here were thinned out widely, so as to allow room for the rapid and extensive development of the roots. The acreable yield of the mangolds which had been moderately manured and kept close together amounted to 46 tons 15 cwts., whilst the mangolds which had been abundantly manured and widely thinned out produced a crop of about 70 tons per acre. Now, if the large roots and small ones were equally nutritious, it would, of course, be desirable to grow the former, but when we compare the composition of the mangolds of plot 1 (thickly sown) with those of plot 10 (thinly sown), we find an absolute and important difference in favor of the former. The thickly-sown roots contain 15.7 per cent. of solid or nutritive matter, which, the acreable yield of the crop being 46 tons 15 cwts, would amount to 19,782 pounds weight of dry food per acre The thinly sown roots contained only 7 47 per cent. of solid or dry matter, and as the acreable return from these large roots was 70 tons, that would yield only 11,681.6 pounds weight of dry food per acre In producing the large roots, the farmer would incur more expense than if he cultivated the small ones; for instance, he would have to apply more manure, and his carriage would be far greater. If Mr. Young had ten acres of mangolds like No 10, he would have had to cart 700 tons from the field to the stores, and yet he would have had in this crop no more solid food than is contained in about 450 tons of the smaller mangolds, No 1"

Real Old Grass Land.

"Twenty or thirty years in permanent sod" constitute real old grass land, though, if well managed and properly grazed, it will improve up to fifty years, and then never retrograde unless abused in some way or other. Now if the greater part of the land which is natural for grass, and adapted for perpetually lying in grass for grazing and mowing, was allowed time to become established in a thick-set old sod, and the finer and most fattening herbage encouraged by judiciously grazing with mixed stock (a good proportion being sheep), there might be fine districts producing beef and mutton, butter and wool, with fine horses also, and with comparatively little use of the plough, less and less arable soil being required as the south was approached, because the winters would be short and the foddering and housing of stock of little moment in comparison

Just as the turnip husbandry of England was the salvation of the light soils, and the hills and downs of England, and the muirs, &c., of Scotland, at the same time renovating all the good, dry and well drained lower land, so lying by for the real old grass all the land most suitable for permanently remaining sacred from the plough, may be the saving of agriculture in America; for the fact of about two-thirds or three-fourths of every farm being in pasture and meadow, or in grass alternating in pasture and meadow, would be an assistance to the arable portion and every farmer adopting this system; because grass land, when once thoroughly established, can be managed so as to enable the farmer to support a great quantity of animals which, with produce from the soil ploughed, will give straw, &c., which in conjunction with better food, increases the manure heap.

But hitherto the greed of gaining a good corn crop by ploughing under the sod, has caused the having any established pastures or mowings to be out of the question; and then the unaccountable fear that sheep may injure the best herbage, has brought about a running out of the very grasses the sheep would have caused to flourish. In Illinois the grass land that has remained uncultivated for 20 and 30 years, has become so superior to the newly-laid down fields in timothy and clover, that double the stock can be supported upon it; and what is proof beyond doubt is that when rented, double the money per acre is readily paid for the "real old grass land."

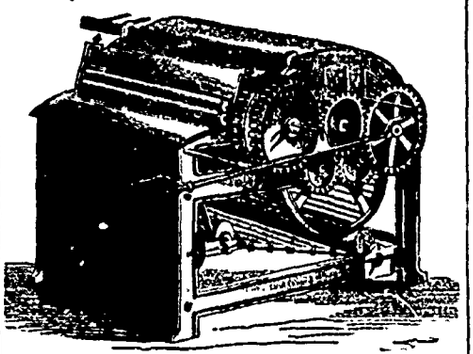
Let any disinterested person think on this, and it will show what a vast advantage would be gained by the whole community if (say half) the land now said to barely pay for occupation, could be let lie in grass till it would carry double the stock and be worth double what it is now to rent.—*Cor. Rural New Yorker.*

HINTS FOR STACKING HAY.—The *Pacific Rural Press* says: Make your stacks long and narrow. It will cure better and there is less danger of its becoming musty; besides it will be easier baling. The press can be moved easier than you can pitch from the rear of a wide stack. In building the stack, unload alternately on different sections of the stack; this will allow the air to circulate through each load before it is settled down by another placed upon it. About three gallons of salt thrown into a load of hay will preserve its sweetness. Three quarts are recommended by a hay farmer.

Agricultural Emplements.

Flax Scutching Machines.

We now present our readers with an illustration and description of the new patent Flax Scutching Machine of Messrs. Sandford & Mallory, England, which attracted so much attention at the late International Exhibition in London, from its simplicity and efficiency.



The cylinder is about 20 inches diameter and the feed 26 inches. It can be worked entirely by boys or girls; no skilled labor is requisite. The cylinder is composed of four iron rings which sustain the teeth and scrapers, and the belt is of strips of leather, which carry the corresponding teeth, the open spaces allowing the boon or shove to fall through, whilst the tow is thrown out at the end The flax, retted in any of the usual methods, and *unbroken*, is held in a light wooden holder, and fed in a thin stratum to the feed rollers, and is operated upon exactly as before described, by the teeth and scrapers, except that no water is used. Flax scutched by this machine is produced perfectly even and unbroken, with very clean ends, and the straw gives a large yield, averaging over 20 per cent. A boy and two children will produce about one hundred pounds of clean flax per day. The yield on the hackle from flax scutched by this machine is very much larger than from flax cleaned by any other process.

This machine may be driven in the same way as the cotton gin, either by steam or horse-power. The power required to drive is about half a horse-power. The speed requires to be varied according to the degree of retting the straw has received. For ordinary retted straw about 150 revolutions per minute are sufficient; for more tender and over-retted, 125 will suffice; and by means of spare pinions the motion of the feed-rollers can be increased or diminished so as to give less or more work, according to the nature of the straw to be cleaned.

Agricultural Implements.

We have heard the question frequently asked, "Is agricultural machinery really and upon the whole a gain to the farmer? Could he not, comparing one year's losses with another year's gains, and averaging these say once in a decade, have done just as well by clinging to the old system of manual labor?" Now there is a fallacy on the very surface of such questioning. In the first place, there is scarcely any species of farm Labor that can be performed without implements of some kind, from the simple processes of hoeing and spading to the new complex systems of reaping the grain and driving the thrashing machine. The query is simply absurd; it will not bear scrutiny. But another is added, viz:—"What great object is it to us farmers to have our machinery rendered more and more perfect when they become at the same time more and more costly?" Now, admit for an instant that agricultural machinery is a necessity—and who can deny that?—and another moment's reflection will show that every real improvement on the machinery —we say, real improvement—must ultimately prove a positive and clear money gain to the user, no matter what may be its present cost. Let us examine this. A farm of one hundred acres requires, if it is at all properly furnished, the following: two or more good ploughs, a shovel-plough, a small plough, a subsoiler, a single or two-horse cultivator, a root-seed planter, a grain drill, a roller, one or more harrows, fanning mill, straw cutter, root cutter, a good strong waggon with hay-rack, an ox-cart, a horse cart, wheelbarrow, sleigh, shovels, spades, hoes, hay and manure forks, hand and horse-rakes, scythes and cradles, grain shovels, mauls, wedges, picks, axes, wood-saws, hay-knife, a ladder, and various other matters still subordinate to these but equally necessary in their sphere. Let us now take the cost of furnishing a whole farming country with such a set of implements as we have mentioned to every hundred acres. We have not got figures for the Dominion just at hand, but it is computed that the cost of furnishing the agricultural districts of the United States with just such a stock is about five hundred millions of dollars. The cost per annum of men and horses to work these is calculated to sum up an equal amount. If now the effective power of labor be increased by improvement in this instance, say one-fifth, does it not stand to reason that there will follow a gain yearly of just one hundred millions of dollars to the farmers?

A knowledge of the science of mechanics, then, should be made a prominent object with the farmer in order that he may be able at all times to construct the best machine himself or select the best already constructed, and understand how to apply the forces required for the use of such machines to the very best advantage. There is no circumstance which shows the rapid advancement of modern agriculture more strikingly than the great improvement in farm implements. Within the past fifty years farmers have been enabled to do several times the work with an equal number of hands and horses. Ploughs have been constructed to plough deeper with the same if not greater ease of draught. Grain, instead of being slowly beaten out and crushed with the flail, is now made to gush in golden showers from the thrashing machine; horse rakes accomplish singly the labor of many men together, whilst the saving effected by the use of horse forks is almost incalculable. From ten to twelve acres of grain are neatly cut per day with a two-horse reaper, and seeds are better and much more evenly distributed by the drill; which thus obviates the heavy monotonous drudgery of hand-sowing It has been estimated that the number of reapers introduced into the United States up to the period of the great rebellion performed the labor of over a million of men—thus supplying the great loss caused by conscription for the army. As we have said, then, the knowledge of scientific principles and the applications of force should be aimed at by every one who aims at success in Canadian farming. We have all heard of the man who, to save the smaller horse, hitched him to the short end of the whiffletree, to balance the larger horse at the longer one. Now we do not expect in this enlightened age to see such ignorance as that, but instances are not at all uncommon where operations are performed to almost as great disadvantage, and which, to a person versed in mechanical knowledge, would prove absolutely absurd.

American Agricultural Implements in England.

There is something quite amusing in English prejudice, especially that which prevails in regard to our agricultural tools. It appears that we make but one tool which is conceded to be superior to their own, and that is the hay-fork. The English agriculturists have been forced to admit that our light spring hay-forks are better than their clumsy and dull implements, and we found this tool on sale in stores, and in use in the fields in all parts of England. This is curious enough, when we consider that they are not ignorant of the nature of most of our tools, and the dullest comprehension ought to be able at once to see their great superiority. The English implements are very *heavy*. Not one of any kind can be found but what contains twice or three times as much iron or steel as is needed. Laborers