ish, two-pronged piece of iron, which the labourer fixes to a long wooden handle, to the loy (a long, bent blade of iron scarcely three inches broad, and which the labourer fastens to a long handle, in general use in the south, west, and indeed over a great part of the country) is a miserable substitute for the spade. No man can, which such a tool perform a reasonable day's work: it costs little, however, and is, on the whole, not ill adapted to the not half-tilled, stony land, and to the not half-paid, and not half-fed peasant of the south and west of Ireland.

The Ulster spade is a long narrow iron blade, but more than twice as broad as the loy, permanently fixed to its handle—which is as long as that of the loy—by the manufacturer; it is an efficient tool, and will no doubt, as improvement advances, take the place of the loy. The English spade is broad and short-handled, well suited for garden work or in the hands of a properly-supported labourer, on our well-tilled land, to any kind of work for which a spade is used, but it is quite unsuited to ill-cultivated or stony land. A fork, with three flattened prongs, is advantageously used in England for digging out potatoes, and one with the prongs not flattened, and sometimes made of or pointed with steel, is used as a substitute for the spade in ordinary work. A very stong one of the same kind is used in subsoiling.

2. *The Plough.*—This important implement has undergone many and great changes, from the sharpened piece of wood dragged through the ground by oxen of former days, to the wooden plough, with scarcely a bit of iron in its construction, still in use in some of the backward districts in this country, and thence onward to the scientifically-constructed and beautifully-finished implements for which prizes are now awarded at our great cattle shows.

The iron swing or Scotch plough is now in general use as well in Ireland as in Scotland; in some places in Ireland a wheel is attached to the end of the beam, by which the depth of the furrow is regulated, but generally no wheel is used, whilst in England two wheels at the end of the beam are very generally. Until a very recent period prizes were awarded for the ploughs which, in the opinion of the judges, were most scientifically constructed; but now the power required to move this and other implements is tested by an instrument called a dynamometer or draught-guage, and this is likely to lead to great improvement in the form of the mould-board, which should raise and turn over the furrow without carrying forward any portion of it.

The turn-wrest or a plough with two moveable mould-boards, sometimes used in ploughing across highly inclined land, it turns the furrow downwards both in going and returning; whilst with the common plough the horses would have to return empty in some parts of the field.

The subsoil plough was noticed under the head subsoiling.

Some writers object to the plough as a rude implement that hardens the under soil, and does not pulverize and look forward to its being superseded by an implement that, worked by steam or even by horse power, will exert a picking action, and by one operation prepare the land for receiving the seed.

3. *Grubbers* are implements of various degrees of strength, used for breaking and pulverizing land that has been previously ploughed, and thus avoiding the necessity of the repeated ploughings formerly practised in order to reduce the land to a fine tilth. In loamy soils a well-constructed two-horse grubber, which costs about £3, drawn by a pair of good farm horses, will, as an ordinary day's work, in spring, break up four acres of autumn-ploughed land, and leave it in a better state of tilth than two cross-ploughings would have done. Grubbers are also constructed for loosening the soil between drilled crops.

Harrows are used for breaking down the surface of ploughed or grubbed land. They are wholly of iron, or iron tines or teeth are inserted in wooden frames or bulls; the former, although costing more in the first instance, last much longer, and are probably more economical in the end; both, when equally well made, are alike efficient, and the perfection of a harrow consists in having a sufficient number of tines, and each time moving a different portion of the earth. Harrows are of various degrees of strength, from the light grass-seed harrow, which may be drawn by a donkey, to the break, requiring four strong horses. These last are now being superseded by the Norwegian harrow, in which numerous, spiked, disks revolve on three axles, and tear up and pulverize the soil very efficiently. An implement, formed of a great number of small disks, which revolve, and by their edges pulverize the soil most effectually known as the web-harrow, is used to cover grass seeds.

Rollers are cylinders made of wood or of cast iron, and used for breaking the clods which escaped the harrow. They should always be made of the latter substance, and of two or three parts; they merely break the surface of the clods, and then pulverize, when in the proper state of dryness, their effect is rather to harden, and if at all moist to polish the surface; they are useful however for consolidating and making the surface even after spring corn and flax, on hay-seed have been sown, but for pulverizing the soil they have been superseded by the modern roll.

Clod-crushers.—This is a heavy implement, not unlike a roller, but formed of a great number of bars or of plain or pointed-edged disks, placed loosely and in contact with each other on an axle. Crokill's is a most efficient implement, capable of pulverizing the most cloddy surface by one operation. The difference in expense between this implement and mallets in the hands of men and women, still used on many clay lands, would go far towards paying the rent of the land. The best remedy against the wire-worm is to clod-crush in spring, and this also, in a great measure, prevents the surface cracking.

The Furrow-presser is a heavy-edged roller, used for compressing the land between the furrow slices of lea land on which it is intended to sow corn. It levels the bottom between the slices, and fills all openings, into which the corn would otherwise fall, and be covered too deeply; and the seed being sown broadcast and harrowed, comes up regularly in drills.

Seed-sowing Machines, also called drills.—For a long period corn and all other crops were sown by the hand, or as it is called, broadcast, and this is still the general practice. But it was observed that large crops might be obtained from a much smaller quantity of seed than was usually sown, that, in fact, as large crops were obtained when only two or three stones of wheat were dibbled—that is, planted at three or four inches seed from seed—as when five or six times that quantity was sown broadcast. In order to save seed, and at the same time avoid the great expense of dibbling, corn sowing machines were invented; they are of various kinds; but the general principle is to raise the seed by means of spoons, fixed in a revolving axle, from a hopper, and let it fall into tubes which convey it to the ground immediately behind the coulters, by which a furrow has been opened to receive it. Drills are made to sow from three to six or more rows of seed, at distance from six to twelve inches or more apart, and from a stone to two or three bushels of seed per acre. The common six-rowed drill, drawn by one horse, and attended by a man, is capable of sowing nine acres daily. Some drills are made to deliver compost with the seed; but this is expensive; this practice is so excellent especially with spring-sown corn, that the mechanic who would produce a plain strong, and cheap machine of this kind would be sure of a large demand for his skill, and at the same time confer a great boon on the cultivators of medium-sized farms; in the meantime, corn, mixed with guano, may be sown with the ordinary corn drills.

Turnip drills vary in price from four or five shillings to more than that many pounds. They are made and adapted to be worked by hand, or to be drawn by a horse, and to sow one or two drills at a time. The best barrow is another simple drill, made to be worked by hand, and the grass-seed sowing machine, worked by hand, or a large kind, drawn by a horse, scatters the seed with great regularity.

9. *Dibbling Machines*, by which wheat may be sown at the rate of a single seed or three or four seeds in a hole, are made to be worked by hand or by horse; they effect a