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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

VOL. 2. No. 7 — This Journal replaces the former "Journal of Agriculture," is delivered free to all members of Farmers' Clubs. — OCTOBER 1, 1898

..THE..

Journal of Agriculture and Horticulture

THE JOURNAL OF AGRICULTURE AND HORTICULTURE is the official 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. Jenner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

LA PATRIE PUBLISHING CO.
77, 79 & 81 St. James St., Montreal.

Subscription: $1.00 per Annum payable in advance.

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Notes by the Way.

Agricultural education. — Among many wise counsels that the late Professor Huxley gave to all sorts and conditions of men, few were more thoroughly practical than the advice offered to the Chamber of Agriculture of Easingwold, Suffolk, England. "There are, said he, some general principles that apply to all technical training. The first of these is that practice can only be learned by practice. The farmer must be made by thorough farm-work. I believe that you practical people would be all the better for the scientific knowledge that would show you *why* such or such a treatment is successful in growing such or such crops, or in feeding such or such animals. The knowledge would keep you from trying hopeless experiments, and would enable you to take advantage of the innumerable hints that Dame Nature gives to people who live in direct consort with things. Boys and girls, when at school, should be led from the observation of the commonest facts up to general scientific truths. If I were called upon to frame a course of elementary instruction preparatory to agriculture, I am not sure that I should attempt chemistry, or botany, or physiology, or geology, as such; it is a method fraught with the danger of spending too much time and attention on abstraction and theories, on words or notions, instead of on things. The history of a bean, of a grain of wheat, of a turnip, of a pig, or of a cow, properly treated,— *with the introduction of the elements of chemistry, physiology, and so on as they come in,*—would give all the elementary science which is needed for the comprehension of the processes of agriculture in a form easily assimilated by the youthful mind, which loathes anything in the shape of long words and abstract notions; and small blame to it!

Dairy-cows.—The favor with which the English dairy-farmer regards the Shorthorn dairy-cow is not a thing of yesterday. More than fifty years ago, we remember the numerous herds of these superb milk-producers in the hands of at least ¾ of the country from the borders of Scotland to the county of Gloucester. The border counties between England and Wales kept a few Herefords, infinitely more for beef-production than for any other purpose; Norfolk and Suffolk had a few Red-polls; Devonshire, Somerset and Cornwall, kept Devons; and the aboriginal black cattle, or *runts*, had a strong hold on Wales; but generally speaking dairies were supplied with milk by either pure-bred or crosses of Shorthorn. And so it is to-day.

Not very long ago, at a "London Dairy Show," of the three premium cows in each breed, the three prize Shorthorn made an average score of 122.1 points; the three prize Jerseys, 88.5; and the three prize Guernseys, 90.76. And yet, adds a correspondent, in the face of this, there are men in the country who presume to say that, for the dairy, you should by all means choose one of the "specifically-bred" dairy breeds, and avoid the "general purpose" cow. The Shorthorn, in the above instance, is the cow that gives the most milk, out of which is made the most butter, the most cheese, and produces a calf which, if a male, can be converted into a steer worth raising. And she does this, according to Prof. Whitover, of the Vermont Experiment Station, in an annual expenditure for food of about $3.50 more than for a Jersey. It by no means follows from the facts brought out by milking tests that a cow, claiming excellence in one thing only, is necessarily superior, in that particular, to a cow claiming excellence in two or more qualities.

Flaxseed.—It is astonishing to hear that American writers on farming still recommend giving uncrushed flaxseed to cattle. Soak it in cold or hot water for ever so long, and the seed is so completely protected by the integument that by far the greater portion will, after being fed, leave the animal undigested. Mrs. Jones, in an article we quoted in our last number, very wisely advises the use of flaxseed-meal for weaning calves; but a crusher would not cost much, and the profit of the intermediaries would be saved. Besides, in hot weather, those who steep the seed, unless they are very careful, run great risk of having the flaxseed turn sour—a very dangerous food for calves.

As flaxseed is often to be bought in the neighbourhood of Sorel, St-Hyacinthe, etc., for from 70 cts to 80 cts a bushel of 54 lbs., it follows that the cost is only 1½ cts a pound. Now, for a cow in full milk, about a pound a day is a fair allowance, and this, added to half a bushel of carrots or mangels, and four pounds of pease, ground up with the flaxseed, will, with a little hay, and straw *ad libitum*, be full feeding for her. For fattening, the quantity of flaxseed may be doubled, and the pease and roots as well, of course regulating the quantity by the size or weight of the beast. How much steeped flaxseed, uncrushed, would be the proper dose, we are unable to say, for a Mr. Parker, of Middlesex county, Mass., writing to the "Country Gentleman," says that he is in the habit of giving his cows 7 lbs of uncrushed flaxseed a day, a clear proof that the interior of the seed passes in an undigested form through the animal, for if it were digested, the butter would be so soft and oily as to be unsaleable, except for cart-grease, to say nothing of the extreme looseness of the bowels produced by the superabundance of oil in the seed.

The English crusher consists of two rollers of equal diameter, through which the seed passes from a hopper that delivers it equally over the whole width of the rollers at once. A simple cracking is sufficient, so the labor is slight.

Hay-making.—Mr. Macfarlane's article in the last number of the Journal contains a great deal of good advice on a subject on which much good advice is needed in this province. We regret to see so many fields of second-crop clover left uncut this season. Have our seasons so altered that the shortness and mildness of the winters justify us in being less careful in providing food for our stock during those periods?

Carrying hay.—When should hay be carried to the barn, or preferably, to the stack? The answer, of course, is: when it is fit. But that is the very point: when is it fit? Hay, in this part of the world is, in nine cases out of ten, over-made. First of all, it is allowed to stand too long before cutting, because it is likely to give less trouble to make it; secondly, because either the cows want milking, or the turnips need hoeing, and so the hay is allowed to remain an extra day in the field, during which a hot sun, accompanied sometimes by a brisk wind, dries up every particle of

moisture in the hay. Now, hay should have a good "sweat" in the stack or mow. This makes the hay lie close and have a rich flavor, and without moisture there can be no "sweat." If hay is carried too soon, it comes out of the stack or mow dark in colour, whereas clover-hay, of which we are speaking, should be of a rich brown. The real time to carry hay is when it is neither too dry nor too moist. The best test is: take a wisp of hay from the interior of a cock, or from the ground, and twist it up *tightly* with both hands; then unwind the wisp, and if it feels warm and comfortable, it is fit to cart, but if this pressure seems to bring out moisture to the surface, it is not fit.

Meadow and clover-hay are not treated alike. Meadow-hay can hardly be *tousled* about too much; clover-hay can hardly be left alone enough. If the weather is fine, let clover-hay lie for three or four days, and then turn gently with a rake-handle, or a longish rod. The grand point is to keep the leaf on. Throw together into windrows, and cart from them. If the weather threatens rain, after mowing, leave the clover alone, but get the meadow-hay into cock. You can shake out the latter from the cock without injury, but if you shake out the clover from the cock, look at the leaves on the ground after carrying.

Keeping nosegays.—As we have a very expressive English word to denote a small bunch of flowers we see no need of employing a foreign word to describe the same thing. The following method of preserving flowers is worth noting:

A florist of many years' experience gives the following recipe for preserving bouquets: When you receive a bouquet, sprinkle it lightly with fresh water; then put it into a vessel containing soapsuds, which nourishes the roots and keeps the flowers as bright as new. Take the bouquet out of the suds every morning and lay it sideways in fresh water, the stalks entering first; keep it there a minute or two, and then take it out and sprinkle the flowers lightly by the hand with pure water. Replace the bouquet in the soapsuds and the flowers will bloom as fresh as when first gathered. The soapsuds should be changed every third day. By observing these rules a bouquet can be kept bright and beautiful for at least one month, and will last still longer in a very passable state. But the attention to the fair and frail creatures as directed above must be strictly observed.

Testing seeds.—The simplest is the best way of testing seeds. Take two plates and in one place a piece of thoroughly clean white flannel. Fold it, and make it very damp, though not sodden, and place the seed between the folds, finally inverting the one plate over the other in which the seed is lying. No need to say more, except that the plates, etc., must not be kept in too cold a place.

Western feeding.—Prof. Shaw says that it is a practice of Western cattle-fielders to give each head of stock from 25 to 30 pounds of corn a day. But the animal is followed by a hog, which manages to account for four or five pounds of this, probably finding it undigested in the animal's dejections. Hardly a nice idea!

Professor Henry writes as follows in his work on "Feeding and Management of Cattle":

FEEDING CALVES

"In his article on the 'Feeding and Management of Cattle,' for the Bureau of Animal Industry, Prof. Henry gives some very practical suggestions for the feeding of calves. He advises taking the calf away from the mother not later than the third day, giving it, for two weeks thereafter, from ten to fifteen pounds of full milk, not less frequently than three times a day. At the end of two weeks some skim-milk may be substituted for a portion of the full milk, making the change gradually until in three or four weeks skim-milk only is fed. Full milk of the Jersey or Guernsey cow is often too rich for the calf, and part skimmed milk should be used from the very start. At the end of a month or six weeks the calf will do nicely on two feeds per day. Cow's milk has a ratio of 1 to 3.7. In skim-milk the ratio is 1 to 2.1. Skim-milk contains all the elements of full milk excepting the fat, and we can in a measure make up for this with cheaper substitutes. Probably the best simple substitute is flax seed, which should be boiled until reduced to a jelly, and a small quantity given at each feed stirred in the milk. Oil meal is cheaper than flax seed, more easily obtained and serves practically the same purpose.

Keep a calf tied by itself with a halter in comfortable quarters, with a rack in front or hay and a box for meal."

Here we have three heresies: 1. letting the calf and cow get accustomed to each other, which is

sure to make after trouble; 2. using uncrushed linseed, or as the Americans call it, flaxseed; 3. tying up a calf, intended to be reared, not for the butcher, whereas exercise is a prime necessity for all young animals.

THE COMPOSITE TEST FAIR

PROF J. B. LINDSEY, MASS., EXP, STA.

Why does not the composite cream test agree with individual test? Admitting that the composite and individual tests do not agree, is it fair to take the same size sample from a patron who makes 50 lbs of cream a day as from the one who makes but 10 lbs?—[L. W. P.

Cream raised by the Cooley process is liable to vary more or less from day to day in the percentage of butter fat. Hence the composite test is used to get the average percentage of the cream. It is expected therefore that a single sample of cream will not test the same as an average of all the samples, that is, the composite sample. It is perfectly fair to take the same sample from each patron, whether he makss 10 or 50 lbs per day, provided that in each case the cream is well mixed. If one patron has but one can of cream and another has five cans, a sample must be taken from each of the five cans and this will give naturally a larger sample than from the patron having one can to be sampled. If, however, the patron's five cans were all poured into one large tank and mixed, one sample, no larger than from the person having one can of cream only, would do.—*Farm and Home.*

THE JERSEY-AYRSHIRE CROSS

The Ayrshire-Jersey or the Jersey-Ayrshire cross is excellent, one of the best for the dairy. It gives hardiness and quantity, and will take nothing from quality, if the bull is wisely chosen. Get a bull from a cow with good shaped udder, teats of fair size and producing milk of not less than 4 % butter fat by Babcock test results may be expected if the cows of the herd are fairly good. J. D. W. French, Mass.

In my opinion there is no breed of cattle that will cross better with the Jersey than the Ayrshire. (1) For a dairy cow, I think a cross with a dark red or brown family having a few small white spots would give color, strong constitution, a good feeder, increased size, improve the form, especially the udder, and make a desirable cow. Obadiah Brown, R. I.

The experiment of crossing Jerseys and Ayrshires was tried nearly 50 years ago in New London Co (I think by a Mr Fitch) for the purpose of uniting the the good qualities of both for a family cow. The enterprise was abandoned on the death of Mr. Fitch, though it seemed to be a success in his hands.—[T. S. Gold, Ct.

In my opinion there is no breed that will give one so good a paying dairy cow as the cross of the Guernsey on high-grade Jersey, Durham or Ayrshire cows. It will give good size, open-built, well-uddered animals, that will give the highest natural colored milk, cream and butter, and also a good constitution.—[W. H. Caldwell, Sec'y Guernsey Cattle Club.

The cross of Ayrshire bull on high grade and unregistered Jerseys is becoming quite common in Vermont and is steadily growing in popularity for the dairy. I am told by creamery men that they find the farmers get a larger money return for their cream when they cross an Ayrshire bull on their Jersey cows. I have seen several cows that were claimed to be from this cross and they certainly looked like wonderful dairy cows and were claimed to be such by their owners. They appear to be larger than the Jersey and of stronger constitution. Those that I have seen were, as a rule, light red and white-spotted, and made a handsome cow. Those who have tried the cross tell me they get considerably more milk from the cross-breeds, that it is as rich as the Jersey and that the cow is tougher, more quiet and a better all-round dairy cow.—[C. M. Winslow, Sec'y Ayrshire Breeders' ass'n, Vt.—*Farm and Home.*

SOW WHITE MUSTARD (1) in corn at the last cultivating. It will not injure the growth of the corn, but it will make a fair growth, and will prevent soluble nitrogen compounds from being washed out of the soil, if indeed the mustard does not have the faculty of taking nitrogen from the air. The mustard acts as a nitrogen conserver. It is, of course, to be plowed under in the fall, preparatory to sowing to fall grain. Use at the rate of

(1) Both are probably from same stock. See "Stephens' Book of the Farm." ED.

(1) Take care not to sow *black* mustard. It will stain the land for years. ED.

24 lbs of seed per acre. A field thus treated increased the yield of fodder by 500 lbs to the acre, and of grain by more than five bushels, at the Massachusetts experiment station. The seed can be had of any of the large dealers.

TO GET RID OF RATS.—I put a handful of corn meal on a small board where the rats can easily get at it, and renew for three or four days, until they are used to it and consider the place a feeding ground. Then I add an equal amount of "Rough on rats" or arsenic to the meal. Those that do not die of poisoning leave the premises. This plan as always worked well with me.—Adolp Keiper.

ALFALFA FOR THE EAST.—I seeded down a piece of land the spring of '97 to alfalfa and orchard grass. I cut a nice crop that season and now, May 30, 1898, it is over two feet high on an average and nearly ready to cut. I expect to get two if not three crops from it this season. It is my opinion that alfalfa can be grown with success at the north. (1)—R. S. Royden, Connecticut.

PROFITABLE MANAGEMENT OF SHEEP

H. P. MILLER, OHIO.

Let the ewes drop their first lambs after warm weather and grass have come in the spring. Grass is the best milk producer and young ewes need it to enable them to nourish their lambs satisfactorily. From the late weaned lambs I would renew the breeding flock, for I believe it will be much more satisfactory, for many reasons, to grow one's own ewes. These lambs, of course, should be of the breed desired in the permanent flock, and for them I should use a mature ram. The male lamb of this crop may be sent to the mutton market at 10 or 12 months of age. If merinos they will sell better when shorn than in full fleece.

Whether to breed the ewes for a second crop of ewe lambs or not should be determined by the need of more ewes. Under a well established flock on this plan, two crops of lambs of this class would be required to keep up the number of the entire flock. The second or third crop of lambs from any class of ewes I should have weaned in March.

The age at which a ewe should drop her first lamb depends somewhat upon the breed but more upon the care she has been given. When they have been pushed to rapid maturity ewes may raise a lamb at two years of age: But they should be fed so as to continue to grow during their third and fourth years, which they will do after this temporary check. If the wool will approximately pay for their keeping I prefer they should not raise a lamb until three years old. (1) Raising a lamb will reduce the fleece 20 per cent in weight and the possible carcass weight about 10 per cent. Hence a lamb raised before the ewe is mature is not entire gain. With her first lamb at three years of age, a ewe may raise four lambs and be put upon the market herself fat at six years of age.

On the average 100-acre farm 250 to 265 sheep ought to be kept, besides a team and two cows. Under a conservative calculation the sales should amount to $750 or above for each year. This should be a practically net income, as one energetic able-bodied man can easily provide the necessary feed and care for that number. This I think will compare not unfavorably with the incomes from average 100-acre farms managed along other lines.

Not much is to be said in regard to feed. We have more to learn in methods of feeding than in the growing of our food products, but we shall probably do well to imitate our Canadian neighbors in the growing of more root and forage crops. —*Farm and Home.*

(1) Of course it can, but people have taken a long time to find it out. ED.

BUTTER MAKING ON THE FARM

GEORGE E. NEWELL

The creamery which makes a success keeps one sole object in view toward which all of its detail work converges, viz, the production of a standard first-classbutter. Private dairies conducted on this principle are the ones which succeed. As a general rule there is a slight prejudice in favor of dairy butter. But to insure permanent recognition at

(1) A well kept ewe is quite fit to lamb down at 2 years old.—ED.

the best prices, dairy butter must have a manufactured quality as perfect as the creamery article.

Creameries have established a deserved reputation for first-class manufactured butter, because of their strict adherence to the best known principles of butter making. Many dairy farmers are trying to run domestic butter making as a side issue, and giving it slight attention when it should have the skill, thought and practice that its importance demands. Of those who know theoretically how to make good butter, many fail in the practical application.—*Farm and Home.*

HOG PACKING IN THE EAST

For so many years has the west been regarded not only as the greatest source of supply, but also as the chief packing point for hogs, that the east has not due recognition of its output. Yet in the aggregate large numbers of hogs are packed in the older middle and New England states, including both home-raised pork and swine shipped in from the west. For example, N. Y. and Boston each pack upward of 2,000,000 hogs annually ; Buffalo, Phila and Balto 500,000 to 1,000,000 hogs and various smaller points considerable numbers. The most important packing point in N. E., outside of Boston is Brightwood, a suburb of Sprinfield, Providence a close second. Albany and Troy each pack in the winter season 30,000 to 50,000 hogs.

The following table shows the total yearly pack at the eastern points named, according to returns to the Cincinnati Price Current :

HOG PACKING AT LEADING EASTERN POINTS

Year ended March 1	1897-'98	1896-'97
Boston,	1,673,105	1,494,000
Worcester, Mass.	144,300	130,200
Fall River, Mass,	43,000	37,000
Brightwood, Mass,	—	154,700
Providence,	125,300	140,500
New Heven,	242,200	101,900
Bridgeport, Ct,	9,200	—
Other N. E. places,	2.0,000	60,000
Buffalo,	457,400	508,800
Albany,	31,900	34,000
Pottsville,	69,400	73,400
Other N. Y. and Pa. places,	65,300	56,100
12 months,	3,027,100	2,790,900

Farm and Home.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

COOKING AT SUMMER RESORTS

I feel sure that I have every right to complain of bad cooking in the JOURNAL, as so much of it is done by the wives of the proprietors of hotels, who as a rule are farmers as well as hotel keepers.

These hard worked women have taught themselves, by experience, what they do know, and they have got into a groove out of which they do not seem able to emerge. It is not for lack of a desire to please, so much as the want of knowledge of how to do better.

There are some, who would gladly alter their mode did they know how, but having gone on in the same way for so many years they know very little beyond preparing a certain amount of food for a given number of people, the real art of cooking is to them a mystery.

It is in the cooking of meat that they fail so badly, but the best of cooks could not make tender meat out of that which is bought in the morning and cooked for the midday dinner.

The cutting up the meat ; one cannot call it carving ; does not help to mend matters, as there is a rule even for this. To take a joint of meat and cut off small slices till there is no more left on the bone is a very easy matter, but one that is very unfair to the eater, as one person might happen to get the very best, and another the very worst part.

If meat is well carved, every one should get a little of all parts. Take a sirloin of beef, the undercut is more tender than the upper, this should be cut across the joint, in thickish slices. The upper part is liked by some people, as having more flavour ; this should be cut in just the opposite way to the under part, by starting from the back bone, and cutting a long very thin slice up to the narrow or flank part.

In private houses, the flank, as a rule, is cut off and put into pickle for 4 or 5 days ; then boiled and when tender taken out, pressed, and served as a cold dish, and is far superior to the usual canned meat, especially if a little saltpetre has been put into the pickle to give it a slight tinge of pink.

If carving were better understood, and done, at summer resorts, one would not hear so often one

person complaining to the other of the toughness of the meat, at the same time that the other person was finding his slice very good.

One must hope that the children of these good people will by education, and mixing more with the world, learn to do things as they should be done, and thus give more comforts, and study to give greater satisfaction to their patrons.

RECIPES

CHOOSING MEAT.

How few women really know the distinctive good qualities of different kinds of meat, and yet this knowledge is easily acquired if a little attention is given to it. Take first of all mutton. Small mutton is generally the best; its flesh should be fine grained and red, and the fat abundant, hard and clear white. Almost the same rule applies to beef. The flesh of well fed beef should be bright red, mingled with tiny grains of fat; the fat should be firm and white, not yellow, and the suet also should be white and firm. And old lean looking beef will prove tough and not in good condition; beef should have plenty of fat. In choosing veal see that the flesh is pink and firm, and its fat white and clear; indifferent veal is flabby. Veal is at its best in spring. Veal is the least nourishing of meats and is difficult of digestion. It requires to be thoroughly cooked to be wholesome. The uncooked flesh of fresh pork should be firm and of a pale pink hue, the fat white and stiff, and its rind thin and flexible. Pork should only be eaten in winter. Always purchase pork from a dealer who is known to keep his pigs in a cleany manner and to feed them on wholesome food.

TO POACH EGGS.

New-laid eggs only should be used for poaching. The white of the eggs is held in a thin membrane, outside of which there is a watery substance containing a little albumen. In two or three days, this membrane will become very tender, frequently rupturing as soon as you drop it into the hot water. The yoke of the egg then stands out prominently, and the white spreads over the bottom of the pan so that you cannot keep the egg at all in shape. The beauty of a poached egg is the yoke almost covered in this thin film, the white sufficiently hardened to form a sort of veil for the yolk. Fill a saucepan with boiling water, break the eggs, one at a time into the saucer; draw the pan where the water will not boil and slip the eggs down into it. Break another, and another, until the bottom of the pan is covered. Then draw the pan over a moderate fire, but still where the water cannot boil, and with the water baste carefully the tops of the yolks until they are of a bluish white colour. Have ready your dish covered with neatly-toasted squares of bread, take eaeh egg up on an egg slice, trim off the ragged edges, and slice it carefully on to the toast. Dust lightly with salt and pepper and send immediately to the table.

STRAWBERRY SHORT CAKE.

This popular American cake should be made when the strawberries are ripe, for afternoon tea. Mix together two cups, or about half a pound of flour, with a saltspoonful of salt, and a third of a teaspoonful of carbonate of soda; rub into it a piece of butter about the size of an egg. Make into a paste with a cupful of sour milk. Butter two round shallow tins, and spread the mixture upon them. Bake for fifteen minutes in a hot oven. When done, split the cakes open, and spread with crushed strawberries, sweetened to taste, with castor sugar, the cake should previously be buttered and sugared between each layer, and sometimes a layer of strawberries is put on the top. Two quarts of fruit for this quantity of cake.

CHERRIES IN VINEGAR.

The German fashion is to preserve fruits in vinegar to eat with meat. The following recipe for sweet pickle is to be recommended: Cut the stalks of the cherries quite closely, lay them in glass pickle bottles, with two or three cloves, and a few strips of cinnamon. To every pint of white wine vinegar allow one pound of preserving sugar, and boil the two together for a few minutes, skimming it if necessary. When cold pour over the cherries, and let them remain till next day; or, better still, two or three days. Drain off the vinegar, boil it up again, and when cold pour over the cherries as before; then tie down the bottles for use. Plums can be done in the same way.

PICKLES: HOW TO MAKE THEM

DELICIOUS MIXED PICKLES.

Let five dozen small cucumbers stand in strong brine for three days. Wash through cold water several times. Put half a gallon of strong vinegar in a kettle, with one ounce of mustard-seed, one of juniper berries, one of celery-seed, half a dozen pods of green pepper, two pounds of sugar, half a dozen small onions and a lump of alum. Let come to a boil, and pour over the pickles for three mornings, heating the vinegar each time. Put the pickles in wide-mouthed bottles and seal.

WHITE ONION PICKLES.

Take large, white onions and pour boiling salt water over them. Let stand three days and pour off. Scald a gallon of strong vinegar, add ten ounces of turmeric, pour over the onions and let stand ten days. Drain, and cover with vinegar, seasoned with red pepper, horse-raddish, celery-seed, mustard, cloves and allspice.

CUCUMBER CHOW-CHOW.

Soak cucumbers just out of the brine until fresh. Scald in strong vinegar, drain, and put in a stone jar, and cover with a gallon of vinegar scalding hot, to which has been added half a pint each of mustard-seed, black and white, two ounces of white ginger, one of pepper, two of ground mustard, one each of mace, cloves and allspice, with two ounces of turmeric, a tablespoonful of grated horse-radish, a head of garlic, one tablespoonful of salt, two sliced lemons and three pounds of brown sugar.

GREEN CUCUMBER PICKLES.

Salt small green cucumbers down dry for ten days, soak in fresh water twelve hours; put in a porcelain kettle, cover with vinegar and water, to which add a teaspoonful of pulverized alum. Set on the back of the stove over night. In the morning drain and put in a jar with cloves, allspice, pepper, horse-radish and garlic; boil sufficient fresh vinegar to cover the pickles, pour over, and set in a cool place for two weeks before using.

MUSHROOM PICKLES.

Take small button mushrooms; wipe clean. Put in salt and water and let stand for forty-eight hours. Scald sufficient vinegar to cover the mushrooms, add a little cayenne and mace. Drain the mushrooms, pour the vinegar over when cold, and keep in a cool, dry place.

The Dairy.

HOW THE FIRST PRIZE BUTTER WAS MADE FOR SHERBROOKE EXHIBITION

It isn't for nothing that pasteurization has become so universal a practice in Danish creameries, and if a success is worth the trouble in that land of natural dairy intelligence, how much more so must it be in this huge Dominion still in many places retarded by primitive ideas and practices in the dairying line.

It is more than probable that never before in the history of the Sherbrooke Dairy Exhibit, has the First Premium been awarded to a butter exhibit from pasteurized cream; it is not likely that an exhibit of this description has ever before been exhibited in Sherbrooke. Yet, in the United States, the majority of first premiums at the large dairy competitions and conventions have, for the past two or three years, been going to butter made from pasteurized cream, whilst in Denmark, as before observed, the practice has already become absolutely universal. And it has to become so here too: we must keep up with the times or be left by our competitors who do so.

In order to convince myself as well as to demonstrate to my students, I determined to pasteurize the cream for my Sherbrooke exhibit, this year. For my own part, I wished very much to institute a comparison with others of our famous Eastern Township creameries, and my only regret was the entire lack of any particular or suitable apparatus for carrying out the operation to a successful issue.

However, I set to work on one of my cream-vats, and after repeated scourings, scaldings and steamings, I deemed it fit to utilize for pasteurizing the cream.

One of our patrons having had five or six of his cows calve lately, he kindly consented to keep their milk for me in a can which I provided for the purpose. I gave him minute directions as to the milking of these cows, and the subsequent handling of this can of milk, and I took care to

be present myself to see my instructions carried out to the letter, with the result that I had as fine a can of fresh milk the next morning as it was possible to obtain under the circumstances.

This milk I put through one of my separators, which had undergone a scouring, scalding and steaming fully as thorough as the cream vat. I saved the skim milk to make a *starter* with. This I heated up to 155° F. for fifteen minutes and cooled down in eight minutes to 70° F. and then set it away, covered with a cloth, in the cream room to ripen, which it did, at 65° F., in forty-five hours.

The skim milk was prepared on Tuesday morning, at 12 o'clock, and was ready for the cream on Thursday morning at nine o'clock.

On Thursday morning no milk passed the weigh-can into the receiving vat, that was not absolutely good and fresh, and to the credit of the patrons be it said there was none refused. This milk was separated under ordinary conditions, with the exception that I took 46% cream (i.e. 46% butter fat) instead of 35%. Needless to state the milk was doubly strained, and the cream also.

Separating was all finished by half-past eight, and the cream had already been cooled to 56° F. Without loss of time, I proceeded to heat the vat three parts full of cream, to 150° F. This was accomplished in three quarters of an hour and was effected merely by heating the water surrounding the cream-vat by steam, and very carefully and gently stirring the cream during the whole time with a specially devised stirrer, shaped so as to pass grating along the curved sides of the cream vat and prevent the cream from getting scorched on, and with a piece in the centre with small wings to keep the entire bulk in motion and to ensure uniformity of temperature throughout. This stirrer was a great success, and the stirring was so gentle, although perfect, whatsoever, that no churningof the cream resulted. Having held the cream at from 150° F. to 155° F. for twenty minutes, gently stirring all the while, the hot water was run quickly off, and a large quantity of pulverized ice and salt, mixed, immediately placed round the vat, to cool the cream.

The cream had been heated from half past eight to a quarter past nine; at twenty-five minutes to ten it was surrounded with ice, salt and water; and at ten minutes past ten it had been cooled down to seventy, and the starter added. During the whole of this time, one hour and forty minutes, stirring did not cease for an instant.

The cream was then left to ripen, being stirred, every four hours, the temperature was allowed to drop to from 70° to 65° between Thursday noon and Friday morning, and was allowed to drop still lower, to 60°, during the day, according as the speed of acid development increased, which was tried four times during the day by means of the Farrington alkaline tablets.

At six o'clock, on Friday evening, the temperature of the cream was 58° F., and it was the same at three o'clock the next morning, and perfectly ripe.

I then, at half past three, cooled the ripened cream down to 50° F., and left it at that temperature for two hours, and at half past five it was churned.

It took just one hour and five minutes for butter to come, and the temperature had risen to 54° F. The grain was perfect, each little granule setting out by itself, as it were. The buttermilk ran off to a drop, and I considered no washing necessary, but merely left the butter to drain-off for half an hour and then worked it, packed it and put it into cold storage at 38° F.

This ended the making of the butter.

The results were highly satisfactory. Apart from it being awarded first prize.

Through the courtesy of the judge, Mr. Picket, I went over some of the best exhibits and compared them with my own; subsequently, I made a thorough examination of the entire butter exhibit. I came to these conclusions: that there was some most excellent butter there, besides my own, and that the whole exhibit was highly creditable. In comparing my butter with the best of the other exhibits, I easily detected a difference in flavor; a pleasant aromatic and piquant taste, reminding one of the sweet breath of the cow, and characteristic of good keeping qualities, was the peculiarity in my butter, as compared with a sharp, snappy but pleasing flavor characteristic of a suspicion of over-ripe cream and not such long keeping qualities. A difference there was, of what value it is difficult to appreciate. As an Englishman with the English taste, I put it as the difference between the butter the middle classes buy for one shilling (25c) a pound, and the butter that is in demand for the tables of the wealthy at one shilling and six pence (35c) a pound.

I hope to see the day when every creamery or

combined butter and cheese factory will be fitted up with the best of pasteurizing apparatus, with which the operation of pasteurizing cream must necessarily be of a far simpler and less laborious character than that I fitted up and which enabled me to successfully compete at Sherbrooke with such satisfactory results.

H. WESTON PARRY.

September 13th, 1898.

NOTE.—A most interesting article. We beg Mr. Parry to accept our hearty congratulations on his success. As he restored our taste for butter—for some 20 years we had never tasted it—we are deeply grateful to him. ED.

ADDRESS OF M. HENRI BOURASSA, M. P.

Dairymen's Convention, 1897.

My Lord, Mr. President and Gentlemen,

I must confess to you that when I made up my mind to attend this convention, the first at which I have ever been present, I had no idea of making a speech, I came hither to listen and learn, but sometimes, while teaching one learns, and that is the reason I have accepted the invitation to address you on the subject of our agricultural societies.

At the last session of the Council of Agriculture, I announced that I had prepared for the next meeting, which was to take place in the course of the present month, a bill intended to regulate the functions of the Agricultural Societies, as well as of the Farmers' Clubs. I could not get the documents necessary for the preperation of my essay, so I postponed till a later period the submission of this project.

If agriculture in Quebec has really made the progress we see in the last few years, it is indebted for a large part of it to the Farmers' Clubs and the Agricultural Societies. But these institutions have not given us all that we were entitled to expect from them. I know the French-Canadian has in him the spirit of progress; he is habitually prepared to adopt a novel idea, but in the spirit of organisation he is often wanting. When we have made a step in advance, when we have discovered a new process, we are inclined to think that before this nothing that was done was good, and we want at once to replace the old system by the new one, oblivious of the fact that the new may, to great advantage, be grafted on the old.

We have not perhaps, in favoring the establishment of Farmers' Clubs, sufficiently taken into account that these clubs may sometimes enter into competition with the agricultural societies, and thereby create a rivalry between the two institutions. It has often happened that a certain number of the members of the agricultural society being, right or wrong, discontented with their directors, have found in the clubs a means of making war upon the society.

The *raison d'être* of the farmers' club is found in its name. What is a club? It is the meeting of several persons composing the same society for the discussion of questions that interest them. It is thus that are formed religious, political, literary clubs, for the discussion of and formation of the ideas and interests of the common cause that it is desired to defend. The object of our farmers' clubs should be to collect the farmers together to discuss questions of agriculture, and to exchange among themselves information and explanations fitted to promote the interests of agriculture. These clubs may also be of great service to farmers by helping them to profit by the advantage of association in the purchase of seed-grain, of pure bred stock, of implements and machinery, suited to improve farming processes, etc.; but these advantages should be the consequence and not the chief reason of the work.

It often happens that the founders of clubs, wishing to attract farmers by the sole view to the present profit, have devoted their attention solely to the purchase of grass-seeds. Many clubs only combine for the purpose of listening to one or two lectures in the course of the year, and want to spend almost the whole money of the club in buying clover and timothy seed. This is clearly a mistake, nay, an abuse. If people only want to buy seed cheap, there is no need to get up a farmers' club to secure that end. Let 20 or 30 farmers put their money together and buy from the same dealer a sufficient quantity of seed, and they will not have to pay a higher price than that paid by the members of the clubs.

But, there is another more serious defect with which our farmers' clubs may be reproached; one that belongs to their present organisation; it is this: they trespass upon the domain of the agricultural societies by getting up agricultural exhibitions and competitions, that can never produce satisfactory results, because the field of competition they offer is too limited. All the competitors living in the same municipality, they cannot be numerous, the value of the prizes is trifling, no real emulation

can exist. The competition of the agricultural societies, on the other hand, by setting the farmers of several parishes or townships to compete with one another, and having more means, can offer more numerous and more valuable prizes; consequently, the zeal and ambition of the competitors are more highly excited.

This coincedence in action of the societies and the clubs, has the effect, too, of weakening both and of offering a ready support to the rivalry and quarrels, to the local disagreements, which, as we all know, are as numerous as they are varied. In almost every part of the province in which the two institutions are at work at the same time, lamentable divisions occur. Some farmers only join the club because some others belong to the society, and conversely.

It is this to which I want to put an end, if possible, by restoring to each of these institutions the characteristics, attributes, and duties that belong to them, and by leading the members to work for their common success.

Although I cannot give an exact abstract of the project I shall submit to the Council of Agriculture, I can point out its chief points.

The basis of the plan is to be made clear in two phrases: there shall be no society without clubs, no clubs without a society.

The people of each parish shall form a club. The combination of the clubs of a county or a region shall compose the agricultural society; consequently there will be only one subscription to be paid.

The president of each club shall be, by right, a director of the society, so the board of directors will be composed entirely of the presidents of the clubs. This will put an end to an abuse that has been found to exist in the election of the directors of several societies, when a few groups or clans often forced upon them boards of directors that did not do equal justice to all the localities that formed part of them.

Each club shall have the control of a certain sum destined to the purchase of breeding stock and seed grain, etc.

The clubs will have to meet frequently and to organise discussions. It will be the duty of the presidents to see to the proper conduct of these meetings, which may be held on Sunday afternoons. Members shall impart mutually the results of their experiments, and give their opiniou on the various systems of farming, breeding, selections of breeds, etc.

The question of the "Journal d'Agriculture" offers several contradictory points of view. At present, the Government retains the price of subscription for each member of a club or society. It sometimes happens that one and the same family receives five or six copies. This absurdity must dissappear. I think it would be better to leave to each the duty of subscribing to the Journal at a moderate rate, and not to deprive the societies of a considerable revenue, a large part of which at utter loss—except to the printer. Besides the members of the clubs, at least each head of a household should be obliged to subscribe. At any rate, the Journal must be taken in by the president and secretary of each club; the principal articles, those which seem to respond best to the needs of the place, should be pointed out by the secretary at the meetings, where they should be read and discussed. The clubs might put themselves into communication with the editor of the Journal, who should enlighten them on settled points, and publish the results of any experiments the members of the clubs may have tried.

Exhibitions of farm produce, competitions of best cultivated farms, shall all be under the control of the societies, and, consequently, the parochial competitions shall be suppressed. The greater part of the funds will thus remain in the societies' cash-boxes, and greater and more numerous prizes can thus be offered for competition.

There will be many details to be considered, but I think I have shown you the chief points of the measure.

What I aim at is, instead of having two rival bodies fighting with and weakening one another, we should have two societies working for their common benefit, and continuing to impel farmers along the path of progress; the one, by inciting farmers to study agricultural information and science, and enabling them to combine for the better application of novel modes of cultivation and breeding; the other, by offering them the means of comparing the results of their experiments and stimulating them by the offer of prizes to the more deserving.

If we succeed in this, we shall have largely contributed to the welfare of our country. In all countries the farming class is the basis of society; and this is more particularly true in our own country and province.

But to attain this end farmers must unite their efforts and good will. In all classes union is

strength ; in the farmer-class it is the essential condition of its influence. Manufactures infuse into its capital the force of organisation ; the liberal professions find in the individual learning and influence of their members the means of preserving their position in society. Farmers can only be powerful by their number, and, moreover, that number must be compactly organised. Let them unite then, let them no longer waste their strength in parish-strife or intestine quarrels, and they will soon find out how to enforce the recognition of their legitimate rights.

I thank you, gentlemen, for the kind attention with which you have heard me. Allow me, in conclusion, to congratulate you, in the name of this region that I represent in the Canadian Parliament, on the good your Association has done and caused to be done.

Let us continue to devote to the service of agriculture the means of action that Providence has entrusted to us, and we shall be doing a real, a genuine service to our country at large.

The Orchard and Garden.

(Conducted by Mr. Geo. Moore).

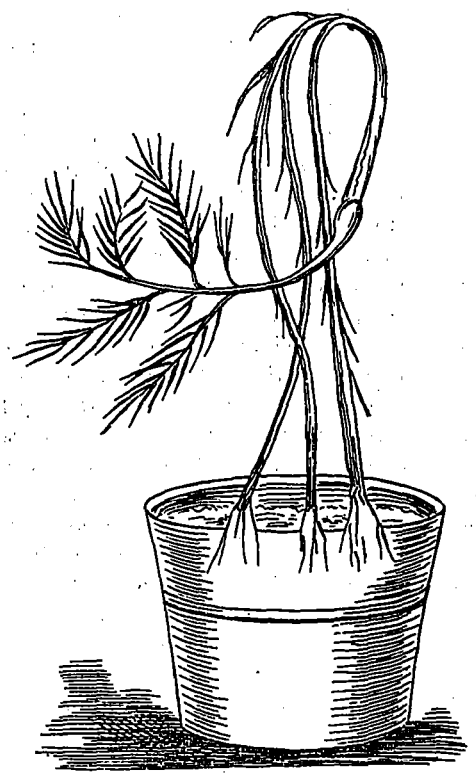
ANNUAL EXHIBITION OF THE MASSACHUSETTS HORTICULTURAL SOCIETY

An exhibition of this, which is said to be the richest Horticultural Society in the world, its assets being over one million dollars, is held every Saturday, at which, prizes are offered for flowers, fruit and vegetables, but this show is more especially for exotic plants of superior cultivation which are exhibited as single specimens and in groups. On this occasion these were of surpassing excellence and exemplified the skill and care of the growers in a remarkable degree. Three plants brought by Mr. Harris, the veteran gardener of H. H. Hunnewell, Esq., of Wellesley, were magnificent illustrations of the cultivator's art. The first, *Asparagus Sprengeli*, was suspended from the roof of the Hall, and for a hanging conservatory foliage plant it would be difficult to conceive anything more graceful or beautiful. Next came a remarkable species of Palm, Encephalartos Ghellenkii, with a stem like a huge green pumpkin, out of which grew long feathery fronds of greyish green, and last, one of the most perfect plants of the Maiden Hair Fern found so difficult to manage by many growers, Adianthum Farleyense ; the plant was about 2½ feet in diameter, a perfect globe of beauty with its delicate pale green fronds not one of which had the slightest blemish or imperfection. For these Mr. Harris was awarded two first prizes and the Society's Silver Medal.

Mr. Bailey's group of stove and green-house plants obtained the first premium (Mr. Bailey was the originator of the *five cent stores* and made an ample fortune thereby, hence he is familiarly known as "Five Cent Bailey";) but if he knew how to earn the money he knows how to spend it to the delight of all who enjoy the wondrous works of creation in the vegetable kingdom. Amongst the most noticeable plants in the groups of tropical plants, which were admirably arranged on the floor of the hall, were some new Alocassia Sanderiana, being the most conspicuous on account of its delicately veined and palmate shaped leaves of metallic lustre and texture, and yet light and elegant. Some remarkably bright foliage Marantas and Crotons C, Queen Victoria, as she should, taking the lead. Nothing could excel in perfection of growth and coloring the collection of Begonia Rex, varieties exhibited by Mr. Roy, gardener to Mr. Converse of Malden ; many of them were quite new and distinct from the elder varieties both in form and color of the foliage and how they could have been transported from the hot-house some miles distant and placed in the hall without the slightest injury is a problem which gardeners and their assistants, who have the handling of such large and fragile plants, alone can solve. The prize which was awarded to them, although liberal, was not adequate to the expense of their removal, but the honor of producing such perfect specimens was worth something, although the gardeners are a little dissatisfied that the public in larger numbers do not see the effect of their care and skill in cultivation, because the society does not sufficiently announce the holding of the exhibitions as they do not depend upon admission fees for funds, and the displays being so frequent and free to all, they become too much a matter of course and are only attended, after all, by a few enthusiasts. A beautiful group of Evergreens in large tubs received a premium for a collection of Coniferæ, but they comprised several which were not coniferous, such as the Portugal

Laurel, *Cerasus Lusitanica*; a sweet *Bay* and an *Ilex crenata*. Should not this fact have been enough to disqualify them, or at least have caused some notice to be taken of it, seeing that the fact was misleading to the uninitiated, and the object of such exhibitions are supposed to be educational?

In some respects the exhibit of dwarfed Japanese trees and shrubs was the most interesting in the hall as it showed that the gardeners of Japan possess a secret of cultivation of which we have



no idea. (1) There were many curious plants in the collection but the most singular was a specimen of a coniferous tree, *Chamacypharis obtusa*, which was stated to be 200 years old and, notwithstanding it only stood about 3 feet high, it was a perfect tree and looked as old as stated, although in perfect vigour. Another *Pinus densifolia* (so named) was a curiosity of which the enclosed sketch may give some idea; it will be seen that all its nourishment is derived from the mere tips of the fibres, all the rest of the root being above ground, this was said to have been in the same condition for many years.

A gardener who has spent some time in Japan, states that the Japanese are most jealous of foreigners discovering any of their secrets, and will leave their work as soon as they see one approaching.

(1) By no means a novelty. We remember them 60 years ago in the Burlington Arcade, Piccadilly, London. Ed.

Live Stock.

THRUSH IN THE FOOT OF THE HORSE

Most farmers are aware that the term "thrush" or frush is applied to a discharge from the cleft of the frog, generally of a foetid character, and, in the advanced form of the disease, associated with a rotten condition of the horn of the frog, and spongy or fungoid growths from the secreting membrane.

There is a common and simple form of the disease, depending on contact of the frogs with the wet manure in the stable and the absence of frog pressure owing to the system of shoeing in vogue, which includes cutting away the frog and raising it from the ground surface by thick heeled shoes.

Thrush of the simple form to which I refer, is easily cured and the introduction of a wedge of antiseptic agents into the open cleft of the diseased frog is not only ingenious, but also as effective as the less elegant plan of cramming in a lot of tow dipped in an antiseptic mixture of tar and acetate of copper, or some similar mixture. It must be remembered however that thrush is not always so simple in kind, nor so inclined to yield to treatment as some people lead one to believe. First among the several forms of thrush is the ordinary kind with which every one is acquainted—the discharge of fœtid matter from the centre of the frog. It does not however occur to the observer of this common disease to note, as a fact of some importance, that the cleft from which the discharge issues is a deep one, extending some distance through the thin layer of horn into the tissues of the internal frog: and still less is it likely to strike the tyro, that the cleft is in itself an abnormal state of the parts, quite without regard to the discharge, which is commonly looked upon as the only indication of disease.

A perfectly healthy frog has no cleft in it. A slight oval cavity is all that can be seen, and the

horn at the bottom of the shallow concavity is quite free from any trace of fissure. If the horny frog be removed by maceration from the internal structure, the sensitive frog is equally free from any sign of division. The concavity in its centre is smoothly excavated, corresponding exactly to the concavity in the horny frog.

With a knowledge of the elementary facts of anatomy, the observer cannot fail to realise that the deep cleft which is seen in cases of simple thrush cannot have been the product of a few hours or days, but in reality indicates previously existing disease, and that the mere fact of its presence, even when there is no discharge, is sufficient to prove that the foot is liable to suffer from an attack of thrush on the slightest provocation, e. g. : the contact of moisture in any form, a cause which the sound, well formed frog would completely resist. To explain the development of a deep fissure through the centre of the horny frog into the vascular and sensitive tissues beneath, it is necessary to refer to the influence of moisture in softening the horn, so as to facilitate, or at least permit, the passage of particles of grit between the horn fibres to the sensitive membrane. The first consequence of the passage of dirt into the horn structure is separation of the fibres, and in the case of the horn of the frog, this separation would take the direction of the fibres and cause the longitudinal fissure, which is the first step in the production of the thrush.

A fissure or cleft once started is certain to extend, if left uncared for, as it usually is, and the natural result is the introduction of various forms of foreign matters, with which the frog is brought into contact, when the foot touches the ground. Irritation of the vascular secreting membrane follows, and the characteristic discharge which constitutes thrush, soon appears.

Another form of thrush is seen in plethoric horses with thick (fleshy) heels, and a general tendency to what the old pathologists called humors—a convenient and expressive word, for which there is no accepted equivalent in modern pathology. Horses of the type above described are liable to eruptions known as surfeit. They are usually gross feeders, and, if allowed to indulge their appetites, will fill their stomachs beyond the digestive powers of the organ : and a febrile state is developed, and exhibits itself locally in the form of swelled legs and acute or inflammatory thrush ; which, commencing in the vascular membrane of the frog, ends by the secretion of a discharge, which forces its way through the born fibres, and establishes a fissure by pressure from above, instead of from below. Between the acute form of thrush, and the common type of the disease, there are variations in degree, which are recognized by the practical man, and treated according to circumstances.

In acute cases, the drying up system—viz : the employment of astringent remedies—is calculated to increase the mischief. Fomentations, antiseptic poultices, with laxative and cooling medicines, are necessary, and this treatment must be supplemented by a strict system of dieting, in which mashes, and in the season, green food will play important parts. For the common kind of thrush without inflammation, the use of styptic and astringent remedies is quite legitimate, and there is not much to choose between the different antiseptics which are in favour as remedies for the disease. Stockholm tar, with a little acetate or sulphate of copper added, about one part to ten, will form a very good application for ordinary cases, and a good method of applying it, is to smear it on a little tow, and then draw the tow by a sawing motion to the bottom of the fissure, leaving it there for a time. The different forms of thrush were well recognized by Gibson, who, writing more than a century ago, remarks, "that a thrush is an imposthume that gathers in the frog, especially in horses that have fleshy heels, and have deep clefts in their frogs. Horses that have their frogs clean and dry, and of a moderate size, are seldom subject to such accidents ; sometimes they are attended with grease in horses that are liable to swelled heels, and where care has not been taken to cure them in time. When proper methods have been used to such horses, they are seldom dangerous, but are sometimes profitable to horses of fleshy and foul constitutions, because they drain off a great many bad humours ; and when ignorant people are too solicitous to dry them too quick, I have known them sometimes to affect a horse's eye, and sometimes bring out a sharp humor on the surface of the skin, resembling a surfeit.

"The safest way in managing thrushes when the imposthume appears, is to pare out the hard part of the frog, or whatever appears rotten, and wash the bottom of the foot two or three times a day with chamber-lye. There is seldom or never anything more necessary for the cure of a thrush,

for this is seldom so perfect but that they will relapse at some certain times, in one foot or another, when horses are inclined to them, but then they may be cured in the same manner.

"But when a horse happens to have been neglected, or has a very strong flux of humor into the part, it is apt to degenerate into a canker."

Very little could be added to these remarks by the most experienced veterinarian of the present day.

W. R. GILBERT.

PRICES OF PURE-BRED SHEEP

The prices realised for sheep in Suffolk during the past fortnight have been very remarkable. The Suffolks have at least enjoyed a boom, due partly to foreign demand; many sheep have also gone to Scotland and the South of England for crossing purposes. This, with a wider home field for the breed, has stimulated the county breeders, Lord Ellesmere and Mr. Hugh McCalmont being extensive purchasers. Then Hampshire Down ram lambs have made 125 and 100 gs. Nor have the old pure Southdowns been overlooked. At Sir Humphrey de Trafford's sale at Swafield, between Norwich and Cromer, the sum of £16 each was given for shearling ewes, £20 10s. each for two-shear ewes and 10 gs. each for ewe lambs. The flock was comparatively small but very choice, having been bred through the Easton flock from the Rigden, Throck-morton, and Webb strains. That this purity of breeding was appreciated was shown by the keen competition for the sheep. It was announced that the Easton Farm, belonging to Mr. J. J. Colman, would be given up next year, the herd of Red Polls being sold in the spring and the entire flock of Southdowns in the autumn.—*Ag. Gazette.*

CARE OF THE FOAL

Notwithstanding the greatest care taken of the foal when weaned there generally appears a perceptible loss of condition when the colt no longer partakes of its mother's milk. To effectually combat the effects of the sudden withdrawal of this natural diet the young foal should be taught to eat freely hay, corn, bran, chaff, roots, for a fortnight or three weeks at least before final separation from the dam takes place. It were well also to teach them to drink cow's milk from a pail. Whether the weaning should be effected completely and at once or by allowing the foal to return to the mare at increasing intervals during the lapse of a few days is a question on which there exists diversity of opinion. Professor J. Wortley Axe considers the latter to be the more rational and best calculated to safeguard the health of dam and offspring. He adds that "whether the one system or other be adopted, the mare will benefit by being placed on a spare diet for a short time in order to check the secretion of milk and bring the gland to a passive state. Any difficulty in this respect must be met by drawing the udder now and again as may be required, and putting the mare to gentle work."—*Ag. Gazette.*

INSPECTION OF IMPORTED MEAT

The Port Sanitary Committee of the Corporation of London have recently been inquiring into complaints as to the alleged defective inspection of food within the port of London, and have visited the docks to see the process. They report that an examination of every carcase brought into the port would be practically impossible, and would, moreover, if attempted, seriously impede the carrying on of the frozen meat trade. A more thorough inspection of food than is at present conducted would, however, the Committee think, be ensured if that particular duty were allotted to two special food inspectors, and in this opinion the medical officer concurs. The Committee recommend the Corporation to appoint two of their existing staff, who have a thorough knowledge and experience of frozen meat, as inspectors of food, their duty being to supervise and inspect all food entering or leaving the port, so far as may be deemed necessary or advisable. That recommendation, if adopted, will necessitate the appointment of two additional sanitary inspectors. The inspectors will be required to pass a qualifying examination by the Sanitary Institute or some similar body. *Ag. Gazette*

Science.

THE MAINTAINING OF THE FERTILITY OF THE SOIL

RECLAIMING OF LAND—AVERAGE YIELDS OF WHEAT IN ENGLAND—REASONS FOR INCREASE—METHODS OF PLANT NUTRITION—WATER IMPLANTS—NITROGEN, PHOSPHORIC ACID AND POTASH.

There can be no doubt that Agriculture will always remain the basis of human industry, and as a prosperous system of agriculture can only be built upon a fertile soil, it is evident that the maintenance of the fertility of our farms is a very important problem. That a soil may be quickly reduced in fertility under a bad system of husbandry, and that the original richness of the once fertile land may be restored, although sometimes slowly and laboriously, are matters of common observation. In the United States and in a few instances in Canada, some old districts have been thrown out of cultivation and given up as exhausted, and left to grow in weeds and briars, while new fields were hewn out of the forests; but as the pressure for land became greater, these old worn out lands were again brought under the plough, and with a more enlightened system of farming, have been made to produce crops equal to those yielded by virgin soils.

The history of British Agriculture gives us a most valuable object lesson on this point. It is recorded that at the close of the thirteenth century the average yield of wheat in England was from ten to fifteen bushels per acre. At the end of the seventeenth century the average yield on the well-tilled and manured lands was twenty bushels per acre. In 1771 Arthur Young estimated the average yield of wheat at twenty four bushels, while the following table shows the average yield of wheat per acre over each eight yearly periods from 1852, and over the forty years, 1852-1891, reckoned in bushels of 60 lbs weight.

Average yield of wheat per acre in the United Kingdom :—

8	years,	1852-1859	28⅜ bushels
8	"	1860-1867	28½ "
8	"	1868-1875	27½ "
8	"	1876-1883	25½ "
8	"	1884-1891	29½ "
40	"	1852-1891	27½ "

These figures show that the range is from about twenty-five bushels to thirty bushels, with an average yield over the forty years of nearly twenty eight bushels per acre.

The increase of yield per acre, may, therefore, be ascribed altogether to better farming, including better tillage, better drainage, and a more extended use of the manure made on the farm, for it is only within a comparatively recent period that the use of commercial fertilisers has played any important part in agriculture generally.

Wherever good cultivation has been adopted, and the natural sources of fertility systematically provided for, and made use of, there has been no decline in the productiveness of the soil; and lands which have been under cultivation for many centuries are still yielding harvests equal to, or better even, than those soils freshly brought under the plough.

These facts show us that the maintenance of fertility in a soil is thoroughly practicable.

The real point of issue, therefore, is to learn to what extent we may call to our aid the discoveries of modern science in reducing the cost of, and making more effective the methods of our forefathers, or whether we may substitute for those methods others still more effective.

There is no doubt that chemistry has done a vast amount both for the farmer and horticulturist in many directions, and as we learn to read the revelations of chemistry with the help of other sciences such as geology and biology, we are, slowly but steadily, working out the intricate problems of plant nutrition, and it now seems pretty safe to formulate a few general principles as being sufficiently proved and established to justify building upon them a scheme of farm or horticultural management.

(1.) The carbon of green leaved plants is absorbed directly and practically exclusively from the atmosphere, through the medium of the foliage. Therefore, the soil supply of carbon is a matter of minor importance.

(2.) The oxygen of such plants is chiefly absorbed in similar manner by the foliage, or taken up by the roots in combination with hydrogen, in the form of water, although a minor and comparatively unimportant source of oxygen and hydrogen may be found in the breaking up of nitrates and ammonia existing in the soil.

(3.) The nitrogen of green-leaved plants is obtained invariably from the soil, either directly, from compounds of nitrogen with oxygen, hydro-

gen, or mineral, or organic compounds, such as nitric acid, ammonia, nitrate and humus ; or indirectly, through small nodules, or growths brought about by micro-organisms living in the soil, which have the power of assimilating the free nitrogen of the atmosphere. This wonderful peculiarity seems to be confined to leguminous plants such as the clovers, peas, beans etc.

(4.) The mineral constituents of plants are taken directly from the soil, being absorbed by the roots in the form of solution in water.

(5.) The ten or more mineral elements found in the ash of plants when burnt will be furnished in abundance by practically all fertile soils, provided there be present a sufficient quantity of available potash and phosphoric acid, and sometimes also of lime.

(6.) The various elementary substances found in plants are combined with each other in definite proportions, varying in different species. The growth of plants is measured and limited by the least abundant of the various elements required for their nutrition.

Reducing these principles to a practical form we may say that the plant will secure a full supply of carbon, provided the other nutrients are supplied; that the supply of oxygen and hydrogen is chiefly dependent upon the water supply ; that the amount of nitrogen may be regulated by the use of mineral nitrates or ammonia salts, or the setting up in the soil of those conditions which favor the growth of nitrogen-working micro-organisms, and that, having provided a full nitrogen supply, we may control the growth of the plant by giving or with holding phosphoric acid and potash. (1)

The water supply of plants is a matter of very great importance, for not only does water comprise three-fourths or more of the actual weight of cultivated plants when growing, but it is the means by which all mineral and nitrogenous constituents of plant food are carried to their destination.

In carrying out this function it is constantly passing through the plant, being taken in by the roots and given out by the foliage. The nitrogen supply takes rank next to that of water in importance ; for it is this constituent which may be most quickly exhausted by an imprudent system of cropping, and which is the most expensive to replace by artificial methods. In the buying of artificial manures the price of Nitrogen is considerably higher than that of Phosphoric Acid and Potash.

When it is considered that the plant food in the soil must be of very slow solubility in order that it may not at once be washed away by heavy rains, and it is a known fact that when certain forms of soluble plant food are applied, such as superphosphate, a large part of it is at once converted into an insoluble, or very slowly soluble, condition by reactions within the soil, it is easy to understand that it is impossible to realise in the growth of a single season, or even in many seasons, the entire quantity of plant food applied in manure.

By accepting the fact, that the whole amount of plant food applied in a fertiliser will not be returned in the crop, the question arises, may the farmer not hope to be able to dispense—to a large extent, at all events,—with purchased nitrogen, and accomplish the end in view by the growth of leguminous crops (for the obtaining of nitrogen from the air) and the addition of phosphoric acid and potash only?

WALTER S. G. BUNBURY,
Compton Model-Farm.

(1) Almon all soils in decently farmed districts, have sufficient potash present. In Britain we never saw it used. ED.

MANURES

A SUMMARY AND PRACTICAL CONCLUSION OF THE EXPERIMENTS OF ROTHAMSTED FARM, HERTFORDSHIRE, ENGLAND (LAWES & GILBERT)

Rain and Drainage Waters.

Most of the nitrogen of farm crops is derived from the nitric acid of nitrates in the soil.

The nitric acid in the soil is produced from the nitrogenous compounds of the soil itself, from the nitrogenous organic matter of animal and vegetable manures, from the ammonia of artificial manures and from the ammonia supplied by rain and condensation of the atmosphere. A very small quantity of ready-formed nitric acid is supplied by rain condensation of the air. Nitric acid is also provided by the direct application of nitrates.

The ammonia from ammonium salts is quickly converted into nitric acid in the soil, as also is the nitrogen of some organic matters such as urine. The nitrogen of rape cake, that of the less soluble parts of farmyard manure, of stubble, of roots,

etc., is much more gradually converted into nitric acid, and it may require many years for the conversion of the whole of it. The nitrogenous compounds of the soil itself are very slowly converted into nitric acid, but the soil yields a certain quantity every year.

When there is no vegetation and there is drainage from the land, or even when there is vegetation and an excess of drainage, nitric acid is lost by drainage.

In the case of permanent grass land, the soil is always covered with vegetation, there will be with it the maximum amount of nitric acid utilized by the crop and the minimum amount lost by drainage. Land without vegetation will be subject to the maximum loss of nitric acid by drainage.

The power of a growing crop to utilize the nitric acid in the soil is much diminished if there be a deficiency of available mineral constituents, and especially of potash and phosphoric acid, within the reach of the roots.

As the various crops grown upon a farm differ very much as to the period of the year of their most active growth, the length of time they may remain on the land and the character and the range of their roots, their capacity for taking up nitric acid from the soil is very varied.

The recognized exhausting character of grain crops is largely due to the limited season of their active growth, and the long period during which the land is bare, or there is little growth, and so subject to loss of nitric acid by drainage.

When salts of ammonium, or nitrates, are applied as manure, the chief, if not the only unexhausted residue of nitrogen left within the soil available for future crops, is that in the increased roots and other residues of the crops; and this is only slowly available.

When oilcakes or other foods are consumed by stock, the formation of nitric acid from the manure produced is slower, but continues longer than when salts of ammonium are used. When there is a liberal use of animal manures, an accumulation of nitrogenous and mineral matter takes place in the soil, and such accumulation is known under the term of "condition." Under such circumstances the fertility of the soil is maintained or it may even be considerably increased.

Continued on page 166.

The Farm.

DRAINING

(*By the Editor.*)

NOTE.—We have been requested, by a gentleman deeply interested in the farming of the Eastern Townships, to republish the series of articles on drainiug that appeared in the first volume of this periodical, 1880.

It is a remarkable fact, and one that is worthy of consideration, that in those counties in the East of England where we find the earliest attempts at thorough-draining, the practice of this remarkable art remained unimproved, and was executed in a purely empirical manner; while over the rest of the country, men of really scientific attainments were conducting the operations, and producing ten times the beneficial effect with no additional outlay.

I observe, in an article written some time ago, by a Canadian gentleman well skilled in agriculture, that a drainer was imported at a great expense from Britain, and a large subsidy paid to a brick-maker to embark in tile-making; and an idea crept into my brain, that it would have been as well if, before importing the man, the importers had settled in their own mind what he was to do. I have no doubt he thoroughly understood his business at home: the climate, the soil, and the rain-fall must, if he had gone to work here, have soon convinced him that his pre-conceived plans would need alteration.

I do not speak without having not only thought upon the subject deeply, but also followed out my thoughts in practice. I have drained several hundred acres of land on my own account, and inspected the drainage of several hundred acres more, besides having constantly watched the operations of Parkes, Morton, and other well known engineers employed to superintend the works under the Commissioners of the drainage-loans in England.

I began with bushes, next went to stones, then to horse-shoe tiles and soles, afterwards to pipes, and ended with the most perfect of all, pipes and collars. I have drained all sorts of land: light quicksands, heavy London clay, and loam on gravel.

All depths, too, I have worked at, from 20 inches, to 4 feet 6 inches, and occasionally as deep as 9 feet, for springs.

I know the cost pretty well, and I know how

absurd it would be to attempt to introduce our permanent system into general use here. We have neither men to execute the work, nor money to pay them with if they did it. But there are cheap and effective ways of draining land, in our climate and with our soil, that might be employed with the greatest advantage to the individual farmer, and to the nation at large. *Eight bushels and a half of wheat per acre!* Really the last sentence ought to be suspended in large characters at the entrance to every village in the Province of Quebec: it is positively frightful to contemplate such a yield. And why are we so shamefully behind other countries? I answer, because, amongst other faults, our land is undrained. Do you imagine that the crop of nearly 40 bushels of fall-wheat per acre grown by Capt. Campbell at St. Hilaire had kept its toes in cold water all the spring? By no means; the land was thorough-drained 25 years ago, and no signs of stagnant water are visible over the whole piece.

Nobody knows better than I do, that large sums of money have been thrown away, by men having more money than judgment in attempting, to drain land in this country without having the least idea of what they were about. I have seen drains, the conduits of which were scraped by the plough at the ordinary furrow depth! I have seen drains, laid by those who ought to have calculated expenditure a little more closely, 14 inches deep and 14 inches wide, with large stones for top, bottom, and sides. No wonder the ordinary farmer, seing these follies, sneered at their perpetrators, and determined, if this were drainage, to have nothing to do with it. And how to win these properly disgusted men back to a calmer view I do not see; but I will try to show them how land may be drained cheaply and effectively with materials to be found on their own farms, and if I can induce one farmer in every county of the Province to attempt to follow out as much of my plans as may seem reasonable to him, I shall be satisfied: for I am sure that if the work be done in a careful, painstaking fashion, it will not be long before his example is followed by his neighbours.

And first, let us see what land wants draining, and why.

To understand this question thoroughly, we must consider what things are necessary to the germination and growth of the seeds we commit to the bosom of the earth. They are, as far as we know, three in number, viz., air, heat, and moisture. A seed in a healthy state is a living object, in a state of repose, but ready to spring into active life the moment it meets with the three concurrent necessaries above mentioned. What is the exciting cause of the vitality of seeds we do not know—it is one of Nature's secrets which she has not yet imparted to man; but we do know what is necessary to excite this vital spark into action, and it is our business, as farmers, to take care that we foster, and not impede, the efforts of the great mother for our advantage.

If any of my readers have access to a malting establishment, an inspection of the barley on the floor and couch will give them a better idea of the germination of seeds than the longest description. They will see that, on the third or fourth day after the grain has been taken out of the *steep*, i. e. a tub of water in which the barley lies for 48 or 72 hours, according to its quality; they will see, I say, a small white bud, springing from one end of the grain, which, having just seen the light, shrinks from it, and, turning back, proceeds under the husk to find itself, on its exit at the other end, a green shoot or *plumule*. Immediately after the appearance of this bud, the small white rootlets show themselves, and the plant is ready to take advantage of any food within its réach—up to this time it has been fed entirely with the starch contained in the seed, which, to secure its more facile imbibition by the infant germ, has been converted into dextrin, or gum, and then into sugar, by what is called *Diastase*, a substance formed from the *albumen*, or nitrogenous portion of the grain. Hence, the sweet taste of malt compared with the original barley: the starch of the one has been partially converted into the sugar of the other; and the maltster takes care to place his *pieces* on the kiln to dry, before the plumule shoots forth into the green leaf, and begins to feed upon this substance. "With the assistance of this saccharine secretion," says Lindley, "the root, at first a mere point, or rather rounded cone, extends and pierces the earth in search of food; the young stem rises and unfolds its cotyledons, or rudimentary leaves, which, if they are exposed to light, decompose carbonic acid, fix the carbon, become green, and form the matter by which all the pre-existing parts are solidified. Thus a plant is born into the world, its first act having been to deprive itself of a principle (carbon), which, in superabundance, prevents its growth, but, in some other proportion, is essential to its existence."

We now see why light is not only unnecessary to the healthy germinations of plants, but absolutely injurious. In light the leaves absorb carbonic acid and give off oxygen, and seeds exposed to the light follow the same rule; but in a healthy process, the reverse takes place, carbonic acid is given off, and oxigen absorbed; and how can we better exclude light than by covering the seed with earth? But, as we observed at starting, the earth in which we bury the seed must be in a peculiar condition: it must, first of all, contain air. Though, at a casual inspection, the soil seems to be too closely packed to admit the air, looked at more narrowly it is not so, but the interstices between the particles of the mould will be found to occupy a fourth part of the whole mass. Hence, 100 cubic inches of soil, finely pulverised, contain 25 cubic inches of air; the depth of ploughing being taken at 8 inches, the number of cubic inches of air on an acre will be 12,545,280; and as every additional inch of depth pulverised brings into activity 260 tons of fresh soil, the ploughing one inch deeper will introcuce into the soil 1,600,000 cubic inches more air. Thus, the deeper we plough, the greater amount of air we lay up as a store for the use of our plants.

Fig. 1 represents a grain of wheat magnified: *a* and *b* are the two skins, inner and outer; *c* is the cotyledon, and *d* the rudimentary plant, whence spring the root and stems.

Fig. 2 is a wheat plant germinated: *a* is a stem which has just left the sheath: *b* another starting: *c* another unevolved, and *d* the roots.

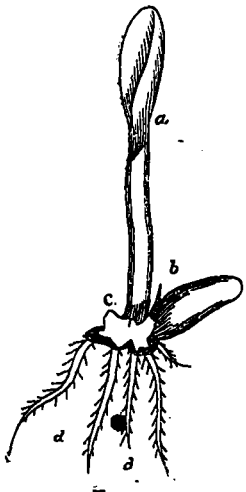


Fig. 1.

It will be easily understood, that, when the land is left full of stones and clods, the air cannot penetrate these obdurate masses, and, in consequence the roots in their tenderest stages are left to fight their own way under the greatest difficulties. Fig. III.

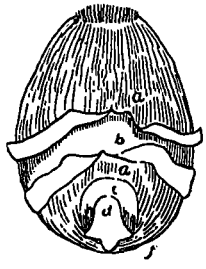


Fig. 2.

This air, again, must be above a certain temperature, or else the seed's vitality will remain dormant. Now, the more thoroughly pulverised land is, the more easily will it resist the induction of cold from without, and the less easily will it radiate its internal heat.

Besides clods and stones, the presence of water will exclude air. Fig. IV shows the seed lying in a well pulverised soil, the interstices of which are filled with water instead of air. Here, too, the seed cannot germinate freely; and, besides, water, during the necessary evaporation that takes place,


Fig. 3.


Fig. 4

produces cold: another hindrance to free germination. On the other hand, entire want of moisture prevents germination, as much as excess; as may be seen in fig. V, where the seed is placed in pulverised earth, and the interstices filled with air, but no moisture is visible between and in the particles of soil. When land is in this state, heat can enter and escape from it with equal ease; so the evils of the want of moisture, and of excess of heat, are evident. In fig. VI, however, we see the soil as it ought to be: the seed lying in its comfortable bed: the air finds easy access between every particle of soil, and the general warmth of the season, whether spring or autumn, finds an easy road to it; germination begins, and the future growth meets with neither check nor obstacle.

From the previous considerations we deduce the conclusion, that all soils which do not rest on a naturally pervious subsoil require draining. For, it will be seen, on inspection, that, where land lies wet in winter, cultivation in spring produces clods, instead of a finely pulverised surface; and instead of the early heat of summer warming the soil, it in reality chills it by evaporation. On such land, large belts of dark coloured earth may be seen in May, dotted about, here and there, among the lighter coloured parts: the plants want vigor when they start, their green is pale, the herbage coarse, hard, uninviting. The tread is unequal, one part of

the foot sinking deeper than the other : (1) the stock never seem satisfied : the trees have hard bark, and are covered with parasitic plants : the roads are soft, and full of ruts : the ditches plashy, and always falling in : mosquitoes, midges, all sorts of horrible insects fill the air : the plough, scuffler, and harrow have double work to do, and, even with double work, never succeed in pulverising the soil into a fine mould.

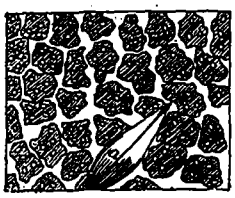


Fig. 5.

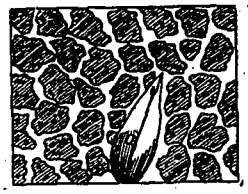


Fig. 6.

In the climate of our Province, it is something, to add ten days to each end of the season. Draining will effect this, at least, and will help in enabling us to sow autumn wheat, if we wish it. Why we do not wish it, I cannot conceive ; for every show at Montreal proves that it can be grown to advantage, and Cap. Campbell's farm at St. Hilaire, would convince an infidel. Of course, autumn wheat won't grow in a swamp ; but drain the swamp, and then try !

I do not think our draining here will ever be syetematic work ; that is to say, that whole farms, or even whole fields, will be drained on a regular plan at 25 to 33 feet apart. In the first place we cannot afford it, and, again, the summer's heat acts too rapidly to make such intensive work absolutely necessary. It would pay, I doubt not, in the long run, but I look upon it as hopeless, and therefore pass it by.

No, what we must look for is local drainage, wet spots, here and there, in corners, under the line of a wood, in sheltered places which the wind cannot reach : this is about all we can, at present, manage. Aad it must not be supposed that I by any means underrate the value of even this slight improvement. The effects of this practical work will, when its benefits are seen, give each one who tries it an appetite for the task. It is so interesting in itself, to say nothing of its profits, that when once a man begins draining I have no fear of his halting on the road : if he begins with bushes, he will end with pipes.

(1) The best test of perfect harrowing is that the toe and heel of the boot sink equally deep in the surface soil.—Ed.

Whatever material we may use for our conduit, we should form, first of all, a clear idea of the way in which the water is to get into it. Many people have a notion, that each drop of water that falls from the clouds, when it reaches the ground, has to hunt its way through cracks and crevices, following the easiest route, in fact, until it falls into the drain at the top. Nothing can be farther from the truth. *Percolation* is not the way. It is all done by the force of *gravity*. My readers all know that a sponge will hold a certain quantity of water, and no more. Let us conceive for a moment a sponge fully saturated : an additional drop is added from above : what happens? A drop oozes out from the bottom. So it is with drained land ; but with this difference : the lowest drop, not being able to escape in any other way, is pressed upon by its superincumbent neighbours, and finds the easiest mode of disembarassing itself from the annoyance is to divide itself in two, and go, one half into the drain on the right hand, and the other into the drain on the left. We know very well that, after a dry time, drains do not run until the body of earth between them is fully charged with water, and we now see the reason why they do not : gravity acts more easily in proportion to the depth it has to work upon ; and this consideration alone should put an end to all idea of *shallow* draining ; it having been satisfactorily proved by experiment, that, in a heavy clay soil, with alternate drains of 30 inches and 48 inches deep, respectively, the 48 inches drains always begin to run, after rain, at least 24 hours before the others.

This, incredible as it may seem to some, I know to be a fact ; and it can only be accounted for on the principle we have just enunciated. In Essex, Eng., again, where very shallow draining, at frequent intervals, had long been practised, upon the introduction of deep drains (in the same fields) the shallow drains ceased to run at all, not even acting as subsidiary feeders to the deep ones, when the latter crossed them at a lower level : gravity acted on a column of water 48 inches high, more easily than on one of 18 inches.

It has often been wondered at by non-critical observers, that an *open ditch* will allow a pool of water to stand within a foot or two of its *lip* ; and that no deepening of the ditch seems to have any effect on the retentive spots. (1)

(1) Hence the difficulty of draining orchards and plantations : pipes, etc., would be filled up by the roots of the trees, and open ditches do not *draw*. Ed.

The solution of the question is, that, in retentive soils, all currents of water *puddle* their bed, and prevent the water rising up through it : this by the way.

So much for the theory of drainage. In the next issue we will attack the practice.

WHEAT.

The Soil.

A soil which, in the ordinary course of cultivation, would have received an application of manure before another crop was grown, has produced 40 crops of wheat in, succession, averaging 14 bushels per acre, solely by means of its existing fertility.

At the commencement of the experiments, the soil contained a large amount of organic nitrogen, derived from the *débris* of pre-existing vegetation. It also contained a large quantity of mineral food of plants.

Every year a certain proportion of the organic nitrogen has been nitrified by the agency of organisms existing in the soil.

Part of the nitrates found has been employed in the growth of the wheat crop ; part lost by being washed out of the soil.

The loss of nitric acid is greater in wet seasons, and the amount taken up by the wheat crop is in consequence smaller. Comparatively, dry seasons should therefore be favorable for the production of large crops of wheat.

The stock of soil fertility in the form of organic nitrogen has been considerably reduced during the forty years that the experiments have been carried on ; the amount of each reduction has been ascertained by analysis of the soil made at different periods. The stock of both potash and phosphoric acid has also been largely reduced.

Although so much fertility has been removed, the stock that remains would appear to be sufficient to grow crops of wheat for a very long period ; the produce, however, must in process of time necessarily be lower than it has hitherto been.

A. A. PLUMMER.

Compton, August, 1898.

(To be continued)

NOTES IN PASSING

Sunshine is the best medicine for poultry as well as men. If the house is dark and gloomy the fowls will stay out of it even in the worst weather. Nothing likes sunshine more than poultry.

Egg shells soaked in kerosene and scattered about are recommended by the Wisconsin Farmer as a remedy for the egg eating habit. Cutting off the end of the bill is still thought by some a better remedy.

While it is undoubtedly unprofitable to doctor very sick fowls it is advisable to treat slight cases of disease in the first stages. Such ailments as colds, that soon lead to lameness from cramps or rheumatism etc., can be easily treated, and it is advisable to do so, but when these troubles turn into croup, cholera, liver troubles and other contagious diseases, then it is far better to kill the patient.

One breeder with fifty chicks is less trouble than one old hen.

Clean out your poultry house or your poultry will clean out your pockets.

It is comparatively an easy matter to grade up a common flock, so that for egg and meat production they shall compete favorably with pure breeds.

It is never a good plan to yard all kinds of fowls together. If large size and weight are desired, select large hens, but the male bird should be active and vigorous.

The hen machine takes a little time to get ready for its productive work. Liberal feeding must precede eggs. Any breed of hens will consume a large quantity of feed before beginning to lay, but after having once begun they will not require or even consume as much food. When laying their craving is for vegetables, animal substances, crushed bones, and shell material.

There is no question but what standard bred poultry is the best for all purposes, for in every contest where a record has been kept standard

bred has won. Fanciers are continually trying to improve both the appearance and useful qualities of their flocks and are succeeding wonderfully well.

ENTHUSIASM TRANSFORMS

Most of the arduous and drudging work about poultry keeping turns into a pleasant pastime. It causes a person to take a delight in keeping the house clean, and attractive; it causes him to take pride in the appearance of his fowls; it causes him to feed judiciously and regularly and enjoy being in their company; in short it causes him to take pride in performing all the duties pertaining to the business.

Eggs, like milk, contain in proper proportions all the elements needed to sustain life. Being highly concentrated, however, they lack the bulk necessary to keep the excretory organs in perfect condition.

Serve with them such food as bread, rice or cereals but do not serve eggs in any way at the same meal with beef, mutton or fowl. Pork, such as bacon, may in winter be served with eggs. While one pound of eggs is equal in nourishment to one pound of beef the latter will be borne for a longer time and would in the end be a much better food. The mineral matter in the egg is small in quantity, but rich in quality and the albumen is in a form most easily digested. We must bear in mind, however, that the egg albumen coagulates at a lower temperature than that in meat which teaches us at once that to be easily digested eggs must be lightly cooked. A hard-boiled egg, one in which the white is rendered hard, may be digested by a man laboring in the open air, but is unfit for food for the man who works in an office, or shop, or for the person whose digestion is weak or for children of any age.

PRIZE WINNERS

While a desire to possess the best may be the main object of some, the most enticing incentive is the excellency of one's competitor. A scholar at school will study and learn, not particularly to know the lesson well, but to reach the head of the class, and to receive applause for it. Winning at exhibitions is often accredited to the tricks of the trade, while those who win with birds of their own rearing and fitting know differently. Success is possible in close competition only to those who breed or own really good birds and have them in proper condition for the battle.

On this one point, condition, hangs the "greatest trick of all." Good strong winners can be ruined by neglect, moderately good ones improved by care. In close competition men have won the much coveted breeding pen prize, on one-quarter of a point, suppose they worked a week for this fraction that just bridged them over, were they not well repaid for their work? If their birds were short of weight they have fed them on sugar with bread and milk by lamp-light every night before going to bed while they had all the grain they could stow away in the day-time; they give a choice cockerel a room — yes, and in some cases a whole house rather than it should get set back one single fraction of a point before going into the show-pen.

They have shaped the tail night after night until his sickle feathers took the proper shape and curve, and when they have gained the highest honors it is not considered the rewards of tricksters: simply the result of care and energy.

Condition is not made in a single day; you must begin in the early spring to bring out the best points of any variety or breed, you must start with healthy breeding stock kept under favorable conditions so as to get strong fertile eggs and vigorous progeny. Not over ten or twelve chicks should be allowed with one hen in roomy brood coops. Growing chicks are often cramped as they huddle or roost in small boxes, one sided, hunched back birds are the results. Roosts that are too close to the wall will cause cockerels tails to bob up like bouquets on the end of their backs and no amount of coaxing will make them assume the desired curve.

Separating the sexes as they begin to materialize is no secret or trick, yet it tends to better growth of both pullets and cockerels for breeding or show purposes. A barred Plymouth Rock male kept from the sun, wind and rain, while he is growing his adult or new plumage will look cleaner in feather than those that ran wild every day. Pullets that are cooped by themselves, not allowed to begin to lay by changing them from pen to pen, one room to another, look their prettiest in the show pen, and are larger and finer birds for the trouble.

To put show birds into best possible condition, one needs to have a building purposely made for it. A bird short of weight can be stuffed with heavy food previous to weighing and with crop distorted made to weigh a quarter of a pound more. Yet how much better it is to begin a month or more before the show and by feeding well have the specimen standard weight with the body well rounded into fulness of all its parts, so having the symmetry as well up to the standard as the weight.

Rough, scabby shanks and feet can be washed and scoured clean before the showing, yet will show the effects every time. A few years ago some Plymouth Rocks were put into an exhibition at Montreal. I have never yet heard whether the owner had become lost to all sense of right doing or whether he thought the judges did not know their business and could not tell a doctored bird a long way off, or thought he could bluff the exhibition committee, in any event he tried the little game once too often. He smeared the legs with yellow ochre mixed in vaseline or olive oil, I do not know which, but the fraud was exposed and the man's name published and I believe he has never entered a bird in Montreal since, and his prospects as a fancier or breeder destroyed, and his reputation as an honest man gone. Condition is the great thing — the main thing in fact — that goes to make success probable and certain. There is a time when every bird reaches its prime and looks its best; then is the time to show them, no matter whether it be a chicken just reaching its maturity or a fowl finishing its moult, it will score more then than it will at any other time. You cannot send a bird round to several exhibitions and expect it to sustain its reputation in each and every subsequent show. Experienced exhibitors know this and plan months ahead to have a successful display at some particular time and prepare later birds for others.

It wears a bird in appearance to show it, yet it does not effect its value as a breeder. The feathered race are not accustomed to being up nights arrayed on saw-dust under electric lights for the benefit of an admiring crowd.

I have been asked if I would send my best birds to a show. I say yes most emphatically, if I send any birds at all, but I would always be at the show myself and look after my birds or I would not send them; not that officers and attendants do not do their best, but there are minor details h at they have not the time to look after and that fraction that may decide the prize can sometimes be saved or gained by the arranging of tail or wing feathers, withholding too much grain: this will cause them to appear more sprightly, and there are other little details incident to showing, too numerous to mention here.

Last but not least look over your birds while getting them ready for showing and be sure that they are not lousy; use some good insect powder on them every few days which in addition to keeping them free from vermin cleanses and brightens their feathers if soiled or stained. Keep your birds for two weeks at least on clean short cut straw at least eight inches deep on the floor of scratching-shed and roosting-room. A reliable poultry judge in the U. S. told me that he often sees the ill effects of lice in many ways. The birds with nibs of their feathers eaten away, with vermin swarming around their thigh and fluffy feathers, making their lives miserable. They grin and bear it, as best they can, but it tells in the scoring: winning less — often nothing — until their owner gets his eyes opened to the fact that lice are there.

The time is passed when scrubs got prizes, and a good thing it is too, for both the farmer, the amateur and the country at large. It is chiefly the result of poultry shows which are held each year in large cities of our provinces, impartial judging allowing no prize money to anything unworthy of it.

Now, to the farmers and the amateurs: men, women and boys; go to the exhibitions as often as you can, particularly the farmers' sons, and read, learn and inwardly digest all the good literature on the subject you can get hold of. Study the particular department your fancy leads you to, and know all you can about it experimentally, theoretically and practically. Knowledge is power on the farm as well as in any other sphere of life.

Some of our best statesmen of to-day, men who are ruling our province, have been educated, lived and worked on farms and are the better fitted for their duties because of that fact, as they are in touch with the people they represent and serve; doing good work and saving the country from disaster and chaos; redeeming the land which is our heritage; knowing our needs and bringing to us peace, plenty and prosperity.

S. J. Andres.