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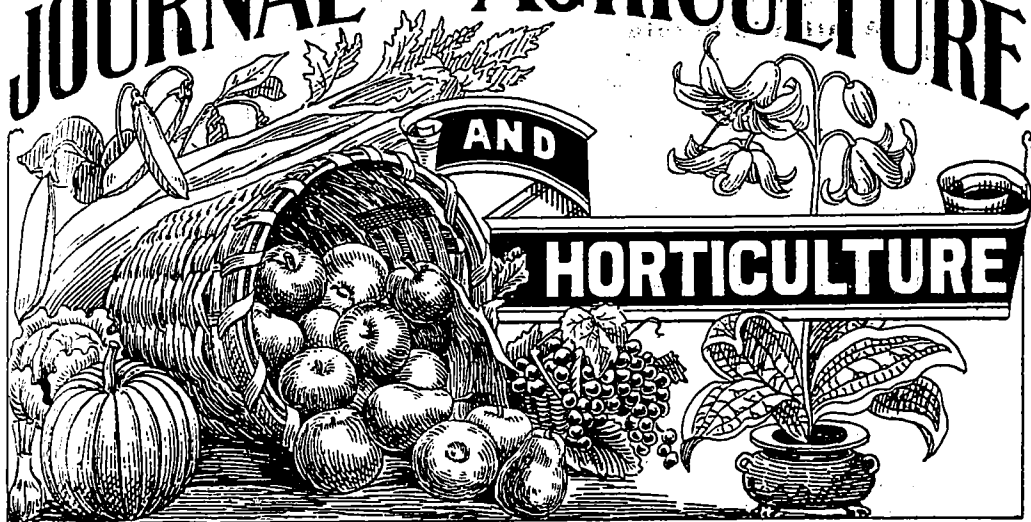
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THE JOURNAL OF AGRICULTURE



VOL. I. No. II.

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

JUNE 1st, 1898.

Notes by the Way.

Price of Wheat.—Why, the farmers of Britain must be rubbing their eyes to see if they are really and indeed awake, or dreaming fantastic dreams of impossible prosperity! Best samples of white-wheat selling at £ 12 10 s. a load? Incredible, almost, but true, nevertheless.

By the bye, the *load* of wheat is rather a peculiar style of measure. It varies according to the district. In the Eastern and South-Eastern counties, where the roads have been good for centuries, it means a cart-load of 40 bushels, —a little more than 2,500 lbs.—in the level land of Hertfordshire, etc., where pack-horses were used a couple of hundred years ago, the load is five bushels, —about 310 lbs.—but in the hilly country of Derbyshire, the pack-horse could only carry three bushels, —170 lbs.—and there the *load* is still of that weight. We mention these curious facts to show how hopeless was the attempt made the other day to carry a measure in the British House of Commons to compel all farmers and dealers to sell all grain, pulse, etc., by the hundred pounds, or cental, as at Liverpool. As well try to abolish the dear old "pound-sterling," the "three barley-corns make one inch," and other weights and measures dear to our ancestors, and replace them by the *dollar* and *cent*, the *gramme* and the *litre*!

Well, to return to our wheat prices, that cereal has, even in steady old London, been marvellously active. A twelvemonth ago, 30 s. a quarter would have been looked upon as a fair price, and, now, farmers turn up their noses at any bid of less than 54 s.; nay, we fully expect to hear of the best qualities of white wheat, the Talavera, Chidham, etc., of England, and our own Manitoba wheat, fetching 60 s. before harvest. And such prices, mind you, are of no trifling importance to the tenant-farmers of Britain. The average rent of land there is certainly, now, not more than 15 s. an acre; the average yield of wheat is about 30 bushels an acre; the usual rotation is one that brings the wheat-crop round about once in five years; so, taking the above data as well grounded, the rise in price is equal to

97s. 6d extra receipt for each acre of wheat a sum more than sufficient to pay the rent, and the tithes too, for the whole of the five years of the rotation!

Weather in Britain.—An early spring in Britain, as it has been here. Crops looking better than they have done for many years in that season. Fortunately for both farmer and consumer, a larger area of wheat was sown than usual, and never in the memory of the oldest farmer has the prospect of a good yield been more promising. Owing to the splendid tilth which the favourable weather assisted in producing, barleys came up very *evenly*, and of a beautiful colour. This even “brairding” of barley, is of immense importance to the grower of barley for malting purposes; for, if barley “brairds” equally, it will probably ripen equally, and if it ripens equally, it will certainly germinate equally, when taken out of the “steep” into the “couch” in the malt-house. And herein lies one of the secrets of the unpopularity of Canadian barley. It is treated by the majority of farmers, in this province especially, as if it required no more pains to grow good malting barley than to grow good oats: but this is an error. Any man can grow grinding or distilling barley; but to grow good malting-barley requires that the greatest care should be taken in fitting the land for it. Retention of moisture is one great point, and to ensure this, use the grubber in spring rather than the plough. Too much ploughing is a bad thing. Not only does it take up the time of the men and the horses, but it necessarily causes the evaporation of moisture. It is equally bad on heavy and light soils, in the former case it brings up clods to the surface; in the latter case it dries it. One fall-ploughing, and plenty of dragging, scuffling, grubbing, or whatever else you like to call the work, in spring, are sufficient to make a fine surface tilth with plenty of moisture below. Then, after harrowing till the land is as nearly equal to the tread all over as possible, commit the barley to the earth with a drill, the only implement by means of which all the grains can be buried at the same regular depth; harrow sufficiently, and roll when the plant is fairly up, and if the barley is allowed to stand till fully ripe before being cut, and gets a couple of *dews*, or one gentle shower of rain, upon it before carrying; if that barley does not satisfy the maltster who deal with it, the fault must lie with the soil on which it grew and not with the farmer who cultivated it.

Grass.—The long continued Easterly wind, accompanied by cold nights and mornings, caused grass-farmers round Montreal to get pretty nervous about the prospect of the hay-crop; but the lovely showery three days of the 11th, 12th and 14th of May, followed by moderate sunny weather and a westerly breeze, soothed their minds. There is now (May 15th) every probability of plenty of grass in the pastures and a good hay-crop. We hear that in the districts of St-John's, Sabrevois, etc., crops never looked better; grain was all in by May 8th, and both pastures and meadows are full of herbage.

The Dairy.

FEEDING COWS FOR MILK

It is impossible to make any general applicable remarks on the influences of food on the yield and quality of milk, since this must always vary with the particular circumstances, breed etc. of the cows. Professor Fleischman, a well known German authority on the subject, points out that the best milch-cows are those that are most affected by an increase in the digestible constituents of food and which respond to that increase in the most profitable manner from the dairy point of view. How far the treatment with food in order to increase the yield and profit can be developed has up to the present been but little investigated.

Professor Fleischmann, however, insists that good milch-cows, whose full capacity for giving milk it is desired to develop, require above all things food which is not only absolutely but also relatively rich in the digestible protein, by means of which the quantity of circulatory protein in the blood may be increased. There can be no doubt that in the

case of cows yielding a large amount of milk, the fat derived from the food is utilised for the formation of milk fat. (1) It is, therefore, advisable that in the fodder of good milk cows, the percentage of digestible fat should be increased over what has so far been regarded as desirable. The old doctrine that the composition of the solids of milk is little influenced by the nature of the feeding and that it is impossible to increase the percentage in milk of any one constituent by special feeding has up to the present time invariably proved itself correct. (2) The German authority referred to contends that it cannot be regarded as correct, that with increased percentage of the dry substance of milk all the separate constituents are raised in the same proportion, not that it is true that the percentage composition of solids for one animal, and for one lactation period, is approximately constant. It is similarly incorrect to suppose that with an improvement in feeding an increase in the yield of milk is obtained which never affects one or other of the separate constituents. This at any rate does not hold good for the fat, since the percentage quantity of fat is subject from day to day, and in the course of a lactation period, to far greater variation than the other less variable milk constituents. The percentage of fat in milk is without doubt most sensitive to all the external influences that affect the yield of milk. Very often it is observed that, the cow, when the activity of the milk glands is temporarily increased in course of lactation, yields not only more milk, but a milk richer in fat, the fat being increased more than the non-fatty solids. For example this is often seen at the beginning of pasturing in summer. Further accurate observations on the yield of milk from well tended and well fed cows, have shown that the average composition of the solids of the milk of single cows is generally proportional to the average percentage of fat, and that the animals yielding large quantities of milk in the case of liberal feeding, yield also a milk richer in value. It has also been found that animals whose milk is *absolutely* richer in fat, at the same time yield milk *relatively* richer in fat. As proof of this Fleischmann quotes a few figures from a number of reliable data, his conclusion being that the secretion of milk is to be regarded as an organic process, which is more or less under the influence or control of the formation of milk fat. This, he says, has been clearly demonstrated in the case of the secretion of milk by well treated and liberally fed cows. Hitherto it has been held that cows yielding a large quantity of milk, yield a milk containing a small amount of solids. Assuming that such cows do not receive food sufficient for developing to the fullest extent their milk forming capacity, this statement may be regarded as generally correct. There are cows however which if richly and liberally fed, not only give a large yield of milk, but also a milk with a high amount of total solids. That this is possible is clear from the predominant action exerted on the percentage of fat by all conditions that influence favorably the yield of milk and from the observation that the increase in the percentage of fat, if not taking place at a similar ratio, yet increases with the percentage of now fatty solids. Doubtless the most important quality in a milch-cow is the capacity of the milk glands to yield, with certain feeding, the largest possible quantity of milk of the best possible composition.

W. R. GILBERT.

PACKING CREAMERY BUTTER IN CANADA

Weekly consignments of creamery butter are being exported from this district at present to commission brokers in Manchester and other English cities. The butter is being put up in new pine boxes, nearly square and lined with oiled paper, each box containing 56 pounds. These boxes are constructed about three-fourths of an inch wider all around at the top (which is screwed on), in order to permit the contents being easily shaken therefrom by the consignees, who weigh nothing but the butter. The weight of the contents of the lightest box in each consignment is taken as the average weight per box of the whole. Thus, great care is necessary, in order that the full quantity shall be packed therein. Coverings of bagging, opened at the top and gathered with a stout string, are

(1) This is, as yet, *coram judice*. Ed.

(2) Experience differs from this conclusion. Ed.

made for each box, to keep the packages perfectly clean for ultimate distribution. The latest return for the product, to the shipper here is 19.88 cents per pound. English dealers are insisting upon every particular of the foregoing details being carried out. In pursuance of recent legislation, boxes are all marked with the name of the maker and the number of factory; and the bagging is marked with the initials of the maker, Government number, and country of production.

LOTON S. HURT,

Consul.

Palmerston, March 24, 1898. (Consular Reports.)

THE BENEFITS OF THE SUB-EARTH DUCT

Ed. Hoard's Dairyman.—Where cheese is cured in the ordinary curing room during the summer months, it has been found necessary, in order that the cheese hold their shape and remain close in texture, to allow the maximum amount of acid to develop, that the curd can stand without causing a "high acid" cheese. It is also necessary to cook the curd sufficiently to cause somewhat of a toughness in the texture of the cheese. All this at the expense of quantity and quality.

Acid dissolves curd, thereby causing a loss of solids. This can be readily observed before the whey is drawn, when the curd begins to spin on the hot iron. If the curd is allowed to settle together, and is then stirred, the whey that comes from amongst the curd is white.

One hundred pounds of cheese contains some thirty pounds of water. Dry, warm air absorbs water rapidly. Thus, cheese held in the ordinary curing room from fifteen to twenty days will shrink about $3\frac{1}{2}$ pounds per 100 pounds.

A curing room ventilated with an efficient sub-earth duct has the following advantages:

1. A temperature of about 65° is maintained.
2. Constant ventilation.
3. A constant degree of the desired per cent of moisture in the air.

Where such a curing room is available the whey may be drawn somewhat sweeter, and a little more moisture may be held in the curd, thereby causing an increase of several pounds of curd per 1,000 pounds of milk.

It has been demonstrated that if cheese is cured in such a room the shrinkage will not exceed one pound per hundred weight in twenty days. Thus a saving of about $2\frac{1}{2}$ pounds is made on the shrinkage of every 100 pounds.

It appears evident that during the summer months, under normal conditions, the sub-earth duct furnishes the means of increasing the yield of cheese altogether, from four to five pounds per 1,000 pounds of milk. In case of trouble with gasses or bad flavors, the benefits derived from such ventilation are even greater.

E. L. ADERHOLD.

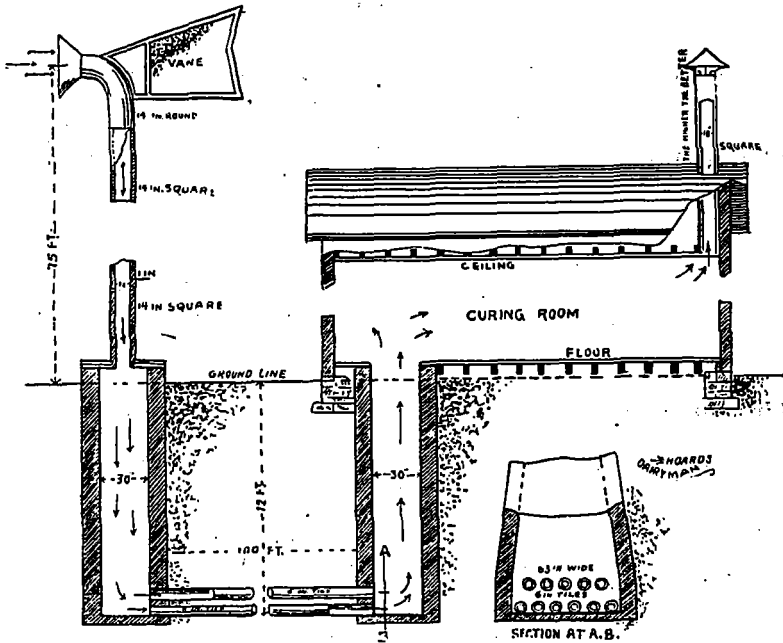
Neenah, Wis.

SUB-EARTH DUCT CURING ROOMS.

In connection with Mr. Aderhold's communication, on the Benefits of the Sub-Earth Duct, we publish herewith illustrations showing method of constructing them. These illustrations are very fully self-explanatory, and they show that first of all there must be an excavation, preferably 12 feet deep (although some are less), and 100 or more feet in length and from 5 to 6 feet in width at the bottom. In this excavation are placed, in continuous rows, common six-inch drain tile—six to eight rows on the bottom and five to seven above. It appears to be better to separate these rows somewhat by filling in with the excavated soil, but in one case at least the tiles were laid close together, just as they are stacked up in a yard.

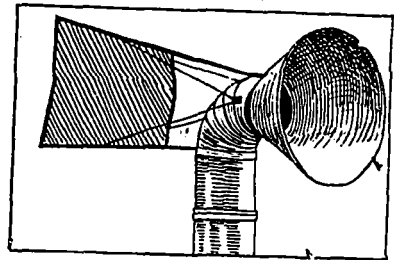
These rows of tiles form the duct proper; and it is now necessary to connect it at one

end with the outside air and at the other with the curing room. For this purpose build up with brick or stone, and circular or square, a pit or well, at either end, into which the ends



of the tile project. At the outer end erect an intake flue or pipe, which may be of wood or iron, and should reach well above any surrounding buildings or trees, (30 feet high in some places and 50 to 75 feet in others), and surmount it with a vane and cowl, so that it will catch every passing breeze, send it down the shaft, into the duct and thence up into the curing room and out through the ventilating pipe.

The cost of installing such a duct will vary somewhat, with locality and the degree of finish and style. Those that were built last summer were put in at the joint expense of patrons and proprietors. The former usually did the excavating and furnished and laid the tile—the greater part of the work being performed by teams, both in digging the trench and filling it. Of course, both the intake and ventilating shafts must be securely fastened with guys or stay rods. The most difficult feature in construction is the vane and cowl, which should be made of galvanized iron, and arranged to revolve easily. Unless pretty sure that local shops can turn out first-class work of this character, it will be prudent to send to parties who are accustomed to doing such work.



HOARD.

The Farm.

PRACTICAL FARMING.

(BY JAMES DICKSON)

Spring time—The old idea—French Parishes—Farmer's Clubs The Weather—Green oats—April—Garden.

Spring time—If there is one time of the year which animates a farmer more than another it is spring. The clamor of the geese, the cackle of the hen, the gambols of the lambs the call of the calves, and the sweet song of the robin, (1) are all enjoyed by the town's man, but to the farmer, it is also a call to duty, a demand for extra effort, a reminder that as "ye sow, so shall ye also reap". Not every one makes the most of the first days of spring. There are those who may be termed afternoon men: they say "it's a long time till night," "it is time enough etc," until the work accumulates, the season gets ahead, and everything is put a week or two behind. We all know those who are always even with their work. No farm is successfully managed except upon the same principle that succeeds in any other business.

The old idea—That the man who is not sufficiently intelligent for anything else will do for a farmer, is not now true, it may have been, I may indeed admit that it was, but these "good old times" have gone. Labor is necessary, the work must be done, but it is of a different sort from that of fifty years ago. In those days, the man who was not an adept with the axe and lever, the scythe and cradle, the sickle and flail, and with the necessary muscle and endurance, was behind in the race. Nowadays those without a certain amount of education, without agricultural reading, without suggestion, reminders, and the experience of others as helps, simply wear themselves out in the slavery and drudgery of a laborer, without the elevating feeling of being master of their business. One difficulty among English speaking people is that often those most in need of Agricultural Books and Journals, those at a distance from post offices, and not connected with a farmer's organisation, do not receive them. In the

French Parishes—The conditions are different, though very many of the farmers there are totally illiterate: but the clergy there have come to the front: very many of them having been reared on the farm, and, educated in country colleges, have not forgotten their early life, and the difficulties confronting the farmer: and aiding their practical knowledge with a course of scientific study, for the purpose of benefiting their parishioners, are doing a great work among them: with the result, that the poorest, and most illiterate, have an equal advantage with the educated, in meeting and discussing farm matters, and thus the whole country is being vastly improved. There is a point here to which I referred in a former article, I observed that the establishment of

Farmer's Clubs—Was the result of a series of letters to the Government of the time: and though many years have intervened since then, I still think, and I am pleased to know, that very many of my farmer friends think, that my proposition for placing them on a sound financial basis was a good one. I hold that it is unfair that the smaller farmer, and poorer man, should pay the same amount to "an Agricultural society or farmer's club" as the large farmer, who has a better opportunity of taking prizes, of having more use of the improved stock, and in many ways receives more benefit from such organisations than the poorer farmer. I also hold, that every farmer ought to furnish a share towards the advancement of Agriculture, and as many do not belong to such an organisation, and who rather retard than advance the interests of Agriculture, therefore the organisations ought to be established upon the same principles as the school system, a small rate being levied by the Agricultural managers of the municipalities according to the valuation roll, and collected by the Council in the usual way. Thus, every one would be a member of an Agricultural Association, and would pay according to his ability and the benefit he would receive. Municipalities would

(1) Properly, the thrush: *turdus migratorius*. Ed.;

be divided into wards; importations of stock, seeds, etc., being directed according to the requirements and vote of the ward. I am aware of the objections to be raised to any proposition with a tax in connection. There can be no doubt however, that if the money were spent in improved stock, the Province of Quebec, instead of, as at present, having a poor class of cattle, would soon be prominent as having all kinds of first class stock.

The Weather—of the past winter, like that of the last summer, has been extraordinary. Seldom has there been a finer November and December, or, a stormier or colder January and February. Also March, and April, so far, have been unusually fine, and with the heavy snows, no ice on the fields, no frost in the ground, everything portends early spring-ploughing and a bountiful harvest. There will be thousands of acres more than usual ploughed and seeded down, on account of the clover-killed fields of last year. It is a mistake to follow the common custom of sowing only timothy and long red clover. As the basis of the seeding these are right, but a little short red clover, and a little red-top grass, thickens the crop, makes a finer hay, holds up the long red, and makes a tough sod, and a better sward to feed off in the fall; and on soft land do not omit putting alsike instead of red clover. There is now no need to remind those who have used

Green Oats—that cattle leave the best hay to snatch a monthful of them. Sow the thrashing oats first, on not too rich land, so that they will stand up and fill heavy. For green oats it will be found best not to sow too large a field at a time. Then they can be cut when they are just right, and without an extra gang of help. And we must suppose that now every one knows the economy of a horse fork with which to stow them in the barn roof. It is wonderful what a field can be cleared in this way by a boy team, when the cutting is well calculated in the spring sowing. I may just here observe, that those whose cattle pick them over looking for the heads; those who do not eat all their feed clean, and roar for more than is good for them to get; either cut too late, or got them weathered. This month of

April—is with most farmers the month of care. When I was younger, and my farming was in the cow and sheep line, I found the care of them day or night made lots of money, and when you begrudge the loss of sleep, and the little other labour you perform, don't worry: this is the harvest month of the stock raiser, this is the month of small things, but the extra care during this month will tell throughout the whole year. I may observe that of late years I avoid the care of the cows by feeding for beef, and by having my lambs dropped on the grass I save what I consider a needless labour, for I estimate that I can raise more weight of lamb dropped in May than earlier, with less risk of loss of sheep: and by taking them from the ewe early, and putting them on a good clover stubble, (1) I get excellent lambs with less personal trouble in the spring. I say personal trouble, for outside of my own family, I have never had the luck to have a good sheep-man. Before I write again you will have made your

Garden—Allow me to tell you my experience. Since forty or more years, my garden, little or much, has been in the potato field, sown in drills and cultivated with a horse, the only difference being, a double quantity of manure. Previous to that time, my other self took great pleasure in garden making. All she wanted was a man to help her. It was done with pickets, line, and square, and after a week of intense labour, she would look with pride on her garden: but, the seed sown, the garden-making had only commenced, and the way the boys and men, boss and all, used to crane over those garden beds, at weeding time, tired one of eating vegetables raised in that way. Thousands of gardens are made in that way to this day, and I know of scores that have been in the same place ever since I can remember.

PLOUGHING AND SPRING SEEDING.

To the Editor of the *Journal* :

DEAR SIR,—It is now coming to the season of giving the state of the crops and also reporting about the spring ploughing.

It is a long time since there was so early a season for ploughing, the first I have heard

(1) *Sainfoin* is better, but, unfortunately, it is not grown here. ED

was on the 11th March, it was a very fortunate circumstance, as, on account of the dry season last fall, there was very little ploughing done. Those who began early did well, as the severe frost that set in about the 20th mellowed the clay down and caused it to work nicely, as some say: like an onion bed. The hard frost only stopped the plough about a couple of days, and on one or two forenoons, so that by the 10th of April, or in about one month, the greater part of the farmers had got their ploughing pretty well done up and began their sowing.

Wheat.—In the Province of Quebec very little fall wheat is sown, only an odd piece here and there, unlike Ontario. There, they sow it nearly altogether, they had an excellent crop last year and it brought a fair price; the first for quite a few years.

There has been a little more spring wheat sown this year than for the last 4 or 5 years; on account of the high price, no doubt—it looks well so far.

Oats.—There is quite as much of this cereal sown this season; perhaps if anything I should say rather more; and perhaps less of some others.

Pease.—The past two years have been unfortunate for those who sowed this pulse. When the season is favorable, pease do well, not hard on the soil, and grand for pulverizing hard clay. The grain is very rich—and when mixed with oats or barley ground makes very desirable pork when fed to pigs, it makes good winter feed for milking cows also, so, taken altogether, farmers should try to grow more pease.

The great difficulty is: farmers to not get them in deep enough, they should be covered 3 or 4 inches deep, many successful farmers plough them in. (Good. Ed.)

Barley.—Very little barley is now sown, as the price, the past few years, has been very low, so only those who use it for ground feed sow this grain.

Rye.—Only a very few sections sow this grain, on sandy soil it seems to do well; either fall or spring.

Buckwheat.—It is too early for this grain. The price is now looking up since the war began.

Corn.—It is also too early for corn; the old Indian rule for planting corn is a good one: when the plumbtrees are in blossom is the time to plant corn, and not before.

Roots.—In my tour last winter through the Province I advocated the sowing of more roots—I hope farmers will profit by the advice given, as 30 tons have often been raised on an acre—of course it is work, but it is a kind of work that pays.

Hay and pastures.—The winter has been very favorable for both of the above; so unlike last year; I hardly think the hard frost of the 20th March did any very great damage.

Fruit.—It is too early to speak of fruit, this is the year for apples in this district. If nothing happens within the next few days in the way of frost, there will probably be a large crop.

Cheese and butter are both low, but there is some chance of a rise in price. At the price they are at now, the consumption should be enormous in England, so that upon the whole we have great reason to be thankful and have buoyant spirits.

Yours truly,

PETER MACFARLANE.

Chateauguay
May 2nd, 1898.

THE EXTENSION OF PASTURES IN ENGLAND.

Causes—Labour question—Profitable point of view—Meat and milk.

Within the last twenty years there has been a great extension of grass land in England. Many causes have combined to necessitate the conversion of arable land into meadow and pasture. Chief among these has been the low price of grain, the reduced capital of agriculturists, and the increased cost of labour, and these factors seem likely to remain. For the last year the price of wheat has been better and the British farmer has benefited a little

by it, but it is an undisputed fact that wheat can nowadays be profitably delivered in Great Britain at a lower price than it can be grown there. Years ago the sale of wheat was regarded by the British farmer as a means of setting his finances straight for the year, but now the wheat crop is grown more as a necessity in the rotation than for anything else.

The diminished capital which farmers hold renders it impossible for a great many of them to till their land in an efficient manner, and for that reason the best way for them to do justice to their holdings is by laying down a portion to grass. The best way of dealing with the agricultural labour question is an anxious one. Few farmers would object to pay the increase in wages were it possible in return to obtain as good a day's work from the men as their fathers gave for less money, but no such willing or efficient labour is now to be got. The labourer's children remain long enough at school to acquire a distaste for agricultural work, and disdaining the manual labour of rural life, they flock into the towns, leaving the sickly and infirm to work on the farms. So that, having paid an education rate in addition to their other heavy burdens, farmers find the cost of labour increased, and its efficiency lowered. To meet this difficulty the arable farmer must either invest in every kind of labour-saving machinery or lay down so much to grass as will reduce the labour bill as much as possible.

Political economists tell us that the creation of pastures is bad for the nation because the land does not produce so good a return in grass as it would under arable, and still more under spade cultivation, and also that there is less scope for the employment of labour on grass land than on arable.

Unfortunately, the question which the British Agriculturists have to face is not which system will produce most food and employ most labourers, but by which can land be farmed at a profit.

Surely, no one can be expected to till the soil at a great loss, just for the sake of the public benefit! The laying down of grass appears to be quite as much a question for landowners as for tenants. The farmer has a direct interest in promoting the movement, as a means of avoiding the deterioration of their land, and of attracting tenants to their farms.

There is no doubt that there are large tracts of land in the old country which are unsuited for the formation of permanent pastures because the finer grasses die out, and the soil gradually becomes filled with worthless varieties which are indigenous to it.

If a certain soil is unsuitable for laying down to permanent pasture, there is no reason why it should not be seeded down with artificial grasses for periods varying from two to five years, instead of breaking it up any sooner. This practice will ensure the storage in the soil of a large reserve of grain-producing energy ready for any emergency. At present the only hope for the English farmer of obtaining a profit from much of his heavy, strong land, is to grow grass permanently or in rotation, and turn it either into meat or milk. For milk alone there is a great future when the populations of London and other large centres better understand its value as an article of diet. There is great need in the old country for the establishment of butter and cheese factories throughout the country where farmers may combine to turn milk into manufactured articles at remunerative prices. It is said that even at the current low price of milk in England, a ton of milk is worth more than a ton of wheat and costs a good deal less to produce.

Beef and mutton can be more cheaply fatted, and milk more cheaply produced, on a farm of which one-half or two-thirds is in grass than on arable land alone. It may not be possible to fatten so many beasts or sheep per acre as when stall-fed on arable produce; but the point to be considered is, which pays the best, and so far as Great Britain is concerned, there is no doubt that meat and milk produced by the grazier will be more profitable than when produced by the farmer of arable land only.

WALTER S. G. BUNBURY,

Compton Model-Farm.

LUCERNE.

DEAR JENNER-FUST,

Thanks for one of your ever welcome notes. You ask me about the lucerne. I re-seeded the field that had been destroyed by the exceptional frost the winter before last. It came up all right, and was thick all over the field last autumn. There was plenty of snow to cover it, and afford it protection early in the winter, which was not a severe one. One field is all right, half of the other one is all right too, but the other and larger portion is very patchy, and I cannot think of a reason to account for it.

It was a very dry weather for a long time this spring. This, and the fact of no top-dressing having been applied to it last autumn may account for it. It certainly does not appear to have been caused by severity of cold or frost. The field is in a very exposed position; still, the lucerne is better on the more exposed part than on the more protected part. It is such a good crop when successful that I think it merits the most careful treatment. If I had only a few tons of good wood-ashes to spread over it!

If I only had some of my good loam near the house, I should be able to show what a good field of lucerne looks like. I think I shall cart clay from the beaver meadow, and spread over the sandy paddocks near the house, in the autumn. I think that 150 loads of clay per acre, would produce astonishing results. I mean to try and do this on one of the paddocks, at least, this autumn, and regret having not done so before.

My wife wants me to ask you to you mention any time that will suit you, about coming out here, if you can, any day now. With kind regards from both us to Mrs. Jenner-Fust, and thanks,

Yours sincerely,

C. F. BOUTHILLIER.

I should like you to see the lucerne, and tell me what is the matter with it. (1)

Household Matters.

(CONDUCTED BY MRS. JENNER FUST.)

Do not worry over every little difficulty that comes to you. If you must worry, let it be about something so important, that when you have overcome it, all minor worries will sink into insignificance.

Some people are blessed with a calm, commanding air, and never seem to worry about anything, and get through life in utter indifference to its many trials.

Such people are much to be envied, but one cannot look upon them as nice people; if they were so, they never could go through the world (as they must selfishly do), with an air of indifference to the sufferings of the weaker ones.

These people are usually blessed with strong constitutions and a fair share of this world's goods, which they distribute with a calm hope that it will cure all worries, when it may be the recipient would rather have hailed with delight a few kind words, which might help to relieve the poor weary mind of a burden which is weighing it down.

Then, there is the over sensitive person who worries about, and over everything, and is, in consequence, a nuisance to everybody with whom he comes in contact. Great sympathy is due to the ailing ones, who are often taxed beyond their strength, whose whole time is spent in one serious worry, how best to get through life on small means, with large demands on strength and purse. Such people as a rule, worry, and suffer in silence, and are often accused of being sulky, when, poor souls, the overburdened heart is to full for utterance. One ceases to wonder at such people worrying, while the stronger minds get through life easily and often have more sympathy shown them in the trials of life.

(1) We hope to give our opinion in the next number of the *Journal*. Ed.

Sleep.

Many of the ills of life, attributed in most cases to other causes, really arise from keeping late hours, or, in other words, sitting up too late at night. Women, especially young ones, often come down in the morning with pale faces, tired-looking eyes and peevish, irritable tempers. Any cause but the right one is blamed for this "out-of-sorts" "tired-out" feeling, and tonics and other remedies are tried with little effect, since the real cause remains. To keep well, every woman, young or old, should have a proper amount of sleep and at the proper time, namely, at night. I do not believe that sleep taken in the daytime in any way compensates for loss of sleep at night. Let those young women, therefore, who wish to keep their youthful looks and their fresh complexions, forego late hours and take as much of the vaunted "beauty-sleep" as possible.

Hot Fomentations.

Amongst the most effective remedial agencies for the relief of pain are hot fomentations. They will often relieve the most distressing pain when nothing else will. Colic, cramp, lumbago, neuralgia, rheumatism, toothache, and a whole host of ills that flesh is heir to, may all be eased by hot fomentation properly applied. Many people I have met have not the slightest idea of the proper way to go about the business, which really means nothing more than a large piece of flannel, a cloth, and plenty of hot water. Nothing is better for this purpose than a piece of old blanket. Fold the blanket to the size required, dip it into boiling water, lay it in a cloth and wring it out by twisting the ends of the cloth different ways. Wrap in thin, dry flannel and lay it on the patient; change from time to time as it cools, but be sure to have another hot flannel ready when the other one is removed. After such fomentations the surface should be sponged with a little alcohol and warmly covered. If these precautions are followed there will be no fear of taking cold.

Potato Poultices.

Notwithstanding its homeliness, this is a most effective remedy for faceache or earache. Either boil or steam a large potato until quite tender, then mash it very quickly on a hot plate, put it into a flannel bag, and apply it to the painful part. Tie another piece of flannel over it, to keep in the heat, and have another potato preparing to use in the same way as soon as the first gets cool. I need not say that when the last poultice is removed, a silk handkerchief should be tied over the place, to prevent a fresh cold. This simple remedy I have also found an excellent one for relieving pains to which some children are subject.

Tea Biscuits.

As a nice change from the rich cakes which at this time of the year make their appearance on our tables, try a few tea biscuits. I can heartily recommend these to my readers; they are so easy to make and delicious to eat. Put two pounds of flour into a bowl, add a little salt. To half a pint of milk add the yolks of two eggs, which must be well beaten. With the egg and milk mix the flour into a stiff paste. Knead this till it is quite smooth. Now roll out the paste as thin as you can, and cut into biscuits with a cutter or the top of a tumbler, which answers nearly as well: prick them all over with a fork, and bake in a slow oven for about half-an-hour.

Wash all oranges and lemons in cold water with a small Manila brush and wipe them before using. A good deal of dust settles in the deep pores of the rinds and it is not good eating. (*Is it Manila or Mantila?* Ed.)

This is called, the poor man's, or children's.

Marmalade.

Do not let its cheapness hinder you from making it for if carefully made it will be found very good indeed.

Slice Seville oranges very thin, cutting through rind and pith and pulp alike. Put into a large pan, and to every pound of sliced fruit add three pints of cold spring water.

Having removed the pips, put them in a jam jar and cover with cold water, too. For twenty-four hours the fruit must lie in the water, and the pips by themselves in the crock. At the end of that time strain the pips from the jelly they will be in, and put jelly, water and fruit into a preserving pan. Boil all together for two hours.

During this time no attention is needed, no sugar being in the mixture, it will not burn.

When the peel is quite soft, to each pound of the now reduced mass, put one pound and a quarter of sugar. Return to pan and boil until the marmalade becomes rich and clear in color. Of course stirring must be carefully attended to during these last fifty minutes or so. When of reddish amber, and just before "setting," add the juice of two lemons, and their peel finely shred.

You ought to have about twelve pounds of preserve for every dozen oranges. The only troublesome part in making this marmalade is the preliminary cutting up of the fruit. The more carefully this is done the more refined will be the result. For rough, every day, schoolboy use, the whole may be passed through any mincing machine. Of course appearance is sacrificed, but the marmalade will taste quite as well.

Potted Mackerel.

Many people who eye rather suspiciously the various potted meats and fish which are offered for sale in the shops little know how very easily such dainty relishes are prepared at home. As a relish for tea, breakfast, or lunch, potted kippered mackerel is a very good. Put the kippered fish into a dish and pour boiling water over it, then you will easily remove the skin. After removing the bones place the flesh of the fish in a stewpan, adding three ounces of butter, a blade of mace, and a pinch of cayenne. Cook gently over a slow fire for twenty minutes, not more. Remove the mace, and pound up the fish till it will pass through a fine sieve; then press down tightly into small pots, cover the top with clarified butter, and set in a cool, dry place. Not a very tedious job, is it, for the amount of relish thus prepared? N. B.—Dried haddocks may be potted in the same way, and make a nice change.

Bathroom Gymnastics.

"Do you exercise after your bath in the morning?" "Yes, I generally step on the soap as I get out."—Chicago Record.

The Poultry Yard.

DEAR SIR,

While on my vacation, spent among the farmers on the north-shore of the St. Lawrence during the months of July and August, I tried to do a little missionary work in the interest of poultry. Eggs were scarce for that time of the summer, so I made it my business to look round among the *habitants* and try to find out some reason for it. On visiting the farms, I found hens scarce, poor in quality, badly fed, and badly housed; often, during a rain-storm, huddled together under the hay carts, that were left out anywhere it was convenient to drop them; roosting on the beams of the old barn, parts of the thrashing mill, laying under the bushes and tall grass growing beside the fences of the road. They had free range all over the farm; a mongrel lot, showing careless feeding; year after year the same stock, without new blood, resulting in small size, late chickens, several clutches hatched in the middle of August, too late to be of any use as winter layers, and not large enough for the use of summer visitors even in August. I asked why they did not get chickens hatched out early enough for the early summer visitors, but the answer was the same everywhere: Oh! we don't have setting hens early enough, and we don't understand how to use incubators and have no money to buy them with if we did.

Why farmers don't have better success with their poultry, is a question that we sometimes hear. They always keep a few hens, and in the spring, when everybody's hens are laying, they have eggs to sell, and in the autumn they have some chickens to sell or eat, but

they certainly fall short of their possibilities in this branch of agriculture, and *very very* far short of the results which experienced poultrymen get. What is wrong in their methods? What should they do to get better results? A brief but comprehensive answer to these questions would be the well known quotation from the prayer book: "They have done those things which they ought not to have done, and have left undone those things which they ought to have done." If they would but apply their intelligence to this question, as they do to their dairy or other farm work, they would soon adopt better methods and get correspondingly better results.

One of their great mistakes is keeping old and young birds running together.

The average farmer keeps all his birds, old hens, pullets, and cockerels, running together in one large flock; all getting the same food and the same indifferent care. The results of such blundering work are very unfortunate, and this is one of the mistakes entailed by "free range" by not having houses and yards in which to confine the old birds; or, if there is a house for the adult fowls, the youngsters are spoiled irreparably. There are several reasons for this: one is the lice, with which the old fowls are liberally infested, and with which the youngsters become infested by contamination. A strong argument for keeping old and young birds separate is that the lice can be so much better fought. Annihilate the lice on the setting hens, rear the pullets without contamination, and we have taken a long stride towards immunity from that costly pest. Another reason is, that the young and growing chicks do not get the proper food to promote growth, and do not get a sufficiently liberal ration to induce growth.

Growing chicks eat tremendously, they seem to be almost all appetite. And where they are reared in the company of the old fowls they get only a scanty food supply at best, grow but slowly, are stunted, and are smaller in size than they ought to be. How much of this stunted undersized condition, which we see so much of in farmers' fowls, is due to scanty food supply, and how much to other contributing conditions, it is difficult to say. Lice contribute largely to this failure to attain full growth, lack of sufficient food and of the proper kind, assist, and another factor is, shutting them up for the summer in foul houses and small runs in which the ground has become unspeakably offensive through being so used constantly for years. Another serious difficulty when old and young all run together is the constant interference (nagging) of the cockerels.

The pullets would have a better chance to grow if the pestering cockerels were kept away from them; and the cockerels would grow better too. It is remarkable how indifferent farmers are to this simple and commonsense method of bettering both pullets and cockerels; and yet, in ninety-nine cases out of a hundred, no attempt whatever is made to keep them separate. The simplest method is to sort out the cockerels and confine them in roomy yards, moving the pullets out into the grass-fields directly after the hay is carried, or putting them into the orchard, where they can have the shade of the apple-trees.

S. J. ANDRES.

Orchard and Garden.

(CONDUCTED BY MR. GEO. MOORE.)

SPRAYING.

At this season, a few reminders as to the novel methods adopted for the checking of the evils inflicted upon our crops by the destructive operations of various insects and fungous growths should be appropriate.

A complete history and discussion of spraying would occupy too much space in the pages of the *Journal*, but may be found in a work, "The spraying of plants," by Lodeman, and an article by Professor Bailey of Cornell University, from which we quote.

Perhaps there is no means by which the science of horticulture has been more advanced than by the use of poisonous compounds in a liquid form. The system is of American origin. In 1872, the United States were visited by a plague of canker-worms, and arsenic, in

the form of Paris-green, which had been successfully used to destroy the Colorado potato beetle, was suggested by the State entomologist of Illinois as a means whereby they could be destroyed. Four years later, the remedy had become quite popular, but it was only after another two years that there was any record of its use in New York; then, a most important discovery was made by the following experiment:

A gentleman of Lockport had sprayed his apple trees to destroy canker-worms, and he noticed, in the fall, that the apples upon the sprayed trees were less wormy than those upon the unsprayed. Similar results were noticed the same year in Iowa, where the trees had been sprayed with London purple, which is another form of arsenic.

The incredulity of the fruit growers vanished before the weight of these facts (what doubting Thomas's we farmers and gardeners be!) The arsenites were proved valuable for the destruction of the larvæ of most of the orchard's insect foes, and spraying is demonstrated to be of the greatest importance and a practice which no intelligent and progressive farmer or grower of fruit, whether he be extensively engaged in the business or not, can neglect if he is to succeed.

Spraying is a secondary operation and its importance is greater in proportion to the efficiency of care in planting, fertilizing, pruning, tillage, and other fundamental processes, all of which will be useless if the crop is allowed to suffer for the want of attention at last.

The practice of spraying for the fungous diseases of plants originated in the attempts of the French grape growers to check the mildew of the vine.

It was only about fourteen years ago that any definite efforts were made on this side of the Atlantic—the first advice we had being obtained from French sources—but about this time, Professor Saunders and others made some important experiments and published the satisfactory results. Our own and other professors have carried on the good work persistently and most efficiently.

Strange to say, the emulsions of kerosene and other compounds for the destruction of scale and sucking (chewing?) insects had yet another origin.

The first successful emulsion with soap was made by Prof. Cook, of Michigan. Coal oil emulsions were proved to be efficacious in the destruction of scale upon the orange. Various soaps and oils have long been thought effective in the destruction of different insects but that has been proved to be true only in a limited degree, while the addition of kerosene has made them complete insecticides.

Spraying is not necessary unless insect or fungi are present, but as no one can assure himself of their absence, the risk of destruction to the crop by them can be lessened, if not overcome, by promptly applying what are known to be certain preventives as well as remedies.

The practice should never be neglected because the risk is too great, and when thoroughly done it never fails to conquer.

It must not be supposed that a certain amount of intelligence and knowledge of the subject is not requisite.

A doctor has to make a diagnosis of the disease of his patient before he can tell what medicines are required to effect a cure. An orchardist must study by what the trouble to his trees is, or is likely to be, caused.

If fungous troubles are feared, compounds of copper or sulphur are the antidotes. Apple scab, blight, black-knot, and mildew are of fungous origin.

If leaf eating or chewing insects, canker-worm, codlin, bud, and other moth larvæ, and tent caterpillar are at work, arsenical poisons, such as Paris green and London purple are to be used. If scale, or lice-like insects, as bark-louse, San Jose scale, or aphids appear, soap emulsions should be carefully and persistently applied.

It frequently occurs that several of these depredators are present, and can be checked or destroyed by the mixture of several specifics, for instance: Bordeaux mixture can be added to Paris green, and administered at the same operation, one acting upon the fungous disease and the other upon the insects, both will be as effective thus used as if used separately, because the one does not in any manner interfere with the action of the other.

We should make two preventive sprayings, one just as the blossom buds have opened, and the second as soon as the last petals have fallen. It will not be sufficient to content ourselves with these, however; for although, the Bordeaux mixture will be all that is required to prevent the fungi from growing, it may not kill the larvæ of the moths, and to do this a third spraying may be needed.

It must be borne in mind that spraying without tillage, good soil, and good varieties, proper attention to pruning, and other care, cannot make an orchard productive, but is just as important as affecting the ultimate profit.

Spraying is no longer an experimental process, although of course there is much to learn about it as regards the appliances, mixtures, and enemies with which we have to contend, but it rests upon a solid basis of fact and is demonstrated as being a radical part of orchard management.

Spraying must be thorough to be effective. All the surface of the tree must be saturated with the mixture used. One good spraying will do more good than a number of half-hearted or careless ones.

Apparatus.

For small orchards, what is called a knapsack sprayer will be found the most useful. There are a number of spray pumps on the market; a great deal depends upon the nozzle used; in case of Paris green forming a part of the compound, a barrel provided with an agitator should be used to keep it stirred, because the arsenic is not soluble in water, and will clog the nozzle.

AN OUTLINE OF THE MATERIALS AND FORMUL USED IN SPRAYING.

Paris green.—Insecticide for all biting and chewing insects. One pound to two hundred gallons of water; one pound of quick lime will prevent injury to foliage. Bordeaux mixture in combination: to fifty gallons of mixture add four ounces of Paris green. To test the purity of Paris green dissolve a small quantity in ammonia, the impure will not dissolve.

London purple is used in the same way as Paris green, but is variable in its composition and therefore not preferable.

White Hellebore: one ounce to three gallons of water mix thoroughly: used chiefly for the currant worm but will destroy all insects which chew.

Tobacco water: prepare by placing tobacco stems in boiling water, allow it to stand several hours, then dilute with three to five times its quantity of water; for plant lice, and all soft skinned insects.

Whale Oil Soap.—One pound to five gallons of water: for tender, growing plants; to dress trees in winter, to prevent St. Jose scale use two pounds to the gallon and add a little resin or glue.

Coal oil emulsion.—Half pound hard soap, one gallon boiling water, coal oil two gallons; dissolve the soap in the water, add the coal oil and churn for five to ten minutes, dilute four times for scale insects, including the St. Jose scale, and twenty-five times for such insects as plant lice, mealy bug, red spider, etc., and for cabbage and currant worms.

Bordeaux mixture—To prevent and destroy fungi, six pounds copper sulphate, (blue stone or vitriol) four pounds quick lime to forty gallons of water. Dissolve the blue stone by suspending it in a canvas bag in four or five gallons of water, use *only* an earthen or wooden vessel. The blue stone will take some time to dissolve: slake the lime in the same quantity of water, then mix the two solutions and add water enough to make forty gallons.

If used on tender foliage, an extra two pounds of lime should be added.

To know when a quantity of lime, sufficient to prevent injury has been introduced, test it with *yellow prussiate of potash*: dissolve five cents worth in a quart or two of water, then add to the Bordeaux mixture and when it ceases to give it a red or brown tinge the operator may know that sufficient lime has been added. Bordeaux mixture should be strained before using to keep the undissolved particles of lime from clogging the nozzle, but if it is

allowed to stand for some time and then poured off gently, the sediment will remain at the bottom of the vessel.

Ammoniacal copper carbonate.—Copper carbonate one ounce ; ammonia, enough to dissolve the copper ; water, nine gallons ; before making the solution, prepare the ammonia as follows ; 26° ammonia should be used and diluted with seven to eight times the quantity of water. Then gradually add the necessary amount to the copper carbonate until all is dissolved. This may be used on half grown fruit or ornamental plants further reduced in strength according to circumstances. It is not so likely to discolor foliage as Bordeaux mixture, but it less potent in its effect.

Iron sulphate and sulphuric acid solution ; hot water 100 parts iron sulphate, as much as water will dissolve ; sulphuric acid 1 part, prepare just before using ; add the acid to the crystals, then pour on the water ; paint dormant grape vines by means of a brush or a sponge.

A simple outline of rules for spraying, as practised at Cornell experiment station.

Apple scab.—1. Bordeaux mixture strong before fruit buds are open ; 2. a weaker mixture after blossoms have fallen ; 3. ten to fourteen days later ; 4-5. at intervals of two weeks if season is wet and favorable to development of fungi.

Canker worm.—1. Paris green thoroughly ; 2. repeat every few days ; place bands painted with sticky surface round the trunk, to keep female moths from ascending.

Bud moth.—1. Paris green as soon as tips of leaf appear ; repeat before blossoms open, and again after they have fallen.

Codlin moth.—Paris green when blossoms have fallen ; watch the effect and repeat if still troublesome.

NOTE.—Paris green may always be added to the Bordeaux mixture with excellent effect.

Case bearer.—As for *bud moth*.

Pear.—Leaf blight or fruit spot, Bordeaux mixture as in apples.

Leaf blister.—Coal oil emulsions diluted five times, apply in early spring.

Psylla.—Coal oil emulsion diluted fifteen times, apply at intervals of two to six days until insects disappear.

Slug.—Dust with arsenic, hellebore or air-slaked lime.

Codlin moth.—As for apple.

Plum and Peach Brown rot.—Copper sulphate before buds swell ; Bordeaux mixture before they open, again when fruit is set, and every ten to fourteen days if necessary ; but when fruit is nearly grown, use ammoniacal copper carbonate.

Black knot.—Bordeaux mixture, very early spring ; repeat when buds are swelling ; again, latter part of May and middle of June, and July ; cut out all knots and burn as soon as they appear.

Curculio.—Very difficult to overcome by spraying ; jar the trees after the fruit is set every two or three days during several weeks.

Cherry.—*Black knot*, treat as in plums. *Rot*, Bordeaux mixture when buds are breaking, repeat when fruit is set, and after it is grown use copper carbonate.

Aphis.—Use kerosene emulsion promptly when insects appear and repeat if necessary.

Slug.—As in apple.

Curculio.—As in plum.

Quince.—*Leaf blight* and fruit spot, same treatment as above.

Rust.—Same.

Rose chafer or rose bug.—The most difficult of all insects to get rid of. Spraying thick lime white wash on the plants will partially repel the attack ; and coal oil emulsion is partly efficient ; their breeding place in the sandy earth should be kept continually under tillage.

St. Jose scale ; prevent by painting the trees with Whale Oil Soap, coal oil emulsion, very strong, to which a little resin may be added.

(To be continued.)