

the farmer from his dependence on itinerant labour, and of economizing that most valuable element, *time*, in garnering the harvest. It took more than fifty years to make the seed-drill a standard implement; within six years the far less valuable and less perfect reaping machine has grown into extensive use. One more gap remained to be filled up at the date of the Salisbury Meeting, in order to complete the mechanical requirements of a well-ordered farm, so that the stubble of the land, where the corn is sown by drill, reaped by horse-power, threshed out by steam, and sent in the shortest possible time by railway to market, should be at once broken up by the resistless force of a Steam Cultivator, instead of being left for the net-like twitch to spread and weeds to seed until the following spring. We almost believe, yet we dare not assert, that this crowning triumph of agricultural engineering has now been achieved. The retentive clays fertilized ten years back by deep drainage will then be brought to develop their full power of production by a gain of time often equal to a whole season.

But perhaps nothing illustrates better the change which has come over farming in the last few years than what has taken place with respect to so ancient and familiar an article of husbandry as the plough. Although an implement more than two thousand years old, it is only within the last sixteen years that it has been reduced to an uniform shape and material. In engravings, to the eye of the casual observer there is now no difference between the ploughs manufactured for the same purpose by every one of the eminent makers; and, in fact, in general construction, they are all alike, except where the "turnwrests of Kent and Sussex" are used, although some have a marked superiority in the details and in durability. They are fashioned entirely of iron and steel, of long graceful wave-like form, provided with a pair of wheels of unequal size, and drawn by a chain attached to the body of the plough. Iron screws and levers have replaced wooden wedges. A few seconds are sufficient to attach the share or adjust the coulter. It was quite otherwise in 1840. Out of six ploughs engraved in the *Journal of Agriculture* for that year, two are swing, two have two wheels, two have one wheel each, all are of wood, except the shares and breasts, all are drawn from the extremity of the beam, and the awkward inferiority of their respective shapes is perceptible at a glance. In 1840, Lincoln, Rutland, Bedfordshire, Berks, and almost every other county, had its separate plough, and knew little of its form in the rest of the kingdom; the exceptions being among the customers of scientific makers, whose trade was restrained by the cost of conveyance, the want of publicity, and the want of intelligence. Mr. Pusey and Mr. Handley, who contributed articles on the Plough to the first volume of the *Royal Agricultural Society's Journal*, were, as gentlemen farmers, far ahead of their time, but it is evident, from their observations, that they had everything to learn in the science and practice of agricultural mechanics. Mr. Handley's acuteness led him to conclude that wheel ploughs were of lighter draught, "contrary to the opinions of the writers" whom he had consulted; but Mr. Pusey, in his general report on English agriculture, evidently prefers the Scotch swing plough, not aware that the old Bedford wheel plough, even in its unimproved state, was a better implement. After mentioning the instances in which the Scotch plough failed, he hesitatingly adds, "It is even doubted whether one wheel might not be advantageously restored." Another report on a trial of different kinds of ploughs in Berkshire showed how general was the ignorance of the simplest principles of mechanical knowledge, for he confesses that he had no idea that there would be any "difference of draught between a smooth share and one covered with tar or paint." These trials, valueless in themselves, were the commencement of investigations by well-informed persons under the auspices of Mr. Pusey, and of a series of public competitions, which have placed ploughs constructed on the best princi-