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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

VOL. 2. No. 11

This Journal replaces the former "Journal of Agriculture,"
is delivered free to all members of Farmers' Clubs.

DECEMBER 1st, 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 etc. 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

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Notices.

PAROCHIAL COMPETITION OF MILCH-COWS

OFFICIAL NOTICE TO AGRICULTURAL SOCIETIES AND FARMERS' CLUBS.

Being firmly convinced that one of the first conditions of the successful conduct of our dairy-industry consists in the selection of cows that will yield the greatest quantity of milk; and with a view to the identification of the best milking breeds of the Province, the Honorable Commissioner of Agriculture is desirous that the Agricultural Societies and the Farmers' Clubs should, next year, organise competitions of milch-cows, the sole qualification to be considered in which shall be the yield of milk.

In order to facilitate and encourage these competitions, the Commissioner will supply the records to be kept; and; in addition, a special grant will be made to the agricultural association that, in each county, shall offer the highest prizes for these competitions.

In case a *Society* is concerned, the grant shall be one of \$25.00, on condition that it devotes, out of its own proper funds, at least an equal amount towards the organisation of these competitions. But in the-case of a *Club*, the grant shall be one of \$10.00, provided the contribution of the Club be at least the half of that sum. These competitions are to be parochial.

The acceptance (adhésion) of this plan by the Societies and Clubs, as well as the prizes offered

by them, are to be sent in with the ordinary programmes between the present date and the 1st February next; and the Hon. the Commissioner will then specify the association in each county to which the grant will be assigned.

At the competition, the cows are to be milked, in the presence of the judges, three times during two consecutive days, the two last milkings being

alone reckoned in the competition. No cow is to be awarded a prize or inscribed in the record, that has given in the competition less than thirty pounds of milk a day.

By order,
(Signed) G. A. GIGAULT,
Assist. Commissioner.

Quebec, November 12th, 1898.

(Model-Register for the Competition of Dairy-Cows.)

COMPETITION OF DAIRY-COWS.

Register kept by the *Farmer's Club,*

in the County of

(No cow giving less than 30 lbs a day can be entered in this register.)

Date of the Competition.	NAME OF THE EXHIBITOR.	Cow's Name.	Age.	Breed.	Colour.	Date of Calving.	Weight.	Name of Sire Breed of "	Name of Cow Breed of "	Morning yield.	Evening yield.	Total.	Percentage of fat.	Price and Remarks

(Signature of the Judges.)

AGRICULTURAL EXPERIMENTAL UNION ANNUAL MEETING

We have received the programme of the next annual meeting of the Ontario Agricultural and Experimental Union which is to be held at the Agricultural College at Guelph. The "Union" will commence with a public meeting in the large Convocation Hall on the College grounds on the evening of December 7th. There will be six sessions in all. and the meeting will close on Friday afternoon, the 9th of December.

The summary results of the field experiments conducted this year on over three thousand farms will be presented and discussed at the meeting. This along with the reports on co-operative work

in Horticulture, Dairying, Bee-keeping, Soil Physics, and the Weeds of Ontario should make the meeting interesting and profitable to all.

We also notice that Prof. C. F. Curtiss, Director of the Agricultural Experiment Station of Iowa, and Mrs. S. T. Rorer, Principal of the Philadelphia Cooking School, and an associate editor of the *Ladies Home Journal*, have been engaged to speak at the meeting.

The Guelph Fat Stock and Poultry Show, and the annual meeting of the Ontario Bee-keepers' Association are both to be held in Guelph on the 6th, 7th, and 8th of December, and the annual meeting of the Guelph Poultry Association on Thursday of the same week.

Arrangements have been made with the railway.

companies for reduced rates to Guelph to attend the Experimental Union Meeting, and other interesting events which take place during that week.

All enquiries regarding railway rates, etc., should be made to C. A. Zavitz, Secretary, Agricultural College, Guelph, Ont.

Notes by the Way.

Flax.—Is there no possibility of increasing the present production of flax in this province? We do not mean the growing of flax for coarse bagging, the place of which is now taken by *jute*; nor the production of flax fit for lace-making, as it were hopeless to try to compete with such climatic conditions as are to be found in Flanders, on either side of the line.

But, surely, there must be a demand for good, finish fibre, suited to the manufacture of the coarser kind of lawn or cambric, the cultivation of which does not forbid the ripening of the seed as does the quality grown for lace.

The soil is, in many parts of the province, well suited to flax, and the preparation of the land is not costly, as it would follow well after a well manured root-crop; neither, where the seed and bolls are kept at home and the fibre prepared there, is the land necessarily impoverished to any great extent.

As for the demand, there is no want of that, for we read in the English papers that the decrease of flax in Ireland from 45,537 in 1897, to 34,489 acres in 1898, has so alarmed the Flax Supply Association that special efforts are to be made to revive the cultivation of that crop. The Society has made arrangements to engage an expert from Belgium to travel through the North of Ireland and to teach the farmers of that district how to manage flax-growing and preparing as they are managed in Belgium.

Cannot we, in this province, supply the evidently eager demand for flax, at least in part?

Milk.—The consumption of milk, in its natural state, is something surprising! We remember well how, in the period from 1835 to 1850, it was an utterly unheard of thing for an English farmer, outside a certain radius from large towns, to sell milk at all; even the children of the workingman, who would gladly have bought milk, could not

get it, as it was considered too much of a nuisance and bother for the farmer's wife, daughter or dairymaid to run to the dairy for it.

But since the above period, 1850, what a difference! Mr. Rew, in the Journal of the Royal Agricultural Society of England for 1892, gave the average consumption of milk consumed per head of the population in 1890, as 60 quarts, or about 150 pounds, a great increase indeed; but, the consumption was far greater 7 years later, as in 1897, Sir Jos. Blyth, a most trustworthy authority, "has no hesitation in assessing the milk consumed in the United Kingdom at 80 quarts, about 200 lbs., for every man, woman, and child!"

This is truly astonishing, and if the quantity of milk consumed is brought into money value, it is more astonishing, as even supposing the milk reaches the people at the low price of 3d. a quart the amount paid for the whole will equal the whole wheat-bill of the United Kingdom, namely, £40,000,000, i. e., \$200,000,000! By this calculation, the average consumption of each man, woman, and child daily, is rather more than half a pound of milk a day, or half a pint, and the cost about \$5.00 a year per head of population. And this for a home-grown article.

The amount of money paid for imported milk is, as yet, but trifling; last year it only came to £1,500,000, or \$7,500,000, something like 9d., or 17 cts., a head.

Butter, however, tells a different tale; the consumption of British-made butter was, last year, \$2.40 for every inhabitant, against \$1.92 of foreign-made goods.

Of course, in Scotland and in the Northern counties of England, where the wages of farm-labourers were paid partly in kind, milk was a much more common article of diet in past days; and this will in some degree account for the superior physique of the Northern as compared with the South of England man: it was not entirely due to porridge!

Storing cabbages.—A question we saw asked, in the *Agricultural Gazette* the other day, referred to the difficulty of keeping cabbages throughout the winter. When we grew cabbage for the Joliette market, in 1870, we used to pull them as late as possible, i. e., just before the ground froze up tight; the beds, so to speak, we made about ten or twelve feet long, and eight cabbages wide,

placing them roots upwards. On this layer, other cabbages were placed, four wide, and then a crest or comb of two cabbages side by side. The out-sides had the earth thrown up all round and sufficient mould was thrown on the top of the bed to prevent the wind from disturbing the leaves of the cabbages. Thus treated, we had no difficulty in sending fresh cabbages—for *perdreaux aux choux*—into market at any time.

When we got hold of this idea we have no notion ; but judging from the following paragraph—from the *Agricultural Gazette* of October 24th, 1898,—we must, in some of our omnivorous reading, have run up against the works of that wonderful master of the English language, William Cobbett :

“ *Preserving cabbage.*—Your correspondent asked for an answer. Here is William Cobbett’s, in the severe climate of the States, N.—V. [“ I made a sort of land with the plough, and made it pretty hard at top. Upon this land I laid some straw. I then took the cabbages, turned them upside down, first taking off all decayed leaves, and placed them upon the straw, about six abreast ; then covered them not very thickly with leaves raked up in the woods, flinging upon them a little dirt to prevent the leaves from being carried off cabbage roots sticking up through it In the month of April and May I took up cabbages of all sorts from this land perfectly good and fresh. ”]

The only difference between our practice and Cobbett’s advice is, that we used no straw, and left all the outside leaves on. We found even a little straw gave the bed a tendency to heat. The kinds of cabbage we grew were the St. Denis and the Savoy. The latter was the better keeper of the two, as the abundant outside leaves embraced between them so great a quantity of dead air space.

May we be excused if we point out the above quotation as a *model* to be followed by all writers of English. Please observe the great number of words in one syllable : very few in two syllables ; only three in three syllables, not one word from the Latin in the whole eleven lines, and only one of Greek derivation—*placed*. (1) And then contrast the following, from Johnson’s “ Preface to the Dictionary : ”

“ If a radical idea branches out into paralled ramifications, how can a consecutive series be formed of senses in their nature collateral? ” We quote from memory, but, we believe, accurately.

This is how English ought *not* to be written : ten words out of the twenty-two are Latin.

Milk and food.—Mr. McConnell and his opponents are still fighting away merrily on the subject. The writer of the subjoined, a well known English farmer, takes exactly the same view that we have insisted upon—*usque ad nauseam*, we fear—so often in this JOURNAL :

Your correspondent, “ J. L.,” in an article under the above heading, says :—“ Mr. Primrose McConnell, who is defending a principle which is not only unassailable, but which commends itself to common-sense, &c. ” He must excuse me if I say that there is some doubt as to whether this principle does commend itself to common-sense. As regards this point of the question, I must ask : Does it seem reasonable that a cow will give as rich milk upon straw as when eating cake and hay ? And it was this statement which caused me to first write upon this subject. Then, as regards the theory being unassailable. I think he cannot have read Mr. Speir’s pamphlet entitled “ The Effects of Food on Milk and Butter. ” I should advice him to read it, and study the figures given carefully. It may cause him to come to the conclusion that Mr. McConnell’s theory is not quite unassailable. As regards his arguments that the milking properties of our cows have been obtained by selection and not by food, I consider this quite beside the question. He says that however well fed, we cannot force a cow’s milk beyond a certain point of richness. I do not remember that anyone had contended that it could be done. He acknowledges, however, that if they are under-fed the milk will fall below that point. I am rather surprised at this admission, for I thought that the question at issue was that he, and those who were of his way of thinking, maintained that this would only affect the volume of the milk and have no effect upon its richness. But what does he mean by under feeding ? If a cow were fed upon mangels and oat straw, with a good proportion of the former, in my opinion she would not be under-fed if she had much as she could eat ; and yet the milk would as be poor in butter-fat. And I know that to add

(1) From “ *plax, plakoe,* ” a *flat*, Ed.

to this diet an allowance of cake or corn would increase the richness of the milk considerably more than the bulk.

J. R. WOODHOUSE.

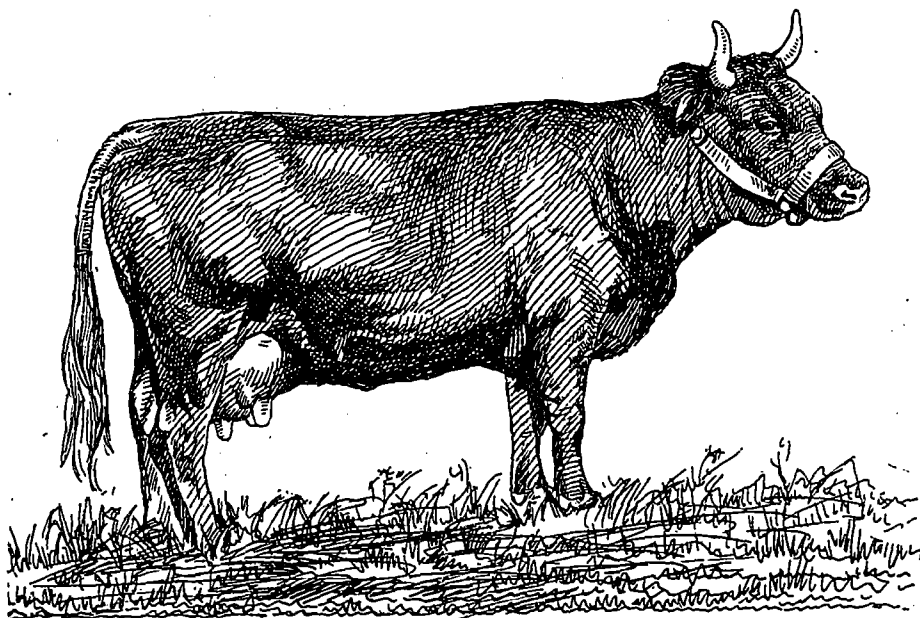
Day House, Bradenbury, Worcester.

And now comes a curious thing, which seems to show that Mr. McConnell is not very "firm on his pins." He says: "While on old pasture, more cheese and more butter will be yielded per gallon of milk by the ordinary methods of cheese and butter-making;" that is, cows increase in yield of milk products according to their food practically treated; "there is no corresponding difference in the actual percentage of the ingre-

percentage of butter-fat had risen to 4.88; and in period 10, when the food consisted of such poor stuff as grains, bran, treacle (molasses) and potatoes, the average fell off to 3.82 per cent.

Mr. Speirs is one of the largest dairymen in the West of Scotland, and his authority is invoked by the McConnell faction to show that "you cannot alter the natural composition of milk constitutional to a cow by altering the composition of her food." Theoretically, it may be so, but, practically, which is the important point to the cow's master, you decidedly can.

The above is a portrait of the Dexter cow "Wee



DEXTER COW WEE KATE

The property of Mr E. S. Woodiwiss. Winner of numerous prizes.

dients of the milk as found by analysis." Again: "The amount of butter made from a quantity of milk is no criterion of the actual richness of that milk at all." Surely this is babyish trifling with the simple question: does or does not rich food tend to the production of rich milk? Well; we are no chemist, but we stick to the practical work of the churn as the final test of profitable feeding.

Mr. Speir's experiments show this: at the beginning the cows were on grass for three weeks, and the average richness in butter-fat was a trifle under 3.56 per cent. In period 9, when they had have decorticated cotton-cake for five weeks, the

Kate." Barring the head, which is rather coarse and *bullish*, she has most of the points of a first-rate little milch-cow. Unfortunately, the Editor of *Hoard's Dairymen* would not approve of her, as she is an example of one of those never sufficiently to be execrated breeds the "general purpose cow." The Dexters make good beef, and give plenty of rich milk before their conversion.

THE CHRYSANTHEMUM SHOW.

A few words, from our own observation, though we hope to have a report *in extenso* from M. Alexander Gibb.

Mrs. Weeks and *Mrs. H. Robinson*, two lovely white incurved-petal examples, "took the shine" out of every thing in the show. The day of the long, ragged flower is, we hope, gone by.

Two charming *Cypripedia* were the pick of the orchids shown by Mr. Angus.

A novel plant, mentioned by Mr. Moore in his report of the Boston show, the *Acalephe*, (a nettle) is curious but not strikingly beautiful.

Flowers in bed-rooms.—There is a wide spread belief that the presence of growing plants and of cut-flowers in sleeping-rooms is prejudicial to health. This is of course derived from the school-taught idea that plants, at night, give off carbonic acid, and the knowledge that this gas is irrespirable.

An experiment was tried not long ago in a closed greenhouse in which were 6,000 growing plants, and the average of three experiments, made early, on three different mornings, after the house had been shut up for 12 hours, showed only 4.03 parts of carbonic acid to the 10,000; a good deal less than that formed by the heating of one pair of lungs, or by a burning wax taper!

A breakfast barometer.—Do you drink "café au lait" for breakfast? We do, and have done for many a day; with loaf-sugar too, or else the flavour is not so good, for some mysterious reason as to the state of the atoms composing the sugar, at least so said the great French man of science, when Napoleon asked him why that exciting beverage "eau sucrée" was not so good if made of crushed sugar as when made of loaf-sugar.

Now, if you are curious about the *probabilities*, pour out your coffee, and drop the, say, two lumps of sugar gently into the cup. The fixed air in the sugar will of course rise to the top of the liquid in tiny bubbles, and there, if closely watched, will tell you if it is or is not going to rain.

If much rain is to follow, the bubbles will rush almost violently over to the side of the cup, as if they wanted to get under cover at once; but if there is only to be a shower, the bubbles will all meet together, and then deliberately move over to the side; if no rain is at hand, every bubble that rises will remain stationary in the middle of the cup.

For a fair trial of this, make it at early breakfast, and all the better if the windows of the room be open.

A fish-barometer.—The "Girt Jan Ridd" in that marvellous book "Lorna Doone," the author of which is, strange to say, a market-gardener at Isleworth, near London, goes out catching "loaches" in the shallow streams of Doone forest, which fishes are intended, when pickled, to tempt his ailing mother's delicate appetite. But the Germans make a better use of the loach.

When stormy weather is at hand, this fish is observed to be very restless, quitting the muddy bottom, on which it usually lies with its head and half its body buried in the slush, and, rising to the surface, it swims about uneasily at a depth of a few inches. If placed in a vessel of water, with a little earth in the bottom, the loach never fails to predict the approach of a storm, by pursuing the same practices it followed in its natural habitat. When kept as a weather-indicator, it should be provided with fresh earth and water about every fortnight in winter and two or three times a week in summer.

Baths.—The use of the daily cold bath is, nowadays, almost universal among educated people in England. If those of our readers who are not accustomed to this purifying, invigorating treatment would only try it for a few months, they would thank us for the advice. Not necessary to stay in long; and when out of the water, scrub hard all over with a rough towel; if suffering from a cold, rub the neck and shoulders till red; if subject to pains in the back, rub the loins and the lumbar region extra hard. (1)

The Flock

LOSSES AT LAMBING TIME

(Concluded).

Diarrhoea is a cause of serious losses among lambs in some seasons, and in some cases it depends on climatic conditions over which the farmer has no control. More frequently, however, it constitutes a phase of the general outcome of bad management during the lambing season, or at some prior period.

(1) If with a "loophah" all the better.

An outbreak of scouring, as it is called, among lambs is always an alarming incident, because, even under the most favorable circumstances, a large percentage of deaths may be anticipated.

The first question which arises refers to the causes of the disorder, and it may be very difficult to select from a number of possible causes. In most cases diarrhoea is consequent upon the presence of something of an irritating or medicinal character in the food or water, and the character of the evidence on this point will depend very much on the age of the sick animals. Very young lambs which live entirely on the milk of the ewes will be presumed to be suffering from some morbid state of the maternal fluid, and it is not uncommon to hear that the milk of the mother is acid in character, and therefore calculated to irritate the delicate and sensitive stomach of the young one. Acidity of the milk is an unusual condition which has rarely been demonstrated; but it is probable that a defect in the constitution of the milk which disposes it to undergo the lactic acid fermentation is not uncommon, and in this state the microbes which set up these actions find a congenial soil, and flourish without hindrance.

Bacteriology of milk—for any purpose—has not been cultivated as much as it should have been, and no doubt but that there are many organisms in milk which have escaped notice, merely because no one has looked for them.

“An acid condition of milk” is a phrase in frequent use, by those who have not taken the trouble to find out whether the milk is really acid or alkaline.

Other food than milk may be taken by the lambs at a very early age, and diarrhoea may be due to the eating of indigestible materials which the young animal may pick up almost mechanically. Hard frozen or rotten roots may be nibbled and form a source of irritation; or, if the lambs are old enough to crop the herbage, the cause may be found in coarse innutritious grass. The presence of the “purging flax” (1) in pastures may be one cause of an extensive outbreak of diarrhoea; and unless some one who is acquainted with the plant detects it, the disease of the lambs may be referred to any cause but the right one.

In some districts the water contains a large quantity of mineral water: and although none of the constituents may be actively purgative, it is well known that a combination of a number of

salts, no one of which is purgative, may become a very potent purgative compound.

Independently of the several causes which have been noticed, diarrhoea may arise from acute inflammation of the lining of the membrane of the intestines, as the effect of exposure to wet and cold weather.

Of the several causes of diarrhoea the farmer should detect the one which is acting in the case which he has to investigate: and in making his selection he is liable to err from want of knowledge of all the facts, but should he light on the true cause, his course is comparatively easy.

Many outbreaks of diarrhoea in lambs have to be dealt with in ignorance of the precise cause which is in operation to cause the disease; and in such circumstances it is safe practice to move the old flock from the feeding ground to a new position. (1) A complete change of this character is often very effective: medicine is not of much use, excepting in special cases when the diarrhoea is excessive: and nothing is better as a remedy than the ordinary chalk mixture, in doses of a teaspoonful to a tablespoonful to each lamb. Diarrhoea is often caused by parasites, especially by the tape-worm and for these cases a dose or two of areca nut, a drachm or two drachms of the grated nut in a little milk, is generally effectual in expelling the worm.

To sum up, the largest proportion of the losses at lambing time is due to a deficient supply of food to the ewes during the time of gestation, which is a reason, apparently little regarded, of a production of weakly lambs. Stockowners do not seem to realize the importance of keeping breeding animals in good condition, although, if the question of liberal rations for such animals were fairly put to them, all practical men would without hesitation advocate the system.

Among the other diseases to which lambs are liable is one which is called red water, meaning effusion of red fluid into the cavity of the chest or abdomen; this is but another name for effusion consequent on pleurisy.

Red water is a very fatal malady, and it may at first be overlooked, because a few deaths among lambs will not attract much notice, and the farmer may not think it worth while to make a post mortem examination until the losses begin to assume

(1) With us, on the English chalk-soil, a change to the fatermatter of sainfoin is almost invariably a cure.—Ed.

(1) *Linum catharticum*.

a serious form. Treatment for this is as a rule not satisfactory. In fact, very little can be done for the young and debilitated, beyond providing good shelter for them, and supplying them with nutritious food. In worst cases some stimulant which may be given with the food will be beneficial, and no agent is better than whisky given in small doses, a teaspoonful several times a day. Be it remembered that the ordinary treatment of inflammatory disease, including sedatives, would add to the mortality in the above cases. To prevent the extension of this disease among lambs, it is absolutely necessary to remove the whole flock from the position in which the causes, cold winds and rain, are acting. The young animals require a dry bed, good food, protection from cold, and failing these necessary things, medicine cannot be expected to do much with them—it is not wanted.

Exposure to wet and cold again sometimes induces a peculiar form of disease of the lungs, in some cases associated with eruptions on the lips and round the coronets, extending now and then up to the knees and hocks. No difficulty is experienced in recognizing the disease, but it is usual to ignore the causes, and consequently the affected animals are left under their influence, and the malady continues. The lungs are always congested, and in various parts of the organs there are cavities filled with a disgusting fluid.

As in red water, the treatment which is most successful is the use of stimulants, with good food, and the removal of the animals from the exposed to a sheltered position. It is a fact that young lives are exposed to many risks! but it may certainly be affirmed that young lambs are generally placed in very unfortunate circumstances, beginning with their uterine life, when the ewes, in order to do their part in the development of their offspring, require an amount of care which it is practically impossible to devote to them. Sheep are perhaps of all animals on a farm exposed most to the weather, and in the most inclement season are kept on food a greater percentage of which is water. Lambs are born during the least genial time of the year, and the first two or three months of the year are passed under conditions, which are rather calculated to test the powers of endurance of a hardy race, than to afford the weakly a chance of survival. It is, in fact, not remarkable that the losses at lambing time are sometimes so extensive as to jeopardise the breeder's chance of a profitable season.

W. R. GILBERT.

SEASONABLE NOTES.

EWES.

December is a critical month for ewes. (1) The heavy rains which usually mark the fall, the springing immature grass, night frosts, and wet lairs, often throw a flock out of track, and diarrhoea, abortion, and heavy losses sometimes follow. Sheep are hardy as long as they are well, but untoward circumstances are liable to produce an unnatural delicacy, which, when once started, is difficult to overcome. After a dry summer, sheep are sure to look well, but are more susceptible of injury from drenching rain and wet lying. The great thing in such circumstances is to act in time, and take precautions of a general character. Among the best preventives against a flock falling into a debilitated condition is plenty of hay, and at no period more than at present should this dry and comforting food be given liberally. The earlier the lambing, the more desirable it is to keep ewes in a healthy condition, and a feed of hay once or even twice a day will be found to be the best safeguard. Ewes should always have plenty of exercise, and close folding should be relieved by a daily outrun upon old seeds or grass land. If fortified by hay there will be less likelihood of grass causing purging at this season. The fold should be chiefly used at nights, and for three or four hours during the middle of each day ewes should be allowed to spread over green ground. By this treatment they will not be in danger of eating too many roots, but in many districts roots are not abundant, and there is consequently less danger of evil arising from this cause. Two-teeth ewes ought not to run with older ewes, but have the preference in food. Old ewes will stand more hardship than young ewes, and therefore should be found on the poorer land, and may be supplied with rougher fodder.

As roots are scarce, the demand on hay becomes a cause for anxiety, for the winter is all before us, and ricks might give out before spring keep is again abundant. It therefore becomes a question as to how far straw may be substituted for hay. On tillage sheep farms straw is generally abundant, and the practical question arises as to how

(1) Of course, a good deal of this article is not applicable to our system; but the good sense apparent throughout induces us to re print it from the English Agricultural Gazette.—Ed.

it should be converted. Sheep are not so well adapted as bullocks for treading down straw, but old straw ricks are an abomination. Of course, when straw is sold the difficulty disappears, but selling straw off light land is not a course which meets with approval. On the other hand, straw adds very materially to the value of sheep manure, and no better method of manuring light land exists than littering folds with straw, and allowing sheep to tread it in. A fold does not readily forget such treatment, and although modern ideas are opposed to such a wasteful method, it differs little from the conversion of straw into dung in yards. Hence strawing before sheep may be in accordance with good theory, especially upon hill farms, where the cost of carting to market centres is more than ordinary. In threshing oat or barley ricks far from the homestead straw may be littered before sheep on the turnips, and if the operation is carried on with judgment a good deal of it will be eaten by ewes. Especially in hard weather will this be found true, as sheep like sweet and dry straw under such conditions. On outlying fields let the ground be strawed before the flock, and a saving of hay as well as great benefit to the land will be the results.

When ewes receive much dry fodder they ought to have water unless they are observed to scour, when they are better kept without it. As to cake of corn it is better to keep ewes upon what the farm will produce, as caking at this time of year leads to too much expense, even in the best class of flocks. In October ewes are often to be thus obtained. This keep cannot be considered to be particularly wholesome, but with a daily ration of hay and an outrun upon sound grass, it may be given without danger. With a view to this procedure it is good policy to mix a little swede seed with the ashes or water used in drilling mangel, and thus an occasional swede will be left when the mangel is pulled for the benefit of the sheep as well as of the land. A thousand sheep folded for one night upon an acre of land is considered to be a manuring, and thus folding ewes upon mangel ground is a good preparation for wheat. This may be further improved by a moderate coat of dung behind the fold, and a fair crop of wheat after mangel may then be expected.

One point scarcely needs prominent mention to practical men, but mistakes are made, and a word of caution may be useful. I refer to the risk of allowing ewes to graze on unsound ground. This

is a bad time of year for contracting liver rot through the agency of those shelled molluscs, which are credited with harbouring the liver parasite. After one good frost the danger disappears for the year, but in muggy weather, such as the present, the fluke is awaiting his opportunity to enter the biliary ducts of his hosts. Salt is a good preventive, but better still is the removal of ewes from flooded grass lands into the dry hills where fluke is unknown.

Ewes should always have plenty of racks or cribs, or they push and shoulder each other to a dangerous degree for animals heavy in young. Racks such as are often seen are expensive when used for a big flock, and cribs of about six feet long, which cost eighteen shillings per dozen, are quite enough. These cribs are universally used in Wiltshire and the surrounding counties, where sheep-farming is very successfully practised on a large scale.

By observing good rules of management, ewes may be brought through the winter up to lambing in good store condition, which is all that is required, for this stock should be neither fat nor lean.

CABBAGE PLANTING.

Now is a good time for planting cabbages, and no better plan exists than ploughing and pressing, and planting in every second or third press mark, according to the land and the variety. Clay land farmers find great advantage from the cultivation of this crop as it is raised on seed bed and is planted out in open weather during May. It is not expensive to cultivate when the plants are raised at home, but this is not true when \$2.50 per 1,000 must be paid for plants. A cabbage seed-bed pays well, even if larger than is necessary. Plants always sell, and after the requirements of the farm are satisfied a few thousands of surplus plants will easily pay the rent and costs of cultivation.

WHEAT IN ENGLAND

is coming through the ground quickly, favoured by the mildness of the season. We are certainly fortunate in having once more escaped autumnal frosts, and it is to be hoped that the present mild weather will continue up to Christmas. Mild winters are a great help, provided we get a little frost later on to keep vegetation in check. A mild winter up to Christmas, a sharp January, and a growing February and March is what we want.

MANURING GRASS LAND.

"Many inquiries reach us as to the best artificial manure for sour grass, coarse grass, bad or poor grass, &c. It is extremely difficult to answer such inquiries so as to be of real use to the inquirers. Everyone ought to try for themselves, and not trust to the *nostrums* recommended by persons at a distance, however accomplished. Basic cinder and superphosphate do not always produce the desired effect, and it is a pity to throw money about until the effect is known. A few small plots staked out, say of a quarter acre, or even one-tenth acre, in extent, may easily be dressed with varying quantities of approved manures. Knowledge as to the best manure for particular fields can only be acquired by years of observation, and there is no need of hurry. Having made many such experiments, I know that the same manure which produces a striking effect on one class of land, may be applied without effect on another. Manures are not like drugs, that are known to be soothing, stimulating, purging, diuretic, &c. Their effect seems to be dependent upon the land, so that the reaction between the particular soil and the purposed manure must be tested by experiment in each case. Many persons appear to think that a manure may be recommended like a medicine, but this is not the case. The only exception appears to be in favour of muck or dirt, dressings of earth, or vegetable rubbish, all of which tell on all sorts of land. For grass land fall grazing by young stock receiving hay as artificial food is a dependable method.

On stiff land pastures drainage, basic cinder and cake feeding will do wonders, and on light land cake feeding will soon put a skin on poor grass land. It must also be confessed that much poor grass land is as well left alone, and used for grazing as far as may be. Poor land is a poor thing, and it is questionable policy to lay out hard cash upon it in these days."

JOHN WRIGHTSON.

CANADIAN FARM PUPILS.

(Continued.)

We have supposed that the pupil has landed on his first farm, in the spring, so that his initiation has taken place before the really hard work of the

summer has begun. We will only take a very hasty glance at him in the hay and harvest field, as he will probably know something about using a pitch-fork, although, of course, it will be a very different thing when he has, later on, to follow a "binder" all day, especially if it has been a good year for thistles. But picture to yourselves this same "tender foot" at his first threshing where he probably finds himself placed behind the "carrier" or if he has good luck, on the straw-stack. How he will welcome the sound of the whistle at noon, and "the feast of fat things" afterwards, and again the really good supper in the evening when the dairy-work is done! He goes back to the house as black as a sweep, and would give anything for a good bath, but alas! such a luxury it not to be had and he has to be content with the tin pan on the "stoor" at the back.

To pass on to the winter-work and the Canadian winter. These will, of course, be entirely new experiences for the pupil. If the farmer has some "stock" in the stables, he will of course have to help in attending to that department, and may by this time have made himself of some use. But "chopping in the bush" and learning the names of the many different kinds of wood, how to handle the bob-sleighs and "jumper," also the "cross-cut" and buck-saws; these and many other winter lessons, on the farm, will be a real study to him.

From these very cursory remarks, there is of course one conclusion to be drawn from our view of the Farm-Pupil, or rather from our view of the average class of Farm-Pupils brought out to Canada by this Association. While fully admitting that the original idea of helping those who wished to become farmers in Canada and thus helping to get the country "settled up," was an excellent one, we are forced to say that the wrong class of pupils were sent out from England. Although in some cases these boys have by sheer pluck stuck to their education on a farm, and have, afterwards, bought farms of their own, the majority of them have soon got tired of farm work, and have either drifted into the towns and large cities, or, worse still—by their own folly or misfortune—have been brought to the prison or the asylum.

Now for a few words, on the side of the farmer, who "hires" one of these pupils, can we say, that on the whole it really pays him to have an

inexperienced hand on his farm, even supposing that his wages are merely nominal? Well, of course, if the boy is willing to learn, he will soon make himself useful round the farm, doing the "chores," etc. But from the very first day he will require constant attention and supervision and will spend a large amount of time and labour in doing everything the wrong way. And further, if he has not been accustomed to horses, for the first few months the pupil will be absolutely a "white elephant" on the farmer's hands.

To sum up therefore we may say, with a fair amount of truth, that the first persons to receive any benefit from the Canadian Farm-Pupil Association, were the parents themselves, who were relieved of the responsibility of their sons, for a few years at least; secondly, the pupils received perhaps the best introduction to Canadian country life, and had a chance given to them of becoming either farmers or good citizens; and, last of all, we must place the Canadian Farmer.

F. W. TERRY.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

HOW TO FAT AND CHOOSE A TURKEY

The very best way to have a good turkey for Christmas is to fatten it yourself, 20 days will be ample if you know how to stuff them, the first few meals will be a little troublesome, after this they will gape for the food themselves.

During the process they must be confined in a small space in a dark room so that they can devote themselves to the one thing, fattening. The following is the mixture to be given, made into long pills about as big as one's thumb.

Take the bird under the left arm, hold it firmly and open the mouth with the left hand and give as much as you think necessary at the time, pouring a few drops of warm milk and water into the bird's mouth after each gobble. I have watched the process and the birds seem to enjoy the feast.

To those who have never tasted poultry fattened in this way I would say, try it, and you will wonder why you have not done it before.

THE MIXTURE TO BE GIVEN

One pound of barley-meal;
Half pound of oat-meal;
Quarter pound of fat;
Two ounces of sugar;

In choosing a turkey, the young cock bird, when young, has a smooth black leg with a short spur.

The eyes are bright and full, and the feet supple and fresh, the absence of these signs denotes age and staleness; the hen may be judged by the same rule.

CHRISTMAS DAINTIES

ROYAL MINCEMEAT

Ingredients—

1 lb. of lean roast beef.
1 lb. of beef suet.
1 lb. of raisins.
2 lbs. of currants.
1 lb. of moist sugar.
1 lb. of stewed pears, with their juice.
 $\frac{1}{2}$ lb. of preserved ginger.
2 lemons, rind grated, and juice.
1 packet of mixed spice.
 $\frac{1}{2}$ nutmeg, grated.
 $\frac{1}{2}$ pint of old rum.
 $\frac{1}{2}$ pint of brandy.

Method: Prepare the ingredients in the usual manner by chopping. Then mix together with half the spirit; the other half should be reserved till the mincemeat is made up into pies, as it is liable to evaporate if put in long beforehand. The meat may be omitted if preferred.

PUFF-PASTRY

The following is the best method for short puff pastry, very suitable for mince pies, the ingredients required being

1 lb. of flour.
12 ozs. of butter.
1 egg.
Salt.

Method: Spread the flour out on the pastry-board, make a hole in the middle, into which place the pinch of salt, the egg unbeaten, and half the butter. Work these together a little, then add two-thirds of half a pint of cold water, working all

into a firm paste, and using more water, up to half a pint if necessary. Spread this out with the hand, lay in the remaining butter, and fold over the sides of pastry, so as to enclose the butter. When the paste has stood five minutes shake some flour over the board and on the paste, then roll it out to the length of about two feet and a half and a foot wide. This must be then folded in three, and after turning it round, so as to bring the sides to face you, roll it out again in a similar manner. After an interval of ten minutes repeat the rolling and folding twice more. The pastry is then ready, and should make about a dozen pies.

VARIOUS SAUCES FOR PLUM PUDDING

Almond Sauce.—An ounce of ground almonds mixed with 3 ozs. of castor sugar, the yolks of 2 eggs, and a gill of boiling cream, stirred over the fire until it begins to thicken, then whisked to a froth, and served hot. Sherry or brandy may be added.

Burgundy Sauce.—Beat together 2 ozs. of butter with 3 ozs. of sugar until creamy. Add a large glass of burgundy. Just before serving stir in the white of an egg beaten to a froth, and boiling water very gradually to make it the required consistency.

Cream Sauce.—Thick, rich cream sweetened, and mixed with brandy to taste, makes a delicious sauce for plum puddings, so also does cold boiled custard flavoured with vanilla. The above quantities of each sauce are sufficient for 5 persons.

Take the half of everything in this and it will make a large pudding.

QUEEN'S CHRISTMAS PUDDING (VERY RICH).

Ingredients—

- 1 lb. of raisins, stoned.
- 1 lb. of sultana raisins, cleaned.
- 1 lb. of currants, cleaned.
- $\frac{1}{2}$ lb. of candied citron, cut into strips.
- $\frac{1}{2}$ lb. of flour.
- $\frac{1}{2}$ lb. of bread crumbs.
- $\frac{1}{2}$ lb. of finely-chopped suet.
- 1 lb. of castor sugar.
- $\frac{1}{2}$ lb. of fresh butter.
- Yolks of 10 eggs, whites of two.
- 1 nutmeg, grated.
- $\frac{1}{4}$ pint of milk.
- 1 teaspoonful each of powdered cloves and cinnamon.

Method: This pudding is mixed rather differently to the usual method. Mix together in a basin first the fruit and citron, then the flour; after this, when the fruit is well coated with flour, the crumbs may be added with the suet. Now put the butter in another basin, and slightly melt it, stir in the sugar, and beat both together till creamy, add the yolks of eggs to this one by one, and beat well, mix contents of the two basins together and other ingredients, adding lastly the whites of the eggs beaten to a stiff froth. Turn the pudding into a greased basin, and boil 5 hours. All the best ingredients must be used, and the raisins should be muscatels. These can be purchased loose very cheaply sometimes.

TURKEY STUFFED WITH MUSHROOMS.

A turkey stuffed with truffles is esteemed a very great delicacy, but truffles are very expensive to obtain fresh, and the tinned ones are not of any use for this purpose. Next to truffle stuffing I recommend that made with mushrooms, as follows: Peel 12 or 14 button mushrooms, put them in a small saucepan with a slice of fresh butter, cover the pan and let the mushrooms simmer in the butter for nearly 10 minutes, shaking them occasionally to prevent burning. Drain them from the liquor and mince them finely; mix with 7 ozs. of breadcrumbs, a pinch of grated lemon rind, seasoning, of salt, pepper, and nutmeg, and 2 ozs. of butter. Bind it together with the yolk of an egg, and add also the liquor in which the mushrooms were stewed, or as much of it as will make the stuffing the proper consistency. Fill the turkey with it, then proceed in the usual manner for boiling or roasting. This stuffing is equally good for either method of cooking.

MUSHROOM SAUCE FOR THE ABOVE.

If for roast turkey a brown sauce will be required. Take $\frac{1}{2}$ pint of small mushrooms—if not very small they must be cut up—stew them in a pint of good stock for half an hour. By this time the stock will have reduced about a third, and will only require a slight thickening with brown roux. White mushroom sauce for boiled turkey will be made in the same way only with white stock and thickening of white roux; or a good melted butter with the cooked mushrooms stirred into it answers the purpose very well.

The Farm.

ESSAY ON THE BEST METHOD TO FOLLOW FOR THE CULTURE OF EARLY AND LATE POTATOES.

First prize at the Sherbrooke Show 1898.

First, the land is to be in first-class condition and should dry early in the spring. Soils that will draw the heat early, such as sandy loam, gravelly soil, or limestone soil, are best fitted for potatoes. A rich soil is necessary so that the potatoes shall grow quick'y to be ready for early market, and a dry soil is necessary in order that it can be worked early in the spring. It should be plowed when dry in the fall and again in spring. If it is plowed when wet it is sure to harden and the potatoes will not grow so rapidly. It is advisable to plow the manure down in the fall, for while the land may be rich it always requires a little extra manure, say about fifteen or twenty cartloads per acre. If manure cannot be had in the fall, employ well-made manure in the spring, in the drills, for early potatoes only. What would also help would be about 150 or 200 lbs. of fertilizer per acre. (1)

Now comes an important point in the production of an early potato, viz: the selection of a good early variety. There are several very good varieties, such as: Early Rose, Early Ohio, Lee's Favorite, Early Gem, Early Puritan, Beauty of Hebron, Early Sunrise, etc. An exhausted potato, i.e. one which has been grown several years in succession in the same soil, should not be planted. Select the potatoes so that they shall be of a uniform size, four or five sets per potato, and not more than one or two eyes per sett. It is absolutely necessary that these potatoes should be put to sprout about six weeks before they are to be planted. Sprout them in a room on shelves and not more than one potato deep, seed end up, with plenty of windows for sun and light. When the room is dark the sprouts grow too long and thin. The light causes them to grow slower and stronger and gives them a green color. The temperature should be from about 55° to 62° or 63°. They can also be sprouted in the stable if the temperature and light are as above. When ready to plant, the potatoes are cut and put carefully into baskets and carried

to the field and planted one by one, so as not to break the sprouts off. Those with sprouts broken off should not be planted with the rest, for in digging time, they would not be ready with the others. They can be put to one side and planted in a drill by themselves. In cutting, always cut round the side and split the top or seed end, and if these are planted by themselves they will produce potatoes several days earlier than the others. In drilling for these early potatoes about 3 inches is the proper depth, but they can be covered much deeper. Four or five days after, they should be harrowed with the potato harrows. This gives them the heat of the sun by drawing the soil away. As soon as they are all nicely through the ground, pass a cultivator through them and hoe them all over thoroughly to move the soil about them. In two or three weeks, another cultivation and hoeing would benefit them by keeping the soil loose. To mould, the Planet jr. cultivator with double mould-boards is the best, or any similar cultivator with mould-boards, for the soil is thrown up looser than by the double mould-board plow. (1) But they should not be moulded up into a sharp peak, a little depression should be left in the centre to catch the rain and carry it down to the potatoes. (2) But bear in mind that the above working must be done when the land is in a good state for cultivation and not when it is too wet. In growing early potatoes a good deal can be done to keep up the richness of the soil. No person would take the trouble to sprout potatoes if he did not wish to have them ready for early market. They are generally sold during the month of July; the land should then be harrowed and the tops taken off, then plow and harrow well and it can be sown with a variety of seeds, such as; oats and vetches, 1½ bushels per acre of each, pease and oats, 1½ bushels each per acre, or early yellow or white turnips, 5 or 6 lbs. per acre broadcast. If the season is favorable any of the above will grow from 1 ft. to 1½ ft. high. In the fall have it well and properly plowed down, with a chain attached

(1) We cannot recommend earthing-up early potatoes. We always, from 1846, sprouted our sets as above and never gave more hoeing than needed to kill weeds. The crop, doubtless, was not so large as if the hoeing was more intense, but as we always had potatoes fit for the table on the 21st June, as long as we grew them in Canada, we think the practice was correct.—En.

(1) Dreadfully vague.—En.

(2) Very good indeed.—En.

to the beam of the plow, with a weight on the end of chain. This chain drags the leaves down into the furrow and they are entirely covered. This, I am satisfied will return as much to the soil as the potatoes have taken out. (1) This will cover the cultivation of early potatoes.

For later or fall potatoes there are several methods one can follow. They can be planted on poorer and dirtier soil as they have more time to grow in, and they help to make up the land. For late potatoes, the manure should be plowed down either in fall or spring, not put in drills for two reasons; 1st, if the land is loose, in a dry season manure in drills will make it too dry, and 2nd, if the potatoes rot, it might cause them to rot more.

The quantity of manure depends on the nature of the soil, from 20 to 30 cartloads per acre. I would strongly advise plowing for potatoes from meadow or pasture, (2) but the land must be plowed and harrowed very early the season before to allow the sod time to rot. Some condemn the harrowing, I find it helps to rot the sod, but the furrows and rigoles must be kept clean. On such land, potatoes will be much more productive and of a better quality. But where they are to be planted in stubble which is dirty, I would advise two plowings in the fall to lighten the soil and clean it, and also plow and work in the spring.

In about ten or fifteen days, harrow down the drills with a light pair of double harrows, leave them three or four days, then mould up again with the double mould-board plow. The next day or so harrow them down again. This harrowing and moulding will only do the potatoes good, and save much hoeing, which is a great economy.

The selection of the seed potatoes has a great deal to do with the crop. The seed should be changed often, getting it from an entirely different soil. It is not necessary to buy for all the crop, just a few bushels to provide for seed. Nearly every farm has two or three kinds of soils and the change can be made at home. When doing so, plant large and nice uniform potatoes, which will prevent the seed from degenerating. In any case where a farmer plants small or middle-sized potatoes, care should be taken that the product should not be mixed with the seed potatoes.

(1) Doubtful. Ed.

(2) We, on the contrary, hold that potatoes, like all hoed-crops, should be the first crop of the rotation. Ed.

They should all be disposed of and not planted again for they will produce an inferior crop, both in quantity and quality. (1) The hoeing should be well done, and for moulding, where the land is heavy the double mould-board plow can be used to advantage. Where the ground is light use the cultivator with mould-boards. Where the land is wet and cold, as in clay, it is necessary to drill for the planting light and cover deeper. If heavy rains come on, the seed is kept up out of the water and cold wet soil. Many farmers have no light or dry soil suitable for potatoes; these could very much improve their land by subsoiling. Not to bring the subsoil to the surface, but to plow 6 inches deep and follow that with another team having a rooting plow, or iron plow with mould-board off and a broad sock on, going at a depth of 6 or 7 inches or more if possible. This would improve the quantity and quality of that and several succeeding crops. (2)

For some years the potatoes have been infested with the potato beetles, which from present appearances are likely to remain. At first, we fought them by picking them off by hand, then came Paris green and water in watering-cans. Then land plaster and Paris green in tins with perforated bottoms; next the wheel-barrow distributor taking two rows; followed by the horse distributor taking four rows, but the latest and best is the spray pump. It is the cheapest and most effectual. The pump is arranged on a hogshead, containing 120 or 140 gallons of water. Two rubber hose pipes with spray-nozzles are affixed and the apparatus placed in a cart. One man pumps and the other directs the spray. It takes from six to eight drills wide. We put in from 4 to 6 lbs. Paris green per hogshead. The usefulness of this pump does not stop here, it can be used at the same time in applying the Bordeaux mixture for preventing rot in potatoes. It can also be used in spraying fruit trees. A good one costs \$15.00. In localities where not many potatoes are planted several farmers might club together to get one. One hogshead of water and Paris green will cover four acres of potatoes.

GEORGE BUCHANAN.

Côte St. Michel, Montreal, P. Q.

(1) When we first went to Sorel, the farmers used to plant whole potatoes no bigger than "chats," or acorns! Ed.

(2) The effects of subsoiling heavy, undrained land never lasts through more than two seasons. Ed.

CULTURAL PREPARATIONS FOR LAYING DOWN LAND TO GRASS.

(PART II.)

Supposing land is prepared by feeding off a crop of rape with sheep, it may happen that the rape has to be supplemented with meadow hay. If so, it is important that the hay should be only such as has been cut very early in the season, otherwise the ripe seeds of the grasses will pass the sheep undigested, and in due time will spring up and make the pasture foul. Whether the rape is fed off during the fall by sheep, or whether it is carted off the field, in either case the plough should be put into the ground as soon as the crop is off. This first ploughing should be deep and thorough, and should be followed soon after by another ploughing to lay the land up rough for the winter. In the spring get the harrow and the roller upon it until the seed-bed is fine and firm.

It should be more generally known that few grass seeds will grow at a greater depth than half an inch even in very fine soil.

Young grasses cannot obtain a proper foothold upon a loose or hollow soil and therefore it is very important to have a firm seed-bed. It is no unusual thing to see a fine plant of grass all around the headlands of a newly sown field, while the centre is thin and bare. This is because the greater traffic over the headlands created a firmer seed-bed for the grasses than they had elsewhere in the field. (1)

Even after the land has been fully prepared for the seeds, it will be all the better if allowed to lie untouched for a few days before sowing; but if the season is advanced don't wait. Otherwise the delay offers two advantages. It allows the soil longer time to settle down, and also gives the annual weeds a chance to start, so that by a final turn of the harrow they may be killed before the grass-seeds are sown. Annual weeds, unfortunately, are sure to come only too plentifully, and will demand constant attention when grass-seeds are sown without a grain crop in the spring.

As a preparation for autumn sowing, no other crop is equal to an early variety of potato. The earthing up of the rows exposes a great surface to atmospheric influences and this materially aids

in the desintegration of the soil. Another point in its favour is that the crop is often lifted by hand, and thus the soil is subjected to a course of spade-husbandry, which, as a preparation for grass, is superior to all other modes of cultivation.

We often hear of people wanting to let go to grass some old piece of land that has been neglected for many years until it has become a perfect mat of couch-grass. In such cases good results are practically impossible until the land is in a state of thorough cleanliness and proper cultivation.

Probably the best way to sow grass-seeds in the spring is to seed them down with a wheat crop. The wheat should be drilled nine inches apart, thinly seeded (1) and horse hoed in the spring. If planted without a grain crop in the fall the seeds run the risk of being killed by drought or smothered by annual weeds. If planted with barley or oats the crop will be often badly damaged by the grain "lodging." Some skill is required in sowing grass seeds. The actual work of sowing grasses is simplicity itself, but as the germination of the seed and the equal distribution of the plant depend upon the accuracy of the process, the details should be carried out with due regard to the serious loss which failure certainly entails. The necessity for making the seed-bed fine and firm has already been spoken about. At sowing time the additional requirement is a soil dry enough to allow the implements to work freely without any tendency to clog on the roller. Very often waiting to sow will tax the farmer's patience greatly, but it is no use to contend against nature, so it is best to wait for good weather and until the land is in proper condition for seeding. The first business is to run the harrow over the land to prepare it for the seed, and the sowing may be either performed by hand or by means of the common seed-barrow.

Some men are skilful in spreading seeds equally by hand, and on a still day their work answers well. But grass seeds are light, and it does not need a very high wind to make the sowing irregular. The heavier seeds will fall near to the

(1) Of course, this refers to districts where fall-wheat can be grown. As to thin-sowing helping the grass-seeds, we differ from our friend Mr. Bunbury, because, if the land is in good fettle, the tillering of the plant in spring will make as much or more shade as if thick sowing had been practised.—Ed.

(1) And we have seen a field of wheat, near Soid, scourged by the wireworm, the headland alone being untouched. Pressure is the sole cure for the ravages of this beast.—Ed.

sower whereas the lighter seeds will blow farther away.

As a seed-barrow delivers the seed nearer to the ground, it will, as a rule, distribute the grasses more evenly than the most skilful hand sower. But whichever method is adopted, there is a decided advantage in making two sowings. If the grasses and clovers are mixed together, half the quantity should be sown by passing up and down the land, and the other half by crossing the first sowing at right angles. When the grasses and clovers are separate, the grasses can be put in one way, and the clovers should cross them. (1)

A chain-harrow is the best implement for covering the seeds. In its absence, a bush-harrow will answer. What is wanted is that as many seeds as possible shall be just covered with soil and no more. Grass seeds will germinate and become established when they are merely pressed upon the surface of the earth, provided they are not picked up by birds, or scorched under a hot sun. But many will not germinate at all at a greater depth than half an inch. Hence the necessity of a fine soil and shallow sowing.

The roller must closely follow the harrow and it is a safer plan to roll twice in different directions.

WALTER S. G. BUNBURY,
Compton Model Farm.

MANURES

A practical summary of the experiments at Rothamsted Farm (England.)

ROOT CROPS.

Like sugar-beet grown for sugar, roots grown for the purposes of stock feeding are very artificial production. The swollen root contains the reserve material for the second growth of the stem and seed; and the conditions of growth, as to the period of the season selected the soil and the manuring, are such as to obtain the greatest development within the season.

Roots are generally considered to be restorative crops. They depend, to a large extent, for their successful development, on large quantities of manures, which is often applied for the previous crop, but as a rule for the roots themselves; and

when grown without manure, even from the same seed as the manured crop either for a few years in the same land successively, or even in rotation, they soon come back to the uncultivated condition.

Independently of the advantage arising from the opportunity which the growth of roots affords for the cleaning of the land, the benefits of growing the crop in rotation are due to the large amount of manure applied for its growth, to the residue of the manure left in the soil for future crops, to the large amount of manure returned by the dead leaves, to the large production of food and to the small amount of the most important manurial constituents of the roots which is retained by the stock consuming them, the rest returning again as manure.

It is entirely fallacious to think that root crops gain a large amount of nitrogen from the atmosphere by means of their extended leaf surface. No crop is more dependent on nitrogen in an available condition within the soil; and if a good crop of turnips is grown by superphosphate of lime alone it is a proof that the soil must contain the necessary nitrogen.

A characteristic difference between the uncultivated and the cultivated turnip is that the latter contains a much lower percentage of nitrogen, and a much higher percentage of carbonaceous constituents, especially sugar, by the accumulation of which the percentage of nitrogen is reduced. Yet it is under the influence of nitrogenous manures that the greatest amount of sugar is produced.

If nitrogenous manures are used in excess, there will be not only a restricted proportion of root, but an undue proportion of leaf. In fact, the higher the nitrogenous manuring and the heavier the soil, the greater is the tendency to produce a large amount of leaf.

In the case of both swedes and common turnips the leaf contains a much higher percentage of dry substance than the root; and the dry substance of the leaf contains a much higher percentage of both nitrogen and total mineral matter than does that of the root.

The root of the swede contains a less percentage of water than that of the ordinary turnip and therefore has a higher percentage of solid food material. The solid matter in the swede contains less mineral matter and consequently a higher percentage of organic food stuff.

The more deeply and powerfully rooting, and

(1) Very good.—Ed.

more vigorous beet is sown earlier, has a larger period of growth, and yields more produce per acre than either swedes or turnips under the same conditions of manuring: but for full crops it requires much heavier dressings of manure. (1)

The proportion of mangel leaf to root is, generally speaking, much less in the case of ordinary turnips, but more than in the case of swedes.

With the more extended root range of the mangel, it is less dependent on continuity of rain when growth is once well established; and it bears, in fact requires, a higher temperature than the turnip.

The mangel root contains a higher percentage of solid matter than either kind of turnip. But whilst the turnip leaf contains a much higher percentage of dry matter than the turnip root, the mangel leaf contains a much lower percentage of dry matter than the mangel root and also a very much lower percentage than the turnip leaf.

Superphosphate is much less beneficial to mangels than to turnips. In mangels, as in turnips, the amount of dry substance grown has a very direct relation to the amount of nitrogen available in the soil. More vegetable matter, however, was produced, and more stock food yielded from a given quantity of nitrogen applied to mangels than to either swedes or turnips. By the application of nitrogen to the soil for mangels, in several cases, there was an increased assimilation of about a ton of carbon per acre from the atmosphere.

Taking the average of 6 years, the amount of nitrogen recovered in the increased crop of mangels was about 60% of that supplied when nitrate of soda was used, about 42% when ammonium salts, about 50% when rape cake, and about 46% when an excessive amount, when a mixture of rape cake and ammonium salts was used. The additional amount of nitrogen accumulated in the leaves was returned to the soil as manure annually.

A. H. PLUMMER.

October 1898.

CORRESPONDENCE.

LENNOXVILLE, P. Q., Nov. 21, '98

To the Editor of the JOURNAL OF AGRICULTURE.

SIR: In your issue of Nov. 15, I notice you refer to on page 220 Slag vs. Supers. If convenient,

(1) From 85 to 95 tons of mangels to the acre were shown in Glo'stershire, Eng., this last month. Ed.

will you kindly inform me where I can obtain a copy of the report by Prof. Wright of the Technical College. By giving me that information you will greatly oblige,

Very truly,

S. L. SPAFFORD.

Reply.—Mr. Spafford, we fear, must write to the Principal of the Technical College, Glasgow, as we cannot help him to a copy of the Report.
—ED.

The Dairy.

CHEESE AND BUTTER

The patrons of cheeseries and creameries are at present sadly perplexed as to whether they should keep on making cheese or turn their attention to butter.

It may be interesting to consider the present situation of these two articles.

Our market is governed by the requirements of the English market, as all productive centres depend upon the centres of consumption. We must therefore be guided in our production by the state of the English market.

Now, the first thing that strikes us when we consider this is that, this year, our exports have been less than those of last year. Thus, up to mid-September, we had only sent 1,115,100 boxes of cheese in England, against 1,349,589 boxes up to the same date last year.

It would seem, at first sight, that this would be a favourable prognostic for the future, and that our dairymen would have to fill up the deficit. But this idea would be erroneous, for last year England received more cheese than she could consume.

Consumption has, in point of fact, its limits, and this is proved by our not having been able to reach the amount of our exports of 1897, in spite of the low price of cheese during the whole season of 1898; so that, it is clear that consumption has not been encouraged by the low prices.

Many people assert that, while our means of production were increasing, consumption in Britain was falling off, on account of the low-price of other articles of food, and because the working classes there were altering their methods of provisioning their families. Strikes, too, which laid

aside thousands of workingmen, must have had some effect in decreasing the demands for cheese. (1)

At any rate, the decrease of consumption is clearly seen by the fact that, on August 31st last, in spite of the comparative deficit of last year, the principal British markets: Liverpool, London, Glasgow, and Bristol held a greater stock of cheese than they held on August 31st 1897. Liverpool alone had 33,685 boxes more at the end of August 1898, than on August 31st 1897.

And we must not leave out of our calculation that, at that date, the imports from Montreal and New-York had been less than in last year by 450,000 boxes.

So, it is clear, the state of the English market is not, at present, very encouraging as regards our dairymen.

Let us now see if, as to its future demand, the English market is certain to have all the cheese it needs.

We must confess we have been foiled in our attempt to find out, with any degree of exactness, the quantity of cheese there is in cold storage. Still, if we cannot give the exact figures, we feel authorized to believe that they are at least equal, if not superior, to those of last year, at the same date. Besides, the quantity will be increased by the addition of the September-make, since it is not to be doubted that the increased prices of to-day will tend to increase the quantity made.

It is supposed that at least 25% of the cheeseries have this year been converted into creameries; hence, much less cheese will be made. An authority in the matter tells us that it is calculated that, taking Canada and the States together, there will be turned out 500,000 boxes fewer than last year, and that the production will still be too great by 300,000 boxes.

To close this examination, we cannot do better than give the opinion of Messrs. A. A. Ayer & Co., with which we, in great part, agree:

"The decrease of exports from Canada as well as from the States, is chiefly due to a slack de-

mand, and to the unprecedented fact that plenty of 1897 cheese is still on offer in the English market.

Besides, cheese was too high in price in 1897, and too much was made for English consumers to make away with. On account of the price, many consumers turned their attention to other foods, and the cheese-trade suffered. This year again, the price, through speculation, has not come down enough to give a fair margin of profit to the grocer who must sell at 5 pence a pound (9½ cents). So the English grocer is disgusted with this branch of trade and has not pushed the article.

"If he could make a profit on cheese, he would be interested in it, and any improvement that would raise the retail price to 6 pence, would give us a better margin here.

"The consumption of cheese in England has certainly not increased, even if it has not fallen off, which is probable enough. The only thing we see for the Canadian farmer to do, is to turn his attention more to butter-making; for we can safely say, that if every cheesery in Canada took to butter-making, we do not believe that the price of butter on the English market would be lowered by half a cent a pound; while, if the reverse were to take place, the price of cheese might very likely fall to 5 cents.

"We think, then, that after the first of October, no more cheese should be made."

(*Le Prix Courant.*)

(*From the French.*)

PRIVATE DAIRYING

It goes without saying that all who keep cows for the purpose of making butter are desirous of producing an article that will bring the best price possible, and of making the greatest amount of butter possible out of the milk produced. When the milk is taken to a creamery it is usually manufactured by those who are well up in the art of butter making, and the result is that, as a rule, a fairly good article is made.

Besides this, the creamery is equipped with appliances which enable its butter maker to obtain very nearly all the butter contained in the milk; and by his knowledge of what the general butter-market demands, he is able to produce an article which is readily sold. But the case is different

(1) There is no doubt that the consumption of second-class cheese was very much checked in Britain by the long continued strike of the Welsh coal-miners. The Gloucestershire tenants of our family, all of whom are largely interested in the manufacture of this comestible, have been complaining greatly of the almost entire cessation of the demand of the miners and iron-workers at Merthyr Tydvil, Cyfarthfa, etc., who are, usually, their chief customers. The strike ended in early October, and since the above was written we hear from our friends that the prospect of the payments of rent by the farmers is very much improved. Cheese went up in price like a shot.—Ed.

with those who make butter on farms. While on some farms excellent work is done and a choice article is made, which brings a fancy price, yet through ignorance of correct methods of manufacture and of the demands of the market and, in many instances, through careless and slovenly habits, the great bulk of farm-made butter fails to bring the price it should, entailing a loss on the farmers of the country which amounts to a considerable sum.

To make good butter one must have good milk, and this comes only from healthy cows, fed on good, sweet pasture or on good, sweet grain and other foods, and which have pure water to drink and pure air to breathe.

The milk must be strained and aerated immediately after milking and not allowed to stand in the cow stable.

In creaming the milk, various methods have been adopted, but in all the large and most successful dairies both shallow and deep setting of the milk has been superseded by the cream separator, by which a much more perfect separation of the cream from the milk may be had. This is shown by the increased amount of butter made when the separator is used and also by the trifling amount of butter-fat left in the milk after skimming, as shown by the Babcock milk test. It has been found that by no system of gravity creaming can all the butter fat be recovered; and usually, under ordinary circumstances, a large per cent is lost; while with the separator very nearly all is recovered. No dairyman, who manufactures his milk into butter, having ten cows or more, can afford to be without a separator. One, if properly cared for, will last for years. All, except the smallest size hand-separators, are so constructed that they can be attached to a power. A light tread power, run by a pony, dog, sheep, or goat, is very economical.

In ripening the cream the most common method is to keep the cream cool, and stir it up well when each skimming is added, it is well however to keep the different skimmings separate and well cooled until the day before churning, when they should be well mixed together and set at the proper temperature for souring.

With some it is the practice to hold the cream at a temperature of 70° F. for twelve hours and then cool to the right temperature for churning; I advocate, however, the holding of the cream at from 58° F. to 60° F. for a longer period, say twenty to twenty-four hours, for the reason, that the

favourable kinds of bacteria have been found to develop at low temperatures with proportionately greater speed than do the obnoxious species. One of the most difficult things to determine is when the cream has the proper ripeness to be churned, so that uniform results may be obtained and one churning be like another. This must be a matter of judgment, and a skillful and experienced butter maker is able to judge closely as to the right condition of cream for churning by its appearance. The cream must be brought to the right temperature for churning before being put into the churn. The churning must be done at as low a temperature as possible, as the colder it is churned the less butter-fat will be left in the buttermilk, and the more readily will the granular form of the butter be retained. The churn should be revolved at a speed that will produce the best concussion. One can soon learn to tell by the sound when the cream begins to break, then close watching is needed, so as not to churn it too much. When the granules are perfect and as large as wheat kernels washing is rarely needed, as the buttermilk will run off to a drop, but in case of the grain being smaller, one washing will usually suffice, although it may be found advantageous to wash twice on some occasions.

The object of working butter is to get the salt evenly distributed and to expel all surplus moisture. If the butter can be worked sufficiently to effect this purpose in one working, without injury to the grain, once working will be all that is required. It is, however, a safe plan to incorporate the salt partially by a first working, and then, after a short interval of about one hour, to work the butter again.

One thing should always be borne in mind by the person who is making butter to sell. The butter is for somebody else to eat, and it is for your interest to make it to suit them, whether it just suits your own taste or not. (1) Habit has a great deal to do with our likes and dislikes. You may have been accustomed to eating sweet-cream butter; if so, you probably like that best. Or, you may have got used to eating butter made from very ripe cream, and the butter not washed or worked sufficiently to expel the buttermilk, causing it to have a very decided flavor and taste, and so you look upon fine, delicate-flavoured butter as insipid. Or you may like little or no salting or

(1) Just so; and that is what the U.S. people would not learn for some time; either with their butter or their cheese.

high salting ; light color or high color. But all this is of no consequence. It is no matter what you like. You want to make it to suit your customer and you want your customers to be those who are able and willing to pay a good price for what suits them. If the customer wants sweet cream butter, make it ; if unsalted, make it so ; if he desires it high salted, salt it high, and so on. Always make it the same for the same customers. They are getting tastes formed which you can find it profitable to gratify. It is not the province of the maker of dairy butter to try and educate the tastes of people who buy butter, but rather to cater to their tastes when he finds out what they are. If one is making butter to put on the general market, he wants to make what that market demands and will pay the best price for. The best way to learn the market demand is to have the butter inspected by an expert judge who is a dealer and knows what takes best in the market. Ask him to criticize it and tell you just what he thinks of it ; and dont get angry at what he tells you, but try and profit by what he says. (1)

H. WESTON PARRY.

Compton, Nov. 5th, 1898.

The Orchard and Garden.

(CONDUCTED BY MR. GEO. MOORE).

MONTREAL CHRYSANTHEMUM SHOW

November 8, 9 and 10th, 1898.

In giving a report of the Chrysanthemum Show, held under the auspices of the Montreal Gardeners' and Florists' Club, one cannot help expressing regret that the public appreciation is not so sufficiently shown as to enable the management to continue to hold their exhibition in the Windsor Hall. Last year's display, held there, was indeed a credit to the growers, who are all members of the Club, but the finances would not warrant the committee's facing the \$200 for three nights ; therefore, they had to content themselves with the hall of the Fraser Institute, where they made the best arrangements possible. It may be mentioned here that the Club is inviting the entrance of associate members, who, by a subscription of \$2

per year, are entitled to free entrance to all exhibitions, and meetings of the Club. Monthly shows are held in their rooms, during the spring and summer, of plants and flowers in season, at the Natural History Society's Hall, Cathcart Street. Messrs. Alfred and Walter Wilshire, president and treasurer respectively, florists, of Sherbrooke St., will be glad to give intending members all the information required.

The chief attraction was as usual the cut blooms of Chrysanthemums, which were fully up to the high standard attained by growers in this district, both in size and quality. This class has been reduced from 24 to 12 blooms, in hopes of inducing more entries, and encouraging the smaller growers to compete. They did not come forward as hoped for ; however, we must congratulate that "not to be beaten" horticulturist Mr. W. J. Wilshire, gardener to Mr. R. B. Angus, in taking first honours, including the Strathcona silver cup ; that hitherto "not to be beaten" Chrysanthemum enthusiast and good fellow, T. McHugh, gardener to the Forest and Stream Club, Dorval, being 2nd, and G. Pascoe, Mr. Robt. Reford's gardener, 3rd.

The above named prize winners, with the addition of C. H. Smith, gardener to Mr. T. A. Dawes, of Lachine, who came second for 3 blooms, distinct, and second for 3 blooms, white, took the whole honours for the cut-bloom section. W. J. Wilshire was awarded 1st for the best flower in the show, for a lovely pure white, curly Japanese variety, named Madame Carnot. Mrs. Weeks, last year's winner, and Mr. Robinson, both whites of the same type, are still very fine. Edouard André is a good bronze of great substance ; Princess, pink, Harry Hurrell, yellow, are about the best of the newest kinds, though some of the old stan-bys are still to the fore, and for size of bloom, Golden Wedding still holds its own among yellows. A full list of the 24 winners was given in last year's report and cannot be much improved upon.

Chrysanthemum plants, 6 varieties : 1st, to G. Pascoe, and the Club cup ; 2nd, C. A. Smith. These growers and W. Horobin, gardener to Mr. R. S. Reid, who gained 2nd for 12 plants, in 5 inch pots, divided honours between them, for the best plant in the show ; the first named were equal firsts. The above class, which, after all the favour shown to single flowers, should constitute the chief feature in a Chrysanthemum exhibition, was not up to last year's exhibit ; the great difficulty,

(1) Very good advice allthough.—Ed.

no doubt, being the large amount of room required to grow plants, 3 to 4 feet in diameter; for, of course, one must have 15 to 20 plants to choose from, varieties varying so much in early and late development.

The regrettable absence of G. Robinson, Mr. Alfred Joyce's gardener, from competition, was much felt, he so often, of late years, having been at the head of this class; however, the entrance of Mr. Robt. Reford's gardener as a first prize-man is encouraging to timid growers.

First prizes for a group of Chrysanthemums alone, and for Chrysanthemums mixed with any foliage plant, arranged for effect, were given to Mr. A. Pinoteau, city gardener, competition nil: why? The prizes are fairly good and 4 of them, viz: 12, 8, 6, and 4 dollars respectively. Is it because of the number of plants required to fill a space of 35 feet square? Specimen plants are not needed, and there is scope for variety of display and taste in arrangement of colours. Is it a case of first or nothing? Anyhow, Mr. Jos. Bennett could put in no less than 175 Ferns, and he and Mr. Walter Wilshire arranged two fine groups of mixed plants, the two latter *not for competition*.

Among miscellaneous plants, Mr. Robt. McKay was first for a specimen-fern, a splendid plant of *Nephrolepis exaltata* (Sword fern), 3 ferns, and a hanging basket of ferns; also, 1st for 3 palms and one palm. W. Harobin, 1st for 6 palms, and C. A. Smith for 6 *Solanum capsicastrum* (Christmas cherry), was first with clean grown well berried one year old plants. *Primulas* were not up to par, (1) G. Pascoe taking 1st.

Mr. R. B. Angus' table of Orchids was a centre of attraction. W. J. Wilshire keeps up the celebrity he earned, while with the late Sir John Abbott, as a grower of these gorgeous flowers. This is not the season for many varieties to be in bloom. *Cypripedium Spicerianum* and *C. Harrisianum* was notable. By the way, an Orchid specialist in England refused \$5,000 for a new variety of the above, just lately. Three *Oncidia* and a *Cattleya labiata* were also very lovely.

Mr. S. S. Bain sent a very striking new plant, *Acalypha* (2) *Sanderii*, introduced by the noted Orchid importer and collector, Mr. Sander, St. Albans, England, with long, catkin-like flowers

(1) Very poor indeed. Ed.

(2) *Acalypha* is the "nettle" in Greek. Ed.

of a brilliant red, always flowering; and still to be seen in Mr. Bain's window on Beaver Hall.

Roses and Carnations were a fine display. Mr. Jos. Bennett, in roses, was first with 12 blooms each of Brides, Catherine Mermet, Morgan, American Beauty, Mr. Walter Wilshire being 1st with Meteors.

Mr. Bennett also staged a white Carnation, not yet in commerce, of very fine quality, with the net always to be obtained merit of the scent of the old *clove* carnation, as well as fine red *sport*, for which he was awarded a special certificate. Mr. McKenna was 1st with 25 pink carnations.

The attendance on the second day was good, and had the weather continued fine over Thursday, the treasurer would have rejoiced; as it is, prize winners will have to be satisfied with so much per cent, unless that most liberal of patrons, Lord Strathcona, continues the \$100 subscription he has so generously contributed for several years past.

ALEX. GIBB.

The Editor begs Mr. Gibb to accept his thanks for a very clear and observant report on a very interesting show. The paucity of attendance is very sad. Unfortunately, the same want of taste is observable in other meetings, in Montreal, connected with the fine arts, especially as regards the higher class of musical entertainments: witness the wretched attendance at the operas of Lucia, Il Trouvatore, with a really good Italian company, with a *first-rate* tenor and baritone, during the week ending November 26th; the loss to the management of the Academy, we are creditably informed, being nearly \$1,600.—Ed.

NOTES ON "PRACTICAL ADVICE ON FRUIT CULTURE"

Prepare the land properly.—Here the Reverend Fathers have struck another key note of success, however good the trees may be, they will not thrive on land carelessly or improperly prepared, and in this respect the amateur too frequently fails; he does not remember that the crop is a permanent one that will last through generations of his successors, nor the old adage which apply to all fruit trees alike.

"He who plants pears,
Plants them for his heirs,"

and, so, he does the work in a careless and slipshod manner, perhaps choosing an unsuitable site, not giving due attention to its draining; plants the trees in a turf-field, never taking into consideration that the after cultivation of the surface for some years, all about the trees, has any effect upon their ultimate fruitfulness. After the

selection of good trees, that of a proper site well prepared is next in importance.

In preparing for the reception of trees on land where the subsoil is loose and sandy, it is considered advisable to pave the bottom of the hole with some large flat stones to prevent any tap-roots from forcing their way into the sand where they would soon perish,—and the tree eventually.

3rd. *Plant with great care.*—In this particular grievous mistakes are made, holes are made, not sufficiently large to spread out the roots which have to be doubled up to get them in, and therefore have no chance to perform their office of obtaining the required elements to support the tree when first planted. Neither is enough care observed as to the depth the tree should be planted, which should be the same as when growing in the nursery, and this may be ascertained by noticing the bark which will be of a different color where it has been exposed to the air to that which has been covered with earth. When the nurseryman has covered the roots with “puddle,” as suggested in the pamphlet, and which is an excellent way to protect them from the action of the air during the process of removal, enough of this may be washed off the stem to discover the different appearance of the bark and know the depth at which the tree should be planted.

To plant trees expeditiously and properly, two persons should be engaged, one to hold the tree in its place, and the other to arrange the roots and fill in the soil compactly amongst them, filling up all the spaces carefully, (J. of A. page 89). In my opinion the trees should not be fastened to the stakes at the time of planting, because if so, and they are firmly tied to them, the earth will settle and the trees will not go with it but will be hung to the stakes and the roots will lose their contact with the soil. If the right kind of trees are planted, stakes will scarcely be necessary at all, except to tie the branches to, to prevent their being broken off by the snow. But the trees, if not tied to stakes should be closely watched, and if moved by the wind and holes formed at the base of the stem which would admit the air, they should be firmly trodden into place and the holes filled with earth.

I do not believe in watering if it can possibly be avoided. A good soaking when planted may be all right if the soil is very dry, but after that the mulching of the surface and lining the hole with wet sods to retain the moisture, as recom-

mended, will be far better than continuous watering. I never saw any good results from it, however dry the weather may have been.

G. MOORE.

The Poultry-Yard.

FEEDING FOWLS FOR EGGS.

This is the season when many are desirous of knowing how to feed their fowls with the idea of getting the best results for egg production, so I propose to give the different methods of some of the best breeders of poultry in the United States, believing that there will be information enough to suit almost any one who raises fowls and keeps them for winter laying.

First is Mr. Hunter's way, the Editor of *Farm Poultry*. He says: Five mornings in the week we feed a mash made of about one third cooked vegetables mashed fine, or of cut clover cooked by being brought to a boiling heat in water, an equal amount of boiling hot water added, a heaping teaspoonful of salt to a bucketful; a heaping teaspoonful of Sheridan's Condition Powder, two days, then cayenne pepper one day. Condition powder two days, then powdered charcoal one; and into this stir mixed meal until the mash is as stiff as a strong arm can make it. This mixed meal consists of one part each, corn meal, fine middlings, bran, and ground oats, and animal meal. A scoop or dipper of each being dipped in turn into a bag, and poured into the meal barrel from which it is dipped into the mash.

We consider the thorough mixing of these meals an essential point in making a good mash. When he has cut bone, fresh bone enough and in abundance, he omits the animal meal from the mixture; ordinarily, he has only about half rations of cut bone to go round, so uses regularly half the amount of animal meal to make up the deficiency. An excellent mixed meal is germ-meal, made by the American Cereal Co., Akron, Ohio, and consists of equal parts corn, oats, barley and wheat ground up together and kiln-dried before bagging for shipment. We consider that it is not quite nitrogenous enough, so add from a quarter (in winter) to a third (in summer) of bran or shorts to it. As it is not always easy to get the germ-meal of the grain dealers he

makes up the mixtures as above, and the fowls object but little to some of that mixture in their mash.

The foundation of the mash is the cooked vegetables, which may be the small potatoes, beets, carrots, turnips, onions, (anything in the vegetable line) and into the pot goes the table waste, potato parings, etc., also the potato, squash, and apple parings from the kitchen. The potatoes and beets, etc., are washed before putting them into the kettle to cook, and the mess when boiled is sweet and savory.

If one has a set-kettle in which to stir up the mash and there leave it to cook in its own heat and the heat of the brick work, he is fortunate. He has not one, but makes it up in common water pails (or buckets). The vegetable or clover kettle is put on before sitting down to dinner, usually, and another kettle of water to be boiling hot when wanted. When vegetables are cooked he sets out 4 buckets in a row, dips out the vegetables into the buckets about equally, mashes them thoroughly, adds the salt—always—and the condiment of the daisy, adds boiling water until the bucket is two-thirds full, then stirs in the mixed meal till it is stiff and firm; then covers and sets it away to cook in its own heat.

Clover rowan (second crop clover) cut fine makes an excellent foundation for the mash and two or three days of the week in winter he uses that instead of vegetables. He fills two kettles with the cut clover and as much cold water as they will conveniently hold and brings it to the boiling point. The clover is then ladled out into the buckets in equal proportions the clover tea added and boiling hot water as before, then salt and add the stimulating condiment and stir the meal in. This mash, you will notice, contains a great variety of food elements, and this variety is quite an important factor. A fowl needs a variety of food to supply her various physical needs, and give her a surplus out of which to make eggs, and this "variety" of food he thinks he can get in the manner he describes as above. An additional advantage is that a tonic or stimulant can be added when desired; he sometimes substitutes a teaspoonful of tincture of iron for the condiment, and sometimes adds a handful of linseed or cottonseed meal; but the latter are rather fattening (as well as stimulating) and those who feed it must beware of too fattening foods.

Some poultrymen make a practice of stirring

up the mash scalding hot in the morning and feeding it at once. In that case, the meals are simply scalded—not cooked. By this method the meals are semicooked and are more immediately available for assimilation; therefore he prefers making up the mash the afternoon of the day before and having it partly cooked when fed, rather than feeding it hot but only scalded. His morning mash is fed in a trough large enough to let all the fifteen fowls in each pen get about it at one time; another important thing, because if the trough is small, some of the birds have to stand back and wait for a second table, and when their chance does come there is nothing left for them. With a trough four feet long by six inches wide there is plenty of room, and if a hen is driven away from one place she runs around and goes to eating at another, and thus all get a share.

His fowls have exercise ground in summer in yards 125 x 12 feet, which gives them a grass run (with growing grass always in the growing season) and they take ample exercise in fine weather. To keep them out of doors, the noon feed of whole barley (or buckwheat) and night feed (before sunset) of wheat scattered on a gravelled space immediately in front of the houses. Each family of fifteen has a pen within the house twelve feet square, or one hundred and forty-four square feet of floor space, which gives about ten square feet per fowl. The floor is the earth covered with six to eight inches deep with screened gravel. On this gravel the grain is scattered in stormy weather in spring, summer and early fall, when he wants his birds to stay indoors. When cold weather approaches exercise must be stimulated and he covers the pen-floors three or four inches deep with chopped meadow hay or chopped straw into which the grain is scattered and the hens have to dig it out. Forest leaves or orchard leaves, dry, make a good litter and are used by many poultrymen. Chaff from the threshing mill is most excellent and in a few cases common corn stalks finely cut answer the purpose very well; but the best of all is the waste from the hay mow, particularly clover chaff, as they get the seed which is a splendid egg producer. That the litter which goes into the scratching pen is of far less importance than the material is there for the fowls to use.

Whole wheat is the best grain food for fowls, whole barley is the next best and buckwheat next. He makes barley or buckwheat the noon food five days in the week and wheat the night food, five

or six days in the week. He does not make the mash on Sunday because he wants to reduce the work to its lowest degree on that day, doing no more than the regular feeding, watering and collecting of eggs.

He gives the work for feeding for each day as follows :

Monday he feeds oats or (barley) wheat, whole corn.

Tuesday mash, barley (or buckwheat) wheat.

Wednesday mash, cut bone, wheat.

Thursday oats, barley, wheat (or corn.)

Friday mash, barley, wheat.

Saturday mash, cut bone, wheat.

Sunday mash, barley (or buckwheat) wheat.

Two feeds of cut bone each week one or two of whole corn (according to the season) gives variety to the ration, and to that is added whole cabbages left in the pens in cold weather to tempt them to pick them to get green food, or turnips or beets and carrots are spilt in heaps and put in the pens to be picked in pieces and eaten. Ground oyster shell are always before them and fresh water replenished three times a day (warm in winter) and the waterpans are carefully revised every day. One variation I would suggest is a slightly smaller and lighter feed of mash in the morning, making breakfast rather a full meal and then scatter barley or buckwheat in the scratching material about mid forenoon and the last feed about mid afternoon say 11 A.M. and 3 P.M. to induce even more scratching exercise. To search and scratch for seeds, grains, insects, etc., is the fowls' normal method of feeding ; one grain at a time and the nearer we approximate to nature's ways the better, hence the greatest possible amount of exercise should be compelled. He says he cannot be sure of a sufficient quantity (thirty or forty pounds of bones for a full meal ; sometimes he gets only twenty or even less at a time, and as it is not convenient for him to cut it up on more than two days in the week, he feeds a part ration of animal meal in the mash to balance the part ration of cut bone. If he had enough cut bone to make three or even two full feeds each week, he would rely entirely upon that. He seems to be in doubt whether he would make one of the feeds into the mash, he is not sure, although he says some of the experienced breeders do it and recommend it ; but to cut the bone is such a perfect food in its natural state he seems strongly inclined to feed it fresh as it is cut. I have a personal acquaintance with

Mr. Hunter, meeting him in Boston and visiting his poultry farm at Natick, Mass., and know that he does not speak theoretically, for he is a practical man, honest, square in his dealings and is a breeder of Plymouth Rocks, Wyandottes and Brahmas, all bred on utility lines for eggs and flesh. I should be glad had we space to do it ; and perhaps the Editor of the JOURNAL may give me the opportunity at some future time ; to give a description of his plant as I saw it on my visit. This article I fear is now too long.

Yours faithfully,

S. J. ANDRES.

Mints.

Exhibition of Range Cattle.—A decidedly novel and interesting exhibition of cattle is booked for Jan. 24-27, 1899, at Denver. The conditions of entry provide that cattle in competition must be born and bred on the range and never have tasted corn or any other grain. Consequently, instead of a collection of fast stock this will bring together in competition for liberal cash prizes, range bred cattle which will surprise those who have not kept in touch with the wonderful advance of cattle breeding on the plains. It will be a great object lesson of what can be done in the Rocky mountain region. The prizes offered are liberal and the cattle will be judged on their merits as beef makers.

Moistening and Soaking Feeds.—Soaking grain feeds for cattle and hogs is quite generally recommended and the tests made by numerous experiment stations seem to support this general opinion. In nearly every case where pigs were experimented with the animals ate more of the wet food and made larger gains on it. It must be admitted, however, that the additional gain was usually due to the larger amount of feed eaten and not to its moist condition. The Kansas station soaked shelled corn for five steers until it began to soften. Another lot of five was fed dry corn. Those given soaked feed ate 282 bushels, while the other ate 290. The first lot gained 164 lbs more than the others, a difference of \$25.50 in favor of soaking. From this the station concludes that it pays to soak corn for steers if this can be done for 6c. or less. Soaking wheat for pigs is quite generally recommended.—*New-Eng. Farmer.*