which must necessarily reduce the cost of producing them very considerably."

Taking the averages of several careful estimates of the cost of tiles and bricks, from the 'Cyclopaedia of Agriculture,' we have the prices of tiles in England about \$5 per 1,000, and the price of bricks \$7 87, from which the duty of 5s. 6d. should be deducted, leaving the average price of bricks \$6 50. Upon tiles there is no such duty. Bricks in the United States are made of different sizes, varying from 8 x 4 in. to the English standard 10 x 5 in. Perhaps a fair average price for bricks of the latter size, would be not far from \$6 per 1,000; certainly below \$6 50 per 1,000. There is no reason why tiles may not be manufactured in the United States, as cheaply, compared with the price of bricks, as in England; and it is quite clear that tiles of the sizes named, are far cheaper than common bricks.

What is wanted in this country is, first, a demand sufficient to authorize the establishment of works extensive enough to make tiles at the best advantage; next competent skill to direct and perform the labor; and, finally, the best machinery and fixtures for the purpose. It is confidently predicted, that, whenever the business of tile-making becomes properly established, the ingenuity of American machinists will render it easy to manufacture tiles at English prices, notwithstanding the lower price of labor there; and that we shall be supplied with small tiles in all parts of the country, at about the current prices of bricks, or at about one-half the present Albany prices of tiles, as given at the head of this chapter. It should be mentioned here, perhaps, that in England, it is common to burn bricks and tiles together in the same kiln, placing the tiles away from the hottest part of the furnace; as, being but about half an inch in thickness, they require less heat to burn them than the bricks.

In the estimates of labor in making tiles in England, a small item is usually included for 'rolling.' Round pipes are chiefly used in England. When partly dried, they are taken upon a round stick, and rolled upon a small table to preserve their exact form. Tiles usually flatten somewhat in drying, which is not of much importance in any but round pipes, but those ought to be uniform. By this process of rolling, great exactness of shape, and a great degree of smoothness inside, are preserved."

TILE MACHINES.

Drainage with tiles is a new branch of husbandry in America. The cost of tiles is now a great obstacle in prosecuting much work of this kind which the land owners desire to accomplish. The cost of tiles, and so the cost of drainage, depends very much—it may be said chiefly—upon