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THE INDUSTRIAL AND EDUCATIONAL INTERESTS OF OUR PEOPLE PARAMOUNT TO ALL OTHER CONSIDERATIONS OF STATE POLICY.

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"I am standing now just behind the curtain, and in full glow of the coming sunset. Behind me are the shadows on the track, before me lies the dark valley and the river. When I mingle with its dark waters I want to cast one lingering look upon a country whose government is of the people, for the people, and by the people."—L. L. Polk, July 18, 1890.

PRACTICAL FARM NOTES.

Written for The Progressive Farmer by the Editors and Hon. Guy E. Mitchell

Have a patch of sorghum for your hogs to run on. There is no cheaper way of giving them quick development and keeping them healthy and vigorous.

A writer in the Practical Farmer says: I have cured my horses of colic several times with common salt. Take a large handful and put it back as far in the mouth as possible. Hold up the head so they cannot spit it out. More salt will not hurt them. They will generally be all right in an hour or two.

The beautiful white laurel which will soon be in blossom, is not only a deadly poison to sheep, but is poisonous to cattle, horses and even goats. Even cases of human poisoning may occur indirectly from eating the meat of animals which have eaten this shrub. Its poisonous qualities are shown in experiments which have been made with chickens which were fed laurel leaves and then killed. Their meat, well boiled and well cleaned, was fed to cats with nearly fatal results. Cases have been known of children becoming poisoned through eating the young laurel shoots mistaking them for wintergreen.

All the leguminous crops—clovers, cow peas, vetches, field peas, etc.—are deep feeders. They perform three important functions, absorbing free nitrogen from the air, extending their roots down into the stiffer and more compact soil, loosening and opening it and bringing its fertilizing qualities up to the surface where they can be utilized by surface feeding crops, such as cereals, grasses, root crops, etc. There is no section of the country that is not adapted to the growth of some leguminous plant, which will not only in the manner indicated, improve the soil conditions, but at the same time raise a heavy crop of forage.

The Soy bean, (incorrectly termed Soja bean) which is gradually coming into cultivation in this country as a stock food, has been used as a food for man in Japan and China for hundreds if not thousands of years, while lately it has been also cultivated in Europe for this purpose. Although supposed by many persons to be indigestible, the Soy bean is a food rich in nitrogen and capable of largely taking the place of meat for a working man. In this respect it is much stronger than the ordinary white navy or kidney bean. In Japan very peculiar preparations are made from it. A dish called natto is prepared by boiling the beans in water for five hours.

The hot mass is then wrapped in straw, the bundles tied at both ends and placed in a cellar in which a fire has been kindled. The cellar is then closed for twenty-four hours, and the cooked beans allowed to ferment in the warm, moist atmosphere. They are

then ready for consumption. The Japanese also make a bean cheese or tofu. The beans are soaked in water for a day and then crushed between mill stones. This material is boiled for about an hour and then filtered through cloth, producing a white liquid having somewhat the appearance of milk but tasting like malt. Analysis shows its composition to be quite similar to that of cows' milk. Another Japanese production of the Soy bean resembles in odor and taste a good quality of meat extract. All these preparations are highly nutritious and largely take the place of beef. As Soy beans contain no starch, they have been recommended as food for persons who cannot digest this constituent. A Soy bean bread is manufactured for this purpose in Paris. The attempt has recently been made by some dealers to place this bean on the market as a new substitute for coffee and to sell it under new names at an exorbitant price.

Succulent foods—silage or roots—are generally believed to be highly advantageous for fattening lambs. The animals can be kept much healthier than when fattened on dry food. In an experiment at the New York Station two lots of five lambs each, about eight months old, were fed alike except that one lot had corn silage and the other hay. In nineteen weeks the five fed on silage made a total gain of 132 pounds, while those fed on hay gained 124 pounds. The silage ration was estimated to be the cheaper. At the Michigan Station corn and hay were compared with corn, roots and hay. Ten sheep on the former ration gained 328 pounds in fifteen weeks, while ten others fed on corn, roots and hay gained 397 pounds. The results of the government experiments show that while there is not much difference in the profit from a succulent ration over a dry ration, there is a decided advantage in favor of the former because of the decreased risk of deaths due to digestive derangements.

Siems, who has been giving some sensible and practical articles to Breeders' Gazette on the management of swine, says:

"Another thing that I have thoroughly learned by dear experience is the vital importance of keeping the youngsters out of the mud. One week of cold, rainy weather in a mud pen, even if they do have a dry, warm sleeping place, will put piggy back at least two weeks in growth. Keep them out of the mud, especially in cool weather, even if to do this you are obliged to confine them to a board floor. But the ideal way is to have your lots so arranged that the pigs can have the run of a grass lot when the weather is good, and can be readily confined to the board floor when it is bad. The mud bath may have its advantages for matured hogs, especially those that are infested with vermin but I don't want any of it for my pigs, neither do I want it mixed with the slop so that the pigs will be compelled to eat it. In fact, I consider mud bad—very bad—for a pig, whether taken internally or applied externally."

The Department of Agriculture is preparing to publish a document of about 100 pages on some of the injurious insects to garden and orchard, and of giving the best known remedies and treatments. This should be especially useful, coming at a time of the year when everybody is garden planting and must prepare to combat the inroads of squash and cucumber bugs, squash borers, melon worms, cabbage worms, flea hoppers and many others which are prone to contest the possession of the farmer's garden. The bulletin is entirely too lengthy to even attempt to summarize, but it goes into the life history, i. e., the time of first appearance, mating time, length of time required to hatch eggs, etc., of some thirty common injurious insects. Among others the common squash bug is described. This bug, especially the adult, is usually resistant to insecticides. A spray strong enough to kill the mature insect will at the same time destroy the vine. The best remedy that can be suggested for this bug are the repellents, such as land plaster saturated with turpentine or kerosene, planting an excess of seed to distribute the attack and particularly clean land. The bugs can be trapped by means of pieces of board or bark placed on the ground in the garden. The bug prefers squash to other plants of this family, and a plan recommended for cucumber

patches infested by them is to plant some squash vines to serve as traps.

The squash vine borer is also an extremely injurious insect to the squash tribe. The worm eats into the woody portion of the stems and does especial damage when near the roots. Ordinary insecticides are of no value against this insect when once it has entered the vine and repellents are also practically useless. The only measures that have been found of particular value are in brief: to avoid planting the infested ground; to plant early varieties for the protection of late squashes; to harrow infested fields late in the fall and plow deep in the spring or reverse this operation to prevent moths from issuing; to encourage the growth of secondary roots by covering the vines at the joints with earth.

In fighting the cucumber beetle it is stated that a weak solution of Paris green is effective in destroying the insect when on the surface of the leaves. Paris green is also effective when applied dry diluted with flour. Prof. Alwood, of the Virginia Experiment Station, uses kerosene very successfully. When the beetle first appears he sprays the hills early in the morning when the bugs are sluggish and lie hidden under clods and around the stems. The emulsion is applied so as to thoroughly drench the soil. Slugethot and pyrethrum are also effective. For the destruction of the garden flea hopper kerosene emulsion is recommended.

This bulletin, written by Mr. F. H. Chittenden, is an able and exhaustive treatise of the various insects mentioned and contains valuable information for farmers, but so much space is occupied in elaborate descriptions, histories, etc., that it is doubtful if there will be much demand for it among this class of readers who as a rule want terse easily-digested publications giving unmistakable and popular descriptions of insects or plants and brief statements of best methods of treatment, cultivation, &c.

AGRICULTURE.

THE COW PEA.

The Cheapest Source of Nitrogen and a Splendid Forage Crop.

Correspondence of The Progressive Farmer. For many years the cow pea has been used by our best farmers in the South to renovate the soil. Of course the story to them is old, but there are so many new farmers coming on each year, and so many who have to have "line upon line and precept upon precept," that it seems necessary to tell often of the benefits to be derived from the cow pea.

Our Northern farmers are waking up to the advantages to be gained by planting this valuable crop though the seed have to be imported from the South each year. The pea crop is valuable to the farmer in three ways.

1. It is one of the best of feeds either cut as hay, or allowed to mature and the seeds used for feed. It is very rich in nitrogen and in fact is rich in all the nutrients. Cut just at the proper time and nicely cured it makes almost a perfect food.

I have seen mules doing hard plowing kept in splendid condition fed on nothing but pea vine hay.

The peas ground up into meal make a most excellent food for milch cows when fed in connection with other food not so concentrated.

To be convinced that it is one of our best feeds, one needs but to try it.

2. The mechanical effect of a pea crop on the soil is very valuable. No crop loosens up the soil and makes it so porous and light as the pea crop sowed broadcast. There is a dense mat of roots that fill the soil and when they rot they leave the soil a perfect network of little channels or canals. These allow the water to soak in the soil freely and serve to drain the soil by causing the water to sink down and pass out through the subsoil, which of course is the ideal condition for many reasons.

It not only aids in drainage, but in the working the soil the next season. Every one knows who has worked a crop after peas that the soil is in the best possible condition.

3. The chemical effect on the soil for the succeeding crops is unsurpassed.

Whether to cut the crop, or turn it under is a question that will have to be decided by each individual farmer; and he will of course be governed by the richness of the soil, what crop he wishes to follow the peas, and by the value of hay in his section, and amount of stock on hand.

To illustrate: If the farmer has no

stock and could get but little for the hay if cut and sold, then it would pay to turn the crop under, but if he has stock that could furnish a home market for his hay, then it would pay and pay well to cut and feed to them. If the land is very thin and quite a distance from the barn, it might pay then to leave the peas on the land.

My advice, however, is to cut and feed if possible, as we then get a double benefit.

If sowed for hay, they should be put in broadcast, if for seed then the best results are obtained from sowing thick in drills about three feet apart and cultivating. Sow two bushels per acre if broadcast and one peck if in drills. As to the value of the pea crop from a chemical standpoint, or as food for the succeeding crop, it cannot be surpassed. That it is one of the best nitrogen gatherers can be proven by looking on the roots of a good healthy vine. Hundreds of tubercles will be seen and upon examination by a microscope these will be found to be the habitation of myriads of colonies of bacteria that possess the peculiar faculty of taking up free nitrogen and storing in up as plant food. This of course is readily available for the next crop, matters not what that next crop may be.

The rest of the plant is very rich in the three elements usually contained in a fertilizer—nitrogen, phosphorus, and potash.

It is so rich in nitrogen that on good loamy soil, that element is usually left out of the fertilizer that is applied to that soil next year, especially as it costs more per pound than the other two combined.

So where a pea crop has been turned under, or even where a good pea stubble has been turned under, it will be economy to simply use a phosphorus and potash fertilizer.

This formula I would suggest about two parts of phosphorus to two parts of potash: Say 400 pounds of acid phosphate and 200 pounds kainit per acre.

This mixture used on our ordinary crops after a good pea crop will be found very beneficial. Put in plenty of phosphorus and potash and the previous pea crop will do the rest.

My favorite varieties are the Black or Stock pea, Unknown, Clay, Speckle or Whippoorwill.

Try a crop one time and you will continue to grow the best of food and finest of land renovators.

CAN HEMP BE GROWN IN THIS STATE?

The Opinion of the Agriculturist of the Experiment Station.

Correspondence of The Progressive Farmer. We have been asked a few times about the advisability of growing hemp in North Carolina. There is no doubt but that this old cultivated crop can be successfully grown here.

The question is more one of market and freight rates after the problem of breaking and hatching out the fibre is solved.

The crop is as easily grown as oats. It needs only to be sown and harrowed and until harvest time it takes care of itself. It is not particularly exhaustive but should be sown on rich land and if manured with chemicals should have as heavy an application as the land needs to produce 12 or 15 cwt. of fibre.

The Kentucky Station has given some attention to maturing hemp lands and has proposed a commercial manure to contain 4 per cent. nitrogen, 12 per cent. potash and 6 per cent. phosphoric acid. It would be well for growers of experimental plots to remember this.

We cannot advise farmers to go into hemp culture. Hemp may be high just now, but it is not very likely to remain so for very long. We understand that some European crops in 1896 and 1897 were very low and the Philippines cannot be counted on for 1898 or 1899 crops. Foreign competition may therefore be abated enough for some recovery, but the United States Statistician gave a rather gloomy outlook for this industry in the last census report. Nevertheless in an address by a gentleman interested in and familiar with the industry in New York State, it is placed in a better light.

When the crop is raised after flowering, the flowering plants should be cut just as the flowers are falling off. This part is stacked in bundles until the seed is nearly ripe when the crop is cut with bush scythes or cradles and tied in bundles and cured for the seed. When seed is beaten out the stalks are

"rotted" and then dried; after it is dried it can be stored for breaking and hatching out in winter, if this last process is done on the farm now. This is done in a coarser, heavier break than that used for flax. The fibre is then tied in bundles and baled for market.

This fibre is used in making a number of varieties of cloth for ropes and binder twine.

If enough capital were directed to ward this industry in North Carolina and a price could be guaranteed for the fibre by parties who would perhaps manufacture the fibre raised here near the farms where it was produced, it may become quite an industry here, but without such an assurance we doubt the expediency of any farmer's attempting this crop.

Hemp has been grown in North Carolina, and there are old "breaks" in existence now in the State, no doubt, on which the fibre has been separated by "breaking" in the olden times.

FRANK E. EMERY.

WHAT CREDIT COSTS.

Did you ever think of how very expensive a luxury credit is? It doubles the expense of book keeping, doubles correspondence, multiplies worry many times over, often destroys confidence, wrecks business galore, and makes mischief of all kinds without limit. More than all, many of these things enter into the cost of nearly everything which is bought and sold, and even the cash buyer, with all his discounts off, pays enhanced prices because of the cost of other people's credit. Imagine the world running a month without the credit system! Next to the millennium it would do more to create and maintain general happiness than any other condition that could be introduced.—National Stockman and Farmer.

COW PEAS FOR HOGS AND HENS.

L. W. Lightly, writing in the National Stockman, says: "A neighbor of mine asked me to get him some seed (cow peas) to sow for soiling, but an extra wet season gave plenty of pasture and the cow peas were allowed to ripen, whereupon the fowls started to harvest them, and he told me that his chickens never laid so many eggs in the same length of time as they did while the cow peas lasted, and right in the fall, too, when chickens generally stop laying and leisurely change their clothes and make up their toilet. Eggs were a good price, and the crop of cow peas was the most profitable crop he raised that season, and he did not have the trouble to harvest it either. The Kaffir corn he harvested for a winter feed for the poultry, and reports it a good thing, but by no means equal to the peas as an egg-producing food. If you turn a lot of pigs into a field of cow peas when they begin to ripen, you will be astonished to find a lot of hogs in a remarkably short time."

SALT AS A FERTILIZER.

The use of salt will not prevent in injuries by worms in the soil. Salt in sufficient quantities to repel the worms would prove injurious to the crop. Where beneficial, salt acts rather indirectly than as a direct manure. It attracts moisture and helps to bind the particles of soil, thus enabling it to hold water much more retentively, and enabling it therefore to raise water by capillary attraction from below in greater quantities. Salt, moreover, sometimes assists to make inert plant food which is present in the soil available to the crop.

Salt is not itself taken up by plants of most kinds in such quantities that it becomes necessary to apply it in order to keep up the supply. Salt is present in moderate quantities in all soils, or at least its constituents, soda and chlorine, are present and commonly in amounts fully equal to the requirements of our crops. A possible exception is the mangel wurzel, which often appears to be benefited by application of salt.

It appears to be possible to get all the indirect benefits which sometimes follow the application of salt to light, dry soils by an application of muriate of potash, which in its chemical properties is very similar to salt. In other words, by an application of muriate of potash of potash the soil attracts moisture more largely and holds and conducts water to a greater extent.

Now if, instead of salt, we employ the muriate of potash we get the improvement in the physical condition in the soil and at the same time we have

in addition one of the most valuable and most frequently deficient elements of plant food—potash. Especially is it found that light, sandy soils often contain too little of this element. Apply muriate of potash at the rate of 300 or 350 pounds to the acre. Put this on in the fall if possible, but do not hesitate to apply it in early spring. I should prefer to spread it after plowing and harrow in.

In place of the muriate of potash it may possibly be expedient, once at least, to apply kainit to each of the fields. This contains considerable common salt as well as potash. It costs about \$15 a ton, while the muriate of potash costs about \$40. The kainit, however, must be applied in considerably larger amounts. To get the same amount of potash as would be contained in 300 pounds of muriate of potash it will be necessary to use about 1200 pounds of kainit. The immediate benefit to the soil would undoubtedly be greater in the case of the kainit than with the muriate of potash.—W. P. Brooks, Massachusetts Agricultural College.

DEEP OR SHALLOW PLOWING.

"Poor Richard," who originated many sayings that cannot be taken literally in these days, must no doubt be held responsible for many mistakes from following his advice to— "Plow deep while sluggards sleep And you shall have grain to sell and keep."

Thos. Convey, one of the directors of Wisconsin institutes, has this to say on this subject:

"Now, with reference to the matter of plowing deep or shallow. It is a subject that every farmer should carefully study from his own standpoint. Some subsoils are comparatively rich in fertility. There, of course, the soil may be deepened by deep plowing, but the plowing should be a little deeper each year until the desired depth is obtained. Where grass or manure is plowed under of course it is better to plow shallow unless it might be for a root crop and of course deeper plowing would have to be depended upon in that case, but for a corn crop on grass land, and especially grass land top-dressed with manure, shallow plowing—four or five inches in depth—will give good results. There is a serious objection to shallow plowing, and that is, the deeper soil is prepared, the greater the capacity of the soil to take up and retain moisture, so that if the soil is deep it will take up the rainfall to the full point of saturation. It has been determined that land prepared to the depth of ten inches will take up two inches of rainfall, which would be an extremely heavy rain, of course."

Probably in Franklin's day deep plowing would have been what Mr. Convey calls shallow—four or five inches in depth. The times have changed since 1750 A. D.

NUTRITIVE AND STIMULANT MANURES.

The word "fertilizer" has a wide definition, because it really includes everything that adds to the fertility of the soil. Fertilizers may be divided into two classes—direct and indirect—or nutritive and stimulant. Direct or nutritive fertilizers furnish the elements of plant food needed to give sustenance and vigor to the growing crops. In other words, they hold the same relation to plant that bread and meat bear to man. This class of fertilizers is of the greatest importance, and therefore deserve special consideration at the hands of farmers.

When we speak of nourishment for the plant we refer to those elements of plant food which must be supplied to them by man. The value of these elements has been so thoroughly established, and is so well known, that to speak about them is very much like telling an old story. The elements are nitrogen, phosphoric acid and potash, and upon their proper use depends largely the success or failure of farmers' crops. These three elements of plant food can be purchased on the market in various forms. Nitrogen, for example, can be procured in the shape of nitrate of soda, sulphate of ammonia, dried blood, fish scrap, tankage and cotton seed meal. At the same time it can be supplied to the soil still more economically by the cultivation of a legume like clover or peas, which crops possess the peculiar and distinctive property of absorbing nitrogen from the atmosphere and transferring it to the soil.

The forms in which phosphoric acid

[CONTINUED ON PAGE 8.]