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

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AGRICULTURE.

"SAWDUST AS A FERTILIZER" AND SOME OTHER MINOR MATTERS.

Correspondence of The Progressive Farmer.

In your issue of Nov. 23d there is an article from the pen of Mr. W. F. Combs, headed as above, setting forth the great value as a fertilizer of partially rotted sawdust. "The stuff had rotted until it had no body to it" From this it is evident that to be of service it must at least be partially rotted. The kind of dust is not stated, but it was presumably pine. Oak, hickory or dogwood would doubtless be much more valuable.

There is an important principle involved in the above, to which I allude, and especially as this same principle can be made available and valuable in various ways. While sawdust is undergoing decomposition the oxygen of the air, or of rain water, combines with the carbon of the wood and forms carbonic acid gas. This gas is possessed of great fertilizing properties and is taken up and appropriated by the growing crops. More than this, said gas is a powerful solvent and acts on certain rebellious elements in the soil, reducing them to plant food.

Every person who turns under a green crop (when mature), such as clover or pea vines, derives the same benefit, and it is this feature that makes them such valuable renovators of worn soils.

TO TRANSPLANT FRUIT TREES.

Construct trenches at right angles at proper distances apart, about 2½ feet deep and from 2 to 3 feet broad in the bottom by plowing and throwing out the dirt with a shovel. Then fill the trenches to within 6 inches of the top with round green wood, bark on. Hickory, oak or dogwood may be employed; hickory thought to be best. A large log, say one foot thick, should be placed on top midway the logs. Then cover with dirt. When completed, the top of the large log should project above the ground.

At each crossing a space of from 4 to 6 feet each way should receive no timbers. Some partially rotted sawdust, or chip manure, can be used here to great advantage, being mixed with the soil and the trenches filled therewith. A tree should be set at each crossing, taking care to plant the trees no deeper, than they originally grew.

The tops of the large logs being exposed above the ground will have the effect to hasten decomposition. The roots will run out among the logs and feed on the gas that will be generated, thus largely improving the quantity and quality of the fruit.

For apparent reasons no logs should be placed beneath the trees.

GRAPE VINES.

The above plan, tested on grape vines, doubled the yield and largely improved the quality of the grapes. In this case, green red oak logs, bark on, were used.

TO PREVENT DAMAGE FROM SPRING FROST

Any time during the winter haul leaves and spread beneath the fruit trees to the depth of about a foot About April 20th remove the leaves and spread on Irish potatoes. The leaves, by keeping the ground cool, will make the blooming later, and thus save the fruit.

BRYAN TYSON.

Long Leaf, N. C.

SUGAR BEETS AND THEIR COST.

Mr. Nieuwenhuyse, superintendent of a sugar factory, Rome, N. Y., and a man of large experience, both in this country and in Europe, in sugar beet culture, writes the Country Gentleman as follows:

"Can sugar beets be cultivated by the farmers profitably, say at $5 per ton, delivered at factory?" Yes, and no

Yes, if raised on good soil, tilled in rows 10 or 20 inches apart, thinned out at five or six inches in the row, and work of cleaning done at the proper time. Do not wait until your young beets are surrounded by weeds, but pass with the hand-hoe as soon as you can see the rows. Thin the plants out as soon as they have two to four leaves. Pass often afterwards with the horse hoe to keep the weeds down. This will have the effect of loosening the earth around the plants, and give the roots plenty of air, while the young weeds will be destroyed; for, as you will see later, the cultivation of beets is very expensive so every opportunity must be taken to have as large a crop as possible. This you cannot get if the weeds take a part of the strength of your soil; and if the beets are tilled in rows farther than 20 inches apart, you will have larger beets but not so much weight off an acre; besides, what the sugar manufacturer wants to make it pay, is small beets, say from one to two and one half pounds in weight. These beets will do well to cut the tops off, while large one are a great deal worse to cut; and in large beets, the percentage of water is too high, and the percentage of sugar too low. Sugar beets for the factory ought to be cut off flat at the root of the leaves, so that no green tops adhere to the beet. This is absolutely necessary in order to manufacture a good standard of sugar. It is impossible to make sugar with leaves.

No, beets will not pay a farmer if grown on poor ground, or on muck land, or land which has not good drainage, or if the soil is not in a good state of cultivation. The cost of raising an acre of beets is too high for them to be raised on poor land. Here is a table showing the approximate cost of raising an acre of beets.

Cost of cultivating well an acre of beets at 18 inches between the rows, and thinning out to 6 inches in the rows, at $1 25 per day for labor:

Preparation of land, plowing and harrowing	$2 00
An extra harrowing before putting in the seed	0 50
Tilling and rolling	1 50
Cleaning between the rows with a hand hoe	3 00
Thinning out and putting in place the beets at distance of 5 or 6 inches in the rows, and cleaning between the rows	6 00
Third cleaning with a horse hoe	0 75
Fourth cleaning with a horse hoe, and slightly hilling up	0 75
One day's work to take the weeds out near the beets which the horse hoe has left	1 25
Pulling up, cutting the tops off, putting the beets in small heaps, and covering them with leaves	6 00
Loading and drawing the crop to the factory at an average of 12 tons to the acre at 50c. per ton, for six miles distance	6 00
	$27 25
Twelve tons, at $4 per ton	$48 00
Cost of cultivating	27 75
	$20 25

It is of the highest importance for the financial success of the beet sugar industry to make the farmers understand that the whole success of this industry is in their own hands and not in the hands of the manufacturer. The machinery well put up, and run economically, will do the work well, but if the first product (the beets) are not well cultivated, and are brought to the factory with green tops on the manufacturer is at a loss to extract the sugar contained in them; everywhere doubling the expenses. As for the farmer, it is better that he should cut the tops off and leave them on his ground, as it is in that part of the beets that all the fertilizing properties lie; so that it is much better for him to cut them off than to bring them to the factory and have a dockage of 8 or 10 per cent; and besides, the cost of labor of the men put on to cut the tops off at the factory must be deducted, for every beet of which the green juice of the leaves is mixed with the beet juice proper, is an obstacle to crystalizing the sugar, and every drop of that green juice must be eliminated before the white granulated sugar can be manufactured; so anyone who has at heart the success of this industry will understand that this means a great loss of time and heavy manufacturing expenses.

MR. WILEY ON BEET SUGAR.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION of Chemistry,
Washington, D. C, Nov 9. 1897.

The Epitomist Pub. Co, Indianapolis Ind:

GENTLEMEN:—I have your letter of the 2d inst. asking me for an expression of opinion in regard to some process by which farmers may produce beet sugar at home in a small way for their own use. In reply, permit me to say that the production of a crude beet sugar in a small way is an extremely simple process. Any farmer who is equipped with a cider mill for rasping the beets, a cider press for expressing the juice and an evaporator suitable for making sorghum molasses, can produce a crude beet sugar. As a rule, this sugar will not be very profitable, because it is not refined and contains the salts and bitter principles which make raw beet sugar and beet molasses, as a rule, unfit for table use. It will be, however, an interesting object lesson to our farmers to demonstrate the fact that the sugar beet itself contains sugar, and that the latter can be made in the crude way I have mentioned above. In this way the making of sugar in a small way by farmers may prove a stimulus to the industry and do great good. Farmers, however, should not be deceived by the expectation of being able to make their sugar in a successful way commercially. The successful and profitable manufacture of sugar can only be accomplished in expensive factories, equipped with all the appliances necessary to make a pure refined sugar Only the pure refined beet sugar can ever become an article of commerce. In this the beet differs from the sugar cane, because the latter will give a sugar which, even in the crude state, is palatable and marketable; in fact many people prefer crude cane sugar to the refined article on account of its containing the aromatic principles of the cane, which give it an odor and flavor very acceptable to most palates. I trust that any of your readers who may undertake the manufacture of beet sugar in the crude way I have mentioned above may do so only from the point of view indicated, and not with the expectation of making it a commercial success.

I am, respectfully,
H. W. WILEY,
Chief of Division.

TOBACCO STEMS.

The stems and stocks of tobacco, which are waste products in manufacture, are rich in potash. These stems give about 15 per cent. of ash, which may contain as high as 8 per cent. of potash. It is not, however, advisable to burn the tobacco waste in order to obtain its fertilizing ingredients. In combustion, the nitrogenous constituents of the waste, which are also valuable fertilizers, are lost, although it is true that both the potash and phosphoric acid become more immediately available after incineration. In order to promote the absorption of the fertilizing ingredients of tobacco waste, it should always be finely ground before applying it to the soil or mixing it with other fertilizing materials.—Western Plowman.

LETTER FROM DR. ERNEST T. BYNUM.

A short time ago we published a letter from Dr. Ernest T. Bynum, of the State University. This we clipped from the Chatham Citizen. Prof. Bynum has now written for the same paper a longer article in which he describes his visit to a millionaire farmer in Germany.

Prof. Bynum says:

"The development of agriculture in Germany and Austro Hungary in recent years has fully kept pace with the industrial growth of those countries and must be regarded as one of the most interesting phases in the advance of European civilization. In the province of Saxony a great many farmers during this period have become millionaires. It was my pleasure a few weeks before leaving Germany to be the guest of one of these more fortunate farmers and to become fairly well acquainted with the methods which he had employed in amassing so much wealth.

"I was invited by a young man whose acquaintance I had made in Halle to come up into Anhalt and spend a day with him on this celebrated estate known far and near as Gerlebog. This young man had been a student in Halle, but had at that time completed his studies in agriculture and was a volunteer inspector in Gerlebog.

"I was a little surprised on my arrival at the nearest station to find a coachman in elegant livery, with one of the finest conveyances I have ever seen, enquiring for an "Amerikaner" who was to be a guest of the Geheimrath Sanberlict. I readily satisfied myself that I was the person sought for and was conveyed in style to the castle of the Geheimrath.

"To my surprise I was met in the court of the castle by the old gentleman himself, who conducted me into his dining room where he had provided lunch for me consisting of a bottle of high wine, carviare and some fresh blood sausage, which the old gentleman seemed to prize very highly. He was 84 years old, seemingly enjoying good health but complained of rheumatism and was limping slightly. He assured me that I was the only American he had ever known who had such a command of the language as to render a conversation easy or interesting, and so he plied me with every conceivable question about America and American farming He couldn't understand our landlord and tenant system and seemed to be especially interested in the negro.

"The old gentleman was drinking a bottle of champagne and as he warmed up he became rather witty and attempted to chide me by saying the American farmers didn't have sense enough to raise their own sugar, but were dependent upon the Germans for their supply of this article, but when I replied that I confidently believed that he would live long enough to see American farmers not only supplying their own needs but sending their surplus product to Germany as they were already doing in respect to many of the cereals, he laughed heartily.

"Mr. Sanberlict is reported to be worth about $25 000,000, the bulk of which he has made 'out of the ground' and this, too, was rented ground. Gerlebog is one of five farms which he has under his control, one of which he owns and four are crown domains, entailed estates belonging to the Duke of Anhalt. Together these estates comprise about 6 000 acres, if I have calculated correctly, and the domains are leased for 25 years. The Geheimrath informed me that he had leased them 20 years ago for $9 250 a year and had already bargained for a renewal at the expiration of the 25 years at the rate of $22,500. He said, his highness, the Duke had been offered $30,000 but inasmuch as he the Geheimrath, had caused the lands to increase to such an extent in value he should have them for $7,500 less than their real rent.

"My friend, the Inspector, intimated that the Geheimrath had managed to lease the domains at first for a sum very much smaller than the price they would have brought on the market. By this means he thought Mr, Sanberlict had grown wealthy so rapidly.

"The court of the castle was a rectangle in shape; at one end was the castle, on either side were stables for oxen, cows and horses, and at the other end were the pig sties and sheep enclosures, or rather houses. In the centre of the court is a very large hole 50x100 feet in size and about 8 feet deep walled about with brick and filled with straw and stable manure. All the buildings on this quadrangle were connected by a high brick wall through which entrance was effected by means of a massive iron gate.

"This presents in general the appearance of almost every German country seat, only it may be well to bear in mind that there are no insolated farm houses in Germany and such a castle is always situated in a village seldom as small as Pittsboro. Such villages, however, are very different in most respects from Pittsboro. The houses are uniformly alike in almost every particular. They are low, thatched cottages, ugly and uninviting. There are no front yards and seldom any space between the houses. The villages are therefore very compactly built. The inhabitants are nearly all employed by the owner of the estate, One or two taverns, a shoemaker's shop or a small Jew store are the only features not distinctly rural.

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'I have frequently been asked if it were possible for us in North Carolina to attain even approximately to the high standards of farming prevailing in Germany. My answer is that to this there seems to be three obstacles which taken together would render agricultural success of the kind I have indicated well high hopeless.

"First and foremost, I should like to refer to the inefficiency of our farm labor, then to the ignorance, or rather illiteracy of our rural population and lastly to a lack of any systematic or genuine encouragement.

"Now as to the first of these I think there can be no clearer demonstration than the fact that a landlord finds it more profitable to rent out his farm in parcels to ignorant tenants who, from the very nature of their position, can not be expected to contribute anything towards the proper keeping of their lands than to employ these men as laborers and so conduct his farming operations as would otherwise not only yield him a larger net income as the result of more uniform management and better judgment but enable him to have an eye single to the permanent improvements of his lands. In discussing this anomalous condition with a farmer quite recently, I was informed that although his tenants worked only four months a year, if their labor be considered as steady and continuous, the annual production of his farm was much in excess of that which it would be if had hired them as laborers at a minimum wage. He assigned as a reason their general indisposition to work if it could be avoided. Our landlord and tenant system is, and perhaps always will be, a mystery to the Germans and the reason is obvious.

'Of course as long as this state of things continues any considerable improvement in agriculture is impossible. I am inclined to think that the inefficiency of our laborers is due in large measure to the amount and quality of their food, I might almost say to their gluttony. Speaking from observation, I should say that a North Carolina laborer eats at least twice as much as a German of the same class. The German subsists very largely on an essentially vegetable diet, and I don't remember ever to have seen one suffering from dyspepsia. To illustrate this I need only to describe the food of a German soldier, who constantly performs the hardest labor and is fed by the government for the sole purpose of fitting him for the hardships of war. As to rations, he receives as much unleavened rye bread as he wishes and this he keeps in his room. The amount is, if I mistake not, 3 loaves in two weeks. Most of them, however, sell at least one of these. For breakfast they get nothing but a pot of black coffee; for dinner, a large wooden dish of soup made thick with vegetables and a little chopped meat; for supper they have only their bread. The allowance of 5 cents a day generally suffices to buy a small quantity of oleomargarine and a glass of beer. Occasionally they are given a cigar and in Russia the privates are given a cigarette once a day.

"Now in America food has always been abundant and easy to obtain, while the other necessities of life have been dearer. In Germany these conditions are reversed. There wearing apparel is so cheap that I don't remember ever to have seen the poorest working man wearing patched clothing, and on Sunday it is surprising to see every one so well dressed as to render it quite impossible to distinguish between rich and poor."

POULTRY YARD

SASSAFRAS AND LICE.

In every experiment made with the use of sassafras in any form as a remedy against lice, it has given excellent results. One who tried the method gave a teaspoonful of oil of sassafras in the mixed food of ten hens twice a week, and claims that lice left the bodies of the fowls. The use of sassafras root, steeped in boiling water, the water being used for drenching the roosts, proved excellent, and even poles of sassafras, as roosts, are better than any other to prevent lice. A mixture of one part sassafras oil and four parts sweet oil, applying a few drops on the head, comb, face, wattles, legs, under the wings and around the vent, is excellent, and when well rubbed into the skin of the head and neck is a sure remedy for the large head lice. Bear in mind that when using oil or grease of any kind on fowls only a little should be applied, as grease will sometimes destroy chicks. As a spray the poultry house use kerosene emulsion (or kerosene), adding a gill of sassafras oil and half a pint of crude carbolic acid to a gallon of the kerosene or emulsion. Two or three applications will destroy not only the lice, but the "nits" and eggs.—Mirror and Farmer.

If all poultry houses were lathed and plastered with two coats of mortar, the lice problem would be solved and the cold drafts in winter shut off. To destroy lice, it will only be necessary, once a week, to burn enough sulphur in the poultry house to fill it with dense fumes, keeping it shut for an hour, and the work is done. When the house is not lathed and plastered, it is not close enough, and too much fresh air comes in while the sulphur is burning. Whitewashing will also be easier on a plastered wall, and the poultry house will be warm in winter, and the hens more comfortable and profitable.—Poultry Keeper.

POULTRY AMONG FRUIT.

While poultry raising and gardening or orcharding are often disappointing when carried on in conjunction, a subscriber evidently made a success of poultry and small fruits. In relating his experience in this line he says: "It is likely that extreme advocates of spraying have found the spray pump wasteful. It is of great value as a destroyer of such insects as the codling moth, but when it is used to kill insects that harbor on the ground its use is wasteful. Nature balances her forces by making some of them the foes of others that become destructive. It is within the province of man to assist in restoring this balance and do it not in a wasteful or wanton way, but economically both as to profit and material at hand.

During the past season I placed a yard of White Bramas in the center of 10 acres of fruits consisting of all kinds of small fruits and a considerable vineyard. I put the cooping places and house in a plum orchard. The pen was increased from five hens and a male to nearly 200 fowls. These were sold for broilers early. I watched the results very closely during the entire season, first, to see if there was any profit in harboring poultry among small fruits, and second, as to their value as destroyers of insects.

'I fed the small chicks with their mothers in the plum orchard and if the trees were jarred before feeding in the morning and wheat whs then thrown under the trees the curculio were gathered up with the wheat. The curculio, as well as the plum gouger, will, when the trees are jarred, double up and drop. My plums were the freest from these insects they have ever been.

When cultivation was begun nearest the chicken house, and many crops had to receive frequent cultivation, it gradually drew the flock of chickens to any portion of the 10 acres under cultivation. When from 100 to 200 chickens lined along the freshly stirred ground behind the cultivators, I found that an incredible number of insects were destroyed. — Farm and Home.

TO MEASURE CORN IN THE CRIB.

Two cubic feet of sound, dry corn in the ear will make a bushel of shelled corn. To get the quantity of shelled corn in a crib of corn in the ear, measure length, breadth and height of corn crib inside the rail; multiply first by second and product by third; divide result by two, giving bushels of shelled corn. Corn shrinks much in winter and spring and settles down.