by the weaker force of man—as in the mowing or threshing machine; or where the slow manipulation of fingers, with no expenditure of strength, is changed to a greatly increased rapidity of the same work by mechanical combinations, instances of which occur in the garden drill and the sewing machine. Some complexity is here necessary, and is admissible when great speed is gained; but when a machine works but little faster than the unassisted hands, it may be discarded, as a universal rule, unless extremely simple.

The second point to observe in providing farm machinery is to select such as each farmer can work with his own unborrowed forces. A threshing machine, for example, that requires six or eight horses to drive, one-half of which must be hired or borrowed for the occasion—or six or eight hands to man it, one-half of whom must be collected through the neighborhood before a sheaf can be threshed—is an inconvenient machine—troublesome and not economical. If the farmer has but two horses and two hands, he should procure a thresher which he can work. He has then complete command of his own operations, and can, on any occasion, for a day, half day, or less, set his machine to work when he wishes a supply of grain for seed or for bread, or straw for his cattle. Many spare or stormy days may be advantageously occupied where such a convenience as this is always at hand. The farmer's wife will not complain of being relieved of boarding a number of hands required to man a ponderous ten-horse thresher, nor will he himself get the fidgets so often in seeing all his collection of men standing idle while a broken cog is undergoing repairs.

Drilling vs. Broadcast Sowing of Wheat.

There is, perhaps, no grain crop in the United States in which greater improvement has been made in its cultivation than in wheat, particularly in the great West—and the reason of this is obvious. Until within a few years our Western farmers were without the benefit of railroads and consequently without a market for their surplus wheat, hence there was no motive to increase the crop by extra cultivation beyond the wants of the family or neighborhood. But in more modern times since the opening of the markets of the world to western farmers, wheat has become one of the most profitable crops in a large section of country, and hence our progressive farmers have found it to their interest to prepare their lands better and to make such other improvements in wheat culture as might be brought with more and better implements for cultivation. Among these the plow, the roller, the harrow, and the drill, have been added or greatly improved, and yet we are far behind the best farmers of Western New York and those of England in the perfection of wheat growing. Among the improved implements that have been introduced there are none more important than the wheat drill; a large portion of the wheat that is sown is made to follow immediately after corn where the drill cannot be used to advantage owing to the interference of the corn-stubble and weeds that are left on the land after harvest. But where wheat is sown on fallow land or after clean crops, the benefits of the drill have been enumerated again and again by those who have used them, and we do not know an instance where the drill has been introduced that the farmer is willing to discontinue its use where the nature of the preceding crop will admit of its operation; and it is only necessary for the careful observer to witness the crops growing together at any stage of their growth that have been put in by the two methods, to be fully convinced of the advantages of the drill system.

A prolific writer, and constant contributor to one of our most popular agricultural periodicals, has labored through several columns in two consecutive numbers of the work, with the promise of "further consideration of the subject, when other facts and inferences will be adduced in illustration of the subject," to prove that drilling wheat has no advantage over the old method of scattering the seed promiscuously over the surface, to take its chance for being covered at sufficient depth to insure vegetation, or to remain on the surface liable to be devoured by the birds.

It is but a short time since the same writer labored ardently to prove that in transplanting trees from the nursery with their roots mutilated and half destroyed, as is too often the case in digging them, it was better to plant them with their entire tops than to cut them back in proportion to the loss which their roots had sustained; and in a later number of the same work, the writer labors with equal industry to prove mulching newly set trees is equally inadmissable. Now, all experience, common observation, and the least knowledge of vegetable physiology, as well as common sense go to prove the absolute necessity of the one and the importance and advantage of the other of these processes; but the writer seems to have a mania for taking the *opposite sides* of all popular questions of the day that have a bearing upon improvements in agriculture. With all intelligent readers his teachings are not calculated to do any material harm. But there are some who may receive his arguments as law, and practice after them inasmuch as they appear without dissent or comment by the editors of one of the foremost papers in the country. It is the giving publicity to the false teachings of such eccentric minds, that too frequently creates the objection to "Book Farming," particularly when they appear in such works as we have alluded to. We are pleased to see all important matters discussed, so long as argument is likely to throw light upon the