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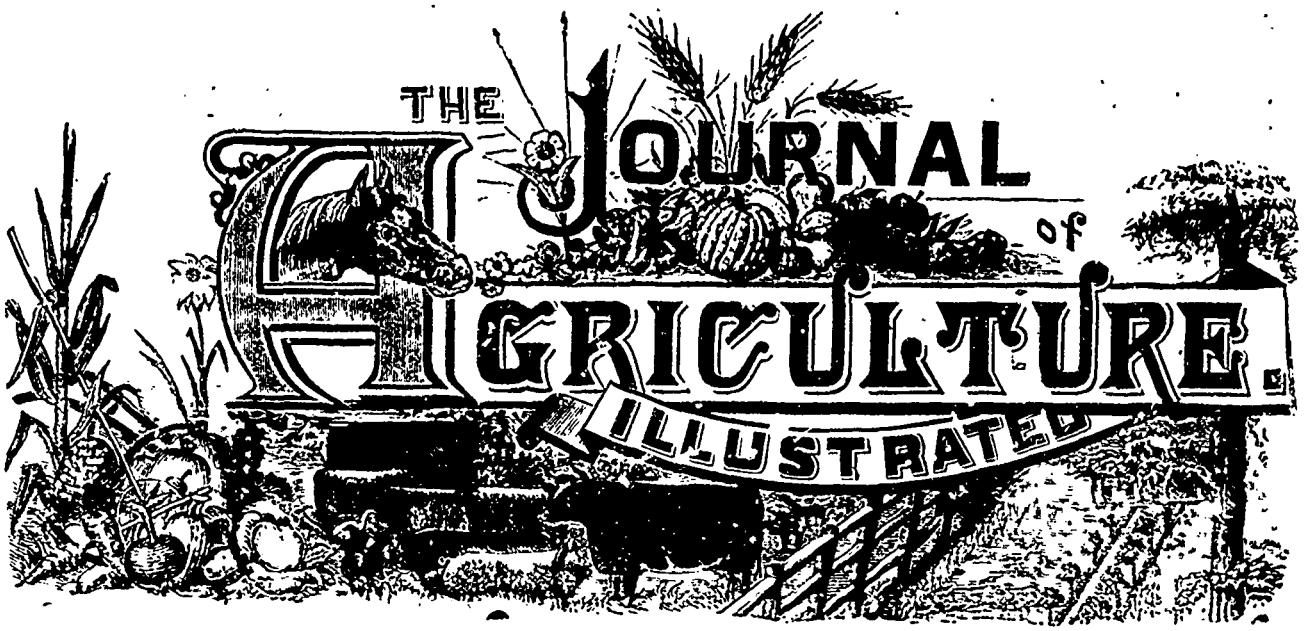

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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—EDITORIAL MATTER. All editorial matter should be addressed to A. R. Jenner Fust, Box 109, Lachine, Que.—or to Ed. A. Barnard, Director of the *Journals of Agriculture*, &c., Quebec.

OFFICIAL PART.

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SHALL WE CAPONIZE?

EDS. COUNTRY GENTLEMAN—I have practised and preached caponizing many years, and the more I practise the same, the more thoroughly convinced I am that there is no branch of the poultry business that pays as well for the poultry-keeper who is in the business to supply markets with his products. There is no question that selling setting eggs for $5 a dozen, and breeding birds at $10 each, is more profitable if one has that kind of trade, but the few who obtain their prices are scattered and far between. In fact, but one breeder in ten who attemps to sell at fancy prices ever gets his money back for the expense he goes to in making a market.

I believe in keeping the best and purest stock of any breed or breeds of fowl I may like, catching a trade now and then for a breeder, a trio or some setting eggs, but should rely for my profit on my capons and market eggs. I find the former the greatest source of profit from poultry. They exceed everything else, and it is a great wonder to me that poultrymen all over the country have not "caught on" to this branch of the business long before. Until within the last few years it seems to have been overlooked entirely except by a few Jerseyites, who have been smart enough to see the profit there was in capons, and the advantage they had in the rest of the country giving them the whole field to work in. The consequence was, they had the markets all to themselves, and for many years have been making lots of money out of this monopoly. So closely have they held this branch of the poultry business to themselves that it has created an impression all over the country that capons could be raised only in that State and sold only in Philadelphia. This of course pleased the boys in New-Jersey, and they took but little trouble to contradict this belief. But like all things, the fact at last leaked out that it was a very simple thing to caponize a chicken, and that he would grow, thrive and produce just as fine a capon in the North South, East and West as in New-Jersey.

Such notions that have been put into the minds of poultry-raisers for the past twenty years—yet fifty—on the subject of caponizing, are absurd, lacking even the shadow of truth. Writers have taken up the subject who knew nothing about it, and then went on to tell all about it. Men who did know something about it, and the simplicity of the operation, have allowed the impression to go forth that it was a very difficult operation, thinking, I suppose, to magnify the importance of their own ability. Cranks have labored hard to make out a case of cruelty, forgetting in their philanthropic fervor, the pain the bird suffers in antogonising other males for six

months. They would rather see a bird suffer every day, enjoy seeing the fight, than to have their sensitive system shocked by the exhibition of a second's pain the effect of which would be to cause the bird to have a peaceful life thereafter, free from the interruption of fights and quarrels. To one of these writers I wrote asking him if he ever saw the operation of castrating an animal performed. He replied that he had not. Why did he write such stuff then? Well he *supposed* it must be terrible. I invited him to be present and see me caponize a cockerel, and then he would be able to write more intelligently. He came, I asked him to tell me just *when* he thought the bird suffered any very severe pain, after I had caponized him, and had given him his liberty, not before. This is promised, and would watch every movement carefully. In three minutes the operation was completed, and this was his verdict: "Mr. Dow, your bird did suffer." "Well, tell me when." "At two different times; one when you caught him in his pen to carry to your table, and again when you lifted him off the table to put back in his pen. He 'squawked' and struggled awfully at each of these times, and really gasped for breath." I thanked the gentleman and asked him to do me one favor, when he ever wrote anything about the suffering the bird experienced in being caponized, that he would qualify the same, by giving the result of his observations, and tell the public just at what period he witnessed the exhibition. He promised he would, and we went to look at the pigs.

Let every poultryman caponize the cockerel he has that he does not wish to preserve for breeders. He will gain in two ways. The bird will gain 40 per cent. in weight, of any breed, and if for sale he will bring 40 per cent. more in price. These two features make together a very handsome profit.

Beyond the gain in weight and price, a capon is a bird that is seldom if ever sick or ailing. They are always strong and well. I never yet saw a sick capon. They become docile, quite easily handled and cared for, and consume less food than any other fowl.

Two years ago I made the claim that by removing the proper testicle I could control the sex of fowl. Later experiments only confirm these previously made, and I fully believe it can be done. Since I advanced this idea, other people have taken it up, and in the Fanciers' Review of March 1st I see that a person of St. Louis is of the same opinion. He states that by removing the right testicle he succeeded in obtaining 300 pullets and *no* cocks. In removing the left testicle he hatched forty cocks and no pullets.

GEO. Q. DOW.

Rockingham County, N. H.

TREATMENT FOR EGG EATING

I have found that the beginning of this troublesome condition in the poultry-yard is frequently due to overfatness in the hens. From this cause comes soft-shelled eggs, which are easily broken under the layer. When once a hen has had a taste of the contents of the soft-shelled package her appetite for a similar diet is not easily satisfied. The best treatment is to reduce the flesh as quickly as possible, not by withdrawing the feed, as many unwisely do, but by feeding solely such egg-producing foods as cut clover steamed and mixed with oat meal or middlings and bran, whole oats, lean meat or ground meat and ground fish (which has most of the oil extracted), together with an occasional feed of vegetables, omitting potatoes. In this way the number of eggs will not be diminished, but rather increased, for a hen will not lay well when fat, and at the same time the shells will resume their normal thickness. In the meantime take a stout pair of scissors, and clip off the horny tip of the upper mandible. Clip it back pearly, but not quite to the quick. It is simply horn, and will cause no more pain than cutting the finger-nails. It is the sharp point that the hen uses in breaking into the egg, and though it will soon grow out again after clipping, yet in the meantime the habit will have been somewhat broken up, and the shells made thicker. The nests should also be arranged so as to be in semi-darkness. Let them be entered by the hen from the rear in such a manner that no direct light can fall into them, and never have them so that the hen will have to jump down upon the nest. Eggs are frequently broken in this way, even when not soft shelled, and the habit thus acquired.

I know of no better treatment than the foregoing, when the trouble has once begun, as it is but a few moments' work to cut the bills of a hundred fowls, and this can be done every two weeks if the habit is not broken. The latter will rarely be acquired, however, if the two precautions in regard to nests and non-fattening feed are carefully observed. Corn has no place whatever in the feed of laying fowls. It is difficult to keep them from becoming too fat, even when forced for eggs with the non-fattening foods already mentioned, and it must be plain to any one who has given any observation to the matter that a soft-shelled egg is never laid unless the author of it is either fat, or out of condition in some other way.

Another point to be born in mind is the keeping of the fowls busy scratching from morning till night, for the satanic majesty of evil finds some mischief for idle hens to do, as well as for human bipeds.

WEBB DONNELL.

Lincoln County, Me

FROM WESTERN NEW-YORK.

VALUE OF RECORDS—MISTAKES IN EARLY SOWING AND PLANTING—BURDOCK FOR THE MAGGOT—TURPENTINE FOR THE FLEA BEETLE.

EDS. COUNTRY GENTLEMAN—One great advantage to be derived from keeping notes of your farm or garden operations, year by year, is that you are enabled to refresh your memory from an annually increasing stock of memoranda as to mistakes made or successes scored; by making good use of them, after a series of years' trials, a farm or garden can be made to yield its utmost and become thoroughly tractable in the hands of its owner. For instance, a recent perusal of my own notes has led me to the conclusion that sowing or planting at the earliest possible moment the soil can be worked is of no advantage—in fact, is a mistake. The late Peter Henderson advised that the hardier vegetable seeds be sown in his latitude (41°)—a rule which would apply here in latitude 43°—when the thermometer averaged 45° in the shade, the time given being from the middle of March to the end of April. Allowing the season in the vicinity of New-York city to be two weeks in advance of that in Monroe county, and taking the mean temperature of April for the last four years here, we find the average to be scarcely 40°, the highest being in 1886, when it was 43°, and the lowest in 1888, when it was 36°; last year, when we had a very favorable spring, it was 42°, the soil temperature on March 30 being only 33° at four, and 36° at twelve inches; the mean of April, however,

was 54° at four and 47° at twelve. On March 15 (about the earliest date mentioned by Mr. Henderson) of this year, with an unusually mild winter, the soil was still at freezing point and only 36° at eight inches lower down.

From observation and experience, I judge that in this section there is not much gained, even if the ground is in workable order, in sowing before the middle of April, unless in a very exceptionable season. It often happens that we have a very few warm days at the latter end of March or the beginning of April, warming just the surface of the soil, while underneath the frost is probably lingering, and lasting long enoug to start such quickly-germinating seeds as cabbage, radishes, &c. A return to the normal temperature of the season would seriously injure, if not destroy, the chitted seeds, chilled as they must be by the cold soil underneath them. The ground should be warmed to a temperature which will not only start but keep up a quick and continual growth before seeds are committed to it. In 1887, as an experiment, I drilled in a row of black wax bush beans April 14, and three weeks later (May 5) another row beside it, the seed for each row being taken from the same bag; the beans on the earlier sown row were not ready a day before those on the other, both being picked July 5. Mr. neighbor, Mr. Joseph Harris, for the purpose of obtaining the luxury of an early dish of peas every year, carefully soaks and sprouts the seed which is sown at the very earliest opportunity, and which subsequently receives the treatment which his well-known skill in agricultural matters enables him to give it. This generally happens two or three weeks sooner than I sow mine, and he is often enabled to enjoy a feast of peas a week or so before I can gather a sufficient quantity to take to market, but my crop is larger and the peas are of better size and quality.

But to no seed is this question of planting at the right time more important than to corn. As market gardeners frequently do, we used to plant sweet corn before we had any right to expect it to grow; of course much of it rotted instead of sprouting, so after a lapse of some two weeks, during which time the temperature of the air and soil had risen to a more suitable point, we planted again with the result that the earlier planted corn was nowhere in the race. Now if corn is planted about the middle of May, and after an interval of a week, any gaps are filled up, it will be found that in this case the first planted is the best, showing the necessity of endeavoring to plant under just the right conditions if you wish to obtain the best results. A few years ago we planted early in April some potatoes which we had sprouted on shelves in the house-cellar, putting them carefully in the ground and covering them about two inches with the hoe; two weeks later we put in some of the same kind—only not sprouted—with the plow, and these were fit to dig at same time as the sprouted ones. The following year we planted the sprouted ones later and had a much earlier crop. No matter if the seeds sown before the soil is fittingly warm come up sooner than those sown later, there is a want of vigor in their growth which is very perceptible when the two are seen growing side by side.

Another thing, probably noticed by others long ago, that each years's experience shows me to be of importance when early sweet corn is desired, and that is, not to cultivate it too often or deep. I used a harrow tooth cultivator directly, I can see the corn so as to kill the small surface weeds, afterwards using the hoe in the rows and for all big weeds, only running the same cultivator through as often as it is necessary to break the crust after a rainstorm. It may be different on stiffer soils, but on a good garden one it is certain that by abstaining from cultivating as much as possible, you will be able to pick ears several days sooner.

Last year I lost my early turnips, radishes and bunching onions through the maggot, but I saved some later sowings by the application of the burdock remedy mentioned by Prof. Lituer in his bulletin of November, 1888. It is there credited to a correspondent of the New-England Homestead, and is as follows: "Take green burdock leaves and stalks, run them through a hay cutter, put them in a large kettle or tub, and mash them with an old ax or maul adding water and pounding them to a pulp. Let it stand over night, have the decoction strong, and when you see the first sign of the maggot, use this, and it will be found a dead shot for the worm. I have used it 40 years on onions. I use a sprinkler taking off the nozzle and pouring the solution along the rows. I seldom have to apply it the second time." We are advised to use it at the first sign of the maggot, but I applied it as soon as the young plants were visible, hoping at the same time to ward, off the flea, but that lively little gentleman required a dose of air-slaked lime flavored with turpentine before he could be induced to quit. For the maggot, the burdock is a capital remedy In powdering a patch of cabbage attacked by the flea, with the turpentine lime, it appears as if the further you proceed the thicker the fleas become; and so they do, since you are driving them before you, and when the last row is reached it seems alive with them; where they then hop to I cannot tell, but I know that they will not again visit the cabbage plants you have dusted, so long as there is a smell of turpentine about them.

J. H. C. *Monroe County, March* 17.

SMUT IN GRAIN, p. 184.—Prof. Jensen thinks that water heated from 110° to 132 is better than limestone. I tried limestone over thirty years ago and it had the desired effect, and since then it has always done well. No matter how much you put on, it will not hurt the wheat. I tried in boxes, with and without all that water would dissolve, and it grew all the stronger for it. T. R.

Allawakee County, Iowa.

DE OMNIBUS REBUS.

Sheep and cattle.—Mr. J. C. Wing, writes to the Country Gentleman that "sheep herded with cattle will starve the latter quite to death". I cannot agree with Mr. Wing, for, as all farmers know or ought to know, all soils in their natural state—and it is of the great prairies Mr. Wing, is speaking produce a great variety of plants or herbage, and we may safely infer that it was not intended for one class of animal alone. Variety is clearly the order of nature in the animal and vegetable kingdoms, and the farmer who wishes to thoroughly utilise all the produce of the soil will not restrict himself to one class of animals for one portion of his pasture.

Those who have the care of flocks and herds ought to pay close attention to the localities where early grasses and plants

grow, and to the succession of their growth throughout the season, and to regulate the herding of the sheep and cattle accordingly.

Even on the very best sheep-pastures, knolls and shelves will be found on which the sheep prefer to pass the night. Their droppings, solid and liquid, as well as the oil exuding from their fleeces, cause such a rank growth of grass on these spots, that the sheep will not graze there, but cattle greedily devour it, and find it highly nutritious.

Cattle graze high; sheep bite, or crop, low: therefore, the two herded together will make the most thorough use of any pasture.

Top-dressing grain.—Where land is full of manure, top-dressing grain is not a wise proceeding: it may very likely produce too luxuriant a growth of straw, particularly in a season like that of 1889. But there is no danger of overdoing the root- or the corn-crop. Half a coat of dung and 2 cwt. of superphosphate for swedes; the same bulk of dung and 150 lbs. of sulphate of ammonia for mangels and corn, with, perhaps, 4 cwt. of salt to the mangels, never left anybody in the lurch yet.

Sandy land.—The following article, by Mr. Henry Stewart, extracted from the Country Gentleman, I was very glad to see. Why people shun the good sandy lands of this province, and select in preference the heavy clays, is not surprising: the clays will, unmanured, produce something; the sands, without manure, will produce nothing.

As for the ploughing in of green-crops, so strongly recommended by Mr. Stewart I cannot away with it. At present, $2,000,000 are sent out of Montreal yearly, for the purchase of Ontario beef, and I think we can hardly spare such nutritious food as clover, tares, &c., with this fact staring us in the face! Mr. T. B. Terry boasts that "not a leaf of clover on his farm ever touches the lip of an animal". All is ploughed in, and he seems satisfied with the result!

SANDY LAND.

EDS. COUNTRY GENTLEMAN—I beg to take exception to the remarks of J. R., (page 166) and his advice to M. T. R. in regard to the management of sandy soils. As I have had several years' experience with a light sandy soil in the same county of New Jersey as J. R. has the happiness to reside in, I can assure him that he is mistaken in several points upon which he advises M. T. R. First, in regard to manure. It is all right to use is liberally but I have found 10 tons of it to the acre is more effective the first year than 20 tons on clay soils. Moreover, artificial fertilizers, lime included, are useful on the sandy lands of New-Jersey. My farm in 1875 was an abandoned one, the sheriff was the last owner, a temporary one, and I purchased it from him at a public sale. On 70 acres one horse and one cow starved. Everybody assured me that it would not hold manure, and as for fertilizers they would go down to the bottom 100 feet or more, and never be heard of again. But with artificial manure alone, which was cheaper than city manure as $3 per ton, I made that poor soil in two years produce 80 to 90 bushels of corn shelled to the acre, 35 bushels of wheat, 1,200 bushels of mangels, 11,000 ears of sweet corn and over 400 bushels of potatoes per acre. On less than 50 acres of it in four years I fed 15 cows, as many young stock and two horses, besides selling nearly $500 worth of market stuff, and making an income in all of $2,500 per year. A large part of the later improvement of the land was made by plowing in clover and using lime in the form of compost with swamp muck and manure.

J. R. takes quite a wrong view of the use of green manuring. He has adopted a recent "fad" which has got into circulation in some way from some inventive but inaccurate brain, or he misuses the word fertility. He says in green manuring you add to the land only the fertility contained in the seed sown, for farmers can not get something from nothing. Does he call the soil nothing, soil that consists of plant food that is as indestructible and as lasting as the earth? Is the atmosphere nothing which has an exhaustless store of carbon in a form that furnishes the larger portion of the food required by plants, as well as a large part of the nitrogen? These are the actual basis of plant growth, needing only development from their inert condition to a state in which they are able to supply plants with food. And a growing crop such as clover ending its roots down deep in the virgin soil, as yet never having contributed an atom to plant growth, perhaps, *gathers from the reserved supply of the inert fertile matter* of the soil, which is as inexhaustible as the soil itself, a quantity of organic matter upon which other crops less able to forage, for themselves may feed. A crop of rye grown on my poor soil the first year gave no more than 3 bushels per acre; the next year, with a dressing of swamp muck and lime, I got a good stand of clover, which was plowed in the second year after, and with a light application of complete manure, 150 lbs. per acre, I got 35 bushels per acre of Clawson wheat, the soil was so loose and sandy that on one windy day I could not stand in the road against the drifting sand. After the next clover crop was plowed in, three years afterwards, this drifting sand was a brown loam quite unlike the yellow sand it previously was. Did not these two clover crops add more to the land than the fertility contained in the half bushel of *clover seed used at the two sowings?*

We must not forget that in plowing under a green crop we add to the soil everything that came from the atmosphere, which Prof. S. W. Johnson says is 95 per cent, of the vegegation, and the other five per cent, is really new matter, for it is fertility which has been manufactured from an infertile soil, by the chemistry of the growing plant. This should not be ignored or forgotten by all farmers who have sandy land to cultivate or improve. And lime, often too much abused and maligned does the same thing in the soil. Its solvent power acts upon the mineral matter, freeing potash and other inorganic plant food from previously insoluble combinations; it decomposes organic matter containing nitrogen and sets the nitric ferment in action. Dr. Lawes said once he felt sure my poor sandy land had at least 2,000 lbs. per acre of inert *nitrogen in it, and what a field for the use of lime or clover!* —that is, that they may exert their chemical functions in drawing fertility from the infertile land filled with unavailable plant food previously. Properly used lime, as well as green manures, may be made of the greatest value in the improvement and culture of light sandy soil.

Sandy soil, well managed, is the best of all kinds. It absorbs the rain and holds it firmly; its porosity keeps it dry in wet weather, and moist in dry weather: it enables the air to pass in and out of it freely at every change of temperature and condition of moisture; and also exerts that active oxidizing effect upon organic matter, as manure or composts, which is well known to be a property of all porous substances, and thus such soil makes at once available an application of manure by decomposing it very rapidly and converting it into plant food it is easily, tilled, may be worked weeks in advance of clay land, and in 24 hours after a rain when the working is the most effective.

Zero-weather in England.—On the 3rd March, in what is

called called Caterham Valley, in the county of Surrey, within 20 miles of London, the thermometer indicated 1° F. below zero! What is the consequence? The land in preparation for spring-grain was so effectually worked upon, that the clays present a pulverised surface hardly ever met with. The wheat-plant was not injured, neither were the tares nor the clover, as fortunately there was snow enough on the ground to protect them.

The season.—I was in hopes, a month ago, that we were going to have a regular early spring; but the fall of snow on the four last days of March settled the question in the negative. Such weather I never saw during the thirty-two years I have been in the country! The snow is all gone again—here at least—and rain and wind!—such wind!—are struggling for the mastery (April 10th). Still, if the weather were to clear and let the sun do its work, it would not be too late to sow horse-beans. Any time before the end of this month would do. Drilled two feet apart, about 2½ or 3 bushels to the acre, they would pay well on heavy land. They should be harrowed twice, horse-hoed and edge-hoed. In the last of these processes, the man, with a 7-inch hoe, keeps the row of beans between his feet and cuts the ground on each side of it with a *chopping*-stroke. I say a *chopping* stroke, because a *drawing*-stroke, as usually practised, covers up the roots of the weeds, and if a shower follows, they will infallibly shoot again. A man will do an acre a day easily. By the bye, talking of hoeing, a man of my country singled last year, on the Dawes' farm, half an acre of mangels a day, making the acre cost $2.50—wages are high here: so near Montreal.

Value of roots.—Mr. E. W. Stewart, in subjoined article, sets the value of a ton of mangels, as compared with clover-hay at $8 a ton, at $2.36; whereas, in England, where clover-hay is worth, generally £6 a ton (=say, $30), mangels hardly ever sell for more than $5 a gross ton, that is to say, whereas, here, clover is worth only 3½ times as much as mangels, in England it is worth six times as much.

Mangels and Sugar Beets.—What is a ton of mangel wurzel beets worth to feed to milch cows, compared with a ton of hay at $8 per ton, or a ton of bran at $14 per ton? What is a ton of sugar beets worth to feed milch cows compared with a ton of mangel wurzel beets? J. E. W. *Mt. Morris. N. Y.* [It is not easy to give a satisfactory answer to J. E. W.'s questions—because the various roots fed to stock are given an excessive value for special reasons, such as the favorable effect of succulent food in the winter, promoting health, and also assisting in the digestion of other food. The real food values of fodder beets, sugar beets, carrots and turnips are over estimated, because the water they contain in 100 lbs. is not properly considered. Mangels of fodder beets have about 12 lbs. of dry food in 100 or 240 lbs. in a ton. Good clover hay has about 55 lbs. of digestible food in 100 lbs., consequently there is as much digestible food in one ton of clover hay as in 4½ tons of fodder beets. But the effect of fodder beets as a digester of other food and as a promoter of health, may fairly be considered as adding 25 per cent. to their value and this would make about 3½ tons of mangels as valuable when used with other food, as one ton of good clover hay; and if that were worth only $8 per ton. this would make fodder beets worth only $2.30 per ton. 2. Sugar beets contain a larger proportion of carbohydrates in the form of sugar, and for certain purposes this root has an additional value of about 25 per cent. But W. will understand that this question of the comparative value of foods always depends upon the particular foods, considered being used in a well balenced ration.

E. W. S.—*Country Gent.*

Artificial manures.—The manufacturers of the Stockbridge manures, who are justly proud of the successful use of their fertilisers in the recent contest in potato-growing, speak as follows:

"The reason why the Stockbridge Manures were so successful in this contest and elsewhere is because they are really made of the very best materials, and there is no cheating the plant. Large quantities of unavailable plant food, costing but little, may deceive chemists into giving high analyses and high valuations, but they won't send up the crops. The public may be misled, but the plant never."

Though I do not think that chemists are likely to be deceived in their analyses, I do think that they are sometimes wrong in their valuations. I object strongly to any value being attached to other constituents of a fertiliser than nitrogen, phosphoric acid and potash.

Poisonous residue.—So the theory so thoroughly exploded by the French agricultural chemist Decandolle, some 50 years ago, still survives in spite of Lawes and Gilbert. Here is an instance:

"*Soil exhaustion and analysis.*—EDS. COUNTRY GENTLEMAN—Under the above heading appears, p. 165, an article by Mr. T. B. BROOKS, in reference to a communication from me in regard to clover sickness, in which I am called upon further to explain certain statements. In this communication I had occasion to say, among other things:

2. Because each crop growing on a piece of land leaves a residue that is more or less poisonous to the same crop, and, unless the ground either contains such an abundance of food required by this special plant as to overcome the baneful influence of this poison, or it is otherwise counteracted in the soil, failure is inevitable."

Consider for one moment: at Rothamsted, wheat has been grown without manure, on the same plot, for upwards of 45 years, and, though the soil is only of moderate quality, the average yield to the acre has been throughout more than the average yield of the great wheat-fields of the United-States! It occurs to me that the reason why successive crops of the same plant on the same plot do not thrive so as to be profitable is simply because there is not a sufficient supply of plant-food in the soil in a proper state to afford them nourishment.

Chemists' analyses.—There is another difficulty in connexion with the analysis of cattle foods: what are malt-coombs worth? We feed cows on them largely in England, and, according to Wolff, they ought to be a very valuable addition to any ration, their digestive nutrients being:

Albuminoids	Carbhydrates	Fat
20.8	43.7	0.9

In England, they fetch $22 00 a ton, and are sometimes given to sheep on turnips, especially to the ewe-flock; Stewart values them at $26.60 a ton, and recommends their use highly. And now comes a large cow-keeper who says: Their total withdrawal from the rations of our herd of cows in full milk, without putting anything in their place, made no difference in the yield of milk!

The question seems to have been referred to Sir Richard Cameron, who, I presume, for I never heard of him before, to be an agricultural chemist, and his reply was, that the disappointing results obtained were probably due to "the nitrogenous materials of malt-coombs being in a low state of elaboration." Highly satisfactory, of course, but I doubt very much if all the millions of quarters of malt-coombs that have been and still are consumed in England have not had, as a rule, a good effect on the animals that ate them; otherwise, the farmers of that country would long ago have given up their

use. May not the real cause of their failure in this instance be that, whether in bean, or peal-meal, or in clover, the food of the cows in question contained so much nitrogen already that the albuminoids in the malt-coombs were superfluous. Animals cannot work up more than a certain quantity of these matters, and all the rest the food contains must go into the manure-heap. Of course, the word here spelled *coombs* should be *culms*, but I have retained the vulgar English form.

Experiments on fertilisers.—The following hints on the proper way of judging the additional produce caused by the use of fertilisers I recommend to the perusal of all who intend to try experiments on those manures. As I have had occasion to observe, *usque ad nauseam* I fear, most of the trials that have been made on this continent have failed because the land under experiment has not been exhausted by previous cropping. In this province, however, there can be no difficulty in finding thoroughly exhausted pieces of land, and the sooner some of these are subjected to a practical essay of their potential yield, the better will it be for the country at large. For, at present, the general run of farmers are absolutely incredulous as to the enormous power of a suitable fertiliser: I mean suitable to the land as well as to the crop.

It is evident that the measure of the effect of any dressing must be taken from the unmanured plots, and it is therefore highly important to study these standards whereby the efficacy of a manure is to be measured. First, we wish to put this matter very plainly by making the broad assertion that the so-called unmanured plots are really misnamed. We know of no unmanured plots except at Rothamsted, where fifty wheat crops have been removed in succession from the same area. These are truly unmanured plots, and may be viewed as standards whereby to measure the effects of fertilisers. We cannot accept the phrase "unmanured plot" as correctly describing a plot which has been regularly manured up to the experiment in which it figures as an unmanured plot.

The error into which readers are likely to fall is this. The unmanured plot is regarded as a zero plot, as though it stood at 0, and the increase from the use of fertilisers is taken as from nothing. The way in which the figures are handled is liable to give this wrong impression, as is seen in the columns devoted to increase and decrease. Increase in the unmanured plot is expressed as . . . (nil), and increase from the use of fertilisers added to neighbouring plots are regarded as dating from zero. There is no harm in this, provided the reader keeps in mind that the unmanured plot does not stand at zero but *in many cases really represents soil in a highly* fertile condition, forced up by previous management almost as high as it is capable of rising. It is a well known axiom with regard to land that each increment of crops is obtained with greater difficulty than the preceding one. For example, an exhausted soil may yield 15 bushels of barley, and on such a soil a dressing of nitrate of soda or of phosphates, or even of potash, may indicate a great effect. Much depends upon what is wanting in the soil, and as nitrogen is very frequently the one thing needful, up goes the yield, after a dressing of nitrate of soda, 15 to 25 bushels per acre. It is the same if potash is absent to such a degree that the crop cannot assimilate potash in sufficient quantities. Hence the effect of potash in the experiments tried by Mr. Cooke, of Flitcham, near Lynn. No experiments carried out in the west of England can disprove this. All we learn is that the condition of the soil varies as between Lynn in the east and Broad Clyst, near Exeter, in the west. If the soil is so well stocked with plant food that the "unmanured" plots yield 30 bushels, we will probably have to rest content with an increase of 5 to 7½ bushels. If the unmanured plot yield 42 or 45 bushels, as in one of Sir Thomas D. Acland's barley experiments near Exeter, an increase can only be obtained by a vigorous philippic in the form of nitrate, and the effects of superphosphate, potash salts, and common salt on such land may easily amount to nothing.

Another factor with regard to the effects of manurial dressings is the natural fertility, which in some cases is high and in others low. It may be as easy and natural for one soil to produce 60 bushels of barley as for another to produce 30 —*i. e.*, good farming may in one case be represented by 60 bushels and in the other case by 30 bushels, and when these limits are reached it may be as difficult to force up the yield of the good land to 65 as it would be difficult to extract 40 bushels out of the inferior soil.

A few hints on garden-crops.—I do not suppose these few hints on growing vegetables will be found very new by old and skilled gardeners; the only virtue I claim for them is that I have mentioned nothing that I have not tried, and successfully too, myself.

BROAD-BEANS.

Windsor-bean and Longpods, are the best and earliest. Best suited to heavy soils, but answer well in a rich loam. Sow in rows, 2 feet apart, 2 inches deep, 3 inches apart *in* the row. Hoe thoroughly, and pinch off the tops as soon as there is a fair show of blossom.

KIDNEY-BEANS.

Sow as early as you dare: if the first lot is cut off by the frost, or checked by a cold wind, not much loss is incurred. never let a crop of haricot beans that has once been checked stand to recover: dig it up and sow again. Sow moderately thick, as, in this climate, the hot sun of July invariably make thin-sown beans hard; whereas, thick-sown beans shade each other. Canadian Wonder and Chiswick, are about the best kinds, to be followed by dwarf butter-beans. For those who care for "Pork and beans" I recommend *Bonnemain's*. Last year, I abused them as grown for eating green, but my people have tried them Boston fashion, and they all agree in saying that they are far superior to any *pea-bean* they ever ate. They are large, yield well, and ripen early. Always sow in rows 2 feet apart, and keep on sowing every fortnight until the 1st July. Two inches will be deep enough.

Of the Runner-beans I spoke last month.

BEET-ROOT.

Beet-root thinned out too far apart is invariably devoid of sugar. Six inches in the row is quite enough, and 18 inches between the rows, half an inch deep. Soak the seed in lukewarm water 24 hours, and let it germinate in a warm place so that the white tip of the germ is just visible before sowing. The land should be rich for this plant, as a quick-grown beet-root is richer in flavour and more tender in substance than a slow-grown one. Wrench the leaves off: a knife bleeds the the root. Only grow the turnip rooted—Egyptian-sort—where the ground is too shallow, stony, or too poor to grow the long-red. Earth up, if you like: the sugar-beet is always earthed up, so I suppose the operation produces more sugar, and sweetness in the chief desideratum in table-beets as well as in the other kind.

The Silver-beet is grown for the sake of the *mid-rib*, which is eaten like asparagus. Pull the leaves from the plant: do not cut them. A few drops of lemon-juice, or of vinegar, will prevent the ribs from turning black while cooking.

Try this: make a stiffish batter; cut a cooked beet-root into slices ¼ inch thick; make fritters of them. *Vous m'en direz des nouvelles.*

CABBAGE.

Every one knows how to grow cabbage. Try Brussel-sprouts next year; it is to late now, as the plants must be hot-bed grown. A few heads of kale will be useful in the early winter. Sow Savoys and St. Denis cabbage at once in the open ground. If the fly bothers them, water with a mixture of soft soap, coal-oil, and water. Don't earth up anything, but keep the land well stirred with the hoe.

CARROTS.

Sow only the stump-rooted, unless you go to the expense of trenching your garden; in that case the Long Surrey will do. Unless heavily manured, land won't grow good Early Horns. Nantes are good. Soak, &c., seed, as recommended for beet-root. Sow, very shallow, in drills from a foot to 18 inches apart, according to sort, and thin out main-crop from 3 to 6 inches.

All carrot-land should, if possible, be manured the year previous to the sowing of this crop, as it is impatient of raw dung and has a tendency to become forked in it, in which case the quality of the root is spoiled.

CAULIFLOWERS.

The finest cauliflowers in the world are to be seen every year at the Exhibition of the Montreal Horticultural Society. This delicious vegetable will grow in any light soil if plenty of manure and abundant water be applied. The plants must be grown in a hot bed, transplanted once therein, and then transferred to a cold-frame until the ground is fit for them, that is, when a thermometer sunk in it shows at least 60° F. The best kinds are Early Erfurt and the Lenormand's Mammoth. To cook a cauliflower properly, the head should not be under water. When done, sprinkle grated Parmesan cheese over it, and brown it with a redhot shovel.

CELERY.

Many amateurs complain of celery-seed as being bad: because they bury it too deeply. It should have merely the slightest sprinkling of fine earth, and be well pressed down. Prick the plants out three inches apart each way as soon as they are fit to handle; cutting them down once or even twice beforehand. When about six inches high, trim the tops, shorten in the roots, and set them in trenches which should be thus arranged: a good size is 18 inches, by ten deep; too much well-rotted dung was never yet given to celery; put the best of the earth on one side, and covering the dung with it, dig it in. I usually break up the bottom of the trench with a strong fork before the last named operation. Now dibble in the plants at 6 or 8 inches between them, and they will require no sheltering if the trimming of the tops and roots has been attended too. Water copiously.

A new plan I have just met with, though never practised, is that of planting celery in beds, and as it would suit well for that part of the main crop intended for winter use I will describe it. The beds are made 4½ feet wide and ten inches deep; set the plants, after having heavily manured the bed, 12 inches × 6 apart, and water as before.

In earthing up the first time—don't begin too soon, as there is no doubt the growth of the plant is stopped by it—use a trowel, and do it in quite a loose way, to allow the heart to expand. Ten days afterwards bring some of the earth between the trenches in small heaps up to the plants; then gather a plant together with both hands, and, liberating one hand, with it bring the earth to the plant half round its base, and, changing hands, pack up the earth on the other side. Don't press the soil too tightly, and don't put any mould inside the plant. The earthing up should not be carried higher than the tops of the outside leaves. Ten days afterwards, carry the mould a stage higher, and one more operation should conclude the job. Four feet from centre to centre is a good distance apart for the trenches. The blanching of the bed-celery will of course be done in the cellar or root-house.

The best kinds of celery for this district are the Dwarf-white and the Chicago Golden Heart. The White Plume is useful for early autumn but it is very delicate.

Cucumber.

Every body grows cucumbers, more or less, but unless they are quickly grown and gathered before they attain their full size, they are not worth eating. Sow in a moderate hot bed about 15th March, and transplant into small boxes, about 3 feet × 2½ as soon as the ground is warm enough. Any light soil will do if mixed with a little rotten dung. When the young plant has made three rough leaves, nip out the point to promote a further growth of shoots from the base, and when these have made four or five leaves, nip out the points to promote a further growth of side-shoots. When the fruiting shoots appear, each should be pinched at two leaves above the fruit. Three plants to a box will be plenty, and the supply of water should be unlimited, providing the drainage be all right.

In England, in the best houses, cucumbers are never peeled; but with our hot sun and late sowings, peeling is essential; at all events, the peel should be taken off as thin as possible: the flavour of all fruit lies just under the skin.

EGG-PLANT.

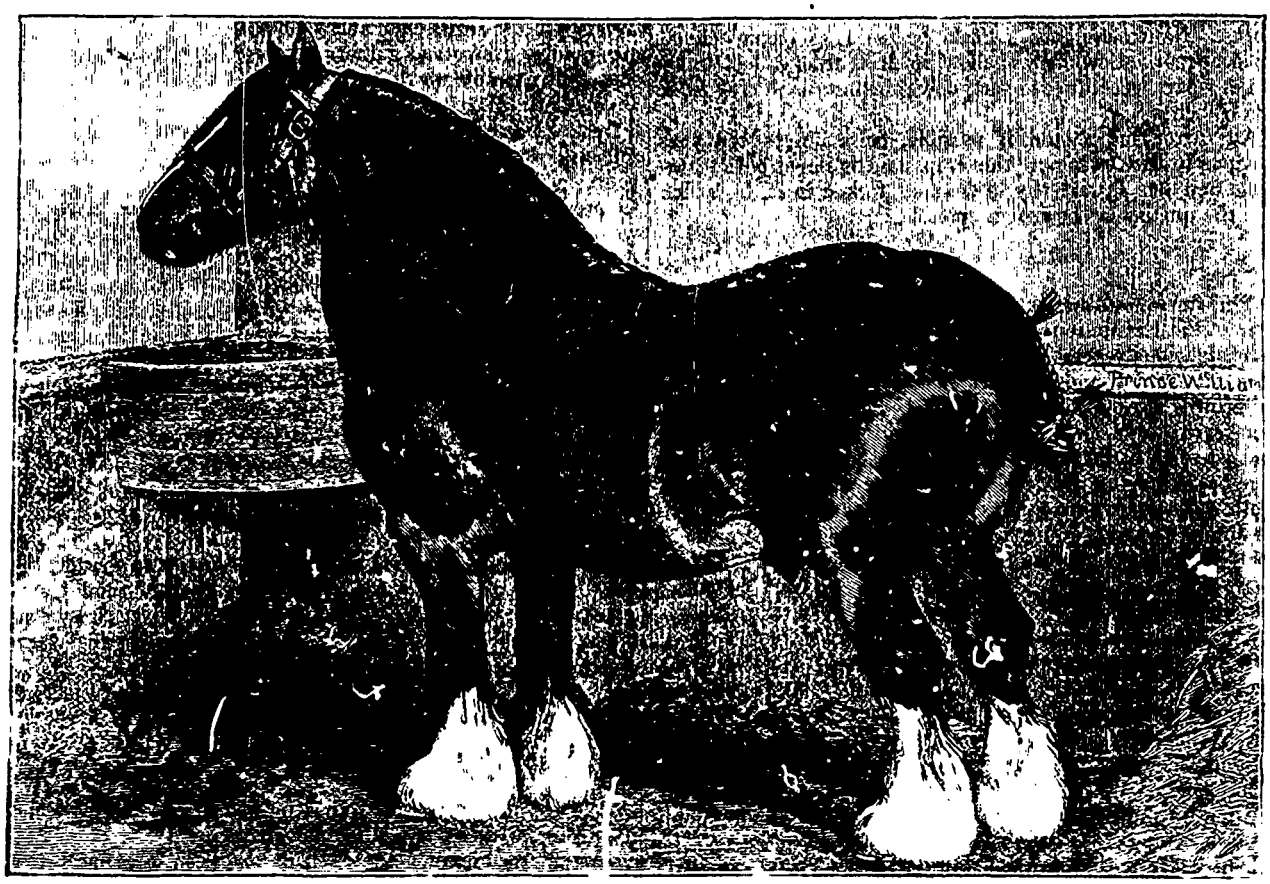
Cut in slices and fried alone, or as a fritter in batter, the aubergine is delicious. Grow them in a hot bed, and transplant once or twice to make them stocky. They are very sensitive, so they should not be put out of doors till the warm weather definitively sets in.

ARTHUR R. JENNER FUST.

(To be continued.)

Ensilage Convention at Cleveland.

The second annual session of the Central Ensilage Association convened at Cleveland, O., March 13. The meeting was called to order by President Jos. Brock, and minutes read by secretary *pro tem* Bert Rice, after which a paper was read by J. F. Hickman farm superintendent of the Ohio Experiment Station—"Has the Silo Come to Stay?" He gave an account of an experiment which I referred to it the COUNTRY GENTLEMAN last year, of feeding ensilage in comparison with beets. His conclusion was that with suitable land as many tons of feed could be grown in beets as in ensilage corn, but that the area of land in the country at large suitable for corn was much greater than that for beets. His experiments satisfied him that it was not judicious to feed of either ensilage or beets more than 5 lbs. per 100 lbs. of live weight of cattle. To a 1,000-lb cow he would feed 40 lbs. ensilage, 10 lbs. clover hay, 2 lbs. corn meal, 4 lbs. of bran. *On beets: 50 lbs.* beets, 15 lbs. hay 2 lbs. corn meal, 4 lbs. bran.



SHIRE STALLION PRINCE WILLIAM 3,956.

The property of Lord Wantage, K. C. B., Lockinge, Wantage, Berks, Winner of Elsenham Challenge Cup at the London Shire Horse Shows in 1885 and 1888, and of Queen's Gold Medal as Best Male of the Breed at Windsor Show of R. A. S. E., 1889.

THE POULTRY-YARD.

BROILER RAISING.

In the New-York Weekly Tribune of Jan. 15, Mr. P. H. JACOBS gives a detailed account of the raising of chickens by incubators of Hammonton, N. J. There are 18 establishments (several run by women) with total capacity of over 30,000 chicks every ten weeks, besides numerous smaller ones 200 to 400 each. The buildings are an incubator house 16 by 16, of rough boards lined inside with building paper; and a brooder attached 72 feet long for 1,400 chicks, 100 to an apartment. Various patent incubators are used with success, and also a home made one, operated with hot water. Each brooder section has a "mother" table one yard square on adjustable legs, with curtains about it cut in strips, and is heated by hot-water pipes under the floor in a pipe box, which supplies pure warm air.

While 98 per cent. of good eggs can be hatched the average is nearer 60 per cent., owing chiefly to the difficulty of procuring good eggs in winter, so that the cost of a chick fresh from the shell may vary from 6 cents to $1. The average loss in broods is about 15 per cent. The chicks are 'mothered" *for 24 hours, then fed rolled oats, oatmeal, or a cake made* of corn, oats, bran and middlings seasoned with salt. Small grain is given as soon as they can eat it, and then the cake is scalded instead of baked, and the middlings omitted. Mashed potato or turnip is allowed, but no green food, except a cabbage to pick as they grow larger. Little meat is used. Stale bread, broken crackers and refuse pop-corn are used to vary the diet. At a month old they are fed four times a day,

scalded mixture night and morning, grain other times. Free access to water, but only by bill. Food costs 5 cents a pound to produce one pound of broiler up to three or four pounds.

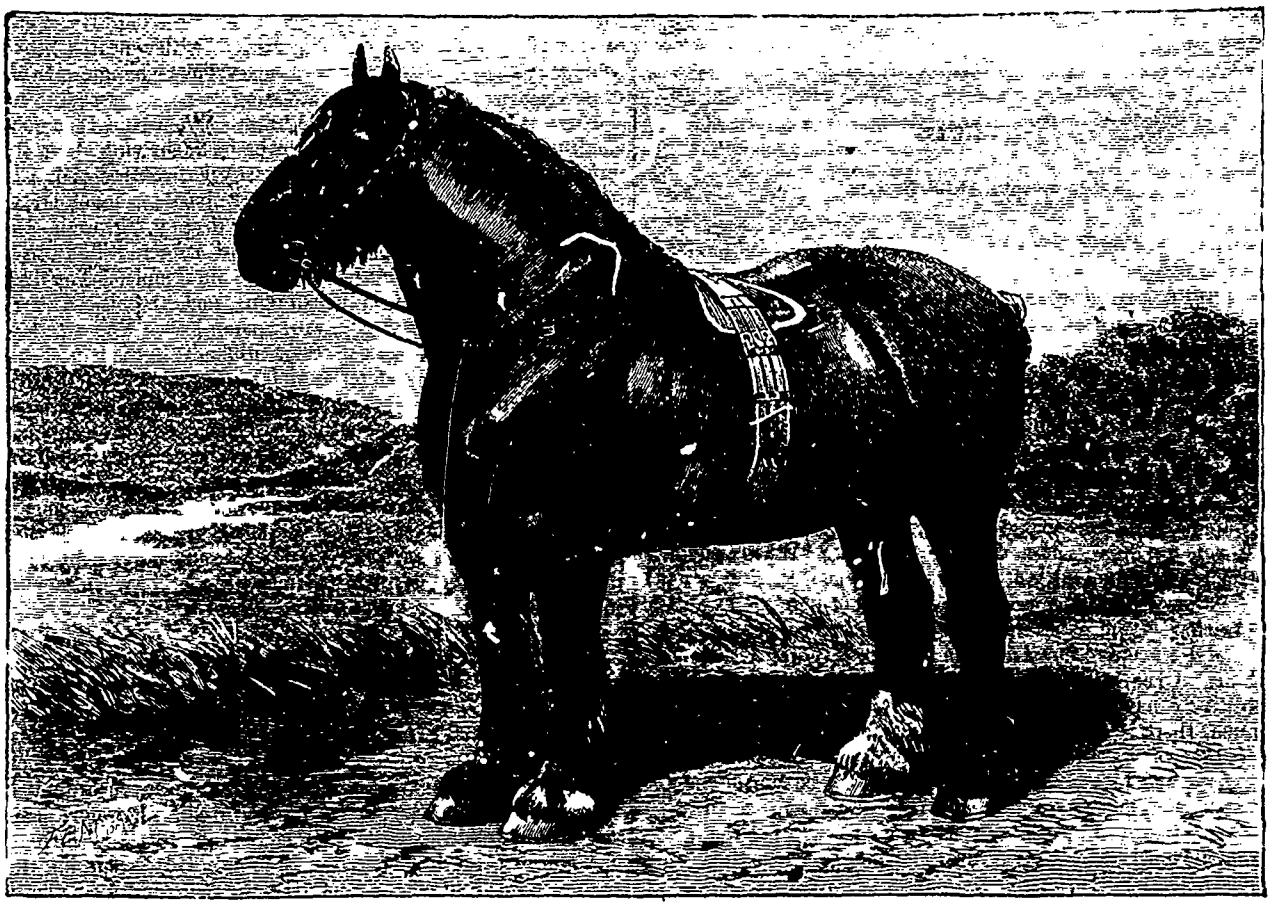
Chicks are sold when they weigh about 1½ lbs. Average weight is—4 weeks, 10 oz.; 6 weeks, 12 oz.; 7 weeks, 22 oz.; 8 weeks, 1½. They are sold dressed, the work being done by "dressers" at 5c, per chick, being bled, picked but not scalded, thrown in ice-water, then picked in barrels or boxes, without wrapping. Prices vary from 20 to 40c per lb., selling season being December to June, best in April and May.

In regard to breeds, the Leghorn proves very desirable, both pure and as a cross. The chicks are more neaty on the breast, and eggs from hens mated with a Leghorn male are more fertile. When the Brahma chicks weigh 1 lb 8 oz,, the Leghorn chick will weigh 1 lb. 7 oz. Crosses of Game are good, but chicks are tender, Houdan and Langshan cross is one of the best. The main points are short legs, compact body, plumb breast, fat on each side of spine. Color of legs is not noticed

Cost of outfit for 1,500 chicks is about $1.000. The business requires close attention, and cannot be intrusted to hired help. It is not an easy pursuit for women, yet several have been very successful. Hammonton has a mild climate and sandy soil, and cholera and gapes are unknown. It is within easy reach of five or six markets. More broilers are said to be raised than in any other place in this country or Europe.

FATTENING CHICKS.—Several recommend the practice of confining chickens in a coop and fattening them. For market purposes it is necessary. Some people like to have fowls very fat; these will have recourse to fattening but we consider a chicken allowed to run over a quiet lawn, well fed on good food till fit for table, perfection, and like turkeys similary treated, they are usually fat enough. To those who wish to confine their chickens and fatten, we say: Be sure to have them well fed from the very first, so that they will have plenty flesh on them before they are put up. Put them in a nice clean coop, so constructed that each bird, or at most each pair of birds, will have a separate apartment. Attend to the ordinary rules of health, keep them scrupulously clean, give a little grit and almost no grain, as their digestive organs will not be in a proper state to digest it It is a good plan to feed on oatmeal, Indian meal and rice meal. Some like buckwheat. We like to mix whatever meal is given with warm milk, and give the food warm. They cannot be confined more than three weeks. For the first week they fail, then they improve for the next two weeks, after which they again decline, and would continue to fail till death would ensue from enlarged liver or bowel derangement. Great care must be taken that their coops are very clean, for if neglected, their flesh will have a most offensive taste when it comes to table.—

Irish Farmer's Gazette



CLYDESDALE STALLION TOP-KNOT 6,360.

The property of Mr. A. B. Matthews, Newton Stewart, N. B. Winner of First Prize at Glasgow Stallion Show, 1889.

Pedigreed Cheshire Pigs for sale.

We had the advantage of visiting several times lately Colonel Rhodes' stables this winter and took a great interest in the stock kept; specially the pigs, which are most thrifty and in every way good. The sows being fed on prepared food, with ensilage, have an abundance of milk and their young are thereby in the best of condition.

Colonel Rhodes offers pedigreed animals, of the best type, at the very moderate price of five dollars, at eight weeks old, giving to purchasers the choice at the time of their visit and purchase. There is now quite a number to select from, and as the demande is considerable over readers should not delay in making their application for young pigs, where required. Address: Colonel Rhodes, Bergerville, Quebec.

CROPS.

SEASONABLE NOTES.

TOP-DRESSING CORN.

THERE is an unusual amount of interest in the subject of top-dressing corn at present. Correspondents are asking the same question many times over in slightly different form, the point of which is, How are we to top-dress our wheat, barley and oats? We will answer the important question as briefly as possible. First, then, let us pause before making up our minds to throw money about. Our connection lies among farmers great and small, thoroughbred and new-fangled, practical and scientific, town-bred and country-bred, reading and non-reading. We notice that a very large number of good farmers do not top-dress unless the corn is weak. When wheat is strong and abundant on the ground—when there is a good "plant"—we say, Let well alone, and do not increase expenses. When barley and oats come up thickly and prosperously, again, we advise keeping our friend in our pockets and letting well alone. Once open the flood-gates of credulity, and we are positively never done, and if farmers who never read lose much, there is, it must be confessed, some advantage in the fact that they are the less likely to be run away with by suggestions and ideas. We hope this will not be considered too reactionary, but, in sober truth, it requires a great deal of judgment to read aright, and we may call to mind the question once asked by a great man. "Understandest thou what thou readest?"

The fact is there are three alternatives involved in top-dressing corn which should not be forgotten.

They may do good.
They may do harm.
They may produce no effect.

Now if corn looks well, why should we assume fresh risks? Taking these three alternative separately we feel some confidence in saying that top-dressings will do good when corn follows corn, as when barley follows wheat. (1) The land under these circumstances requires help, and probably the best dressing—that is, the dressing most certain to act—is 1½ to 2 cwt. of nitrate of soda. If superphosphate is added it should be applied separately, and as soon as possible. The best method is to sow it broadcast over the land before sowing, and to harrow it in. *If salt is added it is best mixed with the* nitrate of soda at the rate of 3 cwt. per acre. Let us, however, clearly understand that the effect of superphosphate is less certain on corn than that of nitrate of soda, but as it is cheap the risk may be run. The farmer who has the keenest appreciation of the "main chance" will probably confine himself to the nitrate, and we view the salt as useful if only as a distributant, but in the chances inherent to soil and season, we think it may do good. We are also convinced that in the long run superphosphate applied, as recommended, will also prove a useful addition.

When corn, looks yellow and is thin upon the ground, a top dressing of nitrate of soda or sulphate of ammonia will soon bring back the colour and produce a vigorous growth. When corn is suffering from wire-worm a top dressing of salt and nitrate of soda, followed up or preceded with repeated heavy rollings will quickly produce a marvellous change. In all these cases we recommend top-dressing.

Next as to when they may do harm. When land is in good condition and the crop is seen to be in a thriving state, the line of maximum production may easily be over-stepped. In such cases a top-dressing is liable to produce too much straw, *and should a wet summer, or even a "droppy," growing season occur,* the crop becomes twisted and lodges. The consequence is a disappointing yield and a thin sample. Top-dressing in such cases also induces blight, and thus the £20 or £30 spent on top-dressing is worse than lost. Top-dressings produce no effect in certain cases, difficult to explain or understand, but we may state, as a fact, that they produce less effect to well-farmed land which has been dunged than upon exhausted soils or those naturally poor. Top-dressings also sometimes produce little or no effect in dry seasons and in dry climates. In the more southern parts of Europe these dressings are less used than in England, and one large farmer in Austro-Hungary declares that artificial manure only produce an effect once in a series of years while oil-cake fed by cattle may always be relied upon to increase a crop, when applied in the form of dung. *John Wrightson.*

(1) In the richer lands of England good malting barley cannot be grown, as usual, after roots fed off by sheep. A. R. J. F.

FERTILIZERS (By Prof Kinch.)

During an ordinary four-course rotation there would be taken away about 325 lb. nitrogen, 95 lb. phosphoric acid, and 250 lb. potash, by far the larger quantities of nitrogen and potash being in the seeds and roots. But, assuming that the grain was sold off the land, and the roots and seeds consumed thereon, and the straw also returned, the actual loss would be about 25 lb. of nitrogen, 33 lb. of phosphoric acid, and 20 lb. potash. If the produce were principally fed to milch cows, and the milk sold, the losses would be much higher.

The value of those manures which may be termed direct fertilizers is dependent mainly on their contents in nitrogen, phosphoric acid, and potash. It is not enough, however, that a manure contain these or any of these constituent, they must be in a form in which they are or can become readily available to the plant. One pound of nitrogen in nitrate of soda costs between 7d and 8d. a pound of soluble phosphoric acid in mineral superphosphate costs rather under 2½d; and a pound of potash in kainit costs rather less than 2d.

Here we give a table showing the amounts of these valuable constituents usually present in 1 ton of farm-yard manure and in 1 cwt. of a few of the more common concentrated *manures which are used to furnish these plant foods to the* farmer's crops:—

		Contents, in lbs., about		
		Nitrogen.	Phosphoric Acid.	Potash
Farm-yard manure	1 ton.	12	8	12
Peruvian guano	1 cwt.	10	14	3
Nitrate of soda	"	18	—	—
Sulphate of ammonia	"	22	—	—
Ground Coprolites	"	—	28	—
Superphosphate, common	"	—	15	—
Do. concentrated	"	—	20	—
Bones	"	4	25	—
Kainit	"	—	—	14
Sulphate of potash, 80... per cent	"	—	—	48

In these days the farmer must try and produce more of such crops as pay best, and try to raise more produce to sell off the farm, and for this purpose he requires to know how best to adapt his manures to his crops. A correct knowledge of the composition of the soils will, in the first place, be a good guide, and then a knowledge of the composition of the crops raised. But this is by no means all that is necessary; it is only what may be called the statics of the subject, and the dynamics must also be considered; that is, the capacity of the particular crops to assimilate the various food materials from the soil. For example, a crop of beans or of clover-hay contains twice as much nitrogen as a crop of wheat or of meadow hay, but it would be folly to apply twice as much nitrogenous manure to the two former crops; indeed, they are but little affected by a direct supply of nitrogen, whilst nitrogen is most valuable to the cereals and to grass. Again, a crop of swedes or turnips contains not very much more phosphate acid than a cereal crop, but the roots are much more benefited by a dressing of superphosphate than is a corn crop.

The following are recommendations as to manuring a few crops under usual conditions, and on ordinary soils;—For

WHEAT

and autumn-sown cereals generally, on land in moderate agricultural condition, a top-dressing with a soluble nitrogenous manure in the spring is usually all that is necessary. The dressing should be from 1 to 2 cwt. of nitrate. On soils which are more exhausted, some 2 or 3 cwt. of superphosphate, applied just before sowing will be found very beneficial. For

BARLEY

and spring-sown cereals generally, nothing answers so well as 2 to 3 cwt. of superphosphate at sowing, and 1½ to 2 cwt. of nitrate of soda as a top-dressing, applied twice, rather than all at once. The phosphate to the spring-sown corn is more essential, and gives better returns than with the autumn-sown grain. For

TURNIPS OR SWEDES

on many soils, as is well known, phosphates are almost essential to a decent crop. Usually 3 to 5 cwt. of superphosphate is sufficient. Three hundredweight of ordinary mineral superphosphate contains as much phosphoric acid as about 10 tons of swedes and their tops, and may be looked upon to produce, on an average of seasons, an increase in the crop of about 5 tons. Usually a small application of soluble nitrogenous manure, in addition to phosphates, to these crops, is beneficial. Where farmyard manure cannot be spared for these crops, 1 to 1½ cwt. of nitrate is a useful dressing.

MANGELS

Though they are not so strikingly benefited by the use of phosphate as are swedes, yet phosphates—say, 3 cwt. of superphosphate—should rarely be omitted from their treatment. Potash salts are more likely to be beneficial to them than to other root-crops, and a top dressing of nitrate of soda and salt is invaluable, from 1 to 2 cwt. of nitrate, with 2 to 3 cwt. of salt. [Owing to the percentage of potash contained in mangels kainit is essential for their successful cultivation—S. D. & Co.]

POTATOES

Some farmyard manure is highly desirable, as rendering a crop much more certain and more independent of season; but, in addition, a rather heavy dressing of artificials will often pay on this crop. Potash is a desirable addition in most soils. For this crop 5 to 6 cwt. of superphosphate, 1 cwt. of kainit, and 2 to 2½ cwt. of nitrate.

MIXED SEEDS

Mixed seeds in a rotation are on many soils, benefited by an application of potash and a little phosphate—say, 3 cwt. of kainit and 2 cwt. of superphosphate. Grass is improved in quality by potash and phosphate, but if quality also is desired, some nitrogenous manure must also be used; 1 to 2 cwt. of nitrate will usually largely increase the amount of herbage.

APPLICATION

Regarding the time in application of artificial manures, potash should usually be sown broadcast before sowing the seed, as there is little chance of its being washed out of the soil, and it is advisable to have it fairly well diffused through the soil.

Superphosphate should be broadcasted before sowing for all crops except the root crops, to which it is preferable to apply it drilled with the seed, though even here we believe that it might often be advantageous to apply part of it broadcast and only part of it in the drills.

Nitrate of soda and sulphate of ammonia should always be used as top-dressings after the growth of the plant has well started, and in case of autumn-sown corn crops they should be used in the spring—March to May according to season. Sulphate of ammonia should be used in all cases about a fortnight earlier than nitrate of soda. A saving will be effected by using these manures in two dressings, the first about three weeks before the second.—

FARMER AND STOCK-BREEDER.

DUTCH CATTLE.

In your issue of September 30th, we observe an article by "E. T.," under the heading "Dutch Cattle," which is so misleading, so totally devoid of facts, as the well-established record of the breed in question will show, that we beg space in your valuable columns to correct some of the erroneous impressions which this article would convey.

According to his own statement, this gentleman has no knowledge of the breed at the present time. His acquaintance therewith seems to be very limited, and confined to some importations which were made into his district forty or forty-five years ago. He does not even claim that at this remote period the importations alluded to were good specimens of the breed. They may have been, even at that time, from the

most worthless class, and yet he would condemn the breed on this meagre evidence of nearly a half century ago.

He seems to have forgotten that the world moves—even the dairy world—and that breeds of dairy cows have changed, developed, and improved almost beyond recognition since 1844.

Especially have the "Dutch," or, as they are called in America, "Holstein-Friesians," improved since that date.

At that time, this great breed of dairy cows was not generally recognized as being superior for butter, but within the last twenty years no other breed has improved and developed so rapidly in this respect. Especially is this true where the breed has been subjected to the influence of the American system of breeding for a specific purpose, and influenced by congenial environments, feed, soil, &c.

Under these influences this breed has developed in butter qualities more rapidly than any other breed was ever known to do in the same length of time. In short, for the production of butter, at the present time it has no superior.

There are to-day in America several families, and several large herds, which have no equals in any breed known.

Within the last three years a system of public tests for both butter and milk has been adopted by nearly all the leading agricultural fair associations of this country.

These tests are open to all breeds, and are usually competed for by all that make especial claims for butter. They are made under the supervision of a committee—appointed by the various associations for the purpose—on the fair grounds during the exhibition, and open to public inspection and criticism.

The Holstein-Friesians have won fully four-fifths of all these tests, over all other breeds.

Among these trials during the autumn of 1889, where large prizes were offered, and competition was spirited, we would mention the following State fairs, viz.. Wisconsin, Nebraska, Michigan, Kansas, Iowa, Ohio, and South Dakota, as well as the International Fair at Detroit, and the annual Fat Stock and Dairy Show at Chicago, at all of which cows of this breed were awarded the first prizes.

At the great Dairy Show in New York City, in 1887, where was exhibited the most remarkable assemblage of dairy-cows of all breeds ever collected in one show, a cow of this breed, in the butter test for three days, surpassed all others, excepting her own three-year-old daughter, by 26 per cent., and the daughter surpassed all but her dam, by 6 per cent.

At the International Fair at Buffalo in 1889, 1,000 dols. were offered in prizes for the largest yields of butter made for three days upon the grounds, all of which were won by Holstein-Friesian cows, the Jerseys having been withdrawn after the opening of the fair.

The State Dairy Commission of New Jersey made last year a careful analysis of the milk of a large herd of cows of this breed, owned by Dr. Morehouse, and although the cows were giving a very large amount of milk, averaging for the year, we doubt not, fully 10,000 lb. per cow for the whole herd, yet the result showed—Total solids, 13.10; fat, 3.90; albumen, caseine, sugar, &c., 9.20.

Five cows from the Lakeside herd were, this last summer, when on grass, and in full flow, tested by analysis by Professor Englehardt, and the result showed the following average for the five head.—Solids, 13.212, fat, 4.267; caseine, albumen, sugar, &c., 8.945.

Two of them were two-year-olds, one three-year-old, one four-year-old, and one five-year-old, and yet the entire lot will probably average for the year over 10,000 lbs. of milk per cow.

We could, did space permit, give a list of cows which would reach into the hundreds, with authenticated butter records of from 20 to 34 lbs. per week.

In one herd in this country eighty three cows have been tested, the butter records of which average over 20 lbs. per week.

We could give many more equally large records, but this article is already too lengthy.

All these records are well established. They speak for the breed without further comment from us.

We leave the verdict with the intelligent reader of your valuable Journal. SMITHS, POWELL, AND LAMB.

Syracuse, N. Y., November 27th.

(*English Agricultural Gazette.*)

The great fat stock shows at Birmingham and London, the latter known for more than a century as the "Smithfield," are the chief events of the season for the feeders of cattle and sheep, as the Royal and other shows earlier in the year are the great occasions for the breeders. The London Live Stock Journal and other papers have given much space to description of the prize-winners that took the Christmas honors, and for the discussion of the lessons taught by the year's experience.

As British farmers find mutton production the most profitable (indeed almost the only profitable) part of their business, it is reasonable to expect to find the sheep classes particularly strong at these shows. They were so last December. At Smithfield the champion prize for wethers went to the South-Downs, and this breed made a grand showing in all the mature pens. The lambs of the various breeds attracted much attention. The heaviest pens of three, generally about ten months old, were as follow: Hampshires, 617 lbs.; Cotswolds, 614 lbs, Oxfordshires, 593 lbs., and Dorsets 588 lbs. The Dorsets were eleven and one-half months old. In point of quality of flesh, the Downs were given the preference.

For ordinary farmers the cross-bred sheep have especial interest as indicating how our common flocks can be best improved by the use of pure males. This year is but a repetition of many preceding years in giving every prize to Hampshires crosses. The first and second prizes for fat wethers were given to pens of Hampshire and Oxford cross. The third prize and reserve honor went to a Hampshire and Cotswold cross. Cross-bred lambs showed great excellence. The first and second prizes went, as with the older sheep, to Hampshire-Oxfords, and the third prize and reserve to Hampshire-Cotswolds. It was the same at Birmingham. This result has been so constant for many years that it is now thought in England that no cross-bred sheep that is not at least half Hampshire stands any chance in a show, and the patrons of other breeds are asking for classes from which Hampshires shall be excluded.

(*American Agriculturist.*)

SEASONABLE NOTES.

MINOR MANURES.

Undoubtedly the demand for fertilisers centres around sources of phosphates and nitrates. There are, however, a number of substances which have been recommended to the attention of farmers which ought to be mentioned at the present time. These owe their value to the fact that they are taken up by the roots of plants, and are found in their ashes. Consequently they are removed from the land, and this is in itself a plea for their employment as manures. The principles which should guide us in employing such substances seem to be (1) whether such substances exist in the soil in sufficient quantities to supply the need of growing vegetation,

and (2) certain special wants in the crop itself, as, for example, the requirement for chlorine on the part of mangel wurzel, or the special needs of the potato crop for potash.

An analysis of the soil would be necessary before we can be sure as to the first point, and an analysis of the ash of a crop, before we can be certain as to any special need for a given constituent. As in these days of high pressure, few are able to convert themselves into chemists as well as farmers, we may be pardoned for making a broad statement that, as a rule, these minor substances need not be specially added to most soils. Take for example magnesia, iron, sulphur, silica, manganese, and soda. These substances all exist in the ashes of plants, and are all removed from the soil. Many of them have been recommended to the attention of farmers in the form of sulphate of magnesia, iron sulphate, and silicate of soda. The general results from the application of these substances have been of a negative character.

IRON SULPHATE.

We have no wish to throw a damper on Dr. Griffiths' published results as to the value of iron sulphate, and freely allow that this substance may possess the merits which he claims for it. The season is in its infancy, and those who have read of the potency of this substance will have ample opportunity of testing its merits. It has been held up as an injurious substance, and no doubt is so when it occurs in large quantities in a soil. Applications of half a cwt. per acre cannot, however, be looked upon as at all dangerous, and it is possible that it may, in certain cases, prove to be a valuable manure when applied as recommended by Dr. Griffiths.

SILICA.

No chemist of eminence attaches importance to silica either as a plant food or as a manurial application. However important it may be to a plant, it is, like the air we breathe for the sustenance of our vital functions, amply provided for the use of plants in the soil. The importance of silica is greatly over-rated in certain of the older text books which have been written for the use of agricultural students. So much is this the case that it has been pointed out to us that silica is apparently the principal element of fertility in the judgment of most pupils who yearly come up for examination under the Science and Art Department. "Cereals exhaust the land of its soluble silica." "Land is exhausted because it is rendered deficient in silica." "The great value of autumn cultivation, and exposure to the winter's frosts is that silica is rendered soluble." Such views are no doubt highly-erroneous. Silica has never been found to be of value as a manure, but if its exhaustion was a matter of common occurrence we should find sources of silica, such as silicate of soda, as popular as we find sources of phosphoric acid or nitrogen. Such is, however, not the case, and, on the contrary, when it has been applied the result has been almost invariably *nil*. Nay, more, the presence of silica in plants is now considered to be frequently merely accidental, so that the annual cramming of children with the notion that silica is the most important plant-food in the soil, and the most readily exhausted, can only be regarded as pernicious. It is a matter of regret that teaching based upon books should involve pupils in a foolish notion as to the paramount importance of keeping up the supply of silica in the soil. This is one of the causes why farmers distrust science. It is a case in which the teaching of schools is in direct opposition to the teaching of practice, but it must also be added that such teaching is not supported by any first-rate authority.

SODA

is one of the two most generally distributed alkalies, but, unlike potash, it is not of direct value as a fertiliser. It occurs in nitrate of soda, but the fertilising value of this most active manure is due entirely to the nitrogen it contains in the form of nitric acid.

Soda cake or soda silicate are not likely ever to be in demand, and even chloride of sodium, (common salt) appears to be valuable as a source of chlorine rather than of soda.

MAGNESIA.

Sulphate of magnesia has also been recommended for soils deficient in magnesia, but our experience has been dead against its application. We do not say that special circumstances may not occur in which magnesia salts might prove beneficial, but they would be restricted to cases in which a soil exhibits a curious barrenness which cannot be accounted for. The cause might possibly be found in the want of some special constituent, such, for example, as magnesia, and the chemist might then suggest a cheap source of magnesia as a possible means of conferring fertility.

SPECIAL (CROP) MANURES.

It would be curious, indeed, if manufacturers of special crop manure—as well as the manufacturers of special foods for stock—should entirely fail in their object. We not long ago drew attention to the excellent barley grown after the use of a "barley manure," and we have ourselves admired the wonderful tubers grown after application of a "potato manure." The compounding of fertilisers so as to produce a special material fitted for the growth of a particular crop is within the range of our knowledge, as when we combine phosphates, nitrates, and potash salts, for a particular purpose. It is a matter of regret that among all the experiments which are reported year by year, it is seldom that we see special crop manures compared with the great standard fertilisers. Rothamsted and Woburn are dumb on this point, the attention being chiefly restricted to comparison between superphosphate, nitrate of soda, sulphate of ammonia, and potash salts, used separately and combined. If manufacturers have succeeded in producing efficient barley, grass, or turnip manure, why do we not see more rigorous experiments for proving their merits? Until this is done, we shall probably find farmers preferring to buy their fertilisers in simple form and to mix them at home according to the best of their ability. That the compounding of various substances may be done with advantage is proved by the large crops grown by Sir John Lawes with nitrate and mixed minerals, and it is scarcely credible that firms who devote themselves especially to this subject, and often employ a scientific chemist to do their work, should not be able to formulate a better mixture than could a farmer at home. Prizes given for the best root crop, or the best barley crop grown with these manures, is not a sufficiently crucial test. What is wanted is a prize offered by the "Royal," or some first-rate society, for the best manure for a certain purpose, to be awarded after trial, and with due regard both to its composition and price. It is indeed strange that, with prizes for almost every kind of agricultural appliance, no prize has, to our knowledge, ever been offered for an economical manure which could then be purchased by non-scientific farmers with some confidence. *(Eng. Ag. Gazette).*

The application of superphosphate to grass land should be regulated by the condition and history of the field. The gradual loss of phosphates in the milk of dairy cows or the bones of young stock has often been allowed to go on unchecked for generations. The case of the Sutherlandshire sheep farms is a good illustration of this. These pastures have so deteriorated through the sale of lambs that the sheep farmers are unable to take advantage of the present good prices, and a wail of sorrow from the far north Cheshire pastures owing to conti-

nued dairying is another even better known case, and in both the use of phosphates is loudly called for. To grow grass requires apparently a richer soil than to grow corn crops, and hence we might expect grass land to feel the effects of depletion and robbing even sooner than arable land. As a general rule the grasses, like the cereals, to which they are closely allied, are not greatly influenced by phosphatic dressings. But this does not affect the argument that a soil deprived of its phosphorus must be re supplied. Whether arable or pasture, land must have its store of phosphorus maintained, and hence when land of either kind is distinctly deficient in phosphates, marvellous effects may be expected from application of phosphatic manures. We have lately heard of great results obtained from the use of basic cinder upon a Lincolnshire pasture, as well as in Sussex and Oxfordshire. Each case must be judged upon its own merits, and because a Lincolnshire farmer has found this substance useful, we should certainly not be justified in ordering a quantity to apply to our own particular poor grass land. In other cases no effect has been produced, evidently because no dearth of phosphates existed in the soil. After a long course of dairying, and especially after a continuous sale of milk and young stock, there is an *a priori* reason for applying phosphates in some form, but caution is even here necessary, and a trial upon a prescribed area would be judicious. When, for example, it is the custom to import foods for a dairy of cows in large quantities, and the cows drop their enriched dung upon the pastures, it is possible that, so far from losing, the ground positively improves under what would otherwise be an exhausting system.

Superphosphate, basic cinder, and other phosphatic manures should therefore be principally used in growing turnips, and as an application for worn-out grass land. It may also be employed in combination with nitrogenous manures as a top dressing for cereals.

Notes of the Farmers' Institutes.

AT ALBION—ANIMAL NUTRITION.

In the course of a full consideration of Animal Nutrition, Prof. Sanborn said:

Regarding the influence of palatableness and the use of excess food, the former is one of the most valuable qualities of food, inasmuch as it determines the quantity of food that will be eaten under ordinary conditions. There are a great many errors current regarding the value of green foods, of cooked foods, of roots, of ensilage, and in other respects, especially touching the value of timothy hay when cut after bloom, of straw, &c., that have been engendered through failure to recognize the bearing of palatableness. In all of my feeding trials for 13 years its influence has been more or less manifest—often profitably so.

Straw is eaten only to the extent of 17 to 18 lbs, daily for a 1,000-lb. steer. This maintains life and full weight. Now, it requires the same, or nearly the same amount of timothy hay to accomplish the same result. This shows the high nutritive value of straw to the extent to which it is eaten. The trouble is that the animal will stop eating it at the point of sustenance, while it will consume good timothy enough to make a pound of growth, or 25 pounds. To the extent to which we can get straw eaten, it has a high value, or three-fourths that of hay. I find that a pound each of the straw of oats and clover is worth as much as two pounds of timothy hay.

As about two-thirds of the food eaten is that of maintenance ration, it is evident that the more there is eaten above this amount the less the ratio of maintenance food to the total eaten Thus, if 18 lbs, of hay constitute maintenance ration, then if 24 lbs, are eaten, 25 per cent. of the total goes to growth; if 30 lbs, are eaten, 40 per cent. goes to growth. The speaker then went on to show that this factor in relation to early maturity of meat animals greatly cheapened production, and for milch cows was a most important factor. In this factor lay the merit of ensilage, although it had erroneously been ascribed to greenness, to easier digestibility, and to other causes.

In considering the subject, the professor called attention to the influence of open-air storage on palatableness. Surprise was expressed that food should be stacked out of doors by such brainy men as he was meeting in New-York. He had found that clover suffered over 20 per cent. and timothy some 10 per cent. decline in value by stacking. (1) Stover would lose much more, and would be better off in the silo, with its loss in burning. The palatable parts are leached out and oxydized and fermented away in the open air. Such food will not be eaten as well, or less excess food will be eaten, with the result that a larger fraction of food goes to mere sustenance.

(1) Because they are *made* too much before stacking. A. R. J. F.

THE DAIRY.

PREPARATION OF FOOD.

WE are pretty well all agreed that the mechanical and other preparation of food for milk-cows in winter-time is a great saving both of the food itself and of the digestive power of the animal, and which in the end means a saving of money. We are not all agreed, however, as to the particular form of this preparation. There are one or two fundamental points in connection with this, which, if we refresh our memories, may help to the elucidation of the subject. The gastric and other secretions, or organisms, which carry out the function of digestion require to be intimately mixed with the food in the stomach and intestines so as to attack each particle, and for this reason the food must be as finely divided as possible. In a state of nature the teeth perform this office of division, but under domestication and with artificial foods it has been found beneficial to perform the division outside as much as possible. Thus grains are ground into meal (or, better still into flour) cake broken into small pieces, fodder cut into chaff, turnips pulped, and so on. All these are mechanical aids to digestion about which we all agree, but the question arises, can we still further aid the preparative process by heat in the shape of cooking or steaming? There is a great deal of evidence, both practical and scientific, in favour of what is generally known as "cooked food" while we must allow that there are many who have found in practice that there is no gain in the extra expense and trouble involved in cooking. We cannot show that cooking increase the digestibility of food, in fact in the case of man there is evidence to show that raw beef is more easily digested and more nutritious than after cooking, and it is possible that the same may be the case with the food of animals. If we give meal to our cows, however, it must be mixed with water in some way, because it cannot be fed dry, or mixed only with dry chop, and the question only lies between whether we shall use hot or cold water for the purpose. To see the difference between the two, it is only necessary to remember what paste made with cold water is like, and how it is changed when raised to boiling point; or what linseed meal or linseed cake meal is like mixed in two different ways. There may be no difference in the digestibility, but there can be no question of the superior palatability and attractiveness of the heated sample. So much is that the case that the late Mr. Mechi was in the habit of mixing the dust of cotton cake from the cake-breaking machine with hot water, thus making a thin soup of it which the animal licked up, although they refused the dry dust by itself. Palatability is one of the great factors in feeding, and it is very greatly improved by subjecting the food to the action of hot water.

There is the further great matter of giving the food warm. Fodder and cakes, or meal, are not cold in the usual sense of the term that is, they are non-conductors of heat, and do

not feel cold to the touch, but they have the temperature of the surrounding air all the same. With water, however, the case is different, and unless something is done with it to raise the temperature, it will chill the internal parts of the animals, with untoward effects on the milk yield. Further, it is absolutely essential to give the animals water, a cow in health and milking requiring from 8 to 10 gals. daily. The best way of giving this is as an ingredient of the food, and it is very little more trouble to warm it. Of course, a temperature of about 100 deg. Fah. is the best, but in order to affect the meals, chop, &c., properly, the water should be raised to boiling point when mixed with them. Warmth, of course, is one of the items which go to make up comfort, and directly affects the yield of milk.

In a season like the present, with the birds singing in January, and the country quite green, there has certainly not been the same need for artificial heat; but when frost and snow come we hold that food prepared with hot water is an absolute necessity, if maximum results are to be obtained. In America, where the winters are more severe than here, some have advocated the warming of the ordinary drinking water in addition.

Some object to warm messes on the ground of expense, but we can certify from experience that the cost for coal will not run more than a shilling or two per head, per annum, while where gravitation, water, or force pump is in use, the labour is very little, and in any case water must be had, whether boiled or not. Steaming as not the same effect; in fact, this is very little better than—if as good as—mixing material in a heap on the floor and damping by throwing a few pailfuls of water over it. We have again and again noticed the decline in the milk yield when the cattlemen, either from indolence or carelessness, did not put enough of warm water among the mixture of chaff and meal so as to make it thin and sloppy, and how the flow increased when the supply of water was increased. Of course the quality was not improved, but in winter dairying quantity is the principal consideration, because when cake and meals are fed the quality will always be up to or over "the mark."

We have kept to the point mostly in the above because it is the only one regarding which there is a difference of opinion. We are all agreed that comminution of food materials or mixing them together in proper proportions is a good plan; also that some long fodder is necessary for cud-chewing purposes, and so on, but it would benefit all—the writer included—if readers would give their experience *pro* and *con* the question of cooking, steaming or infusing part of the food with boiling water. X. Y.

The following is an extract from Mr. Bousquet's address at the annual meeting of the Jacques-Cartier Bank.

"To illustrate the movement of progress made in that direction, and the large produce derived from it by the Dominion, a comparaison of our dairy produce exports ten years ago will show that mixed farming has created in a short time, a revenue, revealing by its magnitude the great resources of our farms, and also the great importance to the trade of a country like ours that the general working of the farm be well executed. Ten years ago, in 1879, the value of cheese exported was $3,700,000, that of butter $2.100,000, while for the year just ended the figures stood: Cheese $9,500,000, and butter $1,125,000. We must then bear to mind that in the extraordinary progress made in the course of a few years by the dairy industries of Canada and its enormous increase in exports, that the province is figuring for such an insignificant amount that we should be ashamed to mention. As to cattle, Montreal alone for its consumption is paying yearly two millions of dollars to Upper Canada and $500,000 to the United States for hogs. Comments are unnecessary.

The crop of 1890, owing to unseasonably cool and wet weather, has then been very poor; grain with but few exceptions has been a failure in every locality and in many instances farmers have not yielded enough to pay for their seed and labor. This has not been true only of the cereals, but everything farmers have raised. Hay is the only exception. Although of a bad quality, the harvest has been abundant, but prices for it have reached a point in remote sections which hardly pay farmers for hauling their crop to market after being harvested. Although our crop is very small, prices contrary to expectations, have been low. The shrinkage in grain value is explained by the large crops harvested in the United States during the two last years. The statistics of their grain crops for eighteen hundred and eighty-nine are something quite unparalleled, and unfortunately the large yield of grains, following directly upon the abundant crop of eighteen hundred and eighty-eight, reduced prices to a minimum unprecedented. So their surplus has reflected on our markets and accounts for the low prices now ruling here. The value of the production of the year for these causes has been considerably diminished. The business of the community at large and its general trade, which directly depends for activity on the farmers' returns, has then felt the first setback, on the improved business prospects for 1889, with which everybody entered last year.

The poor return of crops has deprived the province of millions of dollars, and lowered its power of purchasing to the same extent. As a natural consequence, farmers all round have been impoverished and a great number, under the necessities of meeting interest on farm mortgages, have been compelled to increase their loans. Deprived of their natural income they have sought from merchants and bankers for temporary assistance, incurring by the fact new liabilities instead of relieving their old indebtedness. Country storekeepers who, under very encouraging prospects, had purchased pretty freely in the early spring, were severely tried, and many have succumbed under the pressure for remittances, owing to their inability to collect farmers' accounts."

BUTTER.

My prize same way; no washing or attempt at granulation.

Prime necessities: To know how—first, good cows: second, good feed, and further on, care with cleanliness. Set your milk any way. Working and packing: The first business is to make the butter to suit your customers. Our butter is sold every week now at 23 to 27 cts. per pound. Meet the customer as he wants it, in the form and salted as he wants it.

We average 270 lbs. to the cow; one man 330 lbs. He has only three cows. The cows are graded Jerseys and pure-bred. This crossing he gave thirty years ago. A yearling Jersey bull came first, and from this small specimen came our start, and with the continued crossing with Jerseys the success in butter-making in Vermont. We have never had any other class of bulls since. We had to get our living out of butter, and we had an eye single to butter and butter alone. We never fooled with fancy points. The bulls from the best cows, regardless of color, were saved for sires. We feed to suit our customers. Good ensilage is all right; the bad stuff will taint the milk. Cottonseed meal gave me bad results, but I think the cottonseed meal was old (no doubt of it, and fermented.) We feed two quarts of bran and two quarts of corn meal, with clover hay. We feed grain in the summer with pasture. We aim to give our cows all they will eat. We feed a little and often, to tempt our cows. We turn out our cows from 10 to 3 o'clock pleasant days. The water is under cover, where the cows go when they are in the yard. We put our butter in prints. When there is a glut of this, the dealers pack the prints in tubs, as it will keep better. The cows come in every month in the year."

NON-OFFICIAL PART.

Conservatism vs. The Rage for Novelties.

The Seed Annual for 1890, issued by D. M. Ferry & Co., of Detroit, Michigan, has reached our table. Its cover this year is especially artistic and attractive, and its contents as usual, interesting and instructive. Ferry's seeds are thoroughly reliable, and always come true. The directions given in the Annual for the cultivation of both flowers and vegetables are so full and explicit that no one can fail of success who uses their seeds and follows the instructions.

D. M. Ferry & Co. are very conservative, both in offering new sorts and in their claims for them when offered, but they take pains to inform themselves as to the true character of all new varieties, so if some much lauded novelties are not found in the Annual, the probability is they have tested them and found them of no value.

A request sent to the firm at Detroit, Michigan will bring you a copy of the Seed Annual for 1890 by return mail.

Sleepless Worry.

Is often occasioned by a harassing, tickling cough which might easily be cured if the right remedy—Hagyard's Pectoral Balsam was made use of. Its soothing, healing and expectorant qualities make it wonderfully useful in every family for coughs and colds.

A letter from Dr. Hans Von Bulow.

The Knabe Pianos which I did not know before, have been chosen for my present Concert tour in the United States by my impressario and accepted by me on the recommendation of my friend, Bechstein, acquainted with their merits. Had I known these pianos as now I do, I would have chosen them by myself, as their sound and touch are more sympathetic to my ears and hands than all others of the country.

DR. HANS. VON BULOW.

New York, April, 6, 1889.
To Messrs. Wm Knabe & Co.

Fancy butter commands best prices.

Fancy butter is all the rage now. And it is a good thing for the wise butter maker that this is so, as it enables him to get from five to twenty cents more per pound by taking a little extra pains to see that his butter is especially attractive. The consumer is apt to lay undue stress upon the size of the establishment, the breed of cows, the trade-mark, and undervalue the methods of dairying. Of course these things help, but fancy butter and high prices are not due to them.

Nothing is of so much importance in getting and retaining customers, and obtaining an extra price for the butter, as uniformity of color. This is one of the reasons why nearly all of the fancy dairies and creameries use Wells, Richardson & Co's Improved Butter Color. In this way they always obtain the same rich golden shade, in season and out of season. And as everybody knows that the better butter looks, the better it tastes, these fancy butter makers get not only reputation for the color of their butter, but also for its superior flavor.

Wells, Richardson & Co's Improved Butter Color is superior to any coloring. It is made by special processes, and is perfectly pure. It never gives taste or smell to the butter, and no one can tell the difference between June butter and butter to which a few drops of this color have been added. Use it, and prove for yourrself its great value.

For Frost Bites.

There is no better remedy for frost bites, chilblains, and similar troubles than Hagyard's Yellow Oil. It also cures rheumatism, lumbago, sore throat, deafness, and lameness and pain generally. Yellow Oil is used internally and externally.

CONSUMPTION CURED.

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and a Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper, W. A. NOYES 820 *Powers' Block, Rochester, N. Y.*

Joy in Jasper.

I can recommend Burdock Blood Bitters as a sure cure for scrofula. I had it for four years, and was so bad at one time that I was almost a solid sore. I commenced taking B. B. B. last summer, have taken three bottles, and am entirely cured now. MISS ELLEN PIPE, Jasper, Ont.

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