

from the preceding observations, that the mechanical operations of the field are the simplest and most economical means of rendering accessible to plants the nutritious matters of the soil.”

Fallows are of three kinds.—Summer fallows; where the land enjoys at least a twelvemonth's rest, as when wheat is sown in autumn; or even 18 months rest, as when barley or oats are sown in spring.—Fallows for roots; in which case the land which bore the wheat crop in August is sown, after suitable preparation, with turnips &c., the following spring.—Bastard fallow; when land which has borne grass during the last years of the shift is ploughed, and otherwise cultivated, during the summer after the grass has been mown or fed off in preparation for wheat in the autumn; or barley, or oats, in the spring. In this country, we believe the bastard fallow has never been tried, but, we think, it would be, in many cases, an excellent plan on soils where the usual one-furrow system leaves the land too much consolidated in the sowing season.

The success of the *long*, or *summer* fallow depends greatly on the first ploughing. We must always remember that the object of making a fallow at all is threefold; first, to clean the land; secondly, to mix the soil; thirdly, to liberate, by exposure to the air, the rain, the heat and the frost, those substances, mineral chiefly in their nature, necessary to supply the food of the plants which exist in abundance in the land, but are bound up in inaccessible places, until the alternate action of plough and harrow, of grubber and roller, expose them to the action of the elements, and enable them to perform the duties which are the necessary sequel to their existence.

Immediately after the crop is carried home the work should be begun for the fallow. Autumn cleaning of stubbles is the foundation of all good, clean cultivation. In England we have often seen it practised before the grain is carted—the Ducie drag, or the Bentall's scarifier, worked between the rows of wheat shocks, the space where they stood being done afterwards. Then the implements cross the former work; the harrows quickly follow, and, dragging out all the root weeds, leave them exposed to the August sun to their intense mortification. But this cannot as a rule be done on the heavier class of soils; there, the plough must perform the work, and it is thus that our tougher soils will eventually be treated.

The first furrow, for a fallow of any sort which

is to be manured and sown ultimately with roots, should be as deep a one as the strength of the team employed on the farm can manage. (1)

There are various modes of securing this deep furrow. The plough in general use is, from its construction, but ill adapted to this part of the work, not being able to go deeper than, at the utmost, eight inches. For some years past a plough invented by the late Marquess of Tweeddale, of Yester Mains, Scotland, has been coming into notice. Formed by degrees, after long and patient experiments, and not founded on the theory of what a plough ought to be, the shape of the mould-board was attained by trial and error, and corrected and altered according to the suggestions of the ploughman who held the plough. At length, the implement cut its furrow-slice of the dimensions of 13 inches deep, by 12 inches broad, and, clearing its way as it went with perfect ease, was pronounced to have attained the contemplated end. (2)

In general, the plough packs the furrow-slice too tightly against its neighbour, but the Tweeddale plough leaves it loose and pulverised, permitting air, rain, and frost to enter and to their work freely during the open season; and, when spring arrives, the grubber passed across the ridges draws out the root weeds which the plough has eradicated, and renders their subsequent desiccation easy. This is a far better practice than cross-ploughing, which, cutting, as it does, the root weeds into lengths, renders them less facile of destruction.

As the Tweeddale plough requires three powerful horses to work it, we fear it will be some time before it is introduced into this country. The Scotch iron plough must then still be considered our best implement, though the two-wheeled ploughs of Howard, Busby, &c., are more perfect workers where there are no stones.

It is of no small importance that the land intended for fallow should lie in the right form all the winter. It should be as carefully ploughed, and the water furrowing as strictly attended to, as if it were intended to grow a crop. There is a difference of opinion as to the width of ridges.

(1) Except on land that has previously been always shallow-ploughed, in which case it would be dangerous to bring up too much raw subsoil at once. ED.

(2) No one proposes to plough deep furrows on clover-leys, or in any other position than in preparation for roots. ED.