

Drains are formed in each, and the water which is collected in them is let off by a larger main. The main drains are generally piped, and vary in dimensions according to the extent of the field, or the quantity of water expected to flow through them. The stones after being levelled on the surface, are covered with a thin sod, and to the proper width, and neatly fitted and tramped down, so as effectually to prevent any earth getting into the drain; and the stuff taken out of the drain is then returned. The expense attending this radical improvement is stated by Mr. Smith, of Deanston, on whose farm not less than one hundred miles of such drains have been made, as follows:—Cutting 1s. 6d. to 2s. 6d. per rood, of 36 yards; the stones, if collected on the adjoining fields, from 1s. to 1s. 6d. per rood; breaking them, from 9d. to 1s. per rood, ( $1\frac{1}{2}$  cubic yards of stone being sufficient for a rood of drain); filling in the stones 3d. per rood; sodding 1d. per rood. Thus the whole expense of completing 36 yards of drain will be 4s. 8d., or taking in a portion of the main drain, 5s. per rood; and this at 10 feet apart, drain from drain, is per statute acre, £9 10s.; 15 feet part, £6 6s. 7d.; 18 feet apart, £5 6d.; 21 feet apart, £4 10s.; 24 feet apart, £4; 32 feet apart, £3.

Mr. Kennaird says, "In some experiments which I made, in all of which the substratum was a hard tile, I find that on an average the drains can be cut 16 inches wide at the surface, 8 feet deep, and from 4 to 5 inches wide at bottom, for 2d. per lineal perch of  $16\frac{1}{2}$  feet, which is fifty per cent. under the lowest price mentioned by Mr. Smith.—Thus the expense of furrow draining a statute acre, the drains being 10 feet apart will be £6 13s.; 15 ditto, £4 8s. 6d.; 18 ditto, £3 15s. 4d.; 21 ditto, £3 3s.; 24 ditto, £2 16s.; 32 ditto, £2 2s. 2d. When the substratum abounds in large stones, and also when the materials for filling the drains are difficult to be obtained, the expense will be somewhat

more; but, on an average I am of opinion that the work can be effectually performed, even taking in a portion of main drain, the furrow drains being 21 feet apart, at £4 per statute acre.

#### AGRICULTURE.

It is well known that evaporation produces cold, and that the seeds and roots of all vegetables, except those of the aquatic kind, perish if long exposed to excessive moisture. Considerations arising from these simple truths have been the origin of the greatest improvements introduced into the practice of agriculture within the last century—viz., the substitution of a regular and uniform system of under-draining for the old custom of laying out arable land in ridges and furrows. It was found that the old practice was not effective in reducing the land of superfluous moisture, even in soils possessing very absorbent qualities, and that water produced by the dew and the rain was retained so long as on those of an aluminous description; that the surrounding temperature was too much lowered by its evaporation under the influence of the wind and sun. In consequence of this, a degree of cold and moisture detrimental to vegetable life was produced, and in seasons when much rain fell, the clayey districts of Great Britain exhibited all the marks of sterility, though capable of yielding abundantly, if subjected to a rational mode of cultivation. Wherever the old practice prevailed, it was observed also that on the highest part of the ridge an exuberant vegetation was produced, but that, on its sides or declivities the plants gradually decreased in number and vigour, till in the furrow itself the earth became completely barren.

These phenomena were accounted for on the supposition that the soil, besides absorption, possessed powers of freeing itself of water varying directly with the position on the ridge;