

that the furrow received and retained too much moisture, but that the other parts of the ridge retained less and less, according to their elevation, till on the summit itself, every particle of humidity, except what was necessary to perfect the different processes of vegetation, was discharged, absorbed, or exhaled.

Mr. Smith of Deanston, an ingenious philosophic farmer, in the Carse of Gowrie, was the first to devise a remedy for the evil incidental to this mode of cultivation: he placed under-drains at distances varying from 18 to 24 feet, throughout all his fields, at the same time making communications between them and the natural springs and well heads existing near the surface, which he happened to discover. These operations were greatly facilitated by the invention of an instrument called by him the sub-soil-plough (a plate would be necessary to render any description of this ingenious and efficient machine intelligible; we forbear, therefore, to say anything more about it, but we earnestly exhort the admirers of simple and clever mechanical inventions, or persons interested in agricultural pursuits, to procure a model of it, as without it the operations so successfully practised by Mr. Smith cannot be conducted with a sufficient regard to economy.)

After the complete success of the new practice was established, the result was, that the old and inefficient method of laying out land was abandoned by the intelligent and industrious agriculturist occupying the fertile and extensive valley, which once owned the feudal authority of the Ruthven, and the improvements of Mr. Smith universally adopted. In all their fields the earth was reduced to a plain and level surface, and possessing in consequence of the under-drains uniform powers of absorption, each field exhibited nearly the same degree of fertility throughout its whole extent. In fact every part of the field yielded abundantly,

as the summits of its ridges had formerly done, and the crops raised by Mr. Smith's improved practice were better by 50 or 100 per cent. than those produced upon the same lands had been previous to its introduction.

By the use of ground or crushed bones as a manure, by subjecting the soils of the Carse to chemical analysis, and skilfully varying the manure applied to them, so as to naturalize or supply defects in their composition and to stimulate their productive properties, combined with the improved practice of Mr. Smith, the occupiers of the farms constituting the Carse of Gowrie, the Goshen of Scotland, and I suspect a pleasanter place and a richer district by far than its Egyptian prototype, have doubled the value of the lands within a comparatively short period. Many of the farms adjoining the Tay are let for £6 an acre, and the unjustly confiscated inheritance of the Ruthven yields, it is said, at this moment a rental of £1,000,000 sterling. Many other instances might be given of the immense increase of wealth, which accrues from the application of ingenuity and science to agriculture; out of several which present themselves to my recollection, I will give two. About the year 1770, Dr. Richard Watson, Bishop of Llandaff, the author of many theological works of the highest merit, and of some chemical essays, expended £20,000 in the purchase of lands in the English county of Westmorland. His philosophic acquirements naturally suggested to his high and reasoning faculties, many methods by which the value of his purchase might be enhanced, and those were immediately put into practice, with characteristic energy and prudence.

Plantations of trees were formed upon a most extensive scale, rocks were blasted and removed, bogs, marshes, and moors were drained, and the scientific knowledge of the philosophic Bishop was applied in