

the straw, and increases the weight of grain crops. It should be sown broadcast; if for spring wheat, late in the fall, on land newly ploughed; if for fall wheat, immediately before the crop is sown. The quantity may vary from two or three hundredweights per acre, upwards. Salt alone, however, our correspondent should remember, may not prove nearly so effective as if composted with barnyard and other manures. In fact this latter is the best, and, at the same time, the most profitable method of applying it. About one ton of salt to twenty of manure is the right proportion.

Plaster is a most excellent application for the purpose mentioned. It is superior to salt because it possesses all the good qualities of that condiment (and several others) in a much higher degree. It acts, in fact, as a direct stimulant to vegetation. A simple example will illustrate this strikingly. During the progress of a thunderstorm, for instance, large quantities of the nitrate of ammonia, one of our most valuable manurial elements, are being formed and given off in the air. This compound falling into the soil, is speedily changed into a carbonate of the same element. But carbonate of ammonia is volatile; it evaporates readily; the soil cannot retain it, unless something else has been previously deposited there that will seize upon and hold it as it falls. Now this latter is just what plaster does. Being itself a sulphate of lime, as soon as it comes in contact with the carbonate, a chemical interchange takes place, and the result is, on the one hand, carbonate of lime, a fixed and valuable manure in itself, and, on the other, sulphate of ammonia, also fixed, and still more valuable. Sow plaster therefore, just before a thunder storm, and the effects will be marked.

#### Triticum Trepens.

Couch Grass, Quitch Grass, Log Grass, Quack Grass.

This species of grass, known by so many and various names, causes a united howl of execration from the farmers of the United States, nor is the British farmer behind his American brother in the heartiness of his malediction. It is considered one of the worst pests to the farmer, because of its tendency to spread so rapidly and maintain its life by means of its *rhizoma*, by which means it takes complete possession of the soil; and if a single joint of the *rhizoma* becomes detached, it only furnishes the germ for another plant, instead of injuring the original plant. This peculiarity is one of the causes of the more rapid spreading of the grass, and so while, as in the case of most grasses, the ordinary cultivation of most crops causes their destruction, it appears in the case of this grass only to encourage its more vigorous growth. Therefore corn, rye, oats, wheat, and in fact all grains are very much injured by it.

Notwithstanding the great objections to this grass, it is said to have some redeeming qualities. Its creeping stems are succulent, sweet and very nutritious, and are greedily devoured by horses and cattle. In the South of Europe it is said that the peasants collect them and take them to the market towns as horse food. They contain three times the amount of nourishment that the stems and leaves do. The flavor is similar to liquorice root, and it has been said by Wethering that "when dried and ground to meal they have been made into bread in years of scarcity," adding "that the juice of them drank liberally, is recommended in obstructions of the viscera, particularly in the case of scirrhus liver and jaundice." It promotes vomiting and may produce other specific effects. It is excellent for binding steep sloping banks, its *rhizomas* interlacing so effectually. It makes a very good hay, but does not yield much of a burden, hence in pastures and permanent meadows it is not wholly objectionable.

Notwithstanding some redeeming qualities which this grass may possess, they are insufficient to insure any favor from the thrifty farmer, and instead of attempting to encourage its growth, the disposition is to effect its entire eradication so far as possible. There is no doubt but that all its medicinal qualities can be more easily obtained from other and more reliable sources; and so far as its profit to the poor about Naples is concerned, it is very questionable whether the poor of this country will ever adopt the collection of its branching *rhizoma* for cattle food as a means of obtaining a livelihood so long as other means are at hand; hence its destruction must be insisted upon as a necessity in cultivation.

How to accomplish this best is the question most interesting to the farmer. There is a possibility that very careful ploughing, whereby every particle of root would be fully buried beneath the soil, might accomplish the object; but when it is considered that there is little probability that such a state of affairs will exist, and then, when by subsequent cultivation, many of the broken *rhizomas* will be brought to the surface, the chances are that the grass will only be more firmly rooted. The method employed by Mr. David N. Clark, of Milford, Conn., proving successful, is believed to be not only worthy of being mentioned but of being followed in practice. Mr. Clark had several fields close to his dwelling that were thoroughly infested with couch grass. This he was determined to remove, and the thought was parent to the act. In all that Mr. Clark undertook he was thorough; he had tried the method of cultivation with ill effects, therefore as early in the spring as the season would admit, he thoroughly ploughed his field, and as soon as it was sufficiently dry, he put the harrow upon it and worked it over as thoroughly as possible and then went over the field and picked up every particle of root or *rhizoma* that he could discover or bring to the surface with hoe or manure fork, all of which he accumulated in a pile to dry. In a little time the whole operation from ploughing to the strict search for roots, &c., was repeated. In fact all the spare time that could be obtained was employed in this labor, and when sufficiently dried, the terrible pest was destroyed by fire. So the labor is continued through the season; in this way Mr. Clark was and ever has been successful. It is true it required much time and labor, and this is believed to be a necessity for the total annihilation of this much despised grass.

To go over a field of considerable size with hoe or manure fork, digging over every inch of ground is a slow, tedious process, but besides the object sought there is some gain, as has been proven in the case of Mr. Clark. This thorough pulverizing of the soil effected by the necessary labor of removing the couch grass, fits it in the best possible manner for the cultivation of a crop the next year. Another point is gained; if before the treatment the field was in any way inclined to be foul from the accumulation of the seeds of weeds, it will be rendered perfectly clean, as was the case in the fall with a field that had been under treatment through the summer of 1873.

Therefore, besides being fitted mechanically for the reception of the seed and the best growth of the plant, it is also prepared to render cultivation much easier, and consequently more effective.

Killing couch grass should be governed by the same principle that governs all farming operations, and which are necessary to success, and that is—thoroughness. Very much labor is wholly lost because it is not sufficiently thorough.

The most successful farmers are discovering this, and in place of attempting to cultivate more acres than can be worked well, a less number are employed, with more thoroughness and equal or better success.

WILLIAM H. YEOMANS.

#### Artificial Hay-making.

The proverbial rains of England, Scotland and Ireland, great bugbears to hay-makers, have not been without their effects upon ingenious minds. The latest agricultural novelty we now read of, is an apparatus for drying hay or grass artificially—the invention of a Mr. Gibbs, of Cheshire. It consists of a portable stove constructed of plate-iron and surmounted by a fan, which is driven by a belt from a three-horse power portable steam-engine; the fan draws all the heated air and gases from the coke fire, together with a volume of warmed air, which passes through a chamber surrounding the inner chamber of the stove, and blows the hot current, at a temperature of 400 degrees Fahrenheit or more, in the drier. This resembles in general shape a straw elevator, consisting of a sheet-iron trough 6ft. in breadth, 20ft. long if mounted on wheels as a portable carriage, or 40ft. or 50ft. long, if a fixture. The trough is raised at one end at a low angle; so that hay fed in at the upper end furthest from the stove shall slowly travel to the lower end near the stove—this being assisted by a slow reciprocating motion given to the bottom of the trough. A ridge of triangular section running along the middle of the trough divides it into two almost semi-circular channels, so that the hay passes down in two streams; the hot air issues through two slit apertures, one each side the base of the middle ridge, and for the entire length of the machine; and the hay is kept continually

stirred and lightened up over the hot blast by a number of small iron stirrers cleverly contrived to imitate the action of forks worked by hand.

By means of this machine wet hay is dried at once, and spoiled and musty hay, after going through the mill, comes out dry and fragrant. Freshly cut grass too, drenched with a thunder-shower, is run through and comes out ready for stacking.

The cost of fuel required for each ton is about \$1.75, and the saving is estimated in England at from \$8 to \$20 per ton. The whole machine fitted up and ready for use costs somewhere in the neighborhood of \$800—a pretty large sum, but considered a paying one where such immense damage is caused by rains.

#### Leaves from Farming Experience. - No. 6.

##### Crops, Feed and Manures.

A ton of dung of average quality, moderately cared for, will contain nitrogen 13½ lbs.; soluble salts of phosphoric acid, 5½ lbs.; insoluble phosphates like bones, 13½ lbs.; potash 11 lbs. I believe Canada can raise twice the weight of grain and hay from the same area, and much more than twice the weight of butter and cheese that it does; as I trust to show you, before I have done. A good cow, well fed, will give from 7-400 pounds to 8000 pounds of milk; and twenty pounds of milk will give 2 pounds of cheese; or 1 lb. of butter and 1½ pounds of skim-milk cheese. A cow's food in winter should be about as follows:—

215 days at 24 pounds hay daily, 3 tons at \$12	26 00
165 of these days at 2 pounds peas, -5½ bushels at 70 cents.	3 85
165 of these days at 6 pounds oats, -23 bush. at 40 cents.	11 00
150 of these days at 25 pounds turnips, -75 bush. at 7 cents.	5 25
Summer 150 days green rye, corn and clover, -100 lb each	8 00
2 pounds ground peacal, -5 bush. at 70 cents, the grain all ground fine, and steeped.	3 50
	\$38 20
	264

Cost of food of 64 cows. .... \$4361 80

PRODUCED	USPD.	SPARE PRODUCE AFTER FEEDING.
Hay, 210 tons ..... 192 tons..... 18 tons, at \$12 00 =	\$ 216 00	
Oats, 2300 bush. .... 1043 bush. 1130 bush. " 60 40 =	454 40	
Peas, 462 " ..... 415 " 14 " " 60 70 =	9 80	
Turnips, 1000 " ..... 4700 " 200 " " 60 75 =	14 00	
Potatoes, 540 " ..... 4700 " 200 " " 60 35 =	18 00	
Wheat, 900 b. at \$1 10, 9000. Wheat straw, 50 tons at \$4, \$120	1110 00	
Oat-straw, 60 tons at \$5, \$300. Pea-straw, 20 tons at \$8, \$160	460 00	

Spare Produce after feeding 64 Cows ..... \$2153 20

The pea straw will be cut and mixed with the hay, which will leave about 14 tons more hay, to feed more stock; so that you may have enough of manure to give about 18 tons per acre every 4 years. I reckon a ton of manure to be the heaped fill of a Scotch cart. I divide that into ten heaps from the cart, 6 by 5 yds. apart; the manure should be turned over, if possible, until nearly dry; the water is of no use, and is more than half the labour for men and horses. All the bedding should be cut fine for the cattle; much of it may be dried and used many times; also in summer, when using dry earth for bedding, it should be dried after being used not less than three times; it is then nearly equal to guano. Mix a little plaster, about 50 lbs. to two cart loads; spread that on one acre of new cut grass land and it will pay; or spread it on poor places of wheat. It must be kept dry until spread. I manure the corn land for soiling, and turnips; also the potatoes in spring. The rye gets some when sown in September. All are top-dressed, the hay is manured in the autumn the second year and top-dressed every year. When all straw is cut half inches long, there is no trouble in raking, ploughing, or harrowing. I have had fields of hay that showed no failure in ten years, when treated in this manner. From all experience, lime is absolutely necessary to the proper treatment of the soil. I have known 8 bushels of quick-lime used yearly per acre, in Perthshire, 60 years ago; farmers used from 50 to 100 bushels lime, per acre, every ten years; there were no bones, guano, or any artificial manures heard of, unless common salt, and the taxes raised it, from about one shilling, to 15 shillings per bushel, which stopped its use as manure. I have only limed two fields of 10 acres each, and part of another, with decided advantage. I laid on 36 bushels of good quick-lime per acre, this way:—

"The field may be fallow, or the crops newly taken off. Scuffle or harrow the ground until soft; if there are much stubble or roots, burn it. Make ridge furrows at 6 yards, and cross furrows at 5½ yards, making 33 yards in each division. Put one peck of quick-lime in each piece. The dew and air will soon slake it, or it may be helped with a very little water. Spread quickly, and harrow a number of times. This is far the best and easiest way I have seen tried. I need not instruct you much about lime, only, I