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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 4th, 1890.

EDITORIAL NOTES.

As a rule the average farmer who farms for a living, growing everything he can, gets a better living, and far more satisfaction out of the farm and out of life than the one crop man.

The longer the manure lies in the heap, the greater the loss of fertilizing constituents; granting, however, that there is no loss, will there be as much time in the spring to do the hauling of it, when there are forty other things to do daily?

No animal takes more comfort in a good warm bed than does the pig. A damp bed is apt to be fatal to him. A farmer who believed in giving his pigs warm sleeping quarters, allowed them to lie on the fresh horse manure, thrown out daily. Those pigs never went to market.

The Wisconsin Experiment Station reports that about five pounds of skim milk are the equivalent of one pound of corn meal in nutrition value. Buttermilk holds the same relation as skimmilk. Much more, however, than their actual nutrition value, lies in their relishsome qualities and their balance as a diet.

Reports from some of our sister States would seem to indicate that many planters of the South are realizing that an agricultural people cannot thrive who buy their grain and meat with the price of other farm products. Next year will see some real diversification of farm crops, and North Carolina should join the procession.

Secretary Wilson says that the hog furnishes the best market in which to sell the by products of the mill and dairy. He assimilates more of the most concentrated feed stuffs than any other animal on the farm. In conjunction with the cow he will redeem the worn out cotton and tobacco fields of the South. Select your breeding sows, he says, from good milkers; that is the best indication of fecundity.

President Andrade, of Venezuela, has issued a proclamation concerning a national exposition to be held at Caracas. The Ministers of Agriculture, Industry and Commerce will take the matter in hand and afford opportunity for foreign governments and merchants to participate and exhibit goods. American exporters will doubtless obtain their full share of the increased trade likely to result from such an undertaking. The exposition will open January 1, 1900.

Many who have given the subject careful thought and study believes that the cow coming in fresh in the fall is about a quarter more profitable during the year than one coming in during the spring, other things being equal. The calves are dropped from September, to December and are carried through the winter on skimmilk largely, with good shelter against the cold. When the pastures are ready, they are turned out and need little attention till the following winter.

Consul General Holloway reports to the State Department that the rice industry in Russia has largely increased of late years. The demand for this product is constantly increasing and it is now generally used by the peasants throughout the empire. The finished product is packed and sold in jute bags; the broken grains are made into starch and the "flour" is fed to hogs. The price in Russia for cleaned rice fluctuates from 90 cents to $1 per 36 pounds and the flour bran sells for about 15 cents per 36 pounds.

Quick fattening makes tender meat. But much necessarily depends upon the condition of the animal when the fattening process begins. If it is lean and run down, forced feeding at first is an evident mistake. The digestive organs will speedily become upset and not so good progress will be made in laying on weight as though the increased feeding is more moderate. The animal's system must be brought into a healthy state where it will easily digest everything it eats, and then its appetite must be kept up. The excrement will not show all the undigested food.

With the many methods of dehorning in such common use, from a touch of acid to a scientific cutter for the mature horn, it seems strange that farmers will allow their cattle to retain their horns, jeopardizing the lives of the farmer and his family, endangering the lives of other stock, and keeping a condition of unrest and worry in the herd. Where a farmer or dairyman once practices dehorning, and sees the benefit to his herd, he will never after allow a horned animal in his yards. Look in the advertising columns of THE PROGRESSIVE FARMER for good brands of dehorners.

Alsike clover is a valuable forage crop and can be grown to advantage in many places where ordinary red clover will not yield profitably. It is a perennial and has no hairs on the stalk so is not dusty. Its bloom is sweet and makes good honey. It will stand any amount of wet. Planted in wet swales and depressions, it will make abundant growth and reseed itself from year to year, affording a vast amount of excellent feed. It does not throw out and freeze out as do red and mammoth clovers. Farmers would do well to try a patch on any low lying land on the farm. It withstands cold well and has made good growth in Alaska.

The experiments of the Cornell Station go to show very clearly that tillage is fully as important a factor in growing successful crops as even soil fertility. For seven years the station has been making careful experiments in tillage and soil fertility. Potatoes were grown on a soil containing less fertility than the average soil, yet by means of careful tillage, and without the use of any commercial fertilizer or manure of any kind, crops have been grown which are far above the average of the State. The crop raised this year is the fifth one removed from the soil since fertilizers of any kind were applied; yet it is a very satisfactory one. The time for listing in a crop and cultivating it once has gone by.

The President of the Continental Company, of Chicago, states it is his opinion that the Tamworth is the coming hog. "After some experiments and quite a little experience," he says, "I think that that breed possesses more qualities of general utility than any other. If desired, it can be slaughtered at 175 pounds and makes excellent bacon; otherwise it can easily be brought to 500 or 600 before killing. The virtue of the Tamworth lies largely in its uniformity. I have seen hogs, however, of the Tamworth variety, weigh as high as 1,000 pounds. Canadian bacon, the popularity of which is undeniable, is produced almost exclusively from the Tamworth. I am certain that as soon as the merits of this breed are known to the American farmer and packer, it will be but a short time before it will be very largely bred."

Mr. D G Fairchild, who has charge of the work of seed and plant introduction of the Department of Agriculture, has recently started on a trip to South America, where he hopes to find new plants which will be advantageous to this country. Mr. Fairchild is an accomplished linguist, which smoothes over many difficulties in such an undertaking, is a botanist, and also a specialist on plant diseases. Mr. Fairchild has strongly advocated some measures being adopted by the United States looking to the shutting out of the many diseases and insect enemies which are constantly being imported along with foreign seeds and plants, through the ignorance of growers and merchants. It seems reasonable to assume that action should be taken to keep out, by quarantine, deadly diseases of plants, as well as diseases dangerous to human life. A man's life may pay the result of carelessness in the latter instance; his fortune or means of a livelihood in the former

AGRICULTURE.

SOMETHING IN REGARD TO FERTILIZERS

Mr. G. B. Dillon, of Tennessee, who last week contributed a helpful article our Dairy Department, writes an exchange regarding the use of fertilizers. We quote:

Different soils and different crops require different treatment and different elements of plant food.

JUDICIOUS SOIL CULTIVATION.

A judicious cultivation of soil adds to its producing capacity as the elements of plant growth contained in soils are unlocked and made available to some extent by proper working of the soil. It was formerly believed that it was necessary to add all the constituents of plant growth to the soil before plants could be produced. That if we wished to raise wheat we must add the constitutents of wheat. If we wished to raise potatoes we must add the constituents of potatoes. This is not now considered absolutely necessary. If we use a fertilizer, rich in nitrogen, phosphoric acid and potash, with judicious rotation of crops, we may not only raise good crops indefinitely, but bring the land up to a higher state of productiveness every year. On some soil we could safely leave out the potash, enough being yielded annually by decomposing particles of soil—unlocking the sand grains, as it were, to get these treasures. On some soils nitrogen perhaps would not be called for at first, and on others, rarer still, phosphoric acid might for a time be found sufficient in the soil.

CEREALS AND NITROGEN

Cereal crops are especially benefited by nitrogen and nitrogenous manures. Generally from forty to sixty pounds per acre are required for full crop. I believe clover to be the best medium to use in charging soils with nitrogen. It is a trap easy set and sure to catch. Clover may be specially fertilized with plaster. For Indian corn phosphoric acid is perhaps the best fertilizing element.

LAND PLASTER

Land plaster often does good service. On some soils potash proves valuable. Grass requires all the elements of plant food. Well rotted manure is perhaps the best special manure for it. Bone dust comes next. Either of these can be used at seeding, or afterward as top dressing. Clover requires nitrogen and phosphoric acid in small quantities. Potash and lime are its most valuable manures. Turnips require nitrogen and phosporic acid, the latter in soluble form.

POTASH FOR POTATOES

Potatoes are like the turnip and on most soils they need a supply of potash furnished. There is usually potash enough in our common barnyard manure for potatoes. One hundred pounds of good bone, thirty five pounds of sulphuric acid and thirteen pounds of water, mixed in a wooden tub or vat, will make one hundred and forty-eight of superphosphate dry. In mixing, however, much more water will be found necessary to possibly properly mix the mass, and when properly mixed, if after standing a day or two it is too damp, may be dried by adding ground plaster or other material. The bonedust should be wet with water first, then the acid added, a little at a time; by so doing the vessel in which the mixture is made is less acted upon, and the incorporation with an action upon the bone is better. Stir with a wooden hoe or mixer. Never attempt to reduce whole bones with the sulphuric acid.

LIME ON SOILS

The advantage of reducing bones or rock phosphate with sulphuric acid is to render the solubility in water the greater when applied to the soils. Liming soils really adds no plant food to the soil, but has a tendency to develop it in the soil by the caustic, dissolving, breaking down effect that the action of the lime has upon the particles of the soil. G. B. DILLON.

Eva, Tenn.

MAKE WINTER LEISURE PROFITABLE.

Winter should be the farmer's time of rest. Whether it is not depends largely on himself. If he is properly prepared for winter by having his feed stored handy to his live stock, his fuel stored in a dry place and his farm work done on time he may find many rest days during the winter. If feed must be hauled for the stock, fuel for the house and odd jobs of all kinds attended to, winter may be a time of hard work at a time when work is hardest. It is not too late to prepare for severe weather and after this is done it would be well to take a little time to think how much the best of us fall short of doing as well as we know.

We know we could make every field tillable by draining a few low places early in the spring. When you come to this just note it down in big letters. We know we lose a great deal of the value of the manure made by allowing it to leech away in the rains of winter, and we know we could save all this by a little preparation and a small amount of work every day.

We know plows and cultivators work better if the bright parts are covered with tallow when they are put away in the fall, and if so it happens we have not put them away, we know we are wasting money by letting them rot. Better attend to that to day, don't you think? We discover, when we come to think the matter over, that we have our farm buildings so arranged that we are walking miles and miles needlessly every year while doing the chores.

It isn't a very good excuse to say we haven't time to attend to all these things. Doing the best we know is the one sure way of making as much as we can, and to say we haven't time to do the best we can is very much like the excuse the man made who said he had so much to do that he couldn't attend to business. Let us take time this winter to make a plan that will allow us to do the best we can next year. This would be a profitable way to use the winter leisure.—Farmers' Voice.

ODDS AND ENDS.

Now is the season when there is no big job driving but there are a plenty small ones to keep the farmer out of mischief until winter sets in. Most of them will begin at the barn and more likely than not never get to the house at all, but we will begin with the house in reminding them of the things which they know very well ought to be done but are very liable to overlook.

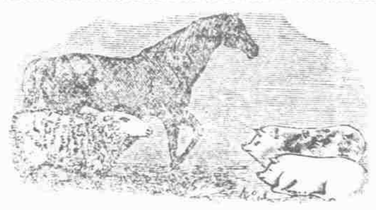
See that the house is well banked if it needs it and that the cellar windows are all right and fit snugly. See that some of them are windows, not plank, so that the women will not have to light a lamp or grope around in the dark two or three times a day. Have your cellar protected for you do not want to wake up some zero morning and find your "garden sass" frozen. You will miss your "biled dish" when you cannot have it. See that the house windows are well puttied and broken places replaced with new glass, also that they are snugly wedged up. It will save fuel and it may save your getting a "Scotch Blessing" if the house plants do not freeze this winter. You will be pretty sure to get one if they do.

Look to the stove pipe and chimneys. They have an inconvenient way of doing mischief in the worst possible weather if not kept safe and you do not want your insurance money just yet. See to the water pipes and tubs. You will use bad language if your water freezes up and you have to lug it from the brook. See if the kitchen floor does not need a coat of paint. If it does, put it on. See that your shed is full of dry wood and some light stuff for kindling.

Now you may go to the barn and tinker around there awhile. You will find plenty of places where a board, or some banking or a hinge or hasp will make things more comfortable for your cattle, and the more comfortable they are, the greater will be your income from them, also your pleasure in them. Domestic animals have no life but at our will and spend that life serving us faithfully as they can. It is a sin not to treat them kindly and make them comfortable and happy.

If you make everything snug and shipshape about your premises before cold weather comes on, you can then sit down by your fire with a contented mind, but if you neglect these things, they will constantly remind you that they should be done and prove a source of annoyance to you all winter.—Green Mountaineer.

LIVE STOCK



FEEDING HOGS AND CALVES.

Valuable Facts of Special Interest to Stockman.

Correspondence of The Progressive Farmer.

The Utah Station has been making experimental tests of the profits to be derived from feeding skimmilk and whey to hogs and calves. In bulletin No 57 of that station, Prof. F. B Linfield makes the following statement of the objects of these tests:

Soon after becoming connected with the station, the writer, from observations made in various parts of the State, was impressed with the necessity for investigation looking to the profitable disposal of the by-products of the dairy, both at the factory and on the farm. The common method at the factories seemed to be to feed hogs on milk or whey alone, and where grain was fed, it was only given to finish the hog for market. This method of managing did not appear to be successful, for it generally took the whole season to get one crop of hogs ready for market; besides, in many instances, it resulted in too high a death rate among the hogs to be at all profitable.

In planning this series of experiments, the object was to study the economy of feeding milk alone and milk in combination with grain, as compared with feeding grain alone.

In several different experiments with hogs extending over four years of time, it was found that milk alone gave better results than grain alone taking less digestible food to make a pound of gain, and also returning larger profits.

But a mixture of milk and grain was found to be far superior to either by itself. When fed alone 100 pounds of skimmilk produced 10 cents work of pork; but when fed in connection with grain, 100 pounds of skimmilk produced 18 cents worth of pork, after allowing 70 cents per 100 pounds for the grain used with it.

A point that should be noted here is that though 40 per cent. of the by product fed was whey, yet the returns for the milk and whey were fully equal to that from previous experiments when skimmilk alone was fed. This does not prove that whey is equal in feeding vualue to skimmilk, but it does show that whey is a very valuable by-product when properly handled.

But where the hogs ran on pasture, the grain alone surpassed the ration of milk alone; but even here the mixed ration was much better than either by itself. In this teet, where the hogs ran on pasture, those fed on a mixed ration of milk and grain were brought up from 50 pounds each to 200 pounds each in 118 days, while those fed grain alone required 174 days, and those fed milk alone required 220 days to reach 200 pounds weight, on an average.

However, the Wisconsin Experiment Station, some time ago, found that milk was more economically fed alone than in combination with grain. At that station, when the milk was fed alone 100 pounds of milk proved equal to 27 pounds of grain, but when fed in conjunction with grain 100 pounds of milk was only equal to 21½ pounds of grain. But in that case the hogs were very young.

Prof. Linfield makes the following general summary of his long feeding tests:

Skimmilk and whey, when fed in conjunction with crushed or ground grain, makes a valuable hog feed in all cases and especially for young hogs.

The mixture of milk and grain is more economical than either alone. To make one pound of gain required 2½ pounds of digestible nutrients in the mixed ration, 2¾ pounds in the milk alone, and nearly 3¼ pounds in the grain alone.

When fed in combination with grain, skimmilk has 63 per cent. greater feeding value than it has when fed alone, 100 pounds of skimmilk taking the place of 23 pounds of grain in the former case and 14 pounds in the latter.

The hogs fed on the milk and grain ration made much more rapid gains than either those fed on milk alone or grain alone. The time required to make 100 pounds of gain was 79 days for the hogs fed on milk and grain, 116 days for those fed on grain alone and 147 days when the food was milk alone.

When the skimmilk and grain were fed in the proportion of 3 pounds or less of skimmilk to one pound of grain, the return for the skimmilk was greater than when a larger proportion was fed. When fed in the proportion of 2 pounds of skimmilk to 1 pound of grain, 100 pounds of milk took the place of 31 pounds of grain, but when fed in the proportion of 4 pounds of skimmilk to 1 pound of grain, only 24 pounds were displaced.

Hogs fed on milk alone gained very slowly and did not keep in good health; in some cases they were off their feed so frequently that a change of feed had to be made. The milk and grain fed hogs, however, without exception, kept in good health.

Young hogs make a better use of milk alone and poorer use of grain alone than older hogs. Hogs fed on grain alone or milk alone did much better when permitted to run on pasture than when kept in small pens.

The appetite of the hogs and the palatability of their food seemed to have a marked effect on the rapidity and economy of the gains.

Young hogs are in every way the more economic producers of pork. The hogs fed milk and grain required 62 per cent. more to grow a pound of live weight when they weighed from 200 to 255 pounds than they did when they weighed from 38 to 100 pounds, and for those hogs fed on grain alone the difference in favor of the smaller weight was 56 per cent.

In the calf feeding tests 16 calves in all were used, and the experiments were repeated four successive years.

The calves were in every case separated from the cow by the time they were 12 hours old. For the first seven or ten days the calves were fed the whole milk from the cow, some of the calves being fed twice and some three times a day. The milk was fed warm from the cow and the amount given was about 16 to 18 pounds per day. It may be asked, why not let the calf help itself for the first seven or ten days? The experiment gives no answer, but past experience had demonstrated that by the method followed both the cow and the calf gave much less trouble. When the calves were fed on the whole milk it was gradually increased as they got older, till 20 to 22 pounds were fed per day at a month old, when the calves were disposed of.

Those calves which received skimmilk were fed as follows: For the first seven to ten days of its life the calf got the whole milk from the cow; then skim milk was gradually substituted till at the end of one week, or when calves were 14 to 17 days old, the calf got half skimmilk and half whole milk. At the end of the next week the ration was three fourths skimmilk and one-fourth whole milk, and at the end of another week, or by the time the calf 4 to 5½ weeks old, the ration consisted of all skimmilk. If, however, the calf was not doing as well as we would like, a little whole milk was continued for another weeks or two. The amount of skimmilk was gradually increased as the calf got older, but the most fed in any one day was from 25 to 27 pounds. The skimmilk ration was kept up till the calf was 5 to 6 months old, but as they increased in age they had what water they could drink in addition to the milk. We have found it to be of the utmost importance to make all changes of feed gradually, so as not to disturb the digestion of the young calf.

Separator skimmilk was used and in every instance it was fed fresh. To prevent the milk from souring it was boiled by having steam turned into it (which diluted it about 8 per cent), and then it was cooled to about 60 degrees Fahrenheit in summer and to about 40 degrees Fahrenheit in winter. When treated in this way the milk would keep fresh for about three or four days in summer and about a week during the winter.

The skimmilk given the young calves was always fed warm, from 80 to 100 degrees Fahrenheit. The cold milk we learned from a little experience generally produced indigestion, with the resulting scours. The milk, however, should not be hot. Our method of warming the milk was by the use of a lamp stove, only a few minutes being required to heat a pailful of milk.

As soon as the calves would eat it a little grain was given to them. Chopped grain was used, and it was fed dry in a box, and not put into the milk. No tests were made of the value of the different kinds of grain, though quite

[CONTINUED ON PAGE 8.]