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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

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Journal of Agriculture and Horticulture

THE JOURNAL OF AGRICULTURE AND HORTICULTURE is the officia organ of the Council of Agriculture of the Province of Quebec. It is issued Bi-monthly and is designed to include not only in name, but in fact, anything concerned with Agriculture and Stock-Raising, Horticulture &c. All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jeaner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

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The Farm.

NOTES BY THE WAY.

"Grass Experiments."—The drought of last season interfered with the operation of a number of experiments on grass land carried out by the Bath and West of England Society, and described in the Society's Journal. No summary of results, or of lessons to be derived from the experiments, is given; but the most striking result appears to have been the moderate success of basic slag in improving the herbage of the pastures, and especially in promoting the growth of clovers. In one case, at least, this manure also appears to have encouraged the growth of ryegrass, and to have caused a diminution of the undesirable Yorkshire fog grass. A more important set of experiments on permanent pasture is the series conducted by the Royal Agricultural Society in twenty-two fields in eleven English counties, which were of a very comprehensive character. They are described by Dr. Voelcker in the Society's Journal, and he gives a good summary of the results. Harrowing did a great deal of good to some bad pastures, while re-seeding or "renovating" was not successful. Lime benefited grass on land found by analysis to be deficient in that constituent, and not elsewhere. Bone manure was not generally efficacious. Similarly superphosphate proved valuable on land found to be deficient in phosphoric acid. Salt did no good where it was tried. Basic slag was generally effica-

cious, though not much so in the season of its application. In the seasons following its use slag produced improved crops. Most of the pastures were on heavy land.

A sale of imported Shorthorns, the property of Messrs. H. & W. Nelson, was held at Buenos Ayres on the 27th of September. The animals were exposed in very good form, and met a capital sale, the following being a few of the leading prices : Sultan, G. C. Aldao, £704 7s. 1d. ; Sign of Wealth, E. Berdier, £504 5s. ; Admiral Sampson, V. Anasagasti, £588 5s. 10d. ; Golden Morning, A. T. de Alvear, £554 13s. 6d. ; Bapton Sultan, S. Lalor y Bercetche, £470 6s. 8d. ; Kruger, E. C. Veley, £445 8s. 5d. ; Rich Orphan, C. Bull, £378 3s. 9d. ; Prince Rufus, S. Lalor Bercetche, £361 7s. 7d. ; Lancer, T. E. de Anchorena, £310 19s. 1d. ; British King, S. A. de Elia, £294 2s. 11d. The average of the whole worked out at over £460. On the previous day fourteen French Shorthorn bulls were sold in the same market, their range of values being from £151 5s. 6d. to £100 17s., with an average of £121 17s. 2d.—"North British Agriculturist."

A MONSTER BUTTER FACTORY.

The Glenorminster butter factory in Australia is, probably, the biggest thing of the kind in the world. The supply of milk in the flush, for several weeks, reaches the enormous amount of 165,000 pounds per day. It is also stated, that some of the patrons furnish as high as 5,000 pounds per day, and the average is about 2,000 pounds ; and these amounts are produced on farms from one to 200 acres each. In the separating room are sixteen large separators of 400 gallons per hour capacity each, that, when necessary, can handle 6,000 gallons per hour.

CALF SCOURS.

Ed. "Hoard's Dairyman" : We have a herd of 50 cows, with Biltmore's St. Lambert No. 33995, A. J. C. C., at the head. He is now just two years old. We have had four of his get to come and they all died with scours. We were very anxious to raise them and allowed them to be put to the cows three times a day. The second day they took the scours and third day they died. The cows were put to the calves in a good clean condition.

We would like to know what to do for calves in this condition and how to raise them when the mother's milk does not agree with them. J. R. P.

Rock Hill, S. C.

Scours in calves may be said to be of two forms, the calf cholera or dysentery. Use antiseptics in the cow barn, such as solutions of corrosive sublimate, 1 part to 1,000 parts of water, hot lime wash, chloride of lime, etc., and the external application to calves' and cows' teats and genitals, of the corrosive sublimate solution, half the strength indicated above. In the particular case mentioned, take the calves away at birth and feed milk sparingly, 2 to 3 pounds, three times daily is sufficient to start with ; the amount can be increased as the need demands.

One to two ounces of castor oil in which is laudanum, one to two teaspoonful, and one tablespoonful tincture of cinnamon may be given with benefit. Lime water should be used as much as two to three tablespoons being given at a feed. As a rule, the first milk, the colostrum, should be given.

Occasionally, however, that milk seems to contain the cause of the trouble. After the administration of the dose above mentioned, subnitrate of bismuth, 25 to 50 grains, may be given daily. If the disease breaks out in one cow barn, remove all cows to calve to another, and thoroughly disinfect the infected barn.

The following mixture is highly recommended by some European authorities : Rhubarb root, pulverized, 1 1-2 drams ; opium, powdered, 1-2 dram ; carbonate of magnesia, powdered, 1-4 dram. Mix and give as one dose in 1 1-2 ounces of whisky or three ounces of camomile tea (this is a good stomach stimulant for sick cows). The prescription (powder) can be repeat-

ed three times daily, or until improvement is noticed.

A. G. HOPKINS.

Wisconsin Experiment Station.

Note by the Editor.—We remember, some ten years ago, that Mr. Dawes, of Lachine, had the same fatality happen among his "Jersey" calves, as the correspondent of "Hoard" complains about. Mr. Tuck, the foreman, told me that, after trying all sorts of dudges, they were cured by a medicine of very much the same composition as the above.

"Green-manuring."—Mr. Shutt advises farmers to practise ploughing in clover as a manure, but only in the case of their not having stock enough to eat it. Mr. James formerly of the Guelph Agricultural College, but now, we believe, Assistant Commissioner of Agriculture at Ottawa, recommends ploughing in the second crop of clover. The "English Agricultural Gazette," in reply to a query, says: "Green manuring is seldom practised here, because, after having grown your crop, it is too valuable for sheep-feed to be ploughed in." If the in-lamb ewes were kept during our long winters on well-made second-cut clover-hay—"with the leaf on,"—they would have more strength to support the "fœtus" during pregnancy, the lambs would be thriftier at birth, and the ewes would have a better supply of milk no nourish their offspring. The grand desideratum of all parturient animals is nitrogen, and that can be secured more cheaply in the second crop of clover than in any product of the farm.

Now, here, we have the opinion of Mr. W. P. Brooks, of the Mass. Agricultural College, which agrees with our opinion, and of course "must" be right:

DOES GREEN MANURING PAY?

W. P Brooks, Mass-Ag'l College.

"There are undoubtedly conditions under which the practice of cultivating and turning under a crop for soil improvement is to be recommended. I believe, however, that in the majority of instances a crop which has been grown will be worth more to feed in Massachusetts than it is for turning under.

Any crop standing in the field has a certain value as a manure. It has also a certain value, in most cases, as a food. It can be used as a food either by pasturing it off or by cutting and feeding in the barn. In either case under proper management the excreta of the animals consuming the crop possesses a manurial value. This value, in most cases, under proper management is only about one-fifth less than the full manurial value of the crop. If we turn the crop under, then in the one case we get its full manurial value; if, on the other hand, we feed and carefully save and apply the excrements, or if we pasture it off and so manage that the droppings are evenly distributed, we have the food value and four-fifths of the manurial value. The sum of these two will, in the great majority of instances, be greater than the full manurial value alone.

There are of course conditions under which the crop cannot be profitably fed, either because of the absence of stock necessary to consume it or because of the location of the field. In such cases the turning under of the entire crop may of course be wisest. My experience and observation have led me to the conclusion that neither the cowpea nor crimson clover is well suited for purposes of soil improvement in Massachusetts as certain others, though they have been recommended by speakers at farmers' institutes."

But Mr. Boden, of Mr. Reford's farm at Ste-Anne, together with several practical men whom we have met at different times, hold that it is good practice to plough clover in and to buy grain, pulse, etc., to replace it! It seems to us that such practice would cost more for the mere carriage, to say nothing of the seller's profit, than the farmer can afford to pay.

Here is a fact noted, that we have often mentioned, as to the quantity of oats sown to the acre by first-rate Scotch farmers:

QUANTITY OF SEED PER ACRE

Sir,—When Newmarket oats were first sown in the counties of Forfar, Perth, and Fife a few years ago, farmers were informally warned that an extra bushel at the least over and above what was required for such varieties as Potato, Blainslie, and Hamilton would be necessary, and that a couple of bushels additional might be the safer measure on some of the colder lands. I can testify that a good many who had been in the habit of using 4 to 4 1-2 bushels per acre of Potato oats found 5 bushels of Newmarket ridiculously thin. At next turn the majority took 6 to 6 1-2 bushels of the Newmarket, and certainly there were no complaints of the crop being too thick. At the present time I don't know a single individual away from the coast side who has used so low a seeding as 5 1-2 bushels of Newmarket for two years in succession. One or two of the newer varieties of oats somewhat similar to the Newmarket in their habit of growth need fully as much seed per acre. Early this autumn I went through a grand crop of oats on an historic holding, and the seeding had been at the rate of 7 1-2 bushels per acre. There was exceedingly little "stooling" or stocking in the stalks, and the straw—like that of the Newmarket on highly-farmed land—was rather "reedy" and strong to be of much use for fodder. Potato oats and others of the older varieties stock out wonderfully, a couple of good straws from one "pen" being quite common, but that is the weak feature with two or three of the newer varieties, hence the necessity for heavier seeding when using the latter. But to sum up, it is true, as Mr. Bell says, that different districts, and even different fields on one farm require special treatment in the matter of seed per acre. On the lowlands of the Forfarshire coast one can have quite as thick a seeding with 3 1-2 to 4 bushels of Potato oats as most of those further inland at an elevation of 500 feet or so have with 5 bushels. Professor Wrightson is, of course, aware that less wheat seed—by a bushel per acre—is frequently needed for sowing after fallow, than for a later sowing after beans or potatoes.

JAMES CAMERON.

"Ag. Gazette."

EXMOOR PONIES

There are several examples of these jolly little fellows in Montreal, and famous first-mounts they make for children, though boys are not mounted so early in this country, on account perhaps of the long winter. We and our seven brothers were all on pony-back before we were five years old. Not too easy in the canter as ponies with a trifle more blood, the Exmoor is, as a contributor to the "English Agricultural Gazette" says, "handsome, safe, and sound. I do not think I am wrong in saying they are the most so of any breed of horses or ponies in the world, as they have been bred from the best and soundest for many generations, by the most noted landlords and the best farmers in the neighbourhood. You seldom see a pony with broken knees or bad feet, and if broken well they have first-class mouths. It is an old saying, "no feet, no horse," and it is an equally good one, "no mouth, no manners." It is a very pretty sight to see a lady driving a pair of handsome Exmoor ponies in a nice little carriage. Put a light weight on them, and where is the big horse that can stand them after the deer for a 10 mile gallop across the forest, and you do not want to insure your life before you mount. They are very dapper, almost knocking their nose with their knees, and a fly off their bellies with their hind feet. It is a treat to see these little beauties trot across a bog; it is just like a cat on hot bricks. The very best cobs and Polo ponies in the West are bred from the Exmoor pony. The best place to buy them is at Bampton Fair."

CLODHOPPER.

Pretty true that about "no mouth, no manners"; but if you will sit and pull at your pony in the shafts, how can you expect him to have either mouth or manners when you are on his back. It is re-

ally disgusting to see the way so many people, women especially, jerk their horses' mouths. If the poor thing goes to sleep over his work, draw your whip across his back, but keep his mouth free from all unnecessary interference. Ed.

"Consumption of food." — What very rash statements one sees sometimes in the papers. A writer in "The New-England Homestead" says :

"A pasture that will carry a herd of ten cows through the summer, will carry a flock of 20 sheep with the cows and be all the better for it."

No doubt the sheep will find food enough in the pasture to keep them going, but it will be gained by their nibbling out the heart of the clover and other bottom-plants, of which we have none to spare on this side of the Atlantic. Of course, we know that the great graziers in the rich feeding pastures of Leicestershire, Buckinghamshire, etc., in the old country, run sheep on their feeding-ground after the big beasts have been marketed, but that is a very different thing. Here, grow rape, vetches, etc., and keep the sheep on the arable land.

"Green-fodder."—We have always advocated thick seeding for green-meat : two bushels of oats, one of pease to the imperial acre ; but Mr. Glurny the "Market-garden," editor of the "Eng. Ag. Gazette," who ought to know, though he sows the same number of bushels to the acre varies in the sorts, sowing 3 bushels of vetches and one of oats to the acre.

HON. SIDNEY FISHER.

In our exhibition number we had the pleasure of recounting in a somewhat brief manner a few of the important features of the work of the Department of Agriculture at Ottawa during the Hon. Mr. Fisher's tenure of office. By the return of the Government to power on Wednesday last Mr. Fisher will, no doubt, continue to be the Minister of Agriculture for the next five years, and a short review of his earlier life and fitness for the position may not be amiss at th,s juncture.

Mr. Fisher is a Canadian by birth and descent, his great-grandfather having come from Perthshire, Scotland, and settled in Quebec somewhere about 1790. He is the son of Dr. Arthur Fisher of Montreal, and was born on June 12, 1850. He was educated at the High School and McGill University and afterwards went to Cambridge University, England, where he obtained the degree of B.A. in 1872. After completing his education, Mr. Fisher returned to Canada, and in the following year purchased his present farm at Knowlton, Que, familiarly known as Alva Farm. At that time he had very little practical experience and no training for the work. But by devoting all his ability and energy to the business, he was able in a very few years to make a great success of it. He made a specialty of live stock breeding, and went into the making of fancy butter, a feature which he always considered the highest development of the business.

Starting in with little knowledge, he purchased commom cows and a thoroughbred bull as good as could be found according to his judgment at that time. First he purchased an Ayrshire, then a Jersey and in 1885 a Guernsey, eventually retaining the last named breed as the most satisfactory for his purpose. His first Guernsey bull was purchased from the well-known herd of the late Sir John Abbott, and he afterwards purchased several females from the same herd. Finding that there was no great choice of the breed in Canada, Mr. Fisher went to the States in 1889 and bought a bull and four females from the celebrated herd of Mr. Morton, who was at that time vice-president of the United States. He then began to build up his herd of Guernseys by cross-breeding these two strains with most gratifying success. For several years previous to becoming Minister of Agriculture, Mr. Fisher's young stock carried off valuable prizes at the leading fairs in his own district. Since going to Ottawa he has not exhibit-

ed at any of the fairs though taking the same pains to keep up the standard of his herd as formerly.

We have said that Mr. Fisher began to make fancy butter. In this line he has been most successful, disposing of his butter at fancy prices to the grocers of Montreal. He has also been very successful as a prize-winner for fancy butter at the various Eastern Townships and Montreal exhibitions. He very early became a believer in the silo as a means of preserving succulent food for the winter feeding of stock, and was the first farmer in Canada, if not the first in America, to build a wooden silo. He recognized that the stone or cement silos which were then being built were beyond the means of the ordinary farmer, and that wood would serve the purpose just as well.

By his skill and ability and the practical experience acquired after a few years, Mr. Fisher soon succeeded in making Alva Farm one of the very best in the Eastern Townships, the banner agricultural district of the Province of Quebec. He made a thorough study of the best methods of agriculture, and by applying them in a practical way to his own farm and his own conditions, was able to make his chosen vocation a success and to fit himself for the position he now fills so ably.

As might be expected in a farmer of Mr. Fisher's education and ability his services were in frequent demand in a public way in his own province. He became a justice of the peace, vice-president of the Quebec Provincial Dairy Association and vice-president of the Quebec Fruit Growers' Association. He was always in demand at dairy and agricultural conventions in his own province to speak on all sorts of agricultural topics. When the dairymen of Quebec were desirous of establishing a scheme of factory inspection, Mr. Fisher was deputed by the committee in charge of the matter to draw up for the use of the Government a memorandum embodying his views as to what the proposed scheme should be. On this memorandum was based the present system of factory syndicates and factory inspection which has revolutionized the dairy system of Quebec.—"Farming."

FERMENTED vs. FRESH MANURE.

Should manure be applied to the soil only when it is well rotted, or should it be used when fresh? The chief reasons given by the advocates of the first method are as follows:

Fermented manure contains more available plant food.

It is more suitable for light soils than fresh strawy manure.

Weed seeds are destroyed in well rotted manure. (Quite right. Ed.)

It is a well known fact that in fermented manure the plant food contained is more available than in fresh manure, but this change has not been obtained without a considerable loss of the original plant food. Ton for ton, fermented manure is richer, but it should not be forgotten that it takes two tons of fresh manure to make one of fermented, as the following experiment carried on at Cornell conclusively proves: 10,000 lbs. of fresh cow manure were exposed in a compact heap during 8 months. At the beginning of the experiment, the manure contained 47 lbs. of nitrogen, at the end, 28 lbs., showing a loss of 45 per cent. of the original nitrogen. But at the end of the experiment the manure weighed only 5,125 lbs. Therefore the 10,000 lbs. of fresh manure contained 47 lbs. of nitrogen, or 9.41 per ton, while the resulting 5,125 lbs. of rotted manure contained 28 lbs., or 10.9 per ton. Rotted manure is then richer owing to the reduction of its volume, while in fact it has lost a large part of the plant food it originally contained. Is this loss compensated by the greater availability of the plant food remaining? It cannot be denied that when manure is applied to the soil shortly before the seeding of a cereal in the spring it should at least be partially fermented so as to supply the first needs of the growing plant.

Advocates of fresh manure claim, how-

ever, that this product, if not too strawy, can be applied without danger to light lands, and many excellent farmers carry out this practice without any inconvenience.

The only point therefore which remains in favor of fermented manure is the possibility which it affords to put to the disposition of plants, at a given moment, the plant food which they need—especially the nitrates so necessary to the young growing plant. But how far should this fermentation be carried to secure the best results ? According to the latest theory brought out upon the fermentation of manure—a subject hitherto very incompletely understood—the condition when manure is at its best to be incorporated to the soil is when half rotted, and this is the theory, interesting at any rate, upon which this assertion is based :

The fermentation of manure is caused by minute beings called " bacteria." In a manure heap three kinds of those bacteria are found : The first live in the superficial layers, in the presence of air, and they help to convert the nitrogen of the manure into a soluble form, " nitrates." These soluble nitrates drain through the manure pile, but they meet, in the centre, another class of bacteria living in the absence of air, which attack the nitrates and disengage the nitrogen, which being free, evaporates. Another class of bacteria causes the decomposition of the organic matter of the manure. Now, if the fermentation is allowed to go on rapidly until the mass is well rotted, the greater part of the nitrogen is lost through the work of these " denitrifying bacteris." But by tight packing, the formation of these nitrates can to a large extent be prevented, to start only when the manure is put in the soil, in contact with the air, where the nitrates formed are immediately absorbed by the roots of the plants.

It is obvious, however, that in a poorly drained land, where air cannot penetrate, the denitrifying bacteria find a place as suitable for their operations as in the midst of the manure pile, and all the care that has been given to the preparation of the manure will be of no avail if the land is not in the proper condition.

But it should not be forgotten that the soil, in good physical condition, " is the safest storehouse for manure " : It would be far better, if possible, to apply fresh manure to the soil several months before seeding than to keep it fermenting in heaps until shortly before seeding. Losses cannot be avoided in the latter case, even with the best of care, while few losses can occur in the soil.

C. M.

ENSILAGE.

Having lately been brought in contact with a man who absolutely ridiculed the ensilage idea, naturally because he had failed in ensilage making ; it struck me, that even though the subject has been pretty well thrashed out, yet an account of some methods, which have proved successful might be of service to readers of this Journal.

My friend, like many more who have failed, had thought it sufficient to put green stuff together in a haphazard sort of way, without considering that before any herbage can be properly converted into ensilage, it is necessary for certain chemical changes to take place. When the system of preserving green fodder in silos was first taken up, the common idea was that the raw material should be preserved as nearly as possible in its natural state. The first practice was to cart the grass as soon as it was cut, and to place it in the silo as wet as possible ; in fact, at one time, the pouring of water into the silo was advocated. The mass thus hurried up was immediately weighted with as much as 300 lbs. or 400 lbs. to the square foot. The result was, that very little fermentation took place, and the ensilage (if such it could be called) was sour with a most abominable smell. Although cattle could be found which would eat the ensilage, the results of this method was not satisfactory. Next came the discovery of the sweet

ensilage system, which was a consequence of going to the other extreme: after being mown the swathe was allowed to remain on the ground for a day or two, or, if the weather were showery, for several days, before it was carted to the silo or stack; for this latter method had by this time come into vogue. The herbage by this treatment lost a portion of its succulency, and became partly made into dry fodder. Under this treatment the fermentation (when once set up) could not easily be checked; and stacks built on this principle, were liable to be burnt quite black even at the bottom; and its temperature would be still high after six months. This showed conclusively that the cooking process had continued too long, until much of the goodness had been cooked out of the crop.

When we remember that it is fermentation, which causes the chemical changes to take place, and that what we want is to attain the best chemical change in the fodder, at the least possible loss of the material, we see that the success or non-success entirely depends upon the amount of fermentation which takes place in the silo or stack.

From a friend's personal experience, extending over ten years, it was found that the temperature from which the best results are obtained range from 130 deg. to 150 deg. F.; but it is not sufficient to allow the temperature to rise to somewhere between these two points for a short time only, and then quickly to cool down again. The process should be one of slow cooking, and should continue for some weeks. At least eight weeks should elapse before the temperature should be allowed to go below 130 deg.

The question will naturally be asked. "How is the temperature to be regulated." This no doubt is the crucial question, and upon the answer depends the ultimate success of the ensilage system. Surely the experiments, with their successes and their failures, of the past ten or twelve years, ought to help to a practical solution.

It is the oxygen (which is contained in the water and air, that is put in with the green crop, or finds its way in afterwards) that causes the fermentation. What we then want to know is how to regulate the supply of air, so as to obtain the proper amount of fermentation. This can be done by attention to two points. First we must consider the condition of the crop, its succulency, and its adaptability for being pressed close together; and, secondly the way in which pressure is brought to bear upon the ensilage.

With regard to the first experience is everything. Different crops require different treatment; for instance, soft grasses (which pack closely) should not be put together in such a succulent state as say the stronger-stemmed rye; whilst crops of the green cereals cannot well be packed too green and succulent. Then the state of the weather must be taken into consideration. Should it be hot dry weather, the silo or stack cannot well be built up too quickly or pressed too soon; but on the other hand, should it be showery or cold, the crop should be put together more slowly, and not weighted too soon, or too heavily at first. All these details can only be learned in just the same way the many other things pertaining to the farm are learned, from practice.

Secondly, we must consider the pressure which is necessary to control the fermentation, and to preserve the ensilage when made. After the ensilage is properly cooked—say, at the end of six or eight weeks—the pressure on the mass cannot be too great. It should be variable in its action; for although the elasticity in a bulk of ensilage is considerable at first, it gradually becomes less. This is more especially the case, when the crop is old and partially dried before it was ensiled. Another danger to be guarded against is the having too little pressure on the stack when the ensilage is fully cooked. In this case, the air gradually finds its way in at the sides, and either sets up a fresh fermentation—soon causing decomposition to set in—or else it dries the ensilage so much, that

most of its value as a succulent food is sacrificed.

The pressure necessary, during the first few weeks during the process of making or cooking, is difficult to gauge, because if the pressure is too great, it may result in arresting the fermentation too soon. This is one reason why silos are better filled at two or three different times.

By means of a screw and lever press, the temperature of 5 ft. or 6 ft. at least of the top can in 24 hours be raised or lowered 15 deg., simply by increasing or decreasing the amount of pressure. The soft grasses require less pressure than the strong grass or corn crops, but, whatever system of pressure is used, whether that of stones, earth or other dead weights, or any mechanical pressure, it must be continuous in its action, and follow the ensilage as it sinks.

The men who have given up ensilage making are the men who have failed, and are not willing to take the trouble to puzzle out why they failed. The only school in which men can learn is Experience, and after some failures they can ensure success at last.

There is hardly a doubt, but that every failure can be traced, either to a lack of familiarity with the principles of the ensilage system, or to the want of a knowledge of common things which could so easily be learnt.

W. R. GILBERT.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

CHRISTMAS.

The great festival of the year will soon be upon us, a time of rejoicing for everyone. The rich and benevolent take care that ample provision shall be made, so that none shall want for plenty, to keep up and make merry on this Great Day.

It will be with a clear conscience that these good folks can lay themselves out to enjoy and make merry after their own fashion.

One of the great delights of this season is the many little secret confabs one has to take amongst friends to find out what is nicest and best to give as a present to friends and relatives.

Children are easily satisfied, as long as they remain under the delusive Santa Claus age. I was reminded of this fact only yesterday by a devotée of his, of a Christmas when she felt certain the real Santa had come, as she got all she had previously written to ask him to bring her; also he himself handed to her many things from the Christmas tree, his identity was never doubted by the fact that he had eaten a plate of cake and drunk a glass of beer they had placed for him to help him on his long journey during the night. Now they know it was only Uncle Jack, dressed in blanket and much cotton-batting, inwardly fuming, and praying that the show would soon be over, so that he could get a breath of fresh air once more.

The trouble of preparing Christmas dainties will be felt less if things are got ready in time. Much care should be taken to see that everything is fresh and good.

In making mincemeat, pudding, or cake, do not trust to luck, but look over the things and see that there is not even the tiniest stone left in the currants or raisins, to spoil the eating in the fact that it might give pain to a sensitive tooth. (Now sent "stoned," thank goodness. Ed.)

Suet or meat for mince must be of the freshest; eggs must be broken, one by one, into a cup to see there is no defect in them before using; and always take out the little thread or skin found in the yolk of the egg, also strain eggs last of all.

Flour, sugar and spice should be well sifted to avoid lumps.

Spices, thrown in carelessly, are apt to stay in lumps if they come in contact with moisture.

Too much salt or pepper, thrown in carelessly, will spoil a whole dish, and give pain to the unlucky one who gets it.

Last, but not least, have the pudding cloth scalded well before using, butter it,

dredge flour over it, then tie with stout string, and before it goes into the boiling water put in a soup plate or saucer to prevent it sticking to the bottom, which it will never do if boiling water is put in now and then to keep it from harm. Don't be afraid of boiling too long, you can't well do it ; 8 hours the first day, and two or three more to warm through on the great day. In fact, it needs a watchful eye to do anything well.

MINCEMEAT.

Peel 3 apples, cut off the cores and bake the pieces till soft.

Squeeze 3 lemons, cut away the white pappy part, boil the lemon-peel till fairly soft.

One pound of stoned raisins.

3-4 pound of washed and dried currants.

One pound of very fresh suet chopped fine.

Two pounds of moist sugar.

Quarter pound of candied peel.

Quarter pound of the rind of a fresh orange.

One teaspoonful of mixed spices composed of cinnamon, cloves and nutmeg.

Quarter of a pound of raw beef.

One glass of port wine and half pint of brandy.

Beef, wine, and brandy can be left out, but it will keep good for a year by its addition, and care in packing in airtight vesels.

PLUM PUDDING (Rich).

Ingredients :—

1 lb. raisins, stoned.
1 lb. sultanas, cleaned.
1 1-2 lbs. currants, washed and dried.
6 ozs. dried cherries, cut in pieces.
3-4 lb. mixed peel, chopped, juice of four lemons, and the peel of three, chopped.
1 1-2 lbs. moist sugar.
1-2 lb. Valencia almonds, blanched and chopped.
1 lb. chopped apples.
2 1-2 lbs. chopped beef suet.
1-2 lb. fine bread-crumbs.
1-2 lb. flour.
1-2 lb. cornflour.
1-2 lb. rice flour.
10 beaten eggs.
1-4 pint of milk.
A nutmeg, grated.
A saltspoonful of salt.
2 wineglasses of brandy.
1 ditto of rum.
2 ozs. baking powder.

Method : Mix the dry ingredients together first, then the eggs, milk, and spirits. Turn into greased moulds ; tie cloths over the top, and boil eight hours the first day. When required for use, boil another two or three hours. This quantity will make two puddings.

CREAM AND BRANDY SAUCE FOR PLUM PUDDING.

Ingredients :—

1-2 pint cream.
2 ozs. castor sugar.
1-2 teaspoonful vanilla essence.
Brandy to taste.
White of 1 egg.

Method : Whip the cream stiffly ; add the sugar, vanilla and brandy. Whip the white of egg to a solid froth, stir it in at the last moment. Serve cold in a glass dish.

GINGER WINE, UNFERMENTED.

Ingredients :—

4 lbs. of lump sugar.
3-4 oz. of tartaric acid.
5 drachms of essence of ginger.
3 drachms of capsicum.
1 oz. of burnt sugar.
5 quarts of boiling water.

Method : Dissolve the sugar in the water, mix the rest of ingredients together. Add these to the sugar and water, stir, and mix well, then bottle. It will keep good for months if closely corked.

ORANGEADE.

Squeeze the juice of as many oranges as are required with one lemon to every half-

dozen. Rub some lumps of sugar on the rinds to obtain a little of the yellow zest. To every pint of juice add one and a half pounds of sugar, including what was rubbed on the rinds. Boil together about five minutes, removing all scum as it rises. When cool bottle for use. A tablespoonful or more in a glass of iced water makes a nice drink.

TOFFEE MAKING.

It is necessary for the successful making of toffee that the ingredients should be of good quality. Use fresh butter in preference to cooking butter, which is salt and spoils the delicate favour of the toffee. Granulated sugar should be used in the finer makes of sweetmeats, but Demerara is used for all ordinary toffee. Flavourings are best added after the boiling is complete. Everton toffee is made by the following method : Take a pound of granulated sugar, a teacupful of water, a quarter of a pound of fresh butter, and a few drops of essence of lemon. Put the water and sugar into a brass or lined saucepan, and beat the butter to a cream. When the sugar has boiled up, add the butter, and keep stirring the mixture until it will set, when a little is poured on a buttered dish. Just before the toffee is done, add the essence of lemon. Butter a dish or tin and pour the mixture thereon. Russian toffee, too, is a general favourite with young people : Take two ounces of butter, half a pound of Demerara sugar, a tin of condensed milk, and a teaspoonful of essence of vanilla. Melt the butter and sugar in a clean enamelled saucepan ; then put in the milk, stirring incessantly. Boil for twenty minutes after boiling point has been reached, when nearly done add the vanilla, and pour the mixture into a strong earthenware dish slightly buttered. Mark divisions with the back of a knife, so that when cold it may be easily broken up and divided.

The Garden and Orchard.

(Conducted by Mr. Geo. Moore).

AN INSECT INJURIOUS TO ANIMALS.

The Warble-fly - (*Hypoderma bovis*).

The warble-fly appears in the summer, especially in hot weather, and does much injury to cattle by depositing her eggs on or in the skin, which subsequently hatch maggots and penetrating the hide, cause irritation, and sometimes inflammation of the tissues followed by the discharge of a jelly-like substance which renders the meat offensive to sight and unfit for sale ; beside which, the hide is much damaged and its value lessened.

After several months, the maggots reach maturity, fall out of the skin to the ground, and finding protection in a hole or under a stone, assume the chrysalis form, from which the perfect fly comes out, and proceeds at once to attack the cattle in the pastures.

Precautions.

The best time to destroy the larva or grub of the warble-fly is while the cattle are in the barns. In the latter part of January, and during February and March, the dark-coloured tails of the larva can be seen in little swellings or lumps raised on the skin, and if on these are rubbed a mixture thus compounded, the maggots will be killed. One quart of any common oil, oil of tar, 4 ounces, and flowers of sulphur, 4 ounces.

A little care and attention at that time will prevent the mischief at small cost and little trouble.

Fig 1

Perfect Fly.

Fig 2

Larva.

IRISH FLOWERS AND JAPANESE FERN BULBS.

We have not been favoured with many novelties in Flora's realm from the Emerald Isle, but are glad to see our Irish friends are now offering some. Irish Tulips and Anemones are catalogued by Messrs. Joseph Breck & Sons, of Boston. The Tulips are described by this most reliable firm as quite distinct, and in many ways superior to the Dutch sorts. They all bloom somewhat later. The flowers are exceedingly large, the colours unsurpassed for brilliancy and are delightful fragrant.

No other Tulips compare with them in grand colour and s,ze.

The new Irish form of Anemone is infinitely superior to those hitherto offered.

The flowers are nearly all double and the colors range through all shades from pure white to deep maroon.

Another novelty is the Japanese Fern ball; the centre is most ingeniously covered with few roots, they are started into growth by being soaked in a pail of water, then hung in a window and watered two or three times a week, and the ball becomes a mass of beautiful green lace-like foliage.

A FEW FACTS ABOUT MUSHROOMS.

There are 150 species of eatable Mushrooms and Toadstools, and about 30 of these of popular utility in various parts of the world.

The flesh of the mushroom has been proved to be almost identical with meat and possesses the same nutritious properties.

The analogy is still further shown by the discrimination of the palate; many kinds of fungi, when cooked, are similar to meats in taste and consistency.

The meadow mushroom, (Agaricus campestris) is the one which is the most popular and, strange to say, the only one which can be cultivated artificially; the spores of other species have been frequently transplanted but without success.

The most poisonous Toadstool or mushroom is "Amanita Veneris," it is easily detected but fearfully poisonous, and is called by some the "deadly Amanita."

A most interesting and beautifully illustrated work is the one on edible and poisonous Toadstools and mushrooms written by Mr. W. Hamilton Gibson, and published by the Harper Brothers.

Mr. Gibson shows that 150 species can be eaten, but only speaks of 30 as being popular, and gives an awful account of the poisonous qualities of others. The question is whether it is wise to suggest the eating of any but the true meadow mushroom which everybody knows; the risk is too great to experiment upon such as there is no absolute certainty as to their identification which to the initiated is difficult.

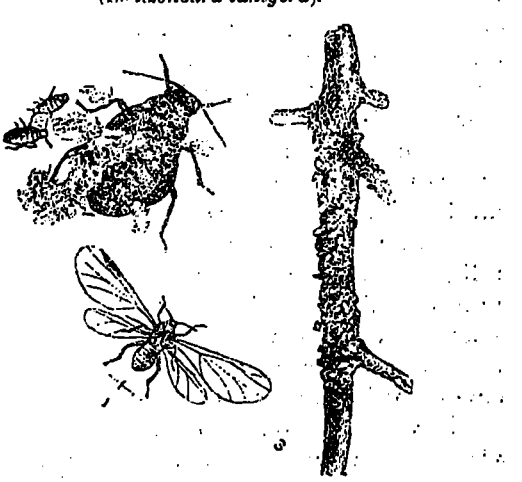
Note.—A peculiar property of some kinds of mushrooms is that they affect some people injuriously, while they are perfectly innocuous when eaten by others. Ed.

INSECTS INJURIOUS TO VEGETATION.

(Continued).

The Woolly Aphis, or American Blight.

(Schizoneura lanigera).



1. Winged female, magnified; and line showing natural ize. 2. Wingless viviparous female, magnified. 3. Apple twig, covered by woolly aphides.

This insect has decidedly increased during the past few years, particularly in

orchards and apple plantations where the the trees have been unpruned and neglected; and its action is most injurious. Young trees planted in infested orchards and plantations are frequently so injured by the wholly aphides carried to them by the wind, and by the winged females, that they die. Their bark, being tender, is easily pierced by the sharp beaks of the larvae, and they cannot long withstand these attacks.

Apple growers often notice bunches of a woolly or cottony substance on the stems, branches, and twigs of apple trees, especially upon scars and cracks where the bark has been injured, or where side shoots and branches have been cut off in an unworkmanlike manner, so that wet has collected and caused decay; the fissures have been formed which have increased in depth and width; while the outer layers of bark do not join, and a thin tissue covers the exposed parts. Upon close and careful examination, the white substance on these will be found to consist of little groups of aphides in various stages, some of which are clothed with fine woolly coverings, and are actively engaged in piercing these naked surfaces with their suckers, and in feeding upon the sap, thus preventing a healthy growth of tissue. Stoppage of the flow of sap also occurs, giving rise to excrescences or warty growths, which afford food and shelter for the numerous generations of larvae; and, eventually, the whole branch is affected, and its vigour and fruitfulness seriously impaired. The infestation spreads rapidly to other parts of the tree, and the smaller branches and fruit-bearing spurs are in time attacked; these, as shown in fig. 3, are soon destroyed by the action of the aphides, and if not interrupted in their destructive work, the tree soon dies, or becomes useless.

The effect of this attack is sometimes attributed to "canker," but it is altogether different; and a careful inspection will show that the woolly aphis is the sole cause of the mischief. The orchardist who neglects his trees is a bad neighbour, for the aphis spreads from branch to branch, from tree to tree, and from orchard to orchard, if unheeded and unchecked; is protected by lichens and mosses, if they are allowed to remain on the trunks of the trees, and by the thick interlacement of boughs and branches where pruning has been neglected. The woolly aphis is sometimes found upon plums and even upon the elm: It also injures the roots of apple-trees and causes swellings upon them. Some have supposed that the insects descends into the ground only for protection from the cold, but it has been well proved that they also feed upon the roots. The aphis under consideration is quite distinct from another species found upon apple trees, known as "Aphis mali," which lives upon the leaves and blossoms.

The winged female (fig. 1) brings forth living larvae. Towards the end of the summer, among the larvae produced by the winged females are wingless, egg-bearing females without beaks, and therefore unable to feed. Only one very small, round, transparent egg is laid by each of these wingless females, and is deposited in crevices of the bark.

The regular continuity of existence is carried on by the larvae which pass the winter wrapped in their woolly coats upon the trunks, branches and twigs, or roots of the trees. The wingless females are not beauties, they are brown and in shape broad, squat, and uncanny, see fig. 2, the larvae from these, after a time, emit wreaths of woolly material and become completely covered, so that a group of them has the appearance of a piece of cotton-wool (fig. 2). A very curious part of them is their enormously long beak, which is bent underneath the body and extending much beyond its extremity, which when seen without a microscope makes them look as if they had tails.

Methods of prevention and remedies.

Keep trees free from moss or lichens. Moss and lichens can be killed by throwing finely powdered lime over the trees during the winter in damp weather. This can be

easily done with tin scoops fastened to the ends of long poles.

Sulphate of iron dissolved in water, 1 lb. to 1 gallon of water, sprayed over the trees in winter will also destroy the moss, and interfere with the woolly aphis.

Young trees should be carefully and systematically pruned, so that their boughs do not intertwine, and plenty of air and light is admitted. Periodical search should be made for all insects upon young trees. When the woolly aphis is discovered in wounds and scars on the stems and branches, these places should be treated in the late autumn or winter with a thick compound of soft soap and paraffin oil, mixed in the proportions of 3 gallons of paraffin to 4 lbs. of soft soap and 25 gallons of water, worked into the cracks and scars with a stiff brush. Infested boughs and trees should be syringed at the same period with a mixture of 5 or 6 lbs. of soft soap and 5 gallons of paraffin oil to 100 gallons of water. In mixing the paraffin washes the soap should be dissolved in hot water and the paraffin put in whilst it is hot, and the whole incorporated into a cream with a hand pump or syringe. Cold water must then be added in proper proportions.

In old orchards and plantations in which pruning has been neglected, boughs and branches crossing each other should be cut away judiciously and daylight let in. Scars and deep fissures on the trunk and stems where woolly aphides congregate should be treated with freshly mixed lime wash having a little powdered sulphur in it, worked well in with a stiff brush. The thick soft soap and paraffin wash would be more efficacious, but it is somewhat expensive. For the infested branches, boughs, and twigs of large trees, spraying with the soft soap and paraffin mixture should be adopted.

In orchards where trees are in regular rows horse hopwashers may be used. In old orchards where the trees stand irregularly, and in plantations with standards and bushes below, hand washers or garden engines with powerful pumps and long lengths of hose must be employed.

Where apple trees are infested with woolly aphides on their stems and branches, examination of their roots should also be made for infestation, which is indicated by swellings upon the roots, and by the groups of woolly insects. The earth should be removed from the base of the trunk and from a few feet of the lateral roots. Lime wash with sulphur brushed well in, or the thick paraffin wash, would be advantageous. Penning pigs close round infested orchard trees, or watering the roots with strong liquid manure, would make it unpleasant for the subterranean invaders. Kainit hoed in round the roots has been found efficacious in Canada.

Before apple trees are planted, their roots should be well soused in a tub containing fresh lime wash and sulphur.

In Australia there are varieties of apples said to be proof against the action of the Woolly Aphis by reason of their bark being hard and its tissues close, and so resisting the action of the beaks of the insects. These are the Northern Spy, an American apple, and the Majetin, a Norfolk (England) variety, and apples in Australia are now always worked upon these stocks. Mr. French, the Government Entomologist of Victoria, says: "Before the advent of these excellent blightproof stocks, the Majetin and Northern Spy, it was exceedingly difficult to find in most orchards an apple tree that was clean or in perfect health. Now, with a little care and attention, the fruit grower, as a rule, may snap his fingers at the American Blight."

We have given considerable space to this blight, of its destructiveness, and because we feel assured, that if the preventives and remedies recommended are faithfully carried into effect, the difficulty and loss may be in a great measure overcome.

The Dairy.

THE BOYD PROCESS OF RIPENING CREAM.

It is an accepted fact that the fine aromatic flavour and also the keeping properties of butter depend largely upon the treatment of the cream from the time it is separated from the milk until it is ready for the churn, that is, in the best possible condition to yield the maximum quantity and the best quality as to flavour, texture, solidity, etc., free from casein and other undesirable substances. This perfect condition of cream is understood by the term "ripened cream," and when this condition can be produced by the butter-maker with uniformity, regardless of the seasons of the year or extremes of climate, the process may be reckoned as nearly perfect as possible, and not until then. Of course, it is most desirable that the process be as simple as possible, in fact within the reach of every creamery and dairyman in the country, and all the means required to attain these results can and should be a part of every dairy and creamery, large or small.

Boyd's process or system of ripening cream or milk is the result of years of practical work in a private dairy of about 40 Jersey cows. After it had been thoroughly tested and used, during all the seasons of the year, it was patented in the United States, Canada and Great Britain, and finally given to the public in the year 1889, a very considerable time in advance of any of the artificial methods of ripening, now being advocated under the representations of "pure cultures of bacteria."

When first introduced, it seems to have been met by a sea of opposition from the experts, who would see nothing good in it, but gradually it has been making its way, in a quiet manner, into popularity until at present it is being successfully practised in every dairy country, and is gaining favour every day with the most practical butter-makers.

The apparatus necessary to practise the process supplies all the conditions required to produce a uniform result every day in the year, the temperature of the lactive ferment and also of the cream being entirely under the control of the operator during the entire process.

The directions for using the process, which go with every purchase of the apparatus, are as follows :

To make the best ferment.—Take milk from fresh milking cows (that from pregnant cows will not answer); submerge the milk warm from the cows in Cooley cans in ice water. Skim at twelve or twenty-four hours, as most convenient, and use this skimmed milk for making the ferment ; or select milk as above, run it through a separator, and save the skimmed milk for making the ferment. The skimmed milk so selected is then brought to a temperature of 90 deg., in a water bath, being constantly stirred during the operation of heating. As soon as the temperature of the milk reaches 90 deg., place it in the fermenting-can and close the cover tightly, having first rinsed out the can with warm water. Allow the can to remain closed for twenty or twenty-four hours, when the ferment will be found thick and in the proper condition for mixing with the cream to be ripened.

How to use the Ferment.—First bring the cream or milk in the vat to a temperature of 66 deg. to 70 deg. F., when the ferment is to be thoroughly mixed with the cream or milk in the proportion of 2 per cent of the ferment to the amount of cream to be ripened. Remove one or two inches of the top of the ferment, which may not be desirable to use, and strain the rest through a fine strainer or hair sieve into the cream. The finer the ferment is broken up the more effective its operation will be. After the cream and ferment are well stirred and mixed at the above temperature, the vat must be closed and allowed to remain undisturbed until the cream is ripened, requiring from twenty to twenty-four hours for the operation ; the cream when ripe will be found thick, mildly acid,

and in the proper chemical condition, requiring only to be cooled to the proper temperature for churning.

After the cream and ferment are mixed, no stirring is admissible, as any agitation of the cream afterwards, retards the ripening process.

H. WESTON PARRY.

November 15th, 1900.

CHEDDAR-CHEESE.

(Continued).

A better cheese is made where there is a small proportion of rennet than where there is a large proportion. This conclusion has been arrived at after careful observation, and direct experiments. For example, a cheese made in August with the lowest proportion of rennet of any cheese made that month, was compared with one made three days previously, for which the highest proportion of rennet had been used. On December 31st following, the cheese made with least rennet was pronounced one of the best, if not the best cheese made in the month, and far superior to that made with a larger proportion of rennet. So also a cheese in September made with the lowest proportion of rennet employed that month was "excellent," while one made with the largest proportion of rennet was considered "not so good as the average make."

These opinions were expressed by competent judges, who were not aware of the difference in the make of the cheeses, nor of the reason for obtaining their opinions. There can be no question as to the accuracy of the conclusion to which these facts point, namely, that the use of an excess of rennet is detrimental to the production of a first-class cheese.

Unfortunately, manufacturers do not guarantee the strength of their rennet, so that it is difficult to say whether any sample has been tampered with or not. But I have good reason to believe that much of the rennet sold retail is first diluted, and is not of the same strength as when sent out by the manufacturer.

The quantity of rennet necessary depends more on the strength of the rennet than on the composition of the milk. Whenever and wherever it has been found necessary to materially alter the quantity of rennet used, it has not been possible to discover any corresponding difference in the milk to account for this necessary alteration, which therefore is most probably due to some change in the rennet, which causes it to lose its strength.

It must not be forgotten that the effect of the rennet will, to a certain extent, depend upon the acidity of the milk, for the greater the acidity the more rapid is the action of the rennet.

Founded upon this fact, the method of testing the ripeness of milk by means of rennet, adopted in Scotland, and explained on p. 89, has been introduced.

The purity of the rennet employed in cheese-making is of as great, if not of greater importance than its strength. Microscopical and bacteriological examination has shown that numerous bacteria, as also some yeasts, are present in the rennet, even when this is of good quality. If bacteria which are not injurious to cheese-making are capable of living in rennet, it is evident that others which would be injurious might also find in it sufficient nutriment for their existence. Hence it is necessary not only to insure that the rennet used is pure, but to keep it in a place where and in such a manner that it is not liable to become contaminated. I have found a bottle with patent stopper, similar to those used for sterilised milk an admirable receptacle for the rennet employed in the dairy.

The Effect of a High Scald.

In order to determine the effect of a higher temperature for scald than that adopted in the Cannon system, it has been necessary to make certain experiments.

In the first experiment the milk was treated exactly the same as usual up to the time of the first scald. For the second scald it was raised to a temperature of 95 deg. F. The acidity of the mixed milk was

.23 per cent. The acidity of the whey after first scald was .17, and at the commencement of the second scald .175. It rose very slowly, and had not reached the desired amount until 12.6 p.m., having been in scald 2 hours 35 minutes. The quantity of fat in the whey was very great, due to the long stirring in scald. When the whey was first drawn it showed an acidity of .25 per cent., but when the whole had been drawn it showed an acidity of .27, proving that the formation of acid had been going on within the curd, and had not shown itself in the whey. This is confirmed by the acidity of the drainings from the piled curd and the rapid development of acidity afterwards. The curd was vatted at 4.49 p.m., was very dry (as shown by the small loss in press as well as by analysis), and lost considerably in the cheese-room.

Hence heat produces a contraction of the curd similar to that produced by acid. Where a high temperature is used in the second scald, the development of acidity in the curd must take place after that curd has been removed from the whey, and not while in the whey as is permissible with a lower scald temperature. The above and other experiments have shown that when a high scald is employedi the curd is so contracted by heat that the acidity subsequently developed in the curd is not recognisable in the whey.

(To be continued).

The Poultry-Yard.

(CONDUCTED BY S J. ANDRES).

BROODERS, OR FOSTER-MOTHERS.

All who use an incubator should have a brooder, and the size and make will depend on the number of chicks intended to be raised in a season. There are several kinds of brooders, as well as there are of incubators. Some are hot-water brooders; others hot-air. A good brooder should be always dry, warm, and clean, and so heated that the temperature will not vary more than three or four degrees at most. Unlike the hen, the foster mother is always ready to brood the chicks at any time, and has no vermin to hand over to the chickens. The temperature of the brooder should be regulated as carefully as an incubator; if not, trouble will follow. Too high or too low a temperature will cause bowel troubles, cramps, staggers, etc. The foster-mother should be started at a temperature of 95 degrees—after the chicks or ducklings are settled in their sleeping compartment—and should be lowered gradually as the chicks or ducklings grow. Care should be taken not to overcrowd the brooder. Especially is this the case with chickens. Ducklings will not huddle up as close as chicks; chicks, on the other hand, will huddle up into a corner if not separated with a couple of shingles or boards. If the young birds are allowed to huddle closely together in a corner of the brooder, the result will be sweaty and dead chicks in the morning.

In the early stages of brooding the chicks or ducklings, much will depend on the time of year. In the early winter months the youngsters require more warmth, and will use the brooder longer and more often than in the summer months. For the first week I like to confine the chicks or ducklings to the brooder run; after that, they are allowed to run on the ground. Care should be taken to keep them in brooder runs till the dew and dampness have left the ground each morning, and if wet weather comes they should be kept in their brooder runs till the ground is dry again. Chicks, as they grow, require more run than growing ducklings. The latter, if allowed a large run, will race about until tired out, then rest a while, and at it again; but ducklings, when commencing to feather, take things more sedately, and do not run about so much. The length of time that chicks or ducklings should be kept in the brooder will depend on the season and weather. Generally, if the weather is favourable, chickens should be brooded from eight to ten weeks; in very warm weather, less. Ducklings should be

brooded four to five weeks, and housed fairly warm afterwards. Chickens, when feathered, should be taught to roost instead of huddling together in boxes or corners. If you lift them up on to the perches for a night or two, you will find they will resort to the perch themselves as soon as night comes.

A FEW WORDS ON THE BREEDING OF BIRDS.

To produce good chickens or ducklings we "must" have a good foundation; all the food, care, etc., will be of no avail if we do not have good, healthy, vigorous breeding stock to commence with. Eggs laid by weak parents or over-fat birds will not produce good chickens. Each bird penned for breeding purposes should never have known "one day's" illness of any kind, and should be so fed that it will not lay on fat or become "out of sorts" through improper feeding.

The mating of the birds should be done carefully. The male bird should be strong and vigorous, and should not be overmated. He should be watched occasionally to see that he is lively and in vigorous health; if he becomes listless or mopish, then the eggs from his pen will prove unsatisfactory. Another point to be watched is to see that the male bird has no favourites; if he has, it is a good plan to remove them for a day or two until he makes up to the neglected hens.

Care should be taken that the degree of relationship of the birds is not too near or too distant; if so the fertility of the egg will be diminished.

The question is often asked, "How many females should be mated with a male bird?" To answer this correctly is not easy, for much depends on the male himself; besides, each variety or breed will differ more or less. For instance, the Asiatics, or large breeds, will not take as many females as the Mediterranean, or lighter breeds. I have become a believer in mating a large number of females than the orthodox rule, and I find I get better results, especially with the lighter breeds. Early in the season fewer hens are needed, but as the season advances the numbers may be increased. For the lighter breeds I generally mate up five or six hens, and add, as the season advances, up to nine or ten, and even "twelve" hens. With the medium breeds—Wyandottes, Orpingtons, etc.—four or five at first, and increase up to eight or ten. With the larger or heavier breeds, three or four hens early in the season, and increase up to eight. Of course, a good, lively, vigorous male bird must be at the head of affairs to get best results.

The hen should be considered as well as the male bird, and must be sound and healthy if we wish to get good fertile eggs. On her depends the greater part of the production of the future chick. She should produce a perfect egg, stored with the proper nutriment for the development of the embryo, and the foundation of health, growth, etc., for the future bird.

CARE OF BROODER CHICKS.

They should have a little yard at first, which should be enlarged as they grow, but care should be used to have no corners where they can congregate in case of a shower or at bedtime instead of going into the brooder.

I find it best to feed brooder chicks four times a day, with extra relishes thrown in. At each feed give only as much as will be eaten before the next feeding time. To provide exercise by scratching, there is no better grain for them than millet seed. For the main part of their rations, make a bread as follows: To three cups of sour milk or buttermilk, add one heaping teaspoonful of saleratus, a little salt and cayenne pepper, stir into this equal parts of corn meal, heavy shorts and bran till it is a stiff dough. Bake it in a deep dish so that there shall be as small a proportion of crust as possible. Keep in a cool, moist place, as it soon sours in warm weather and is then unfit to feed to chicks. Animal

food in some form must be supplied, else some of the chicks will pull the down from others and eat it.

They should have charcoal occasionally, coarse sand or rock, pounded quite fine, and plenty of green stuff. Lettuce, young cabbage-plants, tender clover heads, are all excellent, but they should have two or three feeds of this a day, for they soon tramp on and spoil what they do not eat. Millet-seed, wheat and cracked corn, are good for dry feed and should be scattered about the run for them to pick at. The first thing as soon as it is light in the morning, feed the chickens. The last thing before going to bed at night take a lantern and look at the thermometer in the brooder, for as the outside air grows cooler after sunset the temperature in the brooder will decline.

S. J. ANDRES.

WHY CHICKS DIE IN THE SHELL.

We wish the operator to understand that the incubator will hatch any eggs that can be hatched by any other means. It stays on the nests, never breaks any eggs, and for that reason will hatch a higher per cent. than a hen. Some people won't understand directions and would not follow them if they did. They have their own theories in regard to artificial incubation. After the hatch is over and the chick fail to come hatch is over and the chick rfail to come out, the machine is blamed for not fulfilling their expectations, and artificial incubation is a failure.

Many chicks die in the shell from improper ventilation, air cannot be seen and measured. The operator needs a little experience before the proper amount can be given. With insufficient air the chicks may die in all the stages of growth, but the greatest number during the last three days of the hatch. Too much moisture is nearly always given under the mistaken notion that moisture is what makes the downy balls pop out. Mistaken kindness, eggs pip, but are wedged fast in shell and cannot move. In very bad cases, chicks get out of the shell, but fail to absorb the yolk, and thus stick.

Then the poor chick, in moving around, pulls out its bowels. After several get out in this manner the tray presents a most horrible appearance, shells present a sticky appearance, with white and green deposits, after birds hatch. When insufficient air is given for ventilation, the chicks blow and pant with outstretched neck and open mouth.

Chicks should never pant after hatching. If they do, insufficient air has been given. When chicks are very much shriveled and small the air space very large, not enough moisture has been given.

Chicks or ducks will die in the shell from overheat; running at too low a temperature; bad air in incubator; bad air in room; too much dampness in a cellar; dryness in incubator when hatching; small air cells; extremely large air cells; old eggs; chilled eggs; (eggs do not have to be frozen to chill them); over-fed breeding stock; unbred stock; diseased stock; ill-fed stock, and, in fact, anything that will lower the vitality of the breeding stock or the egg before or after incubation. The piping stage is the judgment day or summing up of all the evils that went before.

In a large number of cases poor hatches are caused by poorly fertilized eggs, and the incubator gets all the blame. Eggs laid in cold weather, in the winter months, are seldom properly fertilized. Eggs from birds in poor condition, or in confinement, may start to hatch, but, not having sufficient vitality, they will die in an incubator or under a hen. Another cause of poor success is the anxiety of the operator.

He is constantly fussing, turning the heat up and down, sliding ventilator one way, then another; watches the machine day and night, gives them an ocean of water one day and dries them the next.

The last great day of the hatch comes off —no chicks. Operator is mad, for "I followed directions (?)" Did he? We think not.

S. J. ANDRES.

The Grazier and Breeder.

THE REARING OF CALVES.

A paper on "The Rearing of Heifer Calves for the Dairy" was read by Mr. W. F. Lawrence, of the C.C. Farm, Newton Rigg, Penrith, to the members of the Northumberland and Durham Dairy Farmers' Society at Newcastle on Saturday. Mr. Lawrence said that during the four and a-half years he had managed the Newton Rigg farm he had set himself, by careful experiment, to determine how calves could most cheaply be well reared and losses prevented. Of eighty-six calves which had been born alive only one had died, and that one suffered from internal haemorrhage from its birth. It was most important and desirable to keep the different calves separate from each other until they were two months old, as many losses occurred among young calves through being together and sucking each other. At Newton Rigg a calf was taken to a pen away from the cow-house as soon as it was born, got a good rub down with straw, (1) and was well bedded and covered with the same material. In the course of half an hour or so the calf was fed with about a pint of its mother's first milk at blood heat. No medecine was given, the first milk containing all that is necessary both for feeding and as an aperient. Afterwards the following rules of feeding were observed: First week: Its own mother's milk warm three times a day, commencing with about a pint and a-half at a time and increasing to 2 quarts on the fourth day. Second week: Two quarts of warm new milk, not necessarily its own mother's, three times a day. Third week: Two quarts of warm milk, half new and half skim or separated, three times a day, with a half-pint of linseed-soup to each quart of skim milk. Fourth week: Same as the third, with a handful of sweet meadow hay to nibble at. Fifth week: Two and a-half quarts of warm skim milk three times a day, a half-pint of linseed soup to each quart, and a little sweet meadow hay after morning and evening meals; to be continued with gradually increasing quantities of hay till the end of the eight week. Ninth week: Omit the linseed soup, and after the mid-day milk give a single handful of broken linseed cake and a little pulped swedes; grass instead of swedes in summer; hay as before. Twelfth week: Omit mid-day milk and give 3-4 lb. of mixed linseed cake and crushed oats, and half a gallon of pulped swedes (grass in summer) at mid-day, continuing morning and evening skim milk and hay as before. If necessary, milk may be entirely discontinued at five months old, and 1 lb. a day of mixed linseed cake and crushed oats be given to each calf, with increasing quantities of hay and roots, sliced or whole, but if skimmed milk be plentiful it cannot be put to better use than giving the calves one or two drinks of it each day up to the age of eight or nine months. To prepare linseed soup put two pints of linseed (2) to soak overnight in four gallons of water, boil and stir the next day for half an hour, and five minutes before the boiling is finished add 1-2 lb. of flour (previously mixed with enough water to prevent it being lumpy) to this quantity of soup to counteract the laxative tendency of the linseed. Side by side with linseed soup cod-liver oil has been tried at Newton Rigg as a substitute for the removed cream, and it has answered admirably—quite as well as the boiled linseed. Where the cow's first milk is not available for new-born calves, ordinary new milk may be made to closely resemble it by adding the white of an egg and a teaspoonful of castor oil previously whipped in a little warm water to about two quarts of the milk. Young calves require dry, comfortable, and sweet beds, and where such conditions are absent scour is often the result. There is nothing better than well-broken moss litter. He had come to the conclusion that it was

(1) This makes the hair of the calf stick together—don't like it. ED.

(2) Lucerne should always be crushed or else ¾ of it pass through the animal undigested. ED.

best to keep spring-born calves in for the first year, except, perhaps, for a few hours a day on a pasture during the best summer months. Autumn-born calves were turned out all the summer.

WINTER SKIM MILK CALVES.

Prof. Haecker, of the Minnesota Experiment Station, has spent a good deal of time in developing his dairy herd and his opinion as to the best way of raising good calves on skim milk in the winter should be of interest. It must be remembered, however, that he is raising his calves for dairy purposes, and hence he eschews any food likely to cause them to lay on fat. His plan of raising calves in winter is as follows :—

We rear about thirty calves each winter on separator skim milk, and find no difficulty in growing them fine and thrifty.

The calf is allowed to suck once (Why ? Ed.); it is then removed and one feeding period allowed to pass without offering it any milk ; this is done so the calf will drink without the finger. The first week it receives a light ration of whole milk, fresh from the cow. The second week it gets half whole milk and half skim milk. The third week, and until it is weaned, it flax-seed and hay. We feed no grain to calves intended for the dairy, other than the ground flax meal. By flax meal we do not mean oil meal or oil cake, but the ground flax, containing all the oil there is in the flax seed. We used to feed ground oats or ground barley to the calves, but found that many of them acquired the habit of laying on flesh, which is a permanent injury to the dairy calf. The quantity of ground flax used daily varies from a teaspoonful to a tablespoonful in each mess of milk, according to the size of the digesting capacity of the calves. The flax meal is not scalded as is usually done with flax seed, but the meal, if dry, is stirred into the milk just before feeding. When the calf is young great care should be taken to always feed the same quantity, and at a temperature of at least 90 degrees. After the calf is a few weeks old, the skim milk and flax meal may be gradually increased. Scours are generally caused by over-feeding, or by milk fed when cool. From four to six pints of milk is a fair ration for a calf the first week. Feed twice a day and keep comfortable and clean and feed from a clean tin pail.

A FLY REPELLENT.

Ed. " Hoard's Dairyman " : I might state for the benefit of your readers, though out of season at this time of the year, I use during the fly season, a mixture made up of equal parts of pine tar and lard and coal oil, mixed up and applied with the hand or scrubbing brush. Have used this five years and do not intend to exchange for any other mixture known at present. In the summer, I pasture the cows and when put out of stable I apply lots of lime and sweep it off, and every fly will disappear, as they can't stand the dust from the lime. I am satisfied, if more lime and salt was used and applied, less questions would be asked about abortion in cows. D. McC.

Brockville, Ont.

Swine

MILK FOR FEEDING PIGS.

Reference was made in the correspondence column in last issue to the value of skim milk in feeding pigs. This is a subject The Farmer has called attention to before. It was discussed at the Sheep and Swine Breeders' Convention last February. Prof. Grisdale spoke of it and Prof. Henry emphasized it, as being a point too often forgotten. Because a farmer has only a little skim milk he thinks it of no account, not worth bothering about, but that is just the time it is most valuable. To bring this matter more freshly to the minds of our readers, we reproduce the final summary of Prof. Grisdale's results :

No of Swine in the Test	Skim Milk consumed per head per day.	Grain Equivalent.
4	2	1 lb. corn equals 1.83 lbs. skim milk.
31	3	1 lb. mixed grains=3.82 lbs. skim milk
4	5.4	1 lb. mixed grains=5.38 lbs. skim milk
4	13.6	1 lb. frosted wheat=7.91 lbs. skim milk
5	15.7	1 lb. mixed grains=7.34 lbs. skim milk
2	17.1	1 lb. mixed grains=8.82 lbs. skim milk
2	23.7	1 lb. mixed grains=7.76 lbs. skim milk

"Generally speaking, skim-milk may be said to be worth one-sixth to one-fifth as much as an equal weight of mixed meal."

It will be seen that in four experiments where only 2 lbs. of skim-milk was fed to each hog per day the highest results were obtained, 1.83 lbs. of skim-milk having a feeding value of 1 pound of corn, while when 3 pounds of skim-milk were fed along with mixed grains it took 3.82 lbs. of the milk to equal 1 pound of the grain ration. As a gallon of milk weighs 10 lbs., a little less than a quart of milk for each pig each day gave the best results. Prof. Henry's experiments show the same thing, only he puts it in a different way. His results are as follows :

When Corn is Worth.	Value of 100 lbs. of Skim Milk.		
	When feeding 1 to 3 lbs. of milk for 1 lb. corn meal	When feeding 7 to 9 lbs. of milk for 1 lb. corn meal.	Average of all trials.
$10 per ton (28.0c per bushel)	15c	9c	11c
$12 " (33.6c ")	18	11	13
$14 " (39.2c ")	21	13	15
$16 " (44.8c ")	24	15	17
$18 " (50.4c ")	28	16	19
$20 " (56 0c ")	31	18	21
$30 " (84.06 ")	36	27	32

All experiments thus tend to show the high feeding value of a limited amount of skim milk

PIGS.

The Modern Bacon Pig.

It is perhaps too much to expect that there will ever be entire unanimity of opinion among judges as to what constitutes the perfect type of bacon pig, yet it is something greatly to be desired, and an effort should be made to come as near to this desired end as possible. The main difficulty in judging seems to arise from the fact that judges differ regarding the relative importance of the various parts of an animal. They may be in entire accord as to what constitutes a perfect bacon pig, but unfortunately, perfect animals are scarce, and it is in the attempt to balance one defect against another that differences in judgment frequently occur. It would seem reasonable, therefore, to assume that some authoritative standard of excellence and scale of points would be helpful in bringing about greater uniformity in judging.

There exists in the mind of some people a very strong prejudice against a scale of points, yet no judge, worthy of the name, ever makes awards in a show ring without a standard of excellence and scale of points in his mind. That is, he has his own ideas as to what constitutes perfection in the various parts of an animal, and he also has his own ideas as to the relative importance of these various parts. Without these things he cannot judge, for he has no basis upon which to make awards. The actual use of a score card in a show ring is to be condemned. Scoring animals is a useful practice for the student, training him to notice all points of the animal, forcing him to make up his mind whether defects are serious or otherwise, and guiding him as to the relative importance of parts ; but all this should be learned before a man attempts to act as judge. The scale of points, then, is merely a means towards an end. It is an aid to judgment, but cannot take the place of judgment. It can serve merely as a general guide to judges, and, properly used, will aid in securing uniformity.

The preparation of a scale of points is no easy matter, and the scale presented here is not claimed to be perfection. It represents an effort to put the question in a tangible form, in the hope that something authoritative may result. In the

scale of points given herewith, an attempt has been made to distinguish between a breeding animal and one intended for slaughtering. It is quite apparent that in breeding animals, weight limits should not be used. On the other hand, an animal that is to be slaughtered need not be criticised as to eyes, ears, hair, style, or the strength of its pasterns, while weight becomes very important. The following is the suggested scale of points : —

Head and Neck—8 points :

Snout, moderately fine	1
Eyes, good size, full and bright.....	1
Jowl, light and neat.....	3
Neck, medium length and rather light.	3

Fore Quarters—17 points :

Shoulders, light, compact, no wider than back.....	9
Breast, good width and full.....	4
Fore legs, set well apart, and straight; pasterns, upright ; bone, moderately fine.....	4

Body—40 points :

Back, medium width, forming a slight arch from neck to tail.....	9
Loin, strong and full but not unduly arched.....	5
Ribs, good length and moderately arched.....	3
Side, fairly deep ; long and straight between shoulder and ham ; a straight edge laid over shoulder point and ham should touch the side throughout.....	12
Heart Girth, filled out even with side of shoulder ; there should be no tucked up appearance back of fore legs, nor droop back of shoulder top.....	5
Flank, full and low.....	1
Underline, straight.....	5

Hind Quarters—15 points :

Rump, same width as back, long and slightly rounded.....	5
Ham, full ; thigh, tapering and carrying flesh well down towards hock.	6
Hind Legs, medium length ; hocks, set well apart but not bowed outward ; bone, moderately fine ; pasterns, strong.....	4

Quality—15 points :

Ear, rather thin (1); hair, fine and abundant (2); skin, smooth, showing no tendency to wrinkle (2); bone, flat and clean in legs, moderately fine in snout and head, and showing no prominence on side and top of shoulder (5); flesh, firm and smooth, with no flabbiness at jowl, fore-flank, belly, or ham (5).....	15

Style—5 points :

Active and sprightly in movement, and standing well up on toes.....	5
Perfection.....	100

The head and neck have very little market value and consequently should be comparatively light. A great deal of the weight of the head is in the jowl, which should therefore be light. A long, scrawny neck is very objectionable, indicating poor feeding qualities. A short neck is a good thing in itself, but where the neck is very short it is apt to be heavy on top, a formation associated with heavy shoulders carrying a great thickness of fat over the top.

The value of the meat in the fore quarters is comparatively low, particularly the fore hock, or shoulder. Consequently we want as little shoulder as is consistent with constitution : smoothness of shoulder being especially desirable.

While a "razor back" is not desirable, yet a broad back invariably gives too great a thickness of fat. A flabby, heavy belly with flabby fore flanks must not be mistaken for a long rib. A fair depth of side is very desirable, but when it goes beyond a certain point it becomes objectionable, because it gives too much belly meat.

THE SLUMP IN HOGS.

The sudden drop in the prices for bacon hogs last week came no doubt as a surprise to many farmers who had been counting upon the high values of the past few months being maintained for some time. But a glance at the market and the conditions affecting the export bacon trade must convince one that these high values could not have been maintained till the end of the year. In fact, some in the trade claim that the drop in prices should have come a month ago and that the high values during October, while benefiting the farmer, meant serious losses to the packers who will not be able to sell the product for nearly what it cost them. However, this may be, we are not in a position to state. That the farmer has had good prices for several months back no one will dispute and if lower values follow he has perhaps no reason to complain.

A drop from $5.75 as reported in last week's market report to $4.75 per cwt. means a big slice off the profits from hog raising. But this should not discourage farmers who are in the business. The fat and the lean periods must come in all trades and people in business or in the production of any marketable article must be governed by the law of averages. Judged from this standard the prices for bacon hogs for 1900 will average high and it is upon this basis that profits must be fixed. But in doing so the farmers should, as we pointed out in dealing with this question in "The Farming World" of June 12 lastl endeavor to so arrange their supply of hogs as to have the largest deliveries during the summer months when prices are high and as few as possible to dispose of in the fall when prices invariably are lower.

(To be continued).