



Rocky Mountain Husbandman.

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The ROCKY MOUNTAIN HUSBANDMAN is designed to be, as the name indicates, a husbandman in every sense of the term, embracing in its columns every department of Agriculture, Stock-raising, Horticulture, Social and Domestic Economy.

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Agricultural.

Give us a rural mountain home. There genuine happiness abides.

A farmer in Franklin Co., Tenn., found a stalk in his corn field having on it ten large ears of corn.

Only about half of the lands of the United States have been settled—so the census report states it.

The price of pork will always be good in Montana and as hog cholera is unknown, why wouldn't it pay our farmers to engage in that business permanently.

The winter has been an excellent one for farmers to get out fencing. There has been plenty of snow in the mountains for sledging but not enough to interfere with work.

Farmers who live remote from any market can make it pay to raise hogs. Pigs are an excellent feed for them so also is oats. The farmer so situated as to grind his own feed can make this business pay immensely.

It will never pay to allow the farm stock to become thin. The teams should always be kept in good flesh, so also should the cow, for these animals see continual service and must be kept in good fix in order to be profitable.

Farmers who raise swine should not neglect them at this season of the year as they are more seriously affected by snow than anything else about the farm. They should have good warm quarters and plenty to eat. Pea vines are excellent for bedding.

The farmer who pays a laborer from \$40 to \$50 per month, and puts him to work with a span of horses worth \$100, makes a serious mistake. Farm hands in order to earn their money must have good teams and good implements to work with; even ordinary hands often do very good work when they have extra good facilities for executing it and it pays to provide such.

Now that we have so many stock farms in the territory and are getting such an excellent start in good stock, it occurs to us that it was time our farmers were exchanging their cayuse teams for good ones, one pair of good horses is worth as much for teaming as two pair of cayuses and serve the farmers purpose better in every way.

One of the results of the late Commissioner LeDuc's experiment in tea-raising at the South, has been the adoption of the shrub in some localities as a hedge-plant, for which, where the climate and soil are suitable, it is said to be excellently adapted, growing low,

and bushy, and well branched, with dark evergreen, glossy leaves, and in autumn, decked with large, pure white flowers.

Mr. Loring, Commissioner of Agriculture, has submitted his annual report to the President. The statistical division estimates the following as the yield of the present year: Corn, 1,635,000,000 bushels; wheat, 410,000,000 bushels; oats, 470,000,000 bushels; barley, 45,000,000 bushels; rye, 20,000,000 bushels; buckwheat, 12,000,000 bushels.

A steam plow is reported in successful operation at Blanchard, Dakota. It is the invention of an Englishman who represents a firm at Leeds, England, that manufactures steam plows. It consists of a frame work to which are attached six plows, each of which cuts a sixteen-inch furrow. The motive power consists of two immense traction engines.

SCABBY POTATOES.

There is much diversity of opinion in regard to the cause of the scabby, rough and apparently diseased surface of potatoes, which is so common. The trouble seems to be increasing and becoming more general, so that complaints are making from all quarters, and there are many inquiries for the cause and a remedy for it, as well as many disputes between persons who think they have discovered the former. Many persons are convinced that the trouble is caused by a fungous growth, and is a disease. Others are as firmly convinced it is caused or assisted by the use of fresh fermenting manure; earth worms are charged by others with the mischief, and white grubs, wire-worms, cut-worms, and other insects, bear their share of the responsibility. For two years past I have been investigating this subject, endeavoring to trace the cause. I am convinced this is due to attacks by wire-worms, and nothing else; the common, hard-shelled, round-bodied, numerous-legged *Julus*, which belongs to the family *Myriapoda*, and is a worm and not an insect being referred to, I have grown potatoes the past two years under various circumstances—in soil without manure, or fertilized with artificial manures, with horse manure, cow manure, both mixed, and fresh and old manure; in new ground, in swamp muck and with leaf-mould; and lastly, I have kept potatoes in soil in separate earthen flower pots, with white grubs, cut-worms and with wire-worms. In every case where the potatoes were damaged by scab, so-called, I found wire-worms, and where there were no wire-worms the potatoes were smooth and free from injury. The worst potatoes were grown with swamp muck, leaf-mould and old manure. In old unmanured ground, and where artificial fertilizers were used, the potatoes were clean and smooth. In the pot with cut-worms, and the dark grey grubs, of what I take to be a species of *Aphodius* or dung beetle, and very plentiful where fresh and old cow manure was used in the hill, the potatoes remained perfect. Where the white grubs were, the potatoes were eaten, and large holes with coarse marks, as if made with a small gouge, were dug deeply into them. In the pot with the wire-worms (12) the three potatoes were badly scabbed over, and the worms were found curled up in their usual way in the shallow holes which they had made. There was no indication of any fungus in the potatoes when they were examined by the microscope, but the surface was found to be eaten into and discolored, and the bark or skin of the potato had swollen and grown over the edges of the wounds much in the same way as the bark grows over the edges of a wound made upon a tree.

The wire-worm is a shining, brown, smooth, many-jointed creature, which I find to be very common when searched for. Each joint has two pairs of short, slender, hair-like legs, and the worm has a pair of short-jointed antennae, with which it feels its way as it crawls actively along. When at rest it is curled spirally. I find them all over my manure-yard, under loose lumps and pieces of rubbish. They are very plentiful in moist spots, where leaves have rotted, and under pieces of bark, and in leaf-mould in the woods. This accounts for the preva-

lence of scabby potatoes in new land where manure has never been used. They are plentiful in grass land that has been top-dressed, and in corn stubble that was manured with cow manure and swamp muck. I have not found any where clear, loose manure from New York city stables has been used; but I find them freely under the heaps of old horse manure, and about the pig-pens and yards. To avoid the trouble, it seems to be necessary to grow potatoes either upon land that has not been manured for some time, or if manure is used, to select that which is made during the previous winter, and which has not yet become infested with the wire-worms, or else to use artificial fertilizers.—*Cor. Country Gentleman.*

The cause of scabby potatoes is no longer a mooted question in Montana and has not been for some time, for these earth worms described in the above have been detected at their work and samples furnished this office.

ROOTING HABITS OF PLANTS.

We extract the following on this subject from a recent report of Dr. Sturtevant of the New York experimental station:

"An hypothesis (says the Doctor) which seems justifiable in the present state of our knowledge is, that plants have different habits of rooting; that various kinds of plants procure their food principally from areas of soil which may be defined. Thus we may have the shallow feeders, those to whom a high temperature of the soil is favorable toward the root development, and the extent to which the fitting temperatures penetrate, marking quite well the regions in which the roots feed. The corn plant seems to be a plant of tropical tendencies, its roots spreading more widely and more abundantly in that portion of the surface which becomes highly heated by the sun's rays. Other plants seem to require a lower temperature of soil for their best growth and development. Such seem to be plants of more northern climes, such as the wheat plant, which has two systems of roots, the principal system seeming to thrive better in a soil of lower temperature than will the corn plant and which forms a secondary system of coronal roots in the upper and warmer layers of the soil. The wheat plant, however, does its growing in the cooler portions of the year when the upper layers of the soil do not become as warm as they do at the time when corn does its growing. The potato plant, a native of the south temperate regions, may be classed as a northern plant in its system of rooting, as, indeed it is, being a native of the south temperate regions and having secured wide adaptations in temperate climes from upper Norway in the North to the limit of settlement in the Antarctic South, and in the tropics, thriving best in the elevated regions, which offer a temperature rather than a tropical climate. Other plants seem to be intermediate in their habits of rooting.

"It seems also reasonable to assume that the place to apply fertilizers is in that region where the plant roots do mostly feed, as thus a greater economy may be secured. Knowing the strong retentive power of the soil for soluble phosphate of lime, and knowing that when placed upon the surface it is carried down but a short distance into the soil before it becomes fixed, and knowing the difficulty, almost impossibility of getting one surface application far below the surface of the soil, except by mechanical means, we can imagine cases where phosphate manures have been applied to the surface soil upon which a deep rooted plant is being grown, where the plant has received no benefit from it simply because its roots has not penetrated the strata of the soil in which the phosphate of lime has become fixed.

"The wheat plant is said to be a deep rooting plant, the roots penetrating downward from the seed more than 40 inches in our clay soil. The coronal roots occupied the upper four inches with more horizontal roots than were found in oats or barley. As our wheat field was seeded also with timothy, we have no special observation of our own to bring forward at this time.

"Oats and barley had very slender roots of even thickness throughout. The majority of the roots terminated in the cultivated soil,

but we traced one root of barley thirty-two inches downward and one of oats to thirty inches downward. These plants seem to be intermediate in their rooting character, occupying quite a wide range of soil with their feeding roots.

"The potato is also a deep-rooting plant. One root was traced twenty-eight inches below the seed and twenty-two inches below the surface of the ground between the ridges upon which the seed was planted. The roots appeared more fibrous deep in the ground than near the surface, diminishing very little in size after attaining a distance of a few inches from the stem. No true roots were found above the tubers. The soil was clay of a very tenacious character.

The Poultry Yard.

New York city consumes \$18,000,000 worth of eggs every year.

To make poultry growing a success in Montana, they must have constant attention and be supplied with unusually warm quarters.

A well kept flock of poultry looks glossy and sleek, are active and cheerful, while one that is poorly kept looks ragged and mope about like poorly kept stock.

Almon Spencer of White Sulphur Springs, built a root house on top of the ground that is frost proof. It is constructed of two ten inch concrete walls with a six inch air space between. A poultry house built on this plan with double windows, would be just the thing for fowls in the winter. Supplied with such quarters and properly fed, good fowls would yield as many eggs in winter as in summer.

The record of 20 hens belonging to Mr. J. L. Wright, of Germantown, shows that in seven weeks they laid 772 eggs, or a little over five a week for each hen. They were of the Plymouth Rock variety, and were fed on an egg diet, or, rather, on food that furnished all that was required. Pure water, variable food, good quarters, cleanliness, oyster shells (pounded) and a little green stuff occasionally showed the result stated. With all the conditions perfectly favorable, the farmer may have to feed his fowls until he is discouraged, and ready to give up, before he sees any prospect of eggs. But if he perseveres intelligently the eggs are sure to come, and pay him well for all his care. Fresh eggs in winter always sell readily at extra prices, besides furnishing the farmer's table with many a luxury which otherwise would be missed.

The natural tendency of all fowls is to produce eggs only in spring and summer, and our improvements in this particular are due to good care, selection and improvement in breeding. To make it comparatively easy to obtain eggs in winter some previous arrangements are essential. Chicks of the larger breeds should be hatched at early as the middle of April, that they may obtain a good growth. The smaller breeds may do well enough hatched by the middle of May. For winter layers hardy breeds with small combs are best, as less liable to injury in extreme cold weather. All fowls require warm houses, from which cold winds are shut off and much sunshine is admitted, so that the fowls may be comfortable. Plenty and variety of food and drink should be always before them, or given at stated intervals, and should not be ice cold. Constant good care is necessary if it is intended that they should lay eggs in winter. It is necessary to keep in mind that good substitutes for all the fowls gather running at large in summer should be provided and given daily.—*Ex.*

HOW TO MAKE HENS LAY.

A correspondent informs us that while on a visit, in the fall, to a friend, he was surprised to see the number of eggs he daily obtained. He had but 16 hens, and the product per diem averaged 13 eggs. He was in the habit of giving on every alternate day a teaspoonful and a quarter of Cayenne pepper, mixed with soft food, and took care that each hen obtained her share. The experiment of omitting the pepper was tried, when

it was found that the number of eggs was reduced each trial, from five to six, daily. Our correspondent believes that the moderate use of this stimulant not only increases the number of eggs, but effectually wards off disease to which chickens are subject.—*Country Visitor*

WOMEN AS POULTRY RAISERS.

The custom practiced in France, of allowing the wife so many francs a month or year as "pin money" to use as she pleases, is one that should be generally adopted, especially in the United States. On the farm the care of some, if not all, the poultry could be very properly transferred to the women of the household. The care of poultry is naturally adapted to women, as it requires patience and attention, and at the same time kindness and gentleness—traits too often lacking in the sterner sex. There is no event in connection with poultry raising, during the whole year, which has not its interest for those who care for the innocent creatures of the farm-yard, whether it be feeding grateful bipeds, gathering eggs, hatching the chickens, or reducing the flocks in the fall to suit winter quarters—all have their charms, and excite the interest and sympathy of their faithful attendants. There is much complaint among physiologists that American ladies lose health and beauty earlier than they ought, for want of sufficient out-of-door air and exercise; and this occupation has, among its other benefits, that of sending them abroad, into the pure, outer air, and inciting a love for rural natural beauty not found among those whom no such duty tempts from the fireside.—*Farmers' Magazine.*

The Household.

Plum Pudding.—Four eggs, one half pound of coffee sugar, which is, in measurement, a coffee cup packed hard and full, one half pound of suet chopped very fine and free from strings, two cups of stoned raisins, one-half pound of currants, two ounces of citron sliced thin, one-half cup of molasses, one-half cup of brandy, two even teaspoonful of salt, two of grated nutmeg, one of cloves, five butter crackers soaked over night in a pint of milk, and the grated rind of half a lemon. This is only one-half the rule; when you make it for yourself double the quantity, as the pudding will keep a long time. The fruit should be prepared and the suet chopped the night before. Previous to mixing the pudding, slightly flour the fruit as for a cake. Rub the soaked crackers through a collander, add the chopped suet, the spices and grated lemon rind; stir well together; add the sugar, molasses and brandy; beat the whites and yolks of the eggs separately, and add to the pudding, and, last of all, the fruit. Wring the pudding cloth out of water as hot as you can bear it, flour it well, pour the pudding into it, tie tightly with strong piece of twine, leaving room for the pudding to swell. Open the ends of the bag, and flour all above the opening, so that the bag will be sealed, and the water will be unable to penetrate the pudding. Have a kettle of boiling water, also a teakettle, so that the water in the pudding boiler may be replenished. Have a tin plate in the bottom of the kettle, so that the pudding will not come too close to the fire, and during the first half hour turn the pudding every five minutes to prevent the fruit from settling to one place. While the pudding is boiling replenish the fire often with a few pieces of coal at a time, so as not to cool it even momentarily, as the success of the pudding depends upon the boiling. It should boil at least four hours, and it is better to give it two hours more. For the sauce, take one-half a pound each of butter and brown sugar; cream them, then set over a boiling teakettle until it becomes liquid, add the well-beaten yolk of one egg, stir until it thickens, flavor with nutmeg and add a gill of brandy or wine. When you send the pudding to the table decorate it with bleached almonds and a sprig of holly set atop.

PUMPKIN PIE.—may be made very palatable by using one level spoonful of cornstarch instead of an egg in it. Care should be taken not to get too much cornstarch in it, as it will cause it to taste pasty.