

he returns again and again to the manufacturer's yard until he has, as far as possible, substituted horse for human power, and steam for horse-power. The flail, so long kept going by the pauper-creating Poor Law, could not have threshed out the breadth of corn which is now grown with the aid of stimulating manures. The picture which is given in Lisle's 'Husbandry,' written in 1714, remained often true up to our own time, because, though there might be a difference arising from the greater or less quantity of grain in the ear, according to the season and the tillage, neither the flail nor the man who worked it varied from the flails and men of bygone generations. 'A good thresher,' he says, 'assured me that five or six bushels of wheat was a very good day's threshing, and, in case the corn was clung and yielded ill, sometimes three bushels was as much as could be threshed in a day.' In another place he tells us that 'iron-clouted shoes do not well to thresh wheat in, especially if it be new corn: a thresher's shoes should, by right, be soled with an old hat.' Horses, always the more fatal expense of a farm, were wanted for other purposes as cultivation expanded: and it was found in addition that it did not pay to wear out good animals in the circular drag of a threshing-machine. Thus a way was made for the steam-engine. So early as 1802, General Bulwer, the father of the novelist, erected, at his seat at Hydon in Norfolk, what Young believes to have been the first which was used in England for agricultural purposes. The cost of it was £600, and it was to thresh, dress and grind the corn, and cut chaff and hay. The earliest experimenters usually pay, and their successors profit. As the practice was not followed, it is probable it did not answer. The rapidity with which it has spread in the last few years adds another to the particular characteristics of the agriculture of our time. The travelling steam-engine, constructed to be drawn by horses from barn to barn and parish to parish, first made its appearance in an unsuccessful shape at Liverpool in 1841, was formed into a working machine by Mr. Cambridge of Bristol in 1842, grew at once into favour, and in 1845 had become fully established. A new trade sprung up almost like mushrooms in a night, and the show at the Royal Agricultural Society at Salisbury in 1857 was attended by upwards of twenty manufacturers, from almost every district of England. One firm alone made upwards of five hundred engines of an average power of seven horses, in the twelvemonth ending December, 1856.

The threshing-machine which the steam-engine worked has advanced in an equal degree. It was originally a mere box for roughly beating out the corn from the straw, and beating the corn almost as much as the straw. Step by step it was improved, until at Lewes, in 1852, a machine was exhibited which winnowed as well as threshed the corn and delivered it ready for dredging. Since that date 'barn machinery' has been produced which 'thresher, raises the straw to the loft, winnows and dresses the corn, divides the wheat according to quality, and delivers it into sacks ready for market, while the tailings, also divided into first and seconds, remain for the pigs and poultry, and the cavings for litter in the boxes or pigsties.' These multiplied services it performs at the rate of 800 bushels a day and at a cost of 2s. 6d. a quarter. The same engine which puts in motion all this automaton work is often made available for pumping water, grinding corn, crushing cake, cutting chaff for cattle, and grinding bones for manure, while the steam from the boiler may be turned into an apparatus for cooking food for cattle.

The reaping machine lay dormant in this country after it had been devised by the Rev. Patrick Bell, because it was not called for by the state of the labour-market, and was re-invented in two different forms in the United States, because the scarcity of manual labour there made it indispensable. It was brought into notice at the Great Exhibition of 1851, and answers the double object of relieving