

Royal Agricultural Society of England.

LIVERPOOL MEETING, 1841.

Report on the Exhibition of Implements.

The Judges of Implements, in presenting to the Council their award of prizes, cannot refrain from expressing the gratification they felt at the splendid exhibition of implements and machines submitted to their inspection; nor can they omit offering their congratulations to the Society on the good effects which have already resulted from the public exhibitions of implements at the Society's Meetings, in stimulating the talent of the mechanic and the zeal of the husbandman. At Oxford the show-yard may be said to have presented an epitome of the state of agricultural mechanism existing in 1839, the era of the formation of the Royal Agricultural Society of England. No spectator of that show can have failed to be struck with surprise and admiration at the Liverpool exhibition. At Oxford there were some examples of good machinery and workmanship, but many more of rude, cumbrous, and ill-executed implements. At Liverpool many machines were exhibited not only of surpassing skill in contrivance and execution, but also for their object the effecting of processes in tillage-husbandry of the most refined and acknowledged importance, but hitherto considered of very difficult practical attainment. Some of these may already be considered as forming part of the necessary apparatus of every well-managed farm, and to be essential to its economy and profit. This vast stride in the mechanics of agriculture, made within so short a period, has doubtless arisen from the congregating together of agriculturists and mechanicians from all parts of the empire; and a still higher perfection in machinery may be confidently anticipated from the opportunity offered, under the auspices of the Society, of periodically contrasting and estimating the merits of varied implements used for similar purposes in different localities and soils. It is apparent that the manufacture of even the commoner instruments has already, to a great extent, passed out of the hands of the village-ploughwright and hedge-carpenter, and been transferred to makers possessed of greater intelligence, skill, and capital. The improved style of finish, the greater lightness and elegance of construction, and the generally superior adaptation of the means to the end, in every class of implements, were sufficient manifestations of the beneficial results arising from the encouragement given by the Society to these objects. Neither were examples wanting in the higher classes of machines to show that the fourth important object for which the Society was incorporated is, to some extent, fulfilled—viz., "to encourage men of science in their attention to the improvement of agricultural implements."

Agriculture, as an art and a practical science, is still in its infancy; and it is to be ardently desired that the mechanical constructor should be seconded in his efforts to produce new or more perfect implements, by receiving the co-operation and instructions of those whose leisure, affluence, or greater knowledge of the wants and capabilities of agriculture, enable them to supply the ideas on which the mechanic would work.

The exhibition at Liverpool contained productions, by several humble mechanics, not inferior in point of genius to the more finished performances of old established firms; and with the pleasing fact before them of the advance already made in the improvement of old, and in the invention of new implements, the members of the Society would perceive how profitable a mine still remains to be worked by the aid of its fostering care. It was also a gratifying feature of this large assemblage of rival mechanicians, that but little jealousy of success was manifested by unsuccessful candidates; and it was agreeable to the Judges to learn that several of the more important or best executed implements, to which prizes were awarded, were afterwards purchased by competing makers.

In the distribution of the sums left to the discretion of the Judges, they have endeavoured to reward merit in most of the varied forms in which it attracted their notice, hoping to encourage the agricultural machine maker in the application of sound scientific principles and good workmanship to every species of implement, whether for improving the preparation of the soil, for lessening animal and human labour either in field or farm-yard, or for alleviating the toil of the domestic in the dairy.

[We shall only give the description of a few of the implements exhibited, and the result of experiments made with several varieties of ploughs].

The Rev. W. L. Rham, of Winkfield, Berkshire, exhibited an implement, the principal object of which is to extend and improve the system of drilling and dibbling wheat and beans. It is chiefly in its latter capacity, as a dibbler of seed and manure, that we shall attempt to give a slight description of it. The operative part of the machine is suspended upon an iron carriage having four wheels, the two hinder ones being fast upon their axle and turning with it; on this axle is a spur-wheel, giving motion to a pinion on an intermediate axle, which carries a wheel geared into a second pinion fixed on an axis, having six cranks arranged spirally. The velocity given to this axis is such that the cranks make one revolution for every six inches of the circumference of the hind wheels, or whatever is the distance desired between the dibble-holes. The radius of each crank is such that this distance shall be equal to the circumference described by it in one revolution. Thus the space described by every crank coincides with that passed over in the same time by the hind-wheels. And, as the cranks turn during the half of a revolution in an opposite direction to that of the wheels, the result of this compound motion is a pause or rest of short duration, at the point where the crank in its rotation commences to retrograde from the line of progress of the machine—i. e. at the lowest point, and when the dibbles are in the ground. The cranks raise the dibbles up and down by means of connecting rods and levers, which double the verticle, without increasing the horizontal motion; and in order that the point when in the ground may be perfectly stationary, it is made the centre of motion while the machine progresses; and to enable it to retain that position for a sufficient length of time for the purpose of leaving a hole truly vertical, the dibble moves between cheeks in the rod which connects it with the crank, and has a spring to restore it quickly to its proper place in rising out of the ground. During, therefore, the entire time occupied in its piercing the hole, and being withdrawn from the soil, the dibble retains its perpendicularity.

By an ingenious and simple contrivance a slow rotatory motion about its own axis is given to the dibble, by which means its point may be said to bore into the ground, thus assisting in the formation of the hole; and by the same action the dibble is cleared of any adhering soil, and the hole left firm and clear.

The seed-valve consists of a cylinder, with a cavity cut in it of dimensions sufficient to hold one or more seeds. This cylinder is tumbled over, and the seed discharged into a recipient of the shape of a quadrant, from which it is pushed out; when the cylinder returns to its first position and takes in a fresh supply. As this motion is sudden, the seed is surely delivered, even when rather damp. When the cylinder is delivering, the quadrant is receiving, and vice versa. The delivery of the manure is effected by similar apparatus, only of a larger size, the valves being furnished with brushes or other means to remove the superfluity.

The valves are connected with the dibbles in such a manner as to deposit the manure and seed in the hole last formed, whilst the dibbles are stationary in the advancing one.

The dibbles bore their holes in shallow drills made by the pressure and sliding action of an iron shoe, shaped like a boat and forming a smooth furrow.

The whole of the machinery is supported by an iron frame, one end of which rests on trunnions attached to a projecting part of the back of the carriage. It is suspended at the other end by a cross shaft carrying two pinions, working into arcs of circles fixed on the carriage, so that it can be raised or depressed as desired, or elevated clear of the ground by one turn of the winch. At the same time the pinion connecting the machinery with the hind wheels is put out of gear, and the whole can then be moved about on the carriage. The implement is steered in a manner somewhat analogous to Lord Western's drill.

The object of the Rev. Gentleman in contriving this original and singularly ingenious implement, has been to imitate the more minute and certain manipulations of the gardener; and so to adapt his machinery to the drilling and dibbling of seed upon land previously laid flat and well prepared, that every field, however extensive, should present the neatness and the regularity of a highly-finished garden.

The distinguishing peculiarities of this remarkable piece of mechanism, are the arrangements for the dibbles to bore the holes, causing them to be perpendicular, and truly cylindrical; and the apparatus for giving certainty to the valves in receiving and delivering the seed and manure. The Judges, not having had an opportunity of inspecting the practical working of this machine, are limited to the expression of their high commendation of its ingenuity and principles, and their hope that the author's sanguine expectations may be crowned with the success his perseverance and inventive genius so richly deserve.

The Uley Cultivator, invented by Mr. Morton of Chester Hill, is an implement of great strength and utility; its peculiar merits consist in an improved form and disposition of the tines or teeth, which enter the ground in a manner effectually to move the couch, or weeds, before they arise from the ground, and to leave them unbroken on the surface. The teeth, five in number, are so arranged, that although drawing lines only 8 inches apart, they are 2 feet asunder, which, with their curved shape and length and their being suspended on wheels 3 feet 4 inches in diameter, renders it impossible for the implement to choke, however loud and encumbered the soil may be. The depth to which the teeth are let into the soil is readily determined by a winch acting on a worm and wheel; and by the same means they are raised clear of the ground. For the preparation of light soils for barley, the teeth are provided with cast-iron shares, which effectually shallow-plough the surface without reversing it. Points of different widths, and also steel blades for paring, are furnished to fit on the tines without pins or other fastenings.

Messrs. Garrett & Son's Hoe deserves the notice of the agriculturist as an implement that will greatly tend to give an horticultural finish to field operations. It is adapted to all the prevailing methods of drill culture, either for the cleansing of corn crops, drilled at narrow intervals, or for turnip crops drilled upon the level surface or on ridges, the axle of the wheels being moveable at both ends to suit the varied intervals between the rows of plants; and as each hoe works by a separate lever, the weeds are effectually destroyed however uneven the surface of the ground, each hoe being kept at an uniform depth by means of regulating keys. The swing steering, adapted to this implement, is a valuable addition to horse-hoes, as they may thereby be guided with the greatest precision, perfectly scarifying the intervals without the possibility of injuring the corn or plants.

An excellent show of drills was produced by Messrs. Hornsby, Garrett & Son, Smith, and others. The drill exhibited by Mr. Hornsby, of Spittlegate, Grantham, to whom the prize of twenty-five sovereigns was awarded, is admirably calculated for deposit-