Rural Economy.

HAY MOWERS.

The genius of modern improvement promises at no distant day to rob hay-making of one element of the picturesque, although it has not yet wholly succeeded in banishing the hand scythe from modern scenery. Yet the scythe is wonderfully effective in comparison with the practice of the Mexican who cuts his grain and hay by handfuls with a common knife. The most valuable improvement on the old scythe for centuries was made by one of the first iron workers of Massachusetts, more than two hundred years ago, in the very infancy of that colony. In the year 1646 the General Assembly granted to Joseph Jenkes of Lynn, the exclusive privilege for fourteen years "to make experience of his abilityes and invention for making his patent for ye more speedy cutting of grasse." His improvement consisted in making the blade longer and thinner, and in strengthening it at the same time by welding a square bar of iron to the back, thus materially improving upon the old English scythe then in use, which was short thick and heavy, like a bush scythe. Improvements have taken place until it reached nearly to perfection for hand use, and then gave way to the mowing machine.

The great breadth of land devoted to grass, the nature of our climate, the character of our crops, the scarcity of labor, and the extent of our agricultural operations, all conspire to increase the use of the mower, and all other implements and machines that will expedite the labors of the farm, especially where the season is so short and the labors of sowing and planting the spring crops are quickly followed by haying and harvesting. These implements are of every variety and form, and are brought to the door of every farmer. Each one has a new and useful point added and the later improvements combining all, are far superior to those in use but a few years since.

It is difficult to conceive that American agriculture could have attained its present condition, had the invention of machines been delayed thirty years. Since 1860 ten manufacturers have alone produced two hundred and fourteen thousand and ninety-four machines, not including those of the present year, and it is considered that a common mower will cut from eight to ten acres in a day of twelve hours.

The crop of hay in the country, is sufficient to stimulate to much larger manufacture. The amount grown in the United States and Territories in 1860 was 19,083,896 tons, of which New England produced 3,869,200 tons, and Vermont, alone 940,178 tons.—*Rutland Herald.*

GRAIN FARMING IN PENNSYLVANIA. I.

ROTATION OF CROPS.

One of the editors of the *American Agriculturist* (New York City) has been rusticating in the Keystone State, and discusses our farming in several articles and in various connections. We extract the following and will make further excerpts, that we may "see ourselves as others see us":—

There is much more uniformity in the rotation of crops in Eastern Pennsylvania than we had anticipated. The lower part of the Valleys of the North and West Branches of the Susquehanna, which we recently visited, are mainly grain-growing districts, and we suspect all the best farming of the State would come under the head of cereal agriculture. Only about a fourth part of the State was put down as improved land in 1850, and with all the rapid improvement of agriculture, there is probably not more than a third of the State now under cultivation. There are still considerable tracts of unbroken forest, and vast regions of rough, mountainous land, which the lumbermen are rapidly stripping of all large trees, and leaving it to make a second or third growth. The best farming is to be found in the valleys of the rivers and creeks, where the soil is almost uniformly fertile and well adapted to grain and grass.

The rotation is a five or six years' course, beginning with corn upon a clover or timothy sod. The liming of the land, which is almost universal, takes place in connection with this crop. The lime and the sod are the main reliance for the corn crop, which yields from forty to sixty bushels to the acre.

The *second* course is either oats or a summer fallow. The best usage is in favor of the oats, for they say that it is in itself a paying crop, and does not very much diminish the subsequent crop of wheat.

The *third* course is winter wheat, for which preparation is made by spreading all the manure of the farm upon the oat stubble or fallow, and plowing it in. The Mediterranean wheat is the variety most commonly used, and the yield in good grass is from twenty to thirty bushels per acre. The white varieties formerly used were more productive, but were more delicate, and more liable to be destroyed by insects. At the time of sowing the wheat, timothy is sown, and clover the following spring, about the last of the frosts, when the ground is cracked with settling.

This gives clover as the *fourth* course, of which there are frequently two crops taken in the same season, one for hay and the second for seed, of which the yield is from one and a half to two and a half bushels.

The *fifth* year the timothy has the ground, and this crop is continued for one or more years according to circumstances. If the grass is very good, or if manure is plenty for top dressing, it stays in grass until it is wanted to begin another rotation.

Where green crops are turned under for manure, there is a diversity of practice. Some plow when the crop is in its most succulent state. The rule for clover is when the heads are half turned brown. The reason offered for this practice is, that the bulk of the crop is then the greatest, and it undergoes most rapid decomposition in the soil. Others do not plow in clover until late in fall, and after it has been well pastured. The reasons they give for this practice are: 1st, that turning in the clover green, makes the soil sour, and has a tendency to bring in sorrell. 2. It has a bad influence upon subsequent crops. 3. In waiting until fall, you have the advantage of pasturing, and if the cattle are kept upon the pasture, as they should be, everything the field produces is returned to it. 4. More carbonaceous matter is returned to the soil. What you lose in tops, you gain in the roots of the clover, which have four or five months longer to grow. 5. Better crops follow. Some of the best farmers in Pennsylvania follow this method altogether. Others still wait until the following spring, and turn in the clover just as it begins to grow.

Much larger areas of land are kept under the plow than is common in the dairy regions. Grain fields of from twenty to fifty acres are of frequent occurence. Upon one 300 acre farm that we visited in the famous Buffalo Valley, we found 80 acres in wheat, 50 in corn, and 30 in oats, or more than one half the whole area of the farm. We think the farms in these valleys would average one fourth of their whole area in these three crops. Rye, which is so common in the dairy regions, is very little raised in the valley of the Susquehanna. In Eastern Pennsylvania it is much more common.

This rotation is very well adapted to the wants of the grain growing districts, and perhaps cannot at once be changed for the better. Lime is every where abundant, and with the manure made upon the farm, furnishes the ready means of keeping up the fertility of the soil. Potatoes are not much raised, except to supply the wants of the family and the nearest village market. The grain-growing farmers of Pennsylvania, and of other districts also in the United States, have no faith in the cultivation of roots. They certainly could be raised profitably for feeding stock in winter, but would require additional laborers. Grain and hay are the principal products sold from these farms. There is some fattening of cattle in the winter, and some raising of pork and making of butter, but they are mainly for the home markets.

PRETTY POOR PRACTICES.

"Cosmos," who edits the rural column of the *Saturday Evening Post*, enumerates a list of pretty poor practices:

It is pretty poor practice for a farmer to dig and delve, tug and grub, and clear up fifty acres of land at a cost of $2000, and then in the third year surrender about a fifth of it to the briars, brambles and oxeyed daisies.

Poor practice to half manure, half plow half seed and half cultivate a field, and then harvest from it less t an half a crop.

To keep two inferior, scrawny, scrub cows for dairy purposes, that give less milk than one good one, and consume more food than three.

To purchase in town 500 loads of livery stable manure, and suffer 600 of better home made manure to run to waste.

To attempt to fatten three hogs into 1200 pounds of pork on just as much feed as would keep two nicely growing.

To estimate agricultural fairs as arrant humbugs, and spend three days every month saving the country at political meetings.

To depend upon borrowing your neighbors' rakes, mowers, and all sorts of implements in haying and harvest time.

To house up a thousand bushels of grain, waiting for a rise, till one-tenth has gone to feed rats and mice, and the remainder smells like the essence of rat, and the price is down 40 per cent.

To plant out a big orchard of choice fruit trees with a first thought of money-making, and leave them to do or die.

It is poor policy not to keep posted on the market value of the products you raise, and to allow speculators to make more money out of your labor than you do yourself. So, take the papers.

HOEING CORN.

The popular opinion is that hoeing is done *merely to kill weeds*. It will not be difficult to show that faithful hoeing does much more than this, even to *warming, moistening* and *manuring* the soil while hoeing up the weeds.

The air about us is always moist. The hotter the day the more moist it is. It has been ascertained that in a hot day in July, more than thirteen hundred gallons of water have been found to evaporate from a single acre of land. The soil has a strong attraction for water, and it is a part of the duty of the atmosphere to penetrate the soil and moisten it, as well as to give us the breath of life. But the soil on its part, must be in a suitable condition to receive it. If the surface is compact, the air cannot readily enter it. When the weeds are destroyed by the hoe, the surface is made loose, the air penetrates it freely, and carries along the moisture it contains, and *thus waters the field.*

It follows, then, that a field often hoed, whether there are weeds or not, will withstand a drought better than one that is not hoed.

The soil is as active as the air, for the moment the air enters, the soil robs it of its moisture and passes it along to the roots of the plants. Thus a carefully cultivated field may be covered with luxuriant crops during a drought, while those on the hard surface of another may be perishing for want of moisture.—*New England Farmer.*

Wounds upon animals, at this season of flies and quick putrefaction, need the most prompt attention. We know of no better application than (hot pine tar, not hot enough to burn.) It may be put on alone, or as a plaster upon a piece of cotton cloth. Look especially to the heads of rams.

Scientific.

ASTRONOMICAL UNCERTAINTY.

Dr. Robert Patterson of Chicago, having had his attention called to this subject in his discussions with the German Infidels of that city, is contributing a series of articles in it ("Speculation on the Stars") to the *Family Treasure* of Xenia, O. We except the following:—

COMETS.

We can obtain no more satisfactory account of the comets which belong, or ought to belong, to our system, from the lists of astronomers, than Lee of the actual numbers of the Rebel Army from the muster-rolls. Arago says that 3,529,000 should be found within the orbit of Uranus, or doubling the number for those passing invisibly in the day, 7,058,000. Herschell demands 22,000,000. Others calculate exactly 17,558,424 within the orbit of Neptune. Lambert, a man of great moderation, contents himself with 325,108, while a beggarly scribe in the *North British Review*, accustomed, doubtless, to frugality, would put us off with only 2,896. But it is useless to quarrel about these numbers on paper, for when we come to count our comets they are not at all. Mercury has 46 within his orbit. At the same ratio we should have had 659; whereas we have only one-fourth that number. This is too bad, seeing that it is from this stuff our world-makers manufacture cosmogonies. But this is not the worst of it. We are in great danger of losing our comets altogether, or of having them reduced to mere vapors, quite too thin to manufacture a solid earth from, and as unfit for shattering a solid planet as a puff of tobacco smoke for sinking the Alabama. For the Development world-makers, like other juvenile workmen, amuse themselves occasionally with breaking up some of the planets they have made, and need a sledge-hammer and smith for that purpose. The discovery of some scores of very little planets between the orbits of Mars and Jupiter, immediately suggested the questions, Where did they come from? and, Why are they so very small? And as some of our world-makers have accepted the cursory account of the origin of the little stars by breaking up the big moons, it was necessary to procure something to break them with. The regular planets, being on very good terms with each other, have no notion of breaking into their honest neighbor's houses; but the comets, having a dissipated appearance, and irregular habits, were just the characters to engage in such exploits; and one was engaged accordingly to bombard an inter-jovial planet, and break him up into little bits. Most provokingly, however, just at this juncture, a number of astronomers, such as Bessel, Struve, Arago, and others, laid hold of the comets, and took their bludgeons and sledge-hammers from them, leaving them only transparent vapors, through which the smallest stars are distinctly visible, and compared with which the lightest mist is solidity itself. Professor Norton, however, coming to the rescue, has determined to give them snow-balls and lumps of ice to defend themselves with. Reichenbach, the well-known European sciatherist, alleges that they are busy making up meteoric stones and iron; which, undoubtedly looks aggressive. Professor Pierce, of Cambridge, reports to the French Academy, that Donati's comet of 1858 has actually a metallic nucleus, from three to twenty times the density of water, that is heavier than marble, for the smaller, and than gold, for the larger of these guesses. But on the very same page of *The Scientific Annual* (1861, p. 404), Mr. Kemp lay stoutly contends for the necessity of disarming them; and of alleging that "a comet is a body of gaseous matter, homogeneous and, indistinguishable in its parts, and nearly, but not perfectly, transparent." How they may finally agree to dispose of the comets it is impossible to predict, or whether they shall ever agree either on the facts or theories of any phenomenon. Humboldt derides Halley's fantastic period of 575 years, in which the great comet should have appeared at all the epochs of the human race; and quotes Encke as reducing its period to 8,814 years; which leaves us very little interest in the subject.

THERMOMETERS.

A somewhat interesting discussion has been going on in the *Chemical News* for some time past, on the subject of Standard Thermometers. Some of the facts elicited appear not to be known so much as they deserve. It appears that the zero points of all thermometers, as a rule, rise in a month or so after the instruments are made. This rise varies generally between ½° and 2°. The bulbs of the best thermometers should, therefore, be blown some months before the instruments are pointed. In this manner the greater part of the error may be avoided. Even after all due precautions have been taken, the thermometer should from time to time be either compared with another standard which has been repeatedly checked, or when this cannot be done, its zero should be independently tested by means of melting ice. The use of boiling water is objectionable for the purpose of testing, as it has a tendency to permanently raise the zero of the instrument, even if it has been unchanged and correct before immersion. The most likely cause of rise is the one-sided pressure of the air. The bulb does not acquire, on cooling, its original size for some months. Every thermometer looses its accuracy, for many months, whenever it has served for the determination of higher temperatures, and there are very few thermometers in use in chemical laboratories that do not come under this head. An instrument, after adjustment, can only once be used for accurate determination of boiling-points without re-adjustment—a circumstance always lost sight of in chemical researches, and which explains, no doubt, many discrepencies between statements of different authors.