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THE ILLUSTRATED
Journal of Agriculture

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Notes by the Way.

To our readers:—It is to be hoped that all our readers thoroughly understand that the publication in this periodical of any communication from outside correspondents does not necessarily imply that the editor endorses the views therein expressed. We believe in laying all the facts and argu-

ments that can be brought forward in behalf of any opinion before our readers, that they may know all that can be said on the question, and draw their own conclusions therefrom.

Montreal Exhibition Company.—The Montreal Exhibition Company held a meeting yesterday afternoon at which Mr. G. A. Gigault, assistant commissioner of agriculture, announced that that Department would offer prizes in connection with the fall exhibition, for essays on the following subjects, the essays to be written in either English or French: 'The making of Cheddar cheese,' 'Buttermaking, Raising and fattening of swine,' 'Raising and fattening of sheep,' 'The feeding of milk cows,' 'The cultivation of mangold wurtzel,' 'Cultivation of carrot for feed,' 'Making and preservation of farmyard manure,' 'Ploughing and sub soil ploughing,' 'Artificial manures and their use.'

The manager of the exhibition announced the prize list had been increased by the sum of \$4,500 this year, chiefly in the dairy and live stock departments.

Fertiliser - application.—All fertilisers should be applied to the land in as finely ground a state as possible. When such small quantities as one or two hundred pounds are to be spread over an acre, it is advisable to mix the fertiliser with from twice to three times its bulk of finely sifted earth. Nothing is easier than to pulverise the manure by spreading it out thinly on a barn-floor, and rolling over it a barrel filled with stones; then, mix the earth with it and pass the whole once more through a sieve.

If the fertiliser is to have its full effect, each filament of the roots must be able at the same time to absorb all the substances that enter into its composition, and this result cannot be obtained unless the mixture is equally made throughout.

These remarks were brought out by what we saw last autumn in a large field of sugar-beets. In parts of this field the nitrogenous constituent of the manure was evidently supersubstant, while in other parts there appeared to be very little of that matter present.

In our opinion, all "hand tillages," as fertilisers are called in some parts of England, should be applied on the top, before the last harrowing, except in the case of *potash*, which cannot be applied too early in the season, and *nitrate of soda*, for roots, which is so soluble that its best effects are found when it is sown after the singling is done.

Calf-feeding.—M. Georges Ville gives an experiment on calf feeding in his well known book, in which he shows that a calf fed on skim-milk increased in the course of 7 days, 13 lbs., a calf fed on skim-milk with a little whey, 26½ lbs., and a calf fed on the same quantity of milk not deprived of its cream, 48½ lbs. The gain of the last, by the bye, seems to us rather extravagant, but then Ville is rather extravagant in his statements.

Now, he asks, what has the second calf received more than the first? sugar of milk and carbohydrates. And the third? an excess of fatty matter and albuminoids.

For every 100 lbs. of living weight the three calves received:

	Casein.	Fatty matter.	Sugar of milk.	Increase obtained.
	lbs.	lbs.	lbs.	lbs.
1. Skim-milk	1.6	1.2	5.5	13
2. do and whey.....	1.6	2.0	7.7	26½
3. Whole milk.....	5.1	7.5	6.3	48½

So the progression is as follows:

- Increased weight.
1. With insufficient rations... 13 lbs.
 2. " more carbohydrates. 26½ "
 3. " more albuminoids and fatty matter..... 48½ "

Ploughing in manure.—We think we see a change of opinion working its way on the disputed point: is manure wasted by using it as a top-dressing? Till very lately, the answer would be generally given in the affirmative; but, thanks to the experiments conducted at Ottawa two years ago, we do not hear of many objections to the practice, and we are glad of it, for a practice so universal in Europe cannot, one would think, be so emphatically bad as the decisive remarks of some of our judges of "Mérite Agricole" would lead us to imagine. No marks seem to have been deducted from the total allotted to the Dames Ursulines, at Lake St John, who received the highest number in the competition of 1894.

Still, we think the "Vermont Farmer's Advocate" carries the idea a little too far when it advocates the application of stable-manure in the following way:

Ought not manures to be plowed into the ground?

A. Under particular circumstances, as with coarse stable manure, and especially with such manure on heavy soils, plowing in may sometimes be best. But as the soluble parts of the manure are washed into the ground by rains, and need to be held in solution by the water which penetrates the soil in order that they may be taken up by the feeding roots of the plants, the best results are generally obtained by applying them on the surface and mixing them with the soil by surface tillage.

Q. What is the best season for applying manures?

A. Stable manures generally give the best results when spread upon the soil in the fall. The rains and melting snows carry their soluble parts into the ground and distribute them evenly through all the soil, thus enabling the roots of young plants to find abundant nutriment at once.

We have always found that, for root-crops and potatoes, dung freshly fermented and ploughed in—on the flat or in drills—just before sowing or planting gave the best crop. And Mr. Stephens, in his invaluable "Book of the Farm" emphatically remarks:

"There are other ways of cultivating the potato in the field besides the one I have described. When light soil, in which the potato thrives, is clean and in good heart, it is frequently dinged on the stubble in autumn, and ploughed with a deep square furrow by casting with or without a gore-furrow. Abundance of gaw-cuts are made to let off the superfluous surface-water in winter. It is then cross-ploughed in spring, harrowed a double time, when it is ready to be drilled up in the

single form, the sets planted, and the drills split in the double form, to complete the operation. In the neighbourhood of towns this is an expeditious mode of planting a large breadth of potatoes in spring on light soil, but it requires the land to have long been in very good heart. I have tried it at a distance from a town, on good potato land in middling condition, but could not succeed in raising much more than half the crop on dunging the same land in spring with the same quantity of dung."

The Rothamsted work.—The treatise, by Sir J. B. Lawes and Sir J. H. Gilbert, on the feeding of animals which appears in the current number of the Journal of the Royal Agricultural Society, is based not only on the experiments at Rothamsted, but on a mass of facts more recently ascertained; and its conclusions treat of feeding for the production of meat, milk, and manure, and for the exercise of force. They may be summarised as follows:

It has been shown that the amount of food consumed both for a given live weight of animal within a given time, and for the production of a given amount of increase, is, as our current foodstuffs go, measurable more by the amounts they contain of digestible and available non-nitrogenous constituents than of digestible and available nitrogenous constituent.

That this should be the case, so far as the consumption for a given live weight within a given time is concerned, seems consistent enough when the prominence of the respiratory function in the maintenance of the body and the large requirement for non-nitrogenous constituents of food to meet the expenditure by respiration are borne in mind. But more than this, store animals may contain more of the non-nitrogenous substance, fat, than of nitrogenous substance; whilst the bodies of fattened animals may contain two, three, four, or more times as much dry fat as dry nitrogenous matter. Obviously, therefore, the proportion of fat to nitrogenous substance in the increase in live weight of the fattening animal must be much higher than in the entire bodies of the animals.

It has been further shown that the fat is, at any rate in great part, if not entirely, derived from the non-nitrogenous constituents of the food. Of the nitrogenous compounds of food, on the other hand, only a small proportion of the whole consumed is finally stored up in the increase of the animal. In other words, a very large amount of nitrogen passes through the body beyond that which is finally retained in the increase.

Again, it has been shown that, in the exercise of force, there is a greatly increased expenditure of the non-nitrogenous constituents of food, but little, if any, of the nitrogenous. Thus, then, for maintenance, for increase, and for the exercise of force, the exigencies of the system are characterised more by the demand for the digestible non-nitrogenous or more specially respiratory and fat-forming constituents than by that for the nitrogenous or more specially flesh-forming ones.

In a paper published in this Journal in 1860 we concluded that—if fattening oxen were liberally fed upon good food, composed of a moderate proportion of cake or corn, some hay or straw chaff, with roots or other succulent food; if sheep were fattened under somewhat similar conditions, but with a less proportion of hay or straw; and

if pigs were liberally fed chiefly on cereal grain—the increase would, with as much as five or six parts of total non-nitrogenous to one of nitrogenous compounds in the dry substance of such fattening food, probably be very fat. Further, that in the earlier stages of growth and feeding, a higher proportion of the nitrogenous compounds is desirable; indeed, that it is frequently the most profitable (having regard to the rapidity of fattening and to the value of the manure) for the farmer to employ, even up to the end of the feeding process, a somewhat higher proportion than is necessary to yield the maximum increase in live weight for a given amount of dry substance consumed.

We at the same time pointed out, however, that the comparative values of foodstuffs, even as such, could not be unconditionally determined by the percentage of nitrogenous and non-nitrogenous constituents; that it was necessary to examine more closely into the nature and condition of the proximate compounds of foodstuffs, to distinguish those which are digestible and assimilable from those which are not so, to determine the relative values of the comparable or mutually replaceable portions; and, finally, to fix our standards of comparative value with more of reference to direct experimental evidence on the point, and to existing knowledge of the composition of the animal bodies, than had hitherto been usual or even possible.

Since then an immense amount of labor has been expended in the determination of the digestibility of the individual constituents of various foodstuffs; and the results so far obtained form a valuable contribution to our information on the subject. There is, however, wide variation in the composition of different samples of nominally the same description of food. Then, determination of the amounts of various constituents remaining undigested has generally been made with animals fed on limited supplies, for maintenance only; and frequently with individual foods given separately. Great care and reservation are, therefore, necessary in the application of the results to practice. Thus, in feeding animals for the production of increase, it is generally economical to give, within limits, an excess of food, if a maximum result is to be obtained for a given live weight within a given time; and, in the case of animals liberally fed for the exercise of force, there will also generally be an excess of food given. It is obvious that, under such conditions of actual practice, greater proportions of the various constituents consumed will remain undigested than under the usual conditions of experimenting.

Conclusive evidence is still wanting as to the exact rôle in the system of some prominent constituents of foodstuffs. For example, there is yet much uncertainty in regard to the position of the various amides, which enter so largely into the composition of feeding roots, and hays—in fact, of all succulent and unripe products. In the calculation of “nutritive ratios,” the amides have sometimes been classed with the albuminoids, and sometimes in large proportion with the non-nitrogenous constituents. We have from time to time had the results of our numerous feeding experiments calculated according to the published tables of digestibility. But the so-calculated “ratios” varied so considerably for different rations within the range of good practice that it would be misleading to give results and general conclusions therefrom without full discussion.

Ewes and lambs.—In another part of the present number of the *Journal* will be found an article on the treatment of ewes and lambs, by the editor. The following list of prizes awarded to shepherds in the county of Suffolk, England, will show the great importance the work of a thoroughly skilled shepherd is to a flock-master. How often have we heard farmers, here, say, they would rather a ewe should have only one lamb at a birth! A sign, in our opinion, that the speaker is either too lazy or too stingy to give a ewe nursing twins sufficient succulent food to enable her to suckle them properly. The “Nursing mothers” of the flocks mentioned in the extract had probably been up to their knees in rape for a fortnight or three weeks before the ram was introduced to them. Why this plant should be the precursor of twins more than any other vegetable, no one knows: the fact remain that it is so.

At a Committee meeting of the Suffolk Agricultural Association at Ipswich on Tuesday, Mr. J. A. Hempson presiding, a number of premiums were adjudicated to deserving shepherds who had been successful in rearing lambs. The prizes were divided into classes as follows:—

CLASS 1.—To the shepherd who shall have reared from no less than 400 ewes the greatest number of lambs with the smallest loss of ewes up to May 7th, 1895. Presented by the President, the Earl of Stradbroke.

Competitors' Names.	Recommended by	No. of Ewes.	No. of Lambs.	Loss of Ewes.	Lambs to the score after deducting 3 Lambs for loss of each Ewe.
Emeny, John, 1st....	Mr. A. Heywood.....	410	620	13	28.34
Bye, D., 2nd.....	The Executors of the late M. J. Watkins	450	646	6	27.91

CLASS 2.—To the shepherd who shall have reared from not less than 300 ewes the greatest number of lambs with the smallest loss of ewes, up to May 7th, 1895. Presented by Lord Rendlesham.

Ling, David, 1st.....	Mr. J. Cracknell.....	310	488	10	29.54
Venn, Leonard, 2nd	The Executor of the late M. J. Sherwood.....	350	512	7	28.05
Meadows, William...	Colonial College.....	364	503	8	26.31

CLASS 3.—To the shepherd who shall have reared from not less than 200 ewes the greatest number of lambs with the smallest loss of ewes, up to May 7th, 1895. Presented by Lord Rendlesham.

Drury, James, 1st....	Mr. G. Martin.....	235	374	4	30.80
Smith, Geo., 2nd.....	Mr. J. Toller.....	227	352	3	30.22
Harvey, Chas., 3rd...	Mr. W. Wilson.....	214	337	5	30.09
Rush, Charles.....	Mr. T. Keeble.....	241	373	6	29.46
Squirrel, Thomas.....	Mr. W. Toller.....	260	397	6	29.15
Crick, William.....	Mr. W. R. Hustler...	207	299	3	28.01
Last, George.....	Mr. S. R. Sherwood..	260	361	9	26.84

CLASS 4.—To the shepherd who shall have reared from under 200 ewes the greatest number of lambs with the smallest loss of ewes up to May 7th, 1895. Presented by Lord Rendlesham.

Stammers, W., prize.	Mr. E. L. Scrivener.	98	177	1	35.51
Cann, Charles.....	The Executors of the late Mr. T. Woodward.....	173	277	5	30.28
Garnham, Eli.....	Mr. J. Huson.....	157	235	4	28.40

The skill and care exercised by the shepherds, especially those to whom premiums were awarded, was spoken of in high terms, and some of the results mentioned as being the highest ever known.

Hampshire Down Lambs.—I beg to send you the following note upon the weights of Hampshire Down lambs taken on the 8th inst. The lambs were born for the most part about January 20th, some of a few days before, and some a few days after that date. The average birthday was therefore as

summed as falling upon January 15th, and the average age on May 8th was therefore 113 days. The lambs were weighed in the field, with the following result:—

No. 1 lamb....	113
“ 2 “	112
“ 3 “	112
“ 4 “	105
“ 5 “	119
“ 6 “	104
“ 7 “	114
“ 8 “	114
“ 9 “	113
“ 10 “	112
Total... 1,118	Average 111 8/10 lb.

If the average age at birth is assumed at 12 lb., the net increase to May 8th was 99.8 lb., and the average daily increase .88 lb., after deducting birth weight. If, however, as in the Smithfield results of December, 1893, the birth weight is given in, then we have the surprising result of 111 8/10 lb. in 113 days, or practically 1 lb. per day.

The *Standard*, in reporting upon the Smithfield Show in December, 1893, published a five years' average increase in the case of lambs of various breeds (birth weight given) in as follows:—

	Average daily increase.
Leicesters.....	0.74
Cotswolds.....	0.77
Lincolns.....	0.72
Kentish.....	0.73
Southdown.....	0.60
Hampshire Down.....	0.71
Suffolk.....	0.67

It is not to be expected that a gain of 1 lb. (.99) per day, calculated on the Smithfield basis, could be kept up until December, but it is nevertheless remarkable that in the month of May, and over a period including the first

weeks of life, such a result, is obtainable. The probability is that during the middle period, i. e., from April to July, these lambs will increase at a considerably higher rate than even that already given.

JOHN WRIGHTSON.
College of Agriculture Downton.

Judging from our experience with this breed of sheep, we should be inclined to put the carcass-weight of a Hampshire-down lamb whose live weight is, in round numbers, 112 at 62 or 64 pounds, and its value at, say, 5s. 6. a stone of 8 lbs., offal=\$12.00. But, then, the Hampshire men do not keep sheep “to clear up the weeds in the corners of the fields”! And it is not only of yesterday that the care of sheep is so important a part of English husbandry. Bishop Latimer (ob. A. D 1555), the son of a tenant farmer, told his flock from the pulpit that: “A plough land (i. e., arable farm) must have sheep to dung their land for bearing corn. If they have no sheep to fat the ground, they shall have but bare corn and thin.” if our *habitans* could once see a chalk-country “sheep farm, with the flock hurled on the rape!

Lucerne.—Our friend, M. C. F. Bouthillier, of Bleury, Ste-Thérèse, tells us that he cut his lucerne, sown last spring, on the 12th of May! Owing, probably to the faultiness of the seed, the plant, he says, is not quite so good as it should be, but where it is weak he has sown more seed and raked it in: with the rains we have just had, it ought to do well.

Gapes in fowls.—This very troublesome malady among young chickens we used to cure by smoking tobacco into a box wherein the chickens were confined: it answered well. A remedy, said by our well known English poultry-lecturer, Mr Newcombe to be equally efficient, is the fumes of lime: get a piece of quick-lime, let it dissolve in hot water; take the chicken in your hand, open its mouth, and let it inhale the fumes which will kill the worms in the throat.

The potato.—A very good idea, that, of allowing the poorer inhabitants of some of our Western cities to plant potatoes on the vacant lots, with, of course, the consent of the owners. The committee in one town estimated the potato-crop at about 15 bushels per lot, but what sort of judges they must be is shown by the following: “By good manuring, as much as 500 bushels (equal to 15 tons) can easily be grown on an acre; 900 bushels (equal to 27 tons) are said to have been grown on a single acre, but this is unusual”: yes, rather; the average crop in the U. S. is rather more than 80 bushels, and in England about 180 bushels. Shirley Hibberd once grew 20 tons (2240 lbs.)=800 bushels of 56 lbs., but we never saw more than 640 bushels on an acre.

Barley for malting.—The 2-rowed barley, so much vaunted a few years ago, seems to have fallen back into its original obscurity; why, no one can tell, for, properly treated, it will make good malt, and a decidedly greater quantity of extract can be had from it than from 4- or 6-rowed. The following extract, from the “Kentish Express,” will show how very carefully the cultivation of this most peculiar grain is looked after in England, and how hopeless it is for us, with our

small farms which render a mixture of ripe and unripe, 2-rowed and 6-rowed barleys unavoidable, to hope to compete with the farmers of the banks of the Saale, and other parts of Europe, who have been so well taught by the agents of English brewers that they now lead the London market by one or two shillings a quarter.

Some interesting particulars were given by Dr. E. R. Moritz, analyst to the Country Brewers' Society, in his annual report to that Society relative to malting barley. The *Times*, in a summary of the report, says:—"Dr. E. R. Moritz remarks upon the altogether exceptional quality of the English barleys grown during the hot, brilliant summer of 1893, when the climatic conditions approximated more closely than in any recent year to those normally prevailing in many foreign barley-growing countries. Nevertheless, though a series of summers like that of 1893 would probably give us seed admirably suited for growth in a sunny climate, such a season coming exceptionally is likely, on the whole, to be productive of mischievous rather than beneficial effects. The barleys of 1894, which are now being malted and brewed, are as different as possible from those of the preceding year. They are, indeed, typical of, but superior to, the English grain of the better seasons within the last ten or fifteen years in spite of a somewhat cool and rainy summer and a particularly wet harvest. In view of such conditions of season the prevalence of 'idle' corns might reasonably have been anticipated; yet, as a matter of fact, maltsters are finding that, after sweating, corns are growing particularly well and evenly. Dr. Moritz inclines to the opinion that the cause of this favorable result is mainly to be sought in the dryness of the barley used for seed in 1894. The "condition" or dryness of the seed is no important factor in the character of the resulting crops of both wheat and barley. Reference is made to the 'deterioration' of English barley, alleged by brewers to be due to the employment of large quantities of chemical manures and the consequent lessened use of farmyard dung. Dr. Moritz questions whether this has been the chief cause, if a cause at all, of the change for the worse in the bulks of English malting barley compared with what they were, say, 20 years ago. It is rather in the altered economic condition under which barley has been grown and marketed since the repeal of the malt-tax that he would look for the special cause of deterioration. A good deal of barley which, prior to 1880, was marketed simply as feeding material, is now brought forward for malting purposes; and this tendency towards the cultivation of barley on inferior land for malting purposes has been aggravated of late by the increasing unremunerativeness of wheat crops, and the consequent devotion of heavy land to barley (1) which had previously been under wheat. It does not seem improbable that much of the prejudice against the use of artificial manures for barley-growing is based upon experience gained where such fertilizers were employed ignorantly and with regard solely to price. On the whole, it is very questionable whether there has been any real 'deterioration' in English barley. Adulteration or falsification seems to oppose the English farmer in every direction. Dr. Moritz expresses his belief that a great deal

(1) And yet, the Chevalier barley grown on the Essex clays sells at the highest market price to the maltsters of Saffron Walden, Bishop Stortford, &c.—Ed.

of mixing in of inferior foreign with superior foreign or English malt is carried on by the less scrupulous firms of maltsters."

The Norfolk experiments on manures for grain-crops seem to have proved a failure this season on account of the too rich state of the land experimented on. Sir John Lawes taught a better lesson many years ago. He began, in 1840, to carry out experiments upon crops and manures, by exhausting a field of about 12 acres by removing four unmanured crops—turnips, barley, clover, and wheat; and in 1844 he sowed the whole of the field with wheat, which has been grown continuously up to the present time—the crop now in the land being the fifty-second in succession. In 1843 he selected another field to grow continuous root crops, and other fields followed, about 50 acres being now under experiment. Judging from some of the reports of experiments in the U. S. papers, we should fancy that the managers of the stations have not paid attention in many cases to this, the first requisite of satisfactory experimentation.

Grain and pasture.—If the addition of extra food, such as grain, cottonseed cake, &c., to the rich pastures of Britain is found to be remunerative, how much more profitable would it be on some of the poorer pastures of our province. With such rains as we have had during the past month—May—many cows have been troubled, if not with actual diarrhoea, at least with a looseness of the bowels: far from conducive to sturdy health. No better cure for this than the addition of from 2 lbs. to 4 lbs. of cottonseed cake. Why do English dairymen lay so much stress on the need of beans or pease in compounding a ration for their cows? Not so much because they expect to see an immediate return for the cost in the extra milk yielded, as because they know, from experience, that, as Mr. Goodrich sensibly remarks in the following extract from the "*Breeder's Gazette*," "the cows hold out better in the fall, and give more in winter" than when there is no extra food given:

Our neighbor, C. P. Goodrich, gives the facts of his experience in feeding grain to cows in summer as follows, in the *Breeder's Gazette*:

I had always supposed good pasture was good enough—as good as anything could be for milk production—but in 1887 I determined to try grain-feeding with it. I fed a small ration of corn and oat meal. It seemed to add but little to the flow of milk, and some men of good judgment who knew about it were of the opinion that I was throwing away and wasting the grain so fed. But the cows held out better in the fall and gave more when it came winter than in previous years. When I came to figure up at the end of the year, I found my herd had averaged fifty pounds of butter more per cow than ever before. I was satisfied that for every dollar's worth of grain fed on pasture, I had got back in butter \$2. You may be sure I have fed grain every summer since.

I intend that cows shall be fed all that they will eat and properly digest every day in the year except during the short time they are dry. Then, the grain feed is partly dropped off. In summer when they are put in the stable to be milked, in addition to their grain feed, there is always put before them some nice early-cut clover hay, and they never fail to eat some

no matter how good the pasture is. In winter they are fed as great a variety as possible.

Ferocious sheep! Now, here is a marvellous story! "Mr. G. F. Cooper, a farmer near Maxwell, Iowa, went into the sheep yard with a lantern in the dark: the lantern was, presumably, lighted. The animals," again presumably the sheep, "attacked him and he was seriously injured. When the light was put out by the rush of the sheep onto (sic!) the farmer, the animals knocked the man down and stamped over his body. The lantern (not the light in it?) seemed to make the sheep crazy." Not a word said about the breed of the sheep; fortunately, we are able to supply the defect. They were *merinoes*, descended evidently from those gallant Spanish sheep, against whom the illustrious knight-errant, Don Quixote, sallied forth when they advanced under the banner of Pentapolin, of the hundred arms, as narrated in the *veracious* chronicles of the historian Cervantes!

Richness of milk.—In England, people engaged in the production of milk do not seem to entertain much doubt as to the possibility of enriching milk by rich food. Mr. Nuttall, one of the largest dairymen near London, "thinks the standard has been placed too low, and is not quite sure if it ought not to be considered fraudulent so to feed cows that they give unnaturally poor milk; if cows are well fed no penalties would be imposed by raising the standard. Of course, such a dietary as distiller's wash, brewer's grains, and mangels, if chiefly given, would cause cows to yield milk of poor quality. If owners of cows do not know this, they might perhaps be brought before the magistrate: but it would serve them right."

Mr. Embrey, F. C. S., one of the government analysts, holds that the standard is absurdly low. *It is a fact that a cow may be so fed as to yield a very poor milk*, which every public analyst must report as adulterated: if it fell below the standard he could not help himself.

FARM WORK FOR JULY.

Haying.—This is the great hay-month throughout the Western part of the province. In the Montreal district, most of the clover will be down by the 10th of the month and the timothy will be quite ready by that time. By the bye, we saw a queer piece of advice in one of the American Agricultural papers the other day. We are told to sow clover in our orchards, and either to turn the pigs in, *urrag*, and let them root the whole up; or to mow it and leave the crop as a mulch. Excellent advice! seeing that our winters are so mild and the abundance of food so great, that in spring we have always a quantity of hay over that we do not know what to do with! (1)

Green-fodder.—As about the middle of the month, the early potatoes will be fit for market in most parts of the Montreal district, as well as in the Eastern-Townships. We cannot too strongly advise all who have such for sale to prepare the land, as fast as a half-day's work of the potato land is

(1) Such a piece of clover and timothy in the Seminary orchard off Sherbrooke St., Montreal, three tons an acre; at least!—Ed.

clear, for a crop of Hungarian grass. Why let the land stand idle? No ploughing is necessary; pass the grubber once or twice over the piece, harrow until a fine tilth is produced, sow the seed thickly—about 3 pecks to the acre—, harrow it in lightly, and finish by the passage of a roller. If sown at any time during the month, there will be a good bite for sheep or cows by the 1st September. Unfortunately, this *millet* will not stand much frost, though 4° or 5° do not hurt it greatly.

Rape.—The rape will be ready for the sheep by the 20th. Remember that the flock should not be admitted to it for the first time till the afternoon, when their bellies will, it is to be hoped, be full. A few pease and oats given in troughs will benefit the sheep, and not only the sheep, but the land will tell of it in the grain-crop of next year. It is really a pity that this most valuable plant is not more generally grown here. The cultivation is so simple! Six pounds of seed sown broadcast, covered with a bush-harrow, if you have no chain-harrow, and rolled. Hurdling off is not absolutely necessary, though more economical, for in the great county of Lincoln, Eng., large fields of rape or cole are to be seen with the flocks, several hundreds each, wandering about as if in a pasture.

Roots.—The earliest sown roots—mangels and carrots—will now be ready for the singlers. Strike out mangels into bunches with a seven inch hoe, and let women and children single the bunches. Do not be afraid of leaving the roots of mangels bare of earth: the more the ground is cut up the better for the future grain-crop of 1896. If the swedes come on quickly to the hoe, there will always be dewy morning in which they can be dealt with during the haying; at all events, do not let them run up and spindle for want of chopping out, for they never recover this feeble growth; better chop them out into bunches if you have no time to single, and do that a little later.

The flock.—A great fly month, this; keep your sheep in the open as much as possible, not forgetting to dip them a second time if you can afford it: the lambs, too. Each sheep should remain in the dip at least a minute. Keep the tag-locks (1) under the tail free from clotted excrement by a judicious use of the shears: Do not let your ewes get too poor, if you have any intention of breeding a few early lambs for next year's market: nothing pays better than February lamb in the Montreal market.

The herd.—You will, of course, have made a plentiful preparation of *green-fodder*, which, in our part of England, is called *green-meat*, for your stock. Nothing, we repeat, is better for milch-cows, as well as for all the other animals on the farm, swine included, than oats, vetches (tares), and pease. But the great thing is to have a variety to come in at different seasons. Calves are now out at grass, and should have some sort of shelter to get under during the heat of the day; it is not nice to see a good lot of calves with their ears all blistered by the sun.

To day, June the 6th, we observe

(1) Rather curious why this word, *tag-locks*, should be applied to the unfragrant solution of *fusel-oil* in the rectifier's business!—Ed.

use neighbour's cows—two fine half-bred shorthorns and Guernseys—scouring away, from the effects of the washiness of the grass caused by the copious rains of the last ten days. Cotton seed cake is, as we remarked last month, the best food for cows in this condition, linseed cake will only make it worse.

By the bye, the above mentioned cows are in very lush pasture; they are taken home every evening, at 4.30, and get *moulée*, and, at 7 A.M., after an early breakfast, they return to their grass; and yet, whenever we pass, generally three or four times a day, they are feeding away merrily.

Horses.—Work in the mower and in the reaper is not light work for your horses, therefore feed them well and work them, if possible in turns or relays. One day in the mower, the next in the rake, and so on. The brood-mares and the foals should have all they can eat; the dam can, of course, do some light work, but the foal should never be allowed to suck when the mare is heated. When the grass is *washy* from too much rain, a feed of clover-hay at night will do all the horses good. Look well to any shoulder-galls.

Swine.—The young pigs, now weaned and ready for any kind of food will almost keep themselves if there is plenty of green meat. They, too, require shelter from the sun at mid-day. The best addition to the green-fodder is, indisputably, pease; even so little as a half pint a day to each will make a wonderful difference. The sows will, of course, most of them at least, have taken the boar, and care should be taken that they be neither too well nor too badly kept. Of the two, we would rather see a sow lean than fat; but the medium is a difficult thing to hit, particularly with high-bred stock.

Poultry.—Plenty of room, lots of water, and a little food is all poultry need this month: green-geese, ducklings, turkey-poults, as well as chickens, ought to be ready for market by the end of this month.

LONDON MARKETS.

June 10th.

White wheat, English, per 50 4 lbs.	26s—30s
Manitoba No. 1 hard	32s—33s.
Duluth	32s—34s.
Barley-grinding	16s—18s.
Pease, white	82s—36s.
Oats, Engl. sh.	14s—22s
Beasts; best Scots p.	
8 lbs.	4s. 4d. to 4s. 6d.
Fat cows, per. 8 lbs.	3s. 8d.
Sheep, 8 stone Downs per. 8 lbs	5s. 6d.
Lambs, Downs per 8 lbs	7s 6d
Calves, per. 8 lbs.	5s. 4d.
Pigs, " "	3s 4d.
Butter, finest English fresh	12s. per doz. pounds.
Bacon, Danish	50s.—112 do
" Irish	56s " do
Hams, Irish (light)	84s 92s. do
Hay, meadow	75s. 84d 2016 lbs.
" clover	100s. 1.4s. do
" Canadian	7s.—per 2240 lbs.

Manures:
Nitrate of soda (Liver-pool) £8 to £9 5s p. 2240 lbs.
Sulphate of ammonia £9 15s—per. do

THE LAMBING OF EWES,
AND THE
TREATMENT OF LAMBS.
(By the Editor.)

The time, we hope, is coming, when we shall see flocks of sheep, under the care of shepherds, properly looked after, and fed throughout the summer on crops grown expressly for them. In no other way can we imagine to ourselves the restoration of the worn out lands of this country. Sheep, even kept on a small scale are profitable to the owner, or so many hundreds would not be let out on shares. But kept, as they should be, on the land from May to December, they will not only give the usual profit of lamb and wool, but the produce of the farm will be at least doubled.

The ram, it need hardly be said, should be in first-rate condition when put to the ewes. Rape is what we generally use in England to bring the ewes into season, and I doubt any other plant having so great an effect; but if you have it not, three weeks good feeding before coition will do much good. Two things you want: plenty of twins, and rapid lambing, that is, that the whole flock should drop their lambs as nearly together as possible—it keeps the shepherd less time deprived of his night's rest, besides giving all the young ones an equal chance, and an equal look, which when drawn up for inspection, will give them more additional value than an inexperienced man would believe.

You may think yourselves very fortunate if you find a good shepherd. We had one, and only one, but he was a wonder: he knew each ewe in the flock, (1) personally; when they were due to lamb; what their pedigree was; could assist them in lambing, when necessary, but never troubled them when they could lamb alone; never wasted the food set apart for them; could nurse a sick ewe, bring up a *cosset* lamb, or induce a ewe to take an extra nursing when she was full of milk; there was no blaring of lambs and dams in search of each other in his lambing shed; his care was unintermitting, and he saved us, during the four years he was in our service, much more than the value of his wages.

The number of ewes put to a ram depends upon circumstances.

One that we hired of Jonas Webb, of Babraham, served 110 ewes, which produced 185 lambs! He was a 2 year old, and the ewes were young, healthy, and in prime condition. But, as a general rule, a lamb-ram, will serve 30 to 40 ewes, and a shearling 50. The Hampshire breeders prefer lamb-rams, but their ewes lamb down so early, and are so well treated all along, that in September the lambs are as vigorous as the shearlings of other breeds. The ram should be *riddled* on the breast, that the time of each ewe service may be marked in the shepherd's book. A separate pen should be provided for the ram, where, in company with a ewe to keep him quiet, he may be fed twice a day with cake, corn, and any green stuff that may be handy; for his attendance on the ewes, if he is allowed to be always with them, will be so incessant, that he will not give himself time to eat.

The ewes will, probably, be all rammed by the end of ten days. Some will return, as it is called, and are served again. At the end of the third week, we used to withdraw the ram, as it is not considered desirable, when

a man takes a pride in his flock, to have ewes keep on dropping lambs for a month or two after the main flock has finished.

Fat ewes always produce small lambs, and often suffer from inflammation in lambing, so don't keep your ewes too well. Ewes in poor condition, on the other hand, can't nourish their lambs properly, die in lambing from weak ness, lose their wool, and can't nurse their lambs: don't starve your inlambod ewes. Moderate keep, clover hay, pea-straw, a little cake just a few days before and after lambing, will see you well through this anxious time. Half a pound of linseed cake, or 4 ounces of crushed linseed, per head, will save many a ewe, and the cost for, 10 days before, and 10 days after lambing, is trifling, compared with the immense advantages to be derived from the outlay.

Above all things keep your ewes quiet. The sudden irruption of a strange dog into the pen may work irreparable damage. Ewes will stand almost any amount of cold, but the wet fleeces must be guarded against. Open sheds will do very well; in fact, we prefer them very much to close places; but means should be provided to keep the sheep under the shelter, as, from obstinacy or some other cause, they will not come in out of the rain when they can get a chance to avoid it.

You will soon learn to distinguish from her neighbours the ewe which is about to lamb: the parts under the tail grow red, and enlarge; she seems uneasy; walks about restlessly; and tries to get away from her sisters; in fact, she gets into, what we should call in a human being, a state of fidgetiness, deeply interested in the lambs of other ewes, which she tries often to seduce from their dams. The water-bag then protrudes from the vagina, then the two fore-feet, if the presentation be natural, and the mouth of the lamb will be seen lying upon them. The ewe changes her position, from time to time, rises to her feet and again lies down, straining forcibly to rid herself of her burden. Now is the time, when if the ewe becomes weak, the careful shepherd assists her.

Drawing out the legs as far as possible, and freeing the top of the head from the vagina with his finger, he pulls gently, in a downward direction, carefully timing his pulls with the straining of the ewe: he should never pull between the pains, as assistance at improper times, we are sure from long observation, puzzles the ewe, and makes her neglect her own duty. When happily extracted and placed in front of the dam, she will soon, unless very sick, recognize the lamb, *nousting* it, purring over it like a cat, and making such a fuss over the newborn wonder, as none but mothers can fairly appreciate. In the case of twins, the second should be got away as soon as possible, and it rarely gives much trouble, though sometimes the ewe is so much taken up with her first, that she neglects the pains that usher in the second. We have seen the second of twins born, as it seemed, almost unobserved by the mother.

In the case of a wrong presentation, the shepherd's hand, smeared with grease (goose-grease remains moist longest), must be introduced, and the lamb extracted as quickly as possible. We believe among the Leicesters wrong presentations are not uncommon, but we have no experience in that breed; in Down flocks we never saw a worse thing than the doubling back of one fore-leg a presentation which is early detected, and easily remedied.

Sometimes, particularly if the labour has been severe, the ewe seems careless of her lamb, and will not let it suck. The udder should be examined, and if found inflamed, should be bathed with a weak solution of saltpetre, or simply with hot water; but if there is neither inflammation nor hardness, the ewe must be tied up tight by the head, and the hind quarters held, until the lamb has sucked its fill; the difficulty will be soon overcome, and the couple be on good terms for the future. If a ewe loses her own lamb, one of twins should be assigned to her. Strip the dead lamb of its skin, and place it, while warm if possible, on the stranger, and with care, patience, and tying up as before, the ewe will soon take to it; but one lambing season will teach you how to proceed in such cases much better than we can tell you.

If you have superfluous lambs, they can be brought up on warm cow's milk. A bottle with an Indian rubber tube, such as children use, to suck from, will answer every purpose. But *cossets*, as they are called, are always a bore, blaring about, and running after every one they see, into the house, and, in some cases, getting into the garden, and doing all kinds of mischief. They should go to the butcher as soon as they are fit.

As to the castration of the male lambs, there is a great difference of opinion. The Sussex men cut theirs at a fortnight or three weeks old. The Hampshire men, on the other hand, who prefer a strong, masculine animal, postpone the operation till the lambs are four months old. The tail, however, in both cases, is docked as soon as the young one has strength to bear it. At whatever age castration is performed, fine, mild weather should be chosen for it. I regret to say that it is too much the custom of those who send early lamb to the Montreal market not to castrate the males. It may seem unnecessary to emasculate them at the age they are killed, but there is a certain reddish look about the meat, called by London butchers "foxiness," which is unmistakable, and injures the flavour amazingly. Lambs for this purpose should be castrated at 10 days old.

Our English flock masters dock their lambs' tails much shorter than is generally done here; and I think with reason. The short dock certainly gives squareness to the hind quarters, and as the real reason for docking is to keep the sheep's twist clear from filth and from the fly, which lays eggs which turn to maggots, the shorter the tail, in moderation, the better. The third joint is about the place.

Don't be afraid of the jets of blood after docking. They will soon stop, as general rule, and if not, a string tied round the tail will speedily arrest the flow.

If you do leave your lambs uncastrated till they are a few months old, you will have a chance of tasting that most delicious dish, delicately called in Hampshire "Lambs' Fry." Clean and split the testicles, but don't wash them; dry them thoroughly with a cloth, dip them first in egg, and then in fine, dry bread-crumbs mixed with dried and well chopped parsley, summer savory, chervil, lemon thyme, and the merest scrape of nutmeg, and fry them "of a beautiful brown," as Mrs Rundell says, in plenty of lard. The lard should in this, as in all other cases of frying, be quite boiling, (1) and at least two inches deep in the pan.

(1) Of course it is only the water in the fat that boils and bubbles: fat cannot boil except at a higher temperature than 212° F.

Our flock consisted of 240 Hampshire-downs ewes and 20 South-downs.—Ed.

Of course the lambs with their dams will, if you really mean sheep-keeping as it ought to be done, be put on the best grass your farm affords, as soon as possible after the snow goes. This must carry them till the sown crops, rape, vetches, &c., are ready to take them. Of these sown crops we have spoken lately, but we need not go over the ground again. But there is one thing we should like to impress upon you very strongly, and that is: a check to the improvement of the young lamb is more difficult to remedy, than a check to any of the other young animals on the farm. A lamb rarely recovers from a check, whereas a calf can, by care and attention, be pretty well restored, and so can a colt.

Lambs are troubled with few diseases as long as they are on the milk. A change from a barren pasture to a luxuriant bite of grass will sometimes produce diarrhoea. A dose of Epsom salts, say, half an ounce, with a little ginger to soothe the bowels, will commonly settle the question. Costiveness, on the other hand, rarely affects lambs running with their dams, and a slight aperitive will cure that complaint. Care should be taken, especially in a wooded country, to keep all the parts near the tail in a perfect state of cleanliness; the fly will play mischief with the flock, if this is not looked to. In our best managed flocks, just before weaning time, the wool growing between the thighs, *outside*, is shorn off, and the lambs are dipped in one of the compositions set forth for that purpose, of which we shall have more to say presently. This treatment generally renders them pretty safe for the summer, but in spite of it all, a want of frequent inspection will too often allow the poor things to be attacked by maggots, and deaths, which might be avoided, occur.

Weaning.—Lambs are usually weaned at from three to four months old. It seems a simple thing enough to separate a lamb from its dam, and at first sight, it would appear there could not be any doubt about the way to do it. But there are, as usual, two ways, only one of which is right. For example: suppose the ewes and lambs are in a field, and you take the lambs away from their mothers into a fresh piece; a pretty row there will be! The lambs, utterly unacquainted with their new home, will go mooning about all over the place, baa-ing, and reducing their flesh, in search for their dams and their familiar corners. It will be some days before they settle. Whereas, if, after remaining for a week or so in the same field, the ewes are removed out of sight and hearing, the lambs, thoroughly accustomed to their habitat, will soon quiet down, and feed away as if nothing had happened to disturb them. By this time, too, many of the ewes, from loss or scantiness of milk, have weaned their lambs, who have been taught to depend upon grass &c., for their food, and the sight of these, feeding away merrily, tends to soothe and tranquillize the minds of the others. Interesting little things! How we wish we had a couple of hundred to look after, now!

If you lamb down early, you must wean early, or else there will not be time for the ewes to recover their condition before their hard time comes again. Fancy, that in Scotland, even in our time, the ewes were milked after the lambs were weaned! That is over, at all events, but care should be taken to look after any ewe that, from lambing late or any other cause, may have a flush of milk upon her after

weaning time. She should, in this case, be dried off as carefully as a cow, and milked at intervals of 12 hours, then 24 hours, 36 hours &c.; and we need not say that the less succulent her food is the sooner the desired end will be secured. The danger is that the teats will be plugg'd up with cheesy matter, causing carget. After a fortnight's separation, the lambs may, if desired, be returned to the ewe-flock; all parental and filial instinct will be extinct by that time.

We do not grow *sainfoin* in this country. It would do well on any of the calcareous soils (no where else, though), and there is nothing as good for weaning lambs. We never saw them scour on it, and we have seen large numbers suffering from diarrhoea (on red clover), completely cured by a few days sojourn on this valuable plant.

Our best flock-masters dip their sheep twice a year—at least they dip the lambs at shearing time, and the whole flock in the autumn. Bigg's composition was the most popular sheep-dip, when we were a breeder. We used it regularly for years and may be trusted when we say that no sheep of ours was ever troubled with scab or tick as long as we had a flock. It is poisonous, though, and therefore care must be taken that no animal drinks it. The sheep is dipped in a tub containing a solution of the stuff in water, and, when thoroughly soaked, the patient is placed on a strainer, so constructed that the liquid squeezed from the wool runs back again into the tub. As a precaution, every sheep bought for any purpose should be dipped before it joins the flock already on the farm. (1)

But there is a cheaper form of sheep-dip that will, doubtless, answer all purposes. For every twenty sheep, take two lbs of tobacco stems and a gallon of water, boiling them gently for at least an hour; to this add 2 lbs of soft soap, 2 ounces of flour of sulphur, and a wine glass of spirits of tar. Dilute this plentifully (experience must be your guide), and treat the sheep as above described.

We forgot to mention that, in England, when the fly is troublesome to the heads of the sheep, we put a sort of cap, tied under the ears before and behind, over the skull. Sheep will but at each other, and if a place is skinned, the fly attacks it at once and drives the poor brute crazy. Note—never put a cap on a sore head, the fly is sure to get under it, and you can't see the damage till too late to remedy it.

Fortunately for us, that dire disease the foot-rot has never been here; though some newly imported sheep (Shropshire Downs) were sold at Chicago, which, a few days after, were found to be affected. A pretty row the purchaser made in the agricultural press about it! The seller, about as honest a man as they make them, was called all sort of names, as if he could have told by intuition that the disease was incubating. We don't see why short-wools should be more afflicted with this pest than long-wools, but with all our love for them, they certainly are, and very troublesome it is to cure it. It takes between the claws of the hoof, and gradually eats its way, under the horn, upwards. We wonder that where sheep are kept, in winter and early spring, on damp straw, that the disease does not show itself, even here. We should prefer sheep lying on boards, with intervals of $\frac{1}{2}$ of an inch between, to

(1) No end of good things are said of Sir John Lawes' dip.

letting them tread down a mass of damp straw into a puddle. The boards should be swept down twice a day, the manure collected, and there could not be a better vehicle to carry bone-dust or superphosphate with it to the turnip crop. Of course, there must be a space of two or three feet between the boards and the ground. If you think the sheep won't like so hard a bed, watch them in the summer, and you will find that they will, if they can, always select the road for their place of repose. Should you fear a loss of the valuable urine, nothing easier than to throw a few bushels of spent tan-bark, or rubbish of any sort to absorb it.

But to cure the foot rot! Well, we have done it with my own hands, and, though it takes time and trouble, I don't think that any one ought to despair of succeeding, if he will follow out, precisely, these instructions. You are sure to have it here, sooner or later, so you may as well learn how to cure it before it arrives.

With a steady hand, and a very sharp knife, pare away all the loose horn, avoiding as much as possible making the hoof bleed. Then, dress, with a feather, the parts affected with *butter of antimony* (Mr Stephens says this is ornal, but the disease is worse than the cure,) taking care that it reaches every bit of the spongy part. The flesh will smoke under the treatment, but, if unpityingly carried out, the patient will recover, and that is surely, in the long run, more humane than allowing the poor beast to die in agonies of pain, as he indisputably will if the disease is permitted to take its course.

The rot is a disease with which we are not well acquainted. As a boy, some sixty years ago, we heard a good deal of it in South Wales, and we picked up one evening, five or six hares, which had died from its effects. But from 1834 till we left England in 1858, nothing had been heard of it. In 1884, its ravages were dreadful, whole parishes, in 1884, lost every sheep—our brother wrote word that on his property, in Gloucestershire, they had neither hares, rabbits, nor sheep, for the preceding five years! The loss of sheep in England is to be reckoned by millions, and there seemed to be no cure for the complaint it vanished as mysteriously as it came.

Another omission—when ewes and lambs are feeding off rape, tares, &c., the hurdles should have gaps to allow the lambs to pass through on to the fresh piece ahead of their dams. White pease are generally given to the lambs in troughs outside the fold; they make lean wret, and are a very strengthening food.

Household-Matters.

LAUNDRY WORK.

I am glad to hear, that in Scotland they have a school, where young people are taught washing and ironing. If they do this, and can get the pupils to follow faithfully the instructions given after leaving the school, what a great boon it will be to the world at large, as the pupils scatter abroad. Washing day comes, and is a duty that must be gone through. Hard as it used to be, it is now made much lighter by so many helps in the shape of washing powders, and soaps. It is however a dangerous experiment to put some of these in the hands of a young girl, and expect her to follow out the instructions minutely. She will soon get careless, and throw

in by guess, where the measure ought to come in, till some fine day you find, to your horror, many of your nice garments full of small holes burnt by a too strong solution of the washing powder. I have learnt by experience to give nothing but a well tried soap. With this and a good washer and wringer good work can be done. Washing powders are undoubtedly strong helps in the hands of careful people, and if people would believe how much of labour saving there is in soaking clothes all night after soaping the soiled parts, or even throwing a little soft soap into the water, or anything that will help where the water is hard; the next day there would be little to do but to put the clothes through the wringer, soap, and when all are ready, put on to boil in cold water. No farm house ought to be without a mangle for with that half of the ironing is saved. It is very short sighted work not having one. It will save its cost in a couple of years in fuel alone, let alone the comfort of saving the strength of a weak woman: try holding a hot iron, even with a good holder, for 2 or 3 hours and then see how glad you will be for any excuse to put it down for a while. There are people who do not seem to mind but go steadily on till the work is done and feel none the worse for it, but as a rule I fear ironing is to some people more exhausting than washing. The latter you can manage in tepid water, but to do good work, the iron must be quite hot just as much so as not to burn the garment. Coloured clothes must not be allowed to soak, but washed as quickly as possible in warm water, not hot suds, then starch lightly dry, and iron as soon as possible.

Teaching washing.—It has come to be a recognized principle that whatever is worth doing at all is worth doing well. Specialists and trained workers are crowding out amateurs everywhere. Schools have been opened for training in every department of labor, and the standard of work has gone up correspondingly. In connection with the School of Domestic Economy in Edinburgh there is a full laundry course consisting of 40 lessons—four courses of ten lessons each, each lesson being two hours long. The work is taught in two ways—by demonstration and by practice. In a "demonstration lesson" the teacher does the work, explaining and instructing as she goes on. The pupils have note books, as at a lecture in Greek history, or a demonstration in physics. At the "practice lesson," the pupil does the work, the teacher overseeing and lending a hand when necessary. Many pupils come for special lessons in fine ironing, lace washing, etc.—Exchange.

Spring salad.—Ingredients—2 or 3 lettuces, 6 young onions, 2 hard-boiled eggs, 6 slices of boiled beetroot, remains of cold chicken, a little chopped parsley, a clove of garlic, salad oil, Vinegar, yolks of 2 eggs, pepper and salt.

How to make it. Wash lettuces, onions, and parsley. Shake them dry in a cloth. Pull the lettuces in pieces not too small, cut off the tops of the onions, chop finely the parsley. Remove the shells from the hard eggs, cut in rings or quarters. Rub the bottom of salad bowl with the garlic; arrange the lettuces, onions and parsley lightly in it, with a few pieces of chicken without bone intermixed, each piece masked with mayonnaise sauce. Spread the remainder of sauce on the

top, garnish with the beetroot and hard boiled eggs. To make the mayonnaise, put the raw yolks of eggs in a basin, stir together, and add drop by drop salad oil, until about 1 gill is used, stirring all the time. The mixture should come quite thick, and the more oil is used, the thicker will the sauce be. Vinegar is then added by degrees, about $\frac{1}{2}$ a gill, with a little pepper and salt.

The sauce is now ready for the salad. Probable cost including the sauce, and exclusive of the chicken, which, of course can be omitted 30 cts. Sufficient for six persons.

The New Cotton (1) Gowns.—Many readers are interested in the make of cotton gowns. The materials are pretty, some being printed in black on light colors, others having a rich silk finish, while many old friends, such as cotton crepon and linens, are shot, striped and checked in a novel fashion.

A suggestive style for making a new cotton gown is a plain skirt, the bodice with a Bolero jacket over a full front, the collar made of velvet to match the waistband, and both arranged to button on as required. Large frills of lace form a point over the shoulder and then descend straight down the back, having a cross cut narrow added basque. The sleeves are large (2) and have big cuffs covered with lace.

The choice of white washing fabrics is great, from the finest embroidered muslin to the stoutest piqué and a kind of oatmeal cloth. There are some fine lawns with a crepon stripe, which are extremely pretty.

Pretty Waists for Crepon Skirts.—Checked and finely striped silks make pretty waists for crepon and satin skirts, but they are made with the tucked muslin vests with satin ribbon collar and belt, or quite plain and worn with a wide lawn collar like the model. Little frills of silks down either side of the front are very effective.

Fashion's Echoes.—A useful little addendum for smartening up a blouse is a muslin sailor collar, frilled at the edge, which can be buttoned round the neck in a moment. Some of them have accompanying cuffs.

Ruffles are the need of the moment. Black chiffon and colored rosettes, broad and important, encircle the neck with one wide long falling lace end. In some roses nestle, and the variety is endless.

Toilet Hints.—A woman with an ugly hand has no right to call attention to it by wearing rings. Let her first make her hand a pleasing object, to which she may with impunity invite the public gaze. A box of almond meal, pure soap, pure cream, warm water, soft towels, a brush, a file, a polisher and a pair of nail scissors are the implements she will need to effect the transformation. Cold water is ruinous to the hands.

The woman who is going away to regions where the water supply is doubtful and soft water for her bath is uncertain, should prepare a number of bran bags for possible emergencies. A quarter of a yard of cheesecloth will make a bag, which should be filled with bran, a little almond meal, a few shavings of Castile soap and a pinch

or two of orris powder. This will soften the water and may be used as a wash cloth also.

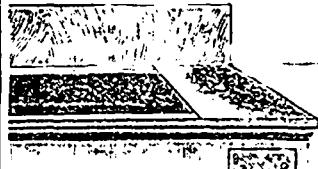
For tired eyes witchhazel and rose water are excellent washes. The woman who wishes to restore brilliancy to her lack-lustre eyes should bathe them in hot water, then in water in which witchhazel has been dropped. Then she should lie down with a cloth dipped into hot water and rose water over her eyes.

Hot water within and without is one woman's unfeeling recipe for health and beauty. She drinks lemon-flavored hot water before breakfast and before bedtime. She takes a hot bath four times a week washes her face and hands in tepid water, and when head aches she cures the pain by bathing her neck in very hot water.

A freckle cure, which is declared infallible and harmless is made of refined linseed oil, glycerine and rose-water. The lotion is cooling, not greasy, and proves efficacious at least in cases of mild summer freckling.

THE ADVISER.

Improving an Iron Sink.—The accompanying illustration shows two ways in which the ordinary kitchen sink can be improved by being made more cleanly and convenient. The front edge of the iron sink that is

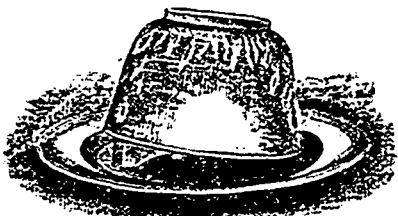


IMPROVING AN IRON SINK.

commonly found is almost universally left uncovered, and the soiled dresses and aprons that have resulted are legion. This defect can easily be remedied by simply fitting a strip of narrow board over the front edge as well as over that at the back of the sink, as shown in the cut, when the soiling of the clothes on the part of those who use the sink will be avoided. The shelf at the end of the ordinary sink is commonly too small to accommodate the dishes that one wishes to place upon it either when cooking or when washing the dishes. A leaf can be hinged to this shelf to occupy the position shown by the dotted lines, which will greatly enlarge the shelf room. This leaf is held in place when raised by a hinged bracket that folds back against the end of the sink when not in use.

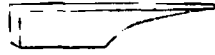
F. V. H.

An Easy Way to Catch Mice.—A housewife knows that a mouse in the pantry an annoyance beyond endurance. A trap is not always at hand,



but the one shown in the engraving is quickly arranged and quite as effective as a purchased one. A bowl is turned down on a plate, as shown in the first drawing, and raised at one

side by a stick about three inches long three-fourths of an inch wide, and whittled very thin, as seen in the second. One end is pointed, to hold a small bit of toasted cheese, which is the best bait one can use for mice. This trap has been used in one family



for many years, and does good work. By tipping the plate and raising the bowl, the mice can be dropped into a pail of water, or are quickly disposed of by the cat.

ELIZABETH BROWN.

C. Gentleman.

To make the celebrated old-fashioned molasses candy pour into a kettle, holding at least four times the amount of molasses to be used, the desired quantity of good Porto Rico molasses. Boil over a slow fire for half an hour, stirring all the time to prevent boiling over. When a little dropped into water becomes hard and snaps like a pipe-stem add half a teaspoonful of carbonate of soda, free from lumps, to every quart of molasses used; stir quickly and turn on a greased platter to cool. Turn in the edges as soon as they cool, and when cool enough to handle pull on a hook until it becomes a beautiful golden color.

Children never forget.—If the mother speaks in a cross, harsh, commanding tone of voice, the child answers in the same manner and then, perhaps, gets punished for it. If her voice is tender and loving, yet requiring obedience as a mother's should always be, the child's will be tender and loving also. Some mothers think that in order to make a child mind they must call out to it in a loud, harsh tone, often accompanying it with a box on the ear or some similar punishment. It is the still, small, loving voice that goes to the heart the soonest; the unceasing flow of mother-love that run through every word and action, even when chiding those that she loves, that subdues at last the angry passions. Mothers, study the dispositions of your children from the first moment of their existence, and treat them accordingly. What will do for one child will not do for all. The angry words you let fall from your lips may have no effect on one, while to another they may bring a stinging pain which pierces to the very heart. And depend upon it, the pain that you think thoughtlessly inflicted does not cease in a moment. Time, and a change in your manner toward the child, may heal the wound, but the scar remains forever. Appeal to the better natures of your children. Do not in a moment of passion call them tiresome and disagreeable, and tell them they are worse than any other children you ever saw. What can you expect of them after that? And perhaps you are angry at them for that for which you yourself are to blame. Are you discontented, fretful, fault-finding? Then blame them not, for they are but following in your footsteps, and you must change your course, if you expect them to be different.

I recall an incident which I witnessed in one home. A child who had committed some misdemeanor and who had received a thorough scolding from her mother, went to her with tears in her eyes and asked to be forgiven, at the same time holding up lips for a kiss. The mother gave the child such a look and said, "What is the use of forgiving you? You will do the same thing again." Then,

after a pause, "Yes, I'll forgive you," as though she felt she must say it, but didn't think it would be of any use. As she bent down to kiss the little lips upturned to hers, there was no love in the mother's eyes, only a look of anger, and the kiss she gave was an empty one. The child turned away unsatisfied, with a passionate longing for something more. She wanted to know that she was fully and freely forgiven; that her mother loved her just the same, even though she had gone astray. The mother may have forgotten the incident soon, but the child, never. God pity those children reared in such a chilling atmosphere. Mothers, do you realize this great responsibility that rests upon you? Immortal souls are confined to your keeping. Think how true and pure you must be to teach them truth and purity. Guard and guide them well to-day while they are with you; all too soon the sound of childish voices and the patter of baby feet will be only a memory and the silence of the lonely home will be oppressive. Lay aside your work when the evening shadows gather and spend a half-hour or so before bedtime with them. Call it the children's hour and let it be the happiest portion of the day.

[Majorie May, F. & H.]

The best remedy for the dislike we feel towards any one is to endeavor to try and do them a little good every day; the best cure for their dislike to us, is to try and speak kindly of them.

Gold Dust.

The only way to regenerate the world is to do the duty which lies nearest to us, and not to hunt after grand, far-fetched ones for ourselves.

Kingsley.

"FARMERS WIVES."

"—Therefore, since Heaven the tender passion gave,
"—E're my life's close a female friend I'll have."

This should be the determination of all young farmers. Farming is a domestic occupation carried on in the home, and participated in by the members of the family, and the household arrangements have a great deal to do with its success.

A farm without a woman at the head of its domestic affairs is like a ship without a rudder. Not a mere house-keeper but one who has a vital interest in the undertaking. If she is what a farmer's wife should be she will not necessarily be a slave, but while performing her own share of home duties systematically, she will aid her husband by her kind advice and counsel, helping him out of many a difficulty, and perhaps preventing him from treading many a crooked path or taking many a false step.

Women, in many cases, are more far seeing, and can make better calculations for the future than men, and many a farmer can attribute his prosperity, in no small degree, to the judgment and assistance of his "better half." Happy is the man who is in such a case.

It is true that some marriages may induce us to ask ourselves the Dutchman's question. Is marriage a failure? and answer it too, by saying:

"Well now that depends
"—As together on how we look at it mine friends
"If we don't pull together right off at the start
"Ten times out nine we'd be better apart."

(1) In England, called calico.—Ed.
(2) Oh! Very large, if you please!—Ed.

But if we do, our chances for a life of happiness and prosperity will be increased by the contract.

It is true also that love is blind and sometimes leads to quite unsuitable unions, but while Cupid should never be left out of the question, we should use some judgment in the choice of a wife, especially the wife of a farmer, seeing so much depends upon her. It is, unfortunately considered by many young women of the present day that to marry a farmer would be lowering them in their social position. In this they are entirely mistaken.

What occupation can be found more congenial to the natural condition of mankind, or more likely to elevate and develop the moral and religious character? A farmer is brought into close contact with, and observation of the wonderful workings of nature, and reliance for a blessing upon his endeavours upon nature's God.

What position, to the true man, can be so conducive to virtue and happiness. The husband's duties are at his home, in the bosom of his family, he is not called upon to be long absent from them as in the case of the man of business, the sailor, or the commercial traveller, and his home duties, anxieties and pleasures, his wife can share, and not be in continual anxiety for his safety.

The higher education of women, as now considered necessary, is not incompatible with the position a lady may occupy as a farmer's wife, but rather the reverse, for the more refined education she has acquired, providing instruction in housekeeping has not been neglected, the more will she appreciate the delights of a country life, and communicate her refining influences to all with whom she is called upon to associate. Then we must take into account the fact that young farmers of the present day are men of education and not the ignorant uncultivated class of a century or less ago, and that good farming is a science, and not a simple routine of guess work and drudgery: therefore, a well educated woman can materially aid in its successful pursuit in many ways. For instance; we are informed that the Danish women, wives and daughters of farmers, are often their husband's or father's, secretaries and accountants, This is an admirable way in which the time of our women could be spent, for we are sadly deficient in this respect, and a farmer should keep a strict record of his transactions as much as a merchant or manufacturer. Since the method of disposing of the milk to the creamery or cheese factory has been adopted, happily our wives and daughters are relieved from some hard work and responsibility, but the responsibility of a good wife is not entirely removed even now, for she can keep a supervision of the way the milk is handled as to honest milking, cleanliness, aeration, &c, and see that the vessels which contain it are as scrupulously clean as when she took so much pride in the butter she produced. She can also visit the stable occasionally and speak kindly to the cows; her sweet voice and gentle caress will not be unappreciated by the poor brutes in which she takes an interest and will do them more good than may be supposed. Some will say: Oh! that is not a woman's sphere of action, she will have her hands full enough in the house and attending to the care of a perhaps, numerous family, and the like, but she can do this and keep a general oversight of all, and will find it a pleasant and healthful recreation.

The care and management of the poultry, too, seems naturally to devolve upon the woman, and without much labour may be made to add very considerably to the profits of the farm.

Then again, what a valuable addition is a garden in which can be grown health preserving fresh vegetables and small fruits for the family and which the wife can at least plan and oversee. Homestead adornments in the shape of flowers, are not to be despised and this is, of all others, the women's department. It is to be deplored that some farmers look upon the cultivation of flowers as a waste of time and give their wives no encouragement, but are rather inclined to scoff at their efforts to produce them. These people are sadly mistaken, for anything that will render home attractive to the young, or leave pleasant memories of it in after years to the absent, must savor of good.

The prosperity of a farmer does not consist only in the money he can make out of the land, but also on the use to which he puts it, and the comfort he takes out of it.

No man can enjoy life, if he will appreciate the bounties of a kind Providence as he should, like the farmer, providing that his aspirations are moderate, and in the cause of righteousness, and no woman can better fulfill her destiny as man's helpmate or as wife and mother, in that capacity allotted to her by the all-wise ruler of the universe, than by being a good farmer's good wife.

GEO. MOORE.

Compton Model Farm,
May 9th 1895.

The good people of Compton may congratulate themselves upon the fact that they have an object lesson in their county as to dairy farming which should be of great service to them. Of course as regards the other branches the season is not far enough advanced to form any opinion, but the cows certainly are models of an Ayrshire herd—well selected for their milking qualities, it would be hard to find a more regular lot, although some are superior to others.

Mr. R. Robertson, the obliging and very practical manager was willing to impart every information, he also gave the writer an opportunity to see the cows milked and each cow's milk weighed at the evening milking.

The following is the record of the thirteen cows milked this day:

Nb. 1—Calved in January.....	17½
2—.....	18½
3—Calved one week.....	20
4—Fresh calved.....	19
5— " ".....	18
6— " ".....	19½
7—.....	17½
8—.....	20
9—.....	19
10—.....	22½
11—.....	18½
12—.....	18½
13—.....	18½
Average butter fat.....	3.75
Average per cow about....	19 lbs.

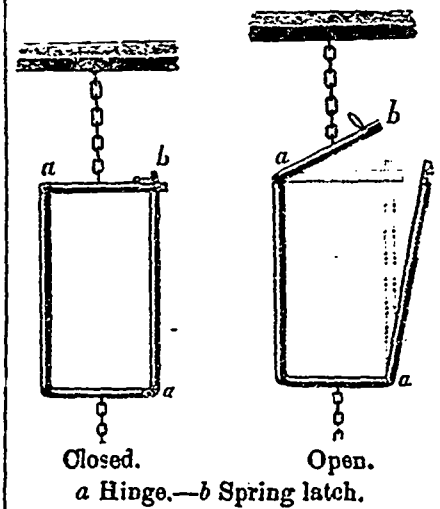
The cattle have not yet been out to pasture but have been fed on sweet ensilage made of Indian corn and horse beans, which was perfectly cured and as fragrant and well flavoured as new-mown hay.

The method of feeding is the following The day is divided into four portions, two for activity—feeding, watering, milking, clearing and bedding, and two for repose.

The first period commences at 5 A. M., and lasts until 9, during which

time all necessary work must be done, all being finished the cows are left to rest 7 hours or until 4 P. M. they are then again disturbed to be fed &c. &c., as in the morning. The work is done by 8 P. M. and the animals are left to their rest until 5 A. M. This is the daily routine which is attended to with the most invariable punctuality, thus the cows' habit is formed to expect it.

So important does Mr. Robertson consider this system that he states that he had frequently remarked that when the cattle have had to be disturbed to exhibit to visitors there has been a perceptible falling off of the milk at the next milking. Mr. R. attributes the success of his dairying for a number of years to following closely his system in this respect. Mr. R. also stated that his practical experience has taught him that cows which calve in November will yield a better average of milk throughout the year than those which calve in the late winter or early spring. He gives his reasons, which briefly are: That being kept in the stable from the time of calving they are more under control as regards temperature, regular hours of feeding and quantity of forage given, which by means of properly prepared ensilage mixed with well balanced ingredients can be made to very nearly resemble June grass. The cattle are not liable to the irritation caused by insects, or to be injured by sudden changes of the weather or chilled by cold rain storms, if only for a few minutes. If the bars they occupy are so constructed as to keep them warm, at the same time being well lighted and ventilated in such a manner as to not allow the slightest draught of cold air to come upon the cattle, they will give a more regular and abundant flow of milk than in the summer and of as good quality; but all depends upon their care and diligence with which the comforts are attended to. Mr. R.'s experience is that a cow thus managed will give, in May, within a fraction as much milk as she did a week or two after calving and if milked so as not to leave one drop in the udder will keep up the flow better when turned out to pasture. By this means winter butter making will be made profitable and our stock will give us a continuous income.



Mr. Robertson said he could not see any profit in a cow that would not yield a copious supply of milk 10 months in the year and the breed (he is entirely in favour of the Ayrshire) being right the dairyman can by judgement and intelligent perseverance form the habit of the animals in his care.

I saw here a swinging stanchion hat seems to be the answer the purpose of keeping the cows clean while giving them liberty to turn round and lick

themselves, lie down and get up easily. The stanchion is made of gas pipe and is very light and at the same time strong and durable, and quite cheap (\$1 25).

It is swung from a beam in front of the cows.

The above sketch, taken from memory, will give an idea of the device.

These few notes were made during a brief visit to Compton. There is no doubt in my mind that when a fair start is made as will be the coming season the farm will be a power for good. It will be a privilege to the surrounding farmers to watch and study all the operations and methods adopted, and it is to be hoped that none will allow their ancient prejudices to, too quickly, influence their judgement. If they observe or think they observe, any errors in practice, or failures, let them examine the circumstances before pronouncing a condemnation of them, but try to strengthen the hands of the executive by their sympathy and good will rather than by continually, looking out for faults.

GEO. MOORE.

The Farm.

JAS. MCCARTHY, Russell Co.—“1. I bought a steel roller last year, highly recommended. Now, many farmers say it is too heavy for clay; that it packs it so tightly that rain falling upon it forms a crust that prevents a large portion of the grain from coming through. Others say: ‘I don't use a roller at all, and my crops are as good as my neighbors’. What is the general opinion regarding the utility of rollers; are they indispensable implements upon the farm, or can they be dispensed with with as good results as with their use? 2. Many farmers say that manure should remain in a pile or heap undisturbed for at least two years, or until it has become fully rotted; unless it is so it is of little value. Others say if it is not removed in the spring it will fire-fang and waste. What say you?”

[1. It is the general opinion, including our own that the roller is an almost indispensable implement upon the farm. Many of our best farmers do not consider the work in connection with seeding a field complete until it has been rolled. This is especially true in a dry time, as the crumbling of the surface forms a mulch which hinders evaporation, in the same way that shallow cultivation does. Of course the action will not be the same on all soils, and perhaps a heavy clay (1) soil such as you evidently have is the most difficult of all soils to keep in nice growing tilth. In a wet time no land should be rolled, especially clay; when the difficulty you speak of is liable to occur, the rolling may be left till the grain is two or three inches high. The field will then better withstand a drouth, and trouble by baking will not likely occur. There is an important advantage in rolling, especially when grain is liable to lodge, by crushing lumps out of the way of the reaper. It is also requisite in properly preparing land for corn or roots. 2. When farmyard manure can be kept a few months without leaching, fire-fanging or over-heating, there is no loss and it is in more soluble condition than when first taken from the

(1) Our roller, used for wheat on the heavy clays of Essex and Kent, weighs 30 cwt. = 3,360 lbs. Crosskill's Clod-crusher weighs from 2,000 lbs. to 2,400 lbs. Light rollers are used for barley sown with clover and grass-seeds.—Ed.

stables; but unless land is very open and liable to dry out very readily, why not allow the rotting process of the manure to go on in the soil and thus save every particle of fertility and also improve the mechanical condition of the land? We intend publishing an article on the care and application of farmyard manure, in an early issue, which will answer your question more fully.

Farmer's Ad.

SEED POTATOES.

The studies of The American Agriculturist's potato tests give some interesting points. While the reports from farmers who raised big yields show wide difference in the quantity of seed used, upon one leading point there is great unanimity among all growers—viz: The careful selection of the potatoes used for seed. In every instance fair, smooth, handsome, well shaped potatoes were chosen. Not always were they large, but they were always of uniform size and weighing usually from six to eight ounces each. In one case 26 bushels used in seeding an acre were selected from a choice lot of 50 bushels of fair, merchantable potatoes. The range in the amount of seed used was very great—from 8 to 66 bushels, the average being 21½ bushels. The amount of seed used in preparing for the three largest yields reported were, respectively, 26, 16 and 13½ bushels. A curious thing about this seeding is that in the first instance the crop was 974 bushels, in the second 847 and in the last 738 bushels. Another curious fact is shown by a further study of the returns. In New York a planting of 40 bushels of seed yielded a crop of 441 bushels, and in Maine a seeding of but 10 bushels gave a yield of 537 bushels. In this last instance the potatoes were all cut to one eye, and the seed ends and stem ends discarded. Everything points to the fact that we want high bred potatoes for seed, as much as we want thoroughbred animals for breeding, and the same care in selection should obtain in the one case as in the other. By all means reject undersized, imperfect, badly shaped potatoes for seed, says The American Agriculturist.

LIME

By SIR J. B. LAWES, BART., LL. D., F. R. S.

[The following is taken from the columns of the *North British Agriculturist*.]

The report of the directors of the Scottish Chamber of Agriculture contains some very interesting tables respecting the exhaustion of lime.

The directors have brought together in one page the opinions, and experience of the great body of the farmers of Scotland; and, according to the evidence thus supplied, the shortest period of time during which a full application of lime, is said to last, is seven years, while thirty years and over is stated to be the longest period.

When we consider that the influence of lime, upon a soil which is naturally deficient in this substance, is due to several distinct causes; and further, that the after treatment of the land which has received the lime differs much in different cases, we have no difficulty in understanding that there must be considerable variations in the

periods of time during which the beneficial effects of lime will be apparent.

Two of the crops which are grown at Rothamsted in our ordinary rotation—roots and clover—contain large quantities of lime in their ash, and when potash is not abundant in the soil they possess the property of utilising this lime in its place.

The ash of leguminous plants growing in an ordinary pasture which had been well supplied with potash, contained 32 per cent, of potash and 22 per cent, of lime; but on pasture where potash was not supplied, the ash contained 32 per cent, of lime and 14 per cent, of potash. Lime, therefore, economises the use of potash.

The first application of lime to moorland, or to pastures which are deficient in lime, is often followed by a growth of white clover so abundant as to have led some to the conclusion that the plant was spontaneously generated in the soil! It may be observed, however, that it is only plants with creeping roots which can so rapidly cover the ground; a similar instance in the case of arable land may frequently be observed in the equally rapid covering of the soil by couch grass; this being a graminaceous plant can find in all soils an abundant supply of its own proper food—silica; but lime in many soils is by no means abundant, and, if the supply is sufficient, a liberal dressing is essential, not merely for the purpose of furnishing the lime which the plant takes up, but also to enable the roots to be in constant contact with that substance.

I may observe that although the amount of lime dissolved, and removed in drainage waters, is considerable, still, the necessity of repeating the application after a few years appears to be rather due to a descent of the lime to a lower level in the soil, where it is less accessible to the roots of the plants.

Lime also acts as the medium by which nitrification takes place; and the almost entire absence of nitrates in the water passing through the peat soils in Scotland—which abound in nitrogen—must be mainly due to the absence of lime.

A reference to the returns in the table shows that the effect of lime is most durable upon pastures that are grazed! that its effects are very good upon virgin soil; that it lasts longer upon good, than upon bad land, and upon clays and heavy loams, than upon light land.

The amount of soil nitrogen which is nitrified each year must depend somewhat upon the amount that the soil contains; but where each application of lime is attended with less benefit than the preceding one, we may feel tolerably sure that the resources of the soil have been too largely drawn upon, and that the export of fertility has been too great. (1)

Lime therefore acts in a double capacity; it furnishes an important ingredient in the food of roots and leguminous plants; and in addition, it furnishes the key by which the stores of organic nitrogen in the soil are unlocked, and rendered available as the food of plants. It is in this latter capacity that its functions are more liable to be abused.

As lime does not furnish any of the more costly ingredient which plants require to form their structure and seed, it is quite evident that these must be derived from the soil: this

(1) The Glamorganshire (S. Wales) farmers limed their land till it refused to grow anything.—Ed.

being the case, if the views of those who hold that agriculture should be carried on without any reduction of the fertility of the soil are correct, it is evident that an application of lime should be accompanied by an application of all those ingredients which are carried away in the crops, or by feeding with stock.

My own opinion is that soils are generally competent to yield a certain portion of their fertility without injury, and that practical experience of the particular district will be the best guide for deciding the amount of fertility that may be thus removed.

FARMERS' CENTRAL SYNDICATE OF CANADA,

30 St. James St., Montreal.

Honorary President: His Grace, Archbishop C. E. Fabro, Bishop of Montreal.

President: Hon. J. J. Ross, President of the Senate, Ottawa.

Manager: W. A. Wayland.

The Farmers' Central Syndicate is in a position to supply the farmers with all that is required for their farms: machinery of all kinds, ensilage cutters, mowers, reapers, rakes, dairy supplies, cheese factory outfits, flax breakers and scutchers, binder twine, bearded wire, thoroughbred animals of all descriptions, fertilizers, &c., &c. All the above mentioned goods are first quality, and highly recommended by the most competent men. The prices are exceedingly low, as can be proved to all those making inquiries at our office or by mail; the purchaser is always sure to gain from 20 to 40% in buying through our intermediate; the annual subscription is thereby soon refunded.

We call the special attention of those who intend using fertilizers to the fact that we have obtained lately large discounts from the Nichols Chemical Co., of Capelton, thus enabling us to quote low figures. Write for information before purchasing elsewhere; it will pay you.

BEAN GROWING IN KENT Co., Ont.

BY W. A. M'G

Since the downfall of prices in wheat, bean growing has been pushed with vigor, until at the present time there is hardly a farmer in the county but raises between ten and twenty acres each; and numbers grow from fifty to seventy-five acres. And yet, owing to the fact that there is but a small tract of country adapted to the growth of this crop, the market remains firm and the demand strong. The average price paid to growers in this locality for the last six years has been about \$1.25 per bushel. Quite an inducement to grow more beans and less wheat, is it not?

Although some risk is incurred of losing the crop by frost, by having a well enriched soil, with early planting and proper cultivation, the crop can be rushed on to early maturity, and this danger reduced to a minimum. Sod is always preferable for beans, although several farmers in this vicinity follow another plan, which is to plough up their out-stubble immediately after harvest and seed it to rye, which is pastured during the fall. It is ploughed under the following spring at least a week or ten days before planting time. This both enriches (1) and, in rotting, warms

(1) Mighty little "riches" in green rye. Ed.

the soil, thus giving them a grand start. When a sod field is used it should be ploughed late in the fall, or in early spring. Fall ploughing is preferable for the reason that it makes a splendid place to haul manure upon during the winter, instead of allowing it to waste in the barnyard. Cultivation can then commence as soon as spring opens.

If the manure is long, the first working should be done with an implement that will turn it under (with the double object of rotting the manure and sprouting any weed-seed it may contain) and still not tear up any sod. For this work we have found the disk harrow an excellent implement. To get the soil in the best possible condition, it should be worked over every week or ten days, always leaving it rolled after each working to hold in the moisture.

The planting-time varies from about 20th of May to second week in June, according to the season. They are drilled in at the rate of three pecks (1) per acre, with an ordinary grain drill or regular bean planter. The latter has the advantage of the former, in that it drops the beans in hills and also ridges the earth over the row, thus making it easier hoeing them, and shedding heavy rains which settle and form a crust in the drill's mark. The principal varieties grown are the Medium and the Pea. The latter is of late introduction, but has proved itself more than a peer to Medium. It has the advantage of ripening from one week to ten days earlier, stands the drought and yields better, and commands from five to ten cents per bushel more in the market.

Cultivation should continue as soon as the beans are large enough, and if the field has been well-worked before planting, and good cultivation is given afterwards, very little hoeing will be required: but what is needed should not be slighted, as there is nothing worse to harvest than a weedy field of beans. Harvesting is one of the most important parts of bean raising; for unless they are pulled at the right stage of ripening, and handled with care while turning, loading, etc., there is great loss from shelling.

The pulling is done with a bean-harvester or plow, or by hand; the latter plan is resorted to where but very small acreage is planted. The proper time to pull them, when done with horse machinery, is before they have all ripened, and the field presents a rather green appearance. Of course where pulled by hand they may be allowed to ripen more fully, as there is less danger of shelling them. Very few will be shelled in pulling them, if done while they are damp. For this reason, mornings and evenings are best suited for cutting. Before mowing away, they should be thoroughly dried,—if not, they will heat and mould. An experienced person can tell when they are fit to haul, by the "rattle" of them—a sound made by the dry pods when handled. If the crop has been properly cultivated, it will take very little working to put the land in fine order for wheat, which generally succeeds beans (when the price is right.)

By following the plan outlined above, we raise from 25 to 35 bushels of choice beans per acre, and this is usually followed by a good crop of wheat. (2)

It requires grand land, with heavy

(1) 6 to 8, and even 10 pecks are none too many.—Ed.

(2) We grew at the rate of 60 bushels an acre at Joliette, in 1869: thick sowing though!—Ed.

manuring, to stand the strain of raising beans and wheat; but for such land, the "Garden of Ontario" (Kent) is justly noted.

MARKETING SMALL FRUITS.

BY ELLIS F. AUGUSTINE.

One of the most important points in successful fruit-growing is to have all varieties gathered and marketed at the right time; but with no other class is this as essential as in the case of small fruits. It is a great mistake to allow small fruit to become over-ripe before picking, and especially so if shipping to distant markets; but it is just as great a mistake, and one more commonly practiced, to gather it before it has fully matured. This is especially the case in regard to strawberries, as is evident to the most casual observer who visits our town and city markets; and it is small wonder that complaints are so frequently made by intending purchasers, and extra prices are willingly paid for choice, uniform lots of perfectly matured, full-flavored fruit, while inferior lots are a drug on the market.

In marketing, arrangements should be made to have all fruit in the hands of consumers within 24 hours after picking. If this be done, and care be taken to have every shipment of the best possible quality and even brand throughout, put up in clean, well-filled packages, no fears need be entertained as to the result. But to secure this a full force of reliable pickers must be kept constantly at hand, and great care exercised by the overseer that no imperfect fruit is placed in the boxes, as a grower may be never so honest, if his pickers are unreliable and fill up the boxes with leaves and crushed and dried-up berries, and then top off with the largest and choicest fruit, his reputation will soon be irredeemably ruined.

But the observant small-fruit grower will soon discover that it is not always in the large cities that the most satisfactory and remunerative markets are to be found. There are hundreds of towns and villages where the people cannot get half a supply of choice fruit, even at higher prices than are paid for it in the cities. This may appear strange, but it is nevertheless true, as the writer has learned from personal experience, for after shipping to commission men in cities, empties have sometimes returned with shipping tags attached bearing the address of grocers in small towns many miles nearer the producer's home than were the first points of shipment. This may be accounted for by the fact that all extensive growers ship exclusively to large markets, while smaller ones are left practically unsupplied. The method which we now pursue (and it is one which might be most profitably followed by all small-fruit growers) is to take each forenoon's picking to our local towns and deliver direct to consumers, and then ship the afternoon's picking by night-express to agents in cities and have it distributed to consumers early the following morning. This secures good prices all round, and ensures all fruit being placed in the hands of consumers while still fresh and in the best possible shape. If all growers would follow this method and offer for sale none but first-class fruit—or else grade according to quality—and then place themselves in closer relationship with consumers, our markets could be developed to an extent at present undreamed of. But for some time this need scarcely be look-

ed for, as there are always a number of careless, unprincipled persons engaged in every vocation. But those will eventually be crowded out by their more honest, careful, energetic competitors. Consumers are quick to find out and patronize reliable producers who offer for sale nothing but articles of the very first quality; and time will bring about in this case, as it is doing in that of all others, the survival of the fittest.—*Farmer's Ad.*

COVERING THE SEEDS.

A FEW OF THE IMPORTANT ESSENTIALS
TO PROPER GERMINATION.

For all seeds a certain degree of heat and moisture is essential to the proper germination. In order to have them grow, contact with the soil is also necessary. It is largely for this reason that more or less covering is always best. The nature of the growth of the plant and the conditions under which the seed is sown are factors that must be considered in determining how much covering it will be best to give. Even with the same seeds a difference in the conditions under which the planting is done will make a difference in the depth of covering that should be given. In many cases the same kind of seed sown early should have a much lighter covering than should be given later on after the soil becomes warmer and drier. With nearly all seeds sown broadcast, especially those sown in the spring like grass, clover, oats, flax, barley, millet and Hungarian grass, only a light covering, such as can be given with a light harrow or drag, is all that is necessary; and the better the condition of the soil after the harrowing is done, the better will be the results. With all crops it is an item to have a good, even stand, and hence it is important that the seed be distributed as evenly as possible over the surface and that the work be done under as favorable conditions as possible. (1)

Of cultivated crops, sorghum and beans need only a light covering, but when the conditions will admit both corn and potatoes will do better if they can be covered reasonably deep. But if covered too deep early in the spring, especially when the soil is rather wet and cold, unless the weather continues favorable, the seed will rot before it will germinate. So that with the earliest planting it is often best to cover shallow, while later it will be much the best to cover deep.

The principal advantage in covering deep is that the roots, growing deeper in the soil, will not be so easily affected by drought, and then, in many cases, the deeper covering is necessary in order to secure the proper moisture necessary to a good germination.

Another point in making a good start to grow is to have the seed come in close contact with the soil. A better germination, as well as a more vigorous growth, can be secured by taking care to have the soil in a good tilth before planting.—*Saint Louis Republic.*

KILLING THE CODLING MOTH.

Secretary Morton sends out the following little slip in relation to the destruction of the codling moth:

Use Paris green at the rate of one pound to 150 gallons of water. Weigh

(1) Very true, but cover thoroughly and harrow well.—Ed.

out sufficient poison for the capacity of the tank used, and make it into a thin paint with a small quantity of water, and add powdered or quick lime equal to the weight of poison used, mixing thoroughly. The lime takes up the free arsenic and removes the danger of scalding. Strain the mixture into the spray tank, taking care to pulverize and wash all the poison through the strainer. During the operation of spraying see that the liquid is agitated with sufficient frequency to prevent the settling of the poison.

"The prime essential in spraying is to break up the liquid into a fine mist, so as to coat every leaf and part of the plant as lightly as is consistent with thoroughness. This should not require more than from three to seven gallons for a comparatively large fruit tree.

"Let the first spraying follow within a week after the falling of the blossoms of either apple or pear, and follow this with a second treatment just before the fruit turns down on the stem, or when it is from one-fourth to one-half inches in diameter. The first spraying reaches the eggs laid by the moth in the flower end of the fruit shortly after the falling of the blossoms, and the second the later eggs laid by belated moths. Do not spray trees when in bloom, and if a washing rain immediately follows treatment, repeat the application.

"Knapsack sprayers suitable for applying the insecticide can now be obtained at reasonable prices at all agricultural implement stores."

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The Flock.

THE EARLY FEEDING OF LAMBS.

A feature of the last Dominion Sheep Breeders Association meeting was an able review by Mr. Richard Gibson, of the papers published in the report of 1893. In discussing the excellent paper on fattening sheep, by Mr. James Sharp, of Everton, Ont., Mr. Gibson said:—

"I would ask your (members present) opinion as to whether due value is given to the importance of teaching lambs to eat a little grain before going to pasture. My own experience teaches that at no time do lambs pay as well for grain consumed as when on the ewes, and I would recommend that a pen be made in the pasture, provided with a creep, where they can daily have a ration. Castration and docking (operations often neglected, especially the former) are given due weight. Again, Mr. Sharp very properly recommends early weaning; but is not the date

named, the middle of August, too late? Would they not be heavier lambs by the middle of September if weaned in the latter part of July? I mean just as soon as I get a good clover aftermath."

The Chairman:—"The question of feeding lambs while on the ewe is an important question, and I have no doubt Mr. Snell will have something to say on the subject."

Mr. J. C. Snell:—"Mr. President and Gentlemen,—While I quite approve of feeding lambs while they are in the pens with the ewes, before they go out to grass, my experience is that it is hardly profitable to feed grain to the lambs after they have gone out to grass, while they are still with the ewes. I think they need it while in the pens, when the ewes are being dry-fed principally, and the lambs will pay well for it when in their growth, but I think when they get out on to the fresh grass in the spring, they get sufficient food there, and it is not necessary and not profitable to feed grain all through the summer, while the lambs are with the ewes."

Mr. Campbell:—"My experience, and what I have practised, has been to feed them while they are in the pens, and, with Mr. Snell, I have found that lambs, on good fresh pasture, will not eat the grain until the pasture begins to fail. To push them on, I think it is profitable to begin again before weaning, so when they are ready to go on a heavier feed of grain they will not miss the nurse when you take it from them."

Mr. James Russell:—"I believe the statements of the gentlemen are both about the same, but there is something they do not tell everybody. They do not tell you what they give them, or how they give it. There is no doubt a great deal can be done by feeding lambs before they go out on the grass, but I have seen cases where a great deal of harm has been done by feeding improper foods, and it tends to produce this 'harsh wool' we have heard about. I think the feed has a great deal to do with that, and I think a little oil cake and oats or bran will produce or commence a better growth of wool than feeding on harsh grain, such as barley or peas." (1)

J. D. Hanmer:—"I think you have the best result from feeding the mother well in preference to feeding the lambs. From my experience, I prefer to feed the mothers well, and let the lambs get the nourishment from them, and I might just say here that I have a very high opinion of rape. If I can have a good piece of rape to put my lambs on at weaning time, I do not need any grain. I have been over the country perhaps as much as any other man, and seen as many flocks as any other man in Canada this year, and the best flock of lambs that I have seen was a flock that were taken off their mothers very early—I think as early as some time in July—about a month earlier than we usually take our lambs from the ewes, and they were put on rape, and they were further advanced than any flock of lambs I have seen in Canada this year."

The President:—"I will agree with Mr. Hanmer. I know he is well up in feeding matters, and I would ask you to look at one of these mothers down at the show. I will now call on Mr. Simenton."

Mr. Arthur Simenton:—"Mr. President and Gentlemen,—You know the breed of sheep I keep. They do not require a great deal of feed. I make a specialty of Southdown. I used to keep a coarser wool sheep, and I used

(1) Cake and peas are the best food for lambs.—Ed.

to have to feed both the mothers and lambs: of course I have some pretty fat sheep. Anything you have in good sheep you have to feed them. My experience is something like Mr. Hammers: that rape is an excellent thing for lambs, and the way I feed it is to sow the rape with the grain in the spring. I sow a field of oats, and the rape with it; we do not seed down to sod, and I find sowing rape in that way gives the best results. It is the cheapest pasture I can get, and it rushes my lambs ahead better than anything else. I think the last two years we should have been in bad shape if it had not been for the rape. We had no young grass at all, and we were entirely dependent on the rape. I feed the mothers on pea straw in the winter season." (1)

Mr. Gibson:—"I just want to make this statement: when I was in Wisconsin last year, they were slaughtering some lambs that had been under experiment. A portion of them had been fed grain with the ewes, and another portion had been fed grain after they were weaned. There was nineteen pounds a head difference in the weight of the lambs. The ones that had been fed grain from the start, and had grain on the pasture whenever they chose to take it, were ten pounds ahead of the lambs that had grain after they were weaned, and those were ten pounds ahead of the ones that had simply grain in the troughs before they went out, or a difference of twenty pounds between grain summer feeding and non-feeding. This was not any forcing what they could do. It was a second test for the second year, which proved the same. My own experience is that you cannot feed grain to animals with more advantage than the grain they will eat while they are running with the ewe."

Mr. Arkell:—"I saw that experiment. Was not that feeding lambs grain against feeding ewes grain as well?"

Mr. Gibson:—"No! It was lambs; and the lambs were all sold to the butcher while I was there, and the lambs that were fed grain in the pasture made three-quarters of a cent per pound more."

An exchange says that we need English shepherds to tell us how to feed and care for our flocks. Of all the animals kept on our farms the sheep is the worst cared for, and the most improperly fed, in order to produce mutton of a fine quality. It is not the breed that we lack so much as the rape, tares and turnips. The American farmer has not yet learned that his corn and other carbonaceous foods will not make mutton of a fine taste and flavor.—*Vt. Farmer's Ad.*

The Dairy.

The Feeding of Milking Cows.

In the interesting article on "The Feeding of Animals," published in the current number of the R. A. S. Journal, it is stated that the Rothamsted milking cows have for some years past received an amount of oilcake graduated according to the yield of milk. Sir J. B. Lawes obviously adopted the plan of proportion so far as regards oilcake from his standpoint as a chemist quite as much as from the standpoint of a cowkeeper. There is, however, from the cowkeeper's view one potent advantage deriv-

able from a system of graduation in the case of oilcake which recommends itself. Cowkeepers know from experience that the drain is great upon the system of a cow whose yield of milk is large, and that the danger of an exhausted constitution is far greater with her than it is in the case of a cow whose yield of milk is small. When a liberal supply of oilcake is given to a deep-milking cow it seems to me that we have a two-fold object in view. We wish (1) to maintain our milk-producing animal in a condition of effectiveness for present and future work, and we wish (2) to raise the quality of the milk itself. (1) Messrs. Lawes and Gilbert tell us very truly that whereas during the months of May and June the influence of grazing is very markedly shown in an increase in quantity, there is coincidentally with this increase in quantity a decrease in quality. At such times the Rothamsted plan of giving oilcake in proportion to yield would very considerably affect the condition of the cow herself, and also in a less degree, the quality of the milk which she was yielding. The liberal use of oilcake would be very plainly seen in the maintenance of the cow's flesh, and, of course, in any subsequent advantage derivable from this maintenance of flesh. No practical dairy farmer is likely to find fault with the system of graduation in vogue at Rothamsted for milk production only, inasmuch as the liberal use of oilcake has an excellent effect on the general health of the deep milking cow.

But however economically correct the system of payment by results may be when exclusively viewed from the point of milk production, there is a complication inseparable from general practice which will effectually prevent the universal adoption of the Rothamsted plan. No dairy farmer keeps his herd for the production of milk only, and shuts his eyes to everything else. To every cow there is an end, and the selling out value of each animal has to be realized sooner or later. Let me illustrate this. Six weeks ago a cow in my herd was supposed to be in calf, but has now proved barren. She was in such condition that it seemed more desirable to fatten her at once than to milk her through the summer. She is yielding about 3 quarts of milk per day, and she will be kept in milk until she goes to the butcher. We have graduated her oilcake by nearly doubling it. Of course this is not feeding for milk, but it is a kind of feeding which the circumstance demands.

At Rothamsted, as elsewhere, "there remains the important question whether the period of lactation is lengthened, or the yield of the higher yielding cows is maintained the longer, by an increased amount of food?" And it is added, "The point is, at any rate, deserving of careful experiment and observation. Here, it seems to me, observation comes in and precise experiment is shut out. You cannot carry on two sets of experiments with the same animal at the same time. Individual cows vary wonderfully. You may have a good year with a cow and a following bad year with the same cow under the same system of treatment and feeding. But, speaking generally, I respectfully submit that the period of lactation is prolonged by an increased amount of food. We are bound to consider alongside with lactation the period of gestation. Most of us have had experience of a cow continuing in milk for several years, during which she continued barren. With such a cow an increased amount of

food shows its results both in meat and in milk, and it seems to me that the increase in the weight of a milking cow is *per se* a decided advantage, so long as we avoid such undue fattening of an incalf cow as will invite puerperal fever. It has been already remarked that lactation and gestation must be considered together in all cases in which the cow is pregnant. For myself, I am convinced that it is unwise to prolong the period of lactation in a higher yielding cow by using the influence of increased food so as to keep the animal in milk until she is near calving again. In my judgment, the old established rule of having a dead time of about three months when the cow was entirely idle had a reasonable foundation. (1) When consideration is had both to the well-being of the cow and of the calf which she has to bear, I believe, as a rule, that it is decidedly unwise not to allow a period of dead time to the extent of at least ten weeks. So that our more generous system of feeding may be said to have given us only a shortening of two weeks from the three months of idle time allowed by our fathers to their milking cows. Once, and only once have I tried the experiment of milking a cow without interval until she calved again in due time. She was a cow of exceptionally high yield, and in the spring I discovered that she was in calf, instead of being, as I intended, barren. As it appeared likely that her calf would be due about mid-summer, I considered that either garget or milk fever would be likely to attack the cow if she was allowed to go dry. The alternative course was to feed her highly, and to keep her in milk until she calved again. A few days before calving her yield of milk increased greatly, and the milk was similar to that of a newly-calved cow. On the second day after calving she dropped with puerperal fever, and continued in almost an unconscious state for a couple of days. Eventually she recovered, but was never again as efficient a cow as formerly. I think we may take it as a general rule that, if we encourage lactation in a cow beyond a period which does not allow a rest of ten weeks, we are burning the candle at both ends.

T. C. S.

THE DISPOSAL OF WHEY.

Sir.—In your last number Mr. A. J. Meldrum, Dundas County, takes issue with Instructor Millar regarding the proper disposal of whey at cheese factories. The sour whey question has been discussed in all its bearings at our dairymen's conventions, and in your valuable paper in former issues, and the consensus of opinion of all those who have made an unbiased study of the subject, is that whey should be disposed of by some other means than returning it in the milk-cans to the patrons. It is, therefore, a matter of some surprise to read the old stock argument advanced by our friend in opposition to the practice adopted by our best factories.

He speaks of keeping the whey sweet by having an elevated tank, and scalding it. The elevated whey tank is indeed something that every cheese factory should have, being a decided improvement upon the low, underground tank. It is almost impossible, however, even with these favor-

(1) But only in the case of valuable cows: the calves are better for it and sell higher.

Ed.

able conditions, to prevent the whey from souring. If a factory would go to the trouble and expense of connecting a steam pipe with the whey tank, and heat the whey up to the boiling point every day, there might be a possibility of keeping the whey pure during the cooler weather. But it is the usual plan to elevate the whey by means of an "ejector." The best that is claimed for this method is that it will heat the whey to about 140° Fahr., and experience teaches that the much larger number of ejectors will not raise the temperature to much more than 110°. Everyone who has made a study of germ life, and especially of those "micro-organisms" which cause the souring of milk or whey, knows that they will thrive best at a temperature of from 95° to 100°; consequently if the whey is only heated to about 115° or 120°, it will quickly cool to a point at which the germ life will begin to grow very quickly, and cause the whey to become sour. Even if a high enough temperature were reached in the process of elevation to kill the germ life, before the whey could be taken home to the patrons it would have cooled sufficiently to allow the germ life, which is in the atmosphere, and more especially around whey tanks, to develop again. Therefore, of necessity, if the whey is taken home to the patrons in the milk cans, it will be sour and contain bad flavors that will not only injure the can, but be communicated to the milk if the cans are not thoroughly scalded and cleansed as soon as the milk wagon has returned from the factory.

Mr. Meldrum takes strong exception to Mr. Millar's remark that all whey should be fed at the factory, and states that the surroundings of a great many factories are foul enough already, without having swine stalled and fed there. He must surely have reference to the condition of the factories in his own district. It is a noticeable fact that, in Western Ontario at least, the best-equipped factories, both as regards buildings and furnishings, and the factories where there is the least foul smell around, and where the finest-flavored cheese are made, are invariably those where the sour whey is not returned to the patrons in the milk-cans. Feeding whey at the factory does not mean that it is necessary to have the hog-yard round the building, or to have the hogs coming to the door "squealing for a drink." The very fact that the whey can be elevated to a considerable distance above ground, makes it quite feasible to have the hog-yard half a mile from the factory, if need be, and to carry the whey any distance to be fed. If this plan is adopted, there will be no risk run from having the milk contaminated by the sour whey flavor so injurious to the quality of the cheese.

What our friend says in reference to factories being in an unfit condition for a cheesemaker, to turn out Al cheese is well taken. It is undoubtedly true that a great many of the factories in Ontario are not in a suitable condition for making first-class cheese, and too much cannot be done towards inducing factorymen to put up better buildings, and to put in better equipment. There seems to be, however, a decided improvement in Western Ontario in regard to better buildings. A number of factories have changed hands this spring, and have been refitted, while many new buildings have been erected. Whatever may be the failings of instructors in other districts, I think that both factorymen and patrons will bear me out in the statement that the instructors, and those who supervise

(1) Good—Ed.

(1) So, we can enrich the milk by food.

Ed.

dairying in the Western part of the Province, never miss an opportunity of pointing out to factorymen the necessity of good buildings and equipment.

J. W. WHEATON,
Secretary Western Dairyman Association.—*Farmer's Ad.*

TREATMENT OF DAIRY COWS.

"T. C. S." has given us some good, practical remarks upon the feeding of milk cows. At the point where he says observation comes in, and precise experiment goes out, on the question whether lactation is prolonged, or the quantity of milk produced by the higher-yielding cows maintained the longer, by increase of food, the results of observation may be useful. I do not go with "T. C. S." quite so far as to say that "precise experiment goes out" at that point, for I venture to suppose that it is quite possible to organise precise experiment without, as he says, carrying on "two sets of experiments with the same animal at the same time," but, in the absence of sufficient precise experiment to lead us to a conclusion, a few scraps of observation may be helpful. If they prompt other observers to give us the benefit of their experience, whether confirming or contradicting the suggestions here offered, we shall have still more evidence before us, and shall be proportionately better able than hitherto at least to make some advance towards a conclusion.

Every cowkeeper will agree with the remark of "T. C. S." that individual cows vary wonderfully. This is so, whether we take the term "vary" to mean cows differing from one another or a cow differing in one period of lactation from herself in a previous period. Some cows, indeed, under pretty equal management, go on steadily through their lives without much more variation than the wear and tear of years and the differences of seasons would fully explain. Others differ almost unaccountably, a cow, for example, making a high yield in a generally unfavourable season, and a lower yield in a season which proves more favourable to all the herd except that particular cow. I have known a heifer milk so deeply through her first period as to raise high expectations, which were disappointed, of her yield after producing her second calf. This has happened more than once, and the local farmers have taken it as no uncommon occurrence. "Ay, ay," they say, "she over-milked herself as a heifer, and she's making her heifer's note this year instead of last: ten to one she'll come back to her milk again next calving." And that proves to be the case, unless the cow becomes too fat during her second period from excess of food, given with the object of increasing the milk, which it does not seem to affect much in quantity, although the quality of the milk may be improved.

Such variations, however, are not always unaccountable. Take the case of a herd which has suffered from foot-and-mouth distemper. Most or all of the cows are injured by it, but some have received prolonged injury, some permanent injury, to the constitution. Sometimes recovery of the tone of health is slow, sometimes only partial at the farthest. For a year or two after the attack, or until the permanently weakened cows have been fed off, there is no dependence to be placed upon any one of them, however good their character before the distemper. It is likely enough that some of the

very best have dropped down to the character of only middling dairy cows.

That the period of lactation may be prolonged by increase of food, if the food be of a nature to stimulate the flow of milk, is surely unquestionable. We all know how in spring, especially after a winter of scarce food, cows which were rapidly failing in their milk, and at the rate of decrease must have been "dry" very soon, "flush" again when turned out into a flourishing pasture.

In the case of the cow continuing in milk through several years of barrenness, the connection between the increase of food supplied to her and an increase of both her own weight and her yield of milk must depend very much upon the kind of food she has. Some kinds of food are proverbially "driers," as dairy farmers call them. They have a tendency to increase the weight of the cow, whilst gradually lessening the yield of milk. The same cow which on certain rations thus falls off in the quantity of her milk, and becomes fat, might very possibly, under different feeding, improve both in condition and in her milking.

Hints on management in the event of great milkers proving shy breeders might be useful. In my experience of dairy cows, as a rule, I have found the best milkers usually very ready to breed again. But there are occasionally cases in which they continue to "return" regularly. Putting aside for the present the question of fault on the other side, and assuming that the facts all point to some cause of barrenness in the cow herself, the question whether she is more likely to breed during the period of milking or after she has become "dry" is one upon which different experiences have led to different opinions. Some breeders of dairy stock, contrary, I think, to the common theory, would expect fecundity when the milk-flow ceases, whilst a larger number, perhaps, at least of those who keep breeds generously inclined to make beef and to grow fat, would think that the chance of again breeding were diminished by the stopping of the milk. I have an impression that in such cases the likeliest time to snatch a calf is just when the milk is decidedly failing, and an increased supply of strengthening food arrests its decline and causes the cow to begin to make flesh again. I do not say this positively, but I think there is some truth in it, as also in the belief that unfertile males in low condition often, partly or wholly regain their fruitfulness under better feeding, and continue fruitful so long as they are gaining flesh.

I have repeatedly known cows very difficult to put "dry," without danger, between calvings. About ten weeks, as suggested by "T. C. S." appears to be a reasonable length of time for a cow to rest; but we must bear in mind the length of time she has milked. A cow that has milked deeply for eighteen or twenty months, or for a couple of years or more, since her last previous calf, will want more than ten weeks to rest her thoroughly before calving again. One that has milked moderately, as regards quantity, and has not exhausted herself by the superior quality of her milk, may do well enough with less than the ten weeks in the year. Some cows, also, have so strong an aptitude to fatten, when not in milk, and to do so even on grass alone, that upon rich land they are in danger of becoming too gross for safe calving if they are allowed more than six or eight weeks of rest. Still, as a rough general rule, ten weeks, I think, will be found a good or fair length of time.

The apology for a rest, which some excellent dairy cows get, to the extent of only three or four weeks, or even five or six weeks, is not only as remarked in the contribution to which I refer, "like burning the candle at both ends," but it is indeed like that with the additional application of a red hot poker to the middle.

Wm. HOUSMAN.

THE SHORT-HORN COW, SUE CADY.

It will be remembered that in commenting on the performance of Mr. Ganes' cow, Sue Cady, (page 180) we expressed regret that so little information was given in regard to her breeding and the dairy performance of her ancestor and near of kin. In the following letter, Mr. Ganes supplies this information in part, but the very meagreness of the available detail, is in itself an indictment of the way in which Short-Horn breeders have treated the dairy ability of their cows.

Mr. Ganes' letter is as follows:

ED. HOARD'S DAIRYMAN.—In reply to your editorial, "Martha" the foundation of this herd of milkers, I purchased of E. Fairbanks, Columbus, Wis., and he of H. B. Sherman, Barnett, Wis. Both of these gentlemen are dead, so I wrote J. H. Pickorell, Sec'y A. S. A. H. Association, and he said, "Sue Cady has four recorded dams and eight recorded sires, and is recognized as a pure bred cow by the rules of this association. The earlier herd books gave Lucinda as imported, but that is evidently a mistake. Her sire, Carcase, 3285, was imported. Sue Cady traces to an unknown cow." All of Martha's female descendants have been butter cows as far as my knowledge goes, with two or three exceptions, and I have laid that fact to the sires.

Dodge Co., Wis. J. W. GANES.

START WITH A GOOD COW.

Let the milk flow be what it may, feed alone can not control the quality of the milk, said John Gould recently to the students of the Ohio State University. The cow has an individuality of her own, a born milking habit, and the greater the number of her ancestral grandams that have possessed this milking trait, the greater the probabilities that this cow will possess like qualities. Remember this, no man ever stimulated a cow into good performance that did not have this born quality or development to start with; but thousands of heifers that were born to make the best of cows, have been utterly ruined by bad feeding, cruel treatment, and needless neglect. Success in dairying implies that a dairyman should raise his own cows, as far as he can, and buy if he must, wisely. So he must be a judge of cows, a collection of dairy form and preferences, and a reader of cow character, a cow phrenologist, like Bro. Hoard, for example. Better cow feeding and handling of cows, to the average dairyman, would carry with it greater success. All this talk about making cows hardy, tough and constitutionally vigorous beyond what we feed into them by wise selection, should be eliminated as quickly as possible from our dairy wisdom. At best our cows are boarders, and profit means that for part of the year, the longer period the better, they shall pay us rates so high that we can in

mid summer give them free entertainment for a few weeks. I do not plead for more fussing and pottering with this cow, but a little more rational care, and we should sooner begin the extra care of the milker. The plan of the winter dairy is showing farmers that profitable cost of this cow means more than a wide range of summer pasture, and beginning to stable her Thanksgiving night. A really kind hearted man may without thought, actually abuse a cow by neglect. I have seen this last autumn, a dairy of fast freshening winter milkers stand 'or hours, yes, days in the aggregate, in the chilly, drenching rain, rounding their backs as the deluge of water broke across their spines, and go into camp at night in the muddy fence corners of a long unprotected lane, and these cows, mothers, even if cattle, were contributing as best they could to their owner's living. I don't think he ever thought of the milking habit of these cows, as a maternal function, artificially prolonged—the intended food for offspring turned by the hand of man into the channel of commerce—and so denied them after offices of a mother. No other benevolence of nature would thus have contributed to him, save this unfathomable beneficence of motherhood whose office is forever to give, even if draining the fountains of life-support itself. Success must come nearest to those who recognize to the fullest extent this underlying principle of attaining success in dairying. Whatever will best administer to the comforts of the mother cow, quiet, care, warmth, comfort, succulent and stimulating food, pure air, clean water, and regularity of attention, will succeed; for on this hang the law and the profits, so far as concerns the cow.

Hoard.

CHEESE MAKING.

(Discussions at the late meeting of the North Western Cheese Makers' convention.)

The Chairman—There is another question that comes in under this head, and that is the practice of capping cheese with light circles; it has been done to a considerable extent in this part of the country last season. Makers ought to be more careful when they use those circles; sometimes they don't adhere very well to the cheese, they are loose in spots, and in such cases it ought to be taken off entirely and the cheese greased. They ought to be careful, too, to see that there are no checks under the caps, and if there are, it ought to be taken off and greased. Those loose places in the circles are checks, and if they are left in that way, and the cheese are stored, they are apt to cause rotten rinds. Another thing, the circles that have been used, many of them, have been too large, and where they overlap the bandage, they don't always adhere very well, and the edge will stick up, and it makes a ragged looking cheese. I would prefer to have those circles a little bit small, and if they don't quite meet the bandage it is all right. You can use grease on those places when the cheese is first put in the curing room.

Mr. White—I would have the circles overlap the bandages. We have had thousands and thousands of cheese capped for cold storage purposes, and it has been my experience, where they have the bandage on the side of the cheese, when they took those caps off,

there was a perfectly clean rind underneath. Where those circles only come within an inch of the side of the cheese, there is half an inch of mould all around. I think it is a poor idea putting caps under the bandages as they are beginning to do, it makes a slovenly top.

Question 3—Can curd be matted on the bottom of the vat just as well as on racks?

The Chairman—I think it can be matted as well on the bottom, but it doesn't do as good a job.

Mr. Phillips—I find that it is impossible when matting in the vat to get whey out as quickly as you ought to. If you throw your curds upon the rack you get a perfect drainage, you get the whey out sooner, and your curds mat nicely, and you are not apt to get sour cheese. I should advise the use of racks in all our factories, even where they are handling only five hundred pounds of milk.

Mr. Johnson—I quite agree with Mr. Phillips, although I made cheese for years without the racks. When you pile the curd on the bottom of the vat, the whey has chance to run off.

Question 4—How much dry acid would you run on a curd?

The Chairman—I would run enough dry acid to hold the cheese down as firmly as I wanted it under the conditions that it was manufactured and cured.

Mr. Schoenman—I think it will depend somewhat on the season of the year that you are making the cheese. I generally run about an inch and three quarters to two inches in the summer season, and in the fall perhaps a little less. I believe that in different localities, you will have to run different lengths. In some places you will have to string a curd on a hot iron more than in others, and also I think there is considerable difference in different makers in calculating the length of their string. I think that Mr. Phillips can string the curd an inch where very few makers would string half an inch. I think there is quite a knack in getting the hot iron test.

The Chairman—Mr. Phillips, why do you string the curd longer than the average maker? I don't think you ought to do that.

Mr. Phillips—I am going to quit it. In traveling through the state I find it impossible to get too much spin on the hot iron. When the curds are enough the spin usually lets up and you don't get any more. You take a piece of cheese that is cured up, it is impossible to get a spin on the hot iron. I don't think the maker need getting too much dry acid on the hot iron. I have been in some factories where in two and a half hours they would get three or four inches spin, and I have been in others where they won't get more than an inch after holding it six hours. The curd cures down quicker in some localities, the milk is different.

Mr. Hoard—Have you paid any attention to know whether the milk was from upland, dry soil, in those localities where the curd spun long, or whether it was to the contrary?

Mr. Phillips—I think it is the upland pasture where you get the least spin, and I think it depends a great deal on the way the milk is handled before it comes to the factory. There is no danger of ever making too high acid cheese provided you get your whey out of your curd at the proper time, no matter if you get a foot of spin. I want to speak with regard to the milk that was worked up into cheese at the World's Fair. That was

perhaps the purest milk that I ever worked into cheese, in those three herds, and if I remember rightly, the milk from the Guernsey herd, I could never get more than a quarter to a half inch of spin, while the Jersey milk you could spin as long as you pleased, and it came quick. The Short-horns' was nearly the same as the Jerseys', and the Guernsey herd's always had a peculiar smell to it. I don't know that any of us came to any conclusion as to what the cause was, but I have been told since that that peculiar flavor was in the cheese. I know we could detect it in the curd.

Mr. Monrad—Was there any difference in the feeling of the herds?

Mr. Phillips—Yes; the milk was all taken care of in the same way.

The Chairman—You made the statement that there was no danger of cheese becoming sour if the whey was drawn at the proper time. We have been told that the word "proper" didn't mean anything.

Mr. Hoard—Don't you mean if the whey is drawn just as quickly as possible?

Mr. Phillips—No, I mean that you should ripen your milk and inside of, say, an hour and a half to two hours from the time you add the rennet, you should begin to draw the whey. You should at least have one eighth of an inch spin on the hot iron, then remove the whey as soon as possible.

Mr. Hoard—Do you know any reason on earth why the whey should be retained in the curd one single minute after it is safe to draw it off?

Mr. Phillips—No, I don't; the quicker you can get it off, the better it is for the cheese, but if you get it off much sooner than two hours from the time you add the rennet, you are not apt to get a sufficient cook, that is, your curd does not firm up enough.

The Chairman—Don't you think that two hours is rather a short time when a man has a vat full of milk?

Mr. Phillips—Where you have steam to work with, it is all right. If you are using self-heating vats, you can't do it. It is safe so far that in over 90 per cent of the factories in Wisconsin the maker has not appliances to do the work right. I know that I can do a great deal better work as an inspector in the southwestern part of the state than I can through the northern part because they are using so many self-heating vats in the northern part. I know that the farmers, most of them, have an idea that we are asking too much for manufacturing their milk into cheese, but in order to make it for less, we have got to build up larger factories, and we never can compare with Canada till we do it, till we get our factories in shape, and have money to improve them and keep them up.

The Chairman—On the question of spinning the acid, I think it must be answered in this way, there should be acid enough on the curd when the whey is drawn so that by two and a quarter hours after the whey is drawn, you have acid enough to hold your cheese down where you want it.

Mr. Phillips—The maker should inform himself how to spin the curd on the hot iron, it is quite a trick. They should practice in doing it.

Mr. Noyes—A man should use spin enough so his curds will work just right.

Mr. Michels—How will it affect the curd, keeping it after it won't spin any more on the hot iron?

Mr. Phillips—I have kept curd as long as two hours after it had stopped spinning on the hot iron. Where I had a poor flavored curd, I think it improved it. I don't think it injures

the curd as long as you keep up the temperature. I have used warm water at a temperature of about 108 deg. to wash the curd before salting it and putting it to press, in order to get rid of some of the fat that would press out and collect between the layers of the curd and keep the curd from closing up. Of course, if the fat begins to start you must do something of that kind. If you get the yield you lose the flavor, and you better get rid of a little more of the fat than to lose your flavor.

Mr. Dolo—At what temperature do you recommend keeping the curd during the matting process in the vat?

Mr. Phillips—I hold it as near 98 as possible, 100 or 102 won't hurt it.

Mr. Dolo—I think that in many instances the temperature is too high during the matting process, it has a tendency to start the butter fat. We had some trouble in our factory last season from the butter fat pressing out too much, and the cheese maker was holding the curd at 100 deg. He told me that was the way to keep the temperature, but I came into the factory one day and I thought that he was frying the butter fat out of the curd, and I had him try the curd with a thermometer, and it went up over 100 deg. and I instructed him after that to reduce the temperature as low as 90 deg., and we had no trouble about the butter fat pressing out. Even at 95 deg. the butter fat pressed out.

Mr. Phillips—I have always lost more fat in hot weather when the milk tested the least in fat and I have always laid it to tainted milk. In the fall of the year I have worked up milk that tested as high as 6.00. I have run my curd up as high as 106 and 108 deg., and I didn't lose any where near as much fat as I did on the 3.00 milk in hot weather, where the milk was tainted.

Mr. Monrad—In Scotland in a private dairy, I saw them keep up the temperature in the curd by covering it with bags dipped in warm water, kept up to about 95 or 98 deg., but before going to press, they always separated it out and cooled it.

REAL NON-PEDIGREE DAIRY SHORTHORNS.

These cattle, selected for their performances as milk and butter producers, and bred from prize-winners in actual competition on such lines comprise such a collection as would be difficult to match. It has been Mr. Baxendale's plan to bring such of the dairy test cattle at the various shows as he could possibly persuade owners to part with. There are also a few of the most notable of the stock at Henham, together with some which he has succeeded in purchasing back from those who bought them at the Henham sale two years ago. It would be quite impossible to give anything like exhaustive details in respect of these superb dairy Shorthorns; they would fill a page of the paper, inasmuch as nearly all call for special mention, which cannot be given.

Take Semolina, first in catalogue, ten years old; she won third prize at the London Dairy Show in 1893 in the milking trials, when she yielded 1 lb. 12½ oz. of butter from 58 lb. of milk in one day, and was giving 34 lb. per day on April 19th; she came from Henham, and her red heifer calf by Melton's Monarch should be worth a lot of money to first-rate dairymen. Then there is Maud, another Henham cow, giving 24 lb. per day, with a big re-

cord; and from her there is a remarkably pretty and promising red-roan October weaning heifer calf, Mona by Earl of Feversham Bess, from Honham, is one of the very best of the lot; she was one of the best of the Henham cows, having an excellent bag, and being a first-rate milker. It is a great pity that there is no bull calf from her, which would in all probability be a valuable acquisition to a tenant-farmer. Pretty Face, now dry for calving, is one of the very best non-pedigree Shorthorns in the herd; she is a massive cow of scale, depth, substance, and the character of the old Durham and Yorkshire cows, which constituted the bulk of the supply of the metropolitan and suburban town dairies, or milk walks as they were called twenty years ago, where they were kept in such high condition that they were quickly dried and easily sold to caterers for the mining and manufacturing districts, where there is always a demand for that particular class of beef, when times are good. That is so much for the carcass; an aptitude to fattening having been always in view, together with milking propensities, in all Mr. Baxendale's breeding of Shorthorns. She is one of the best of the non-pedigree Shorthorns, as the records will show, and she is due to calve to Melton's Monarch just after the sale. From her next there is a long, level, red, promising heifer by Melton's Monarch, Marsh Marigold, calved in 1889, is one of the very best milkers in the herd; she has a splendid milking and prize-winning record, and she is due to calve at the end of May. Flower, a Henham cow, was giving 37 lb. of milk per day. She is a deep-framed cow, with a great milk-vessel. Dairyman's Pride, rather a small cow, has an immense bag, and was giving 47 lb. of milk per day; at the butter test at the Chester "Royal" she gave 2 lb. of butter from 40 lb. 11 oz. of milk. Poppy is a capital cow, and has won several valuable prizes; she was giving 35 lb. of milk per day. Drayton, a massive red-roan cow, purchased from Mr. B. Merry, of Leighton Buzzard, is one of the best cows in the dairy. At the London Dairy Show in 1893 she won first prize in the butter test, yielding 2 lb. 5¼ oz. of butter from 58 lb. of milk in one day, and second prize in the milking trials with 65 lb. 4 oz. of milk in one day. Dolly is another capital milker, and so is Beauty, winner of the Lord Mayor's Cup at the London Dairy Show in 1894 in the milking trials, where she gave 59 lb. 4 oz. of milk in one day, also first prize in the butter test, giving 1 lb. 15 oz. of butter from 57 lb. 4 oz. of milk. Both these were purchased from Mr. Merry, as also was the grand cow Marsh Marigold, winner of first prize in the milking trials at the Cambridge "Royal" with 67 lb. of milk in one day, and at Tring yielded 1 lb. 15 oz. of butter from 52 lb. 6 oz. of milk in one day; she is due to calve at the end of May to Melton's Monarch. Dairymaid, from the same stock, is also a capital milker, now giving 33 lb. of milk per day, and has made some excellent records. Sally, a young cow from Henham, is a red cow of good quality and a big milker. Teazle is a big roan cow from Henham, and has given 26 lb. of milk; and there are two young balls from her which would be very useful to a tenant-farmer. Duckling is another good cow, and there are three capital heifers from the herd of Mr. J. Christy, of Sawbridgeworth—Lassie, Strawberry, and Lovely—which are likely to make grand milkers. Strawberry was giving 31 lb. of milk with her first calf, a very pro-

missing white one, by King Dale 2nd. Special notice may be made of the yearling bull Trojan by King Dale 2nd, which is out of a capital milking cow, and which should be very useful in a dairy herd. G. T. T.

The Poultry-Yard.

The Summer egg again—How ill flavoured eggs were shipped to England—Getting the eggs with good flavour—Practical instructions for farmers.

(A. G. GILBERT.)

The query which I asked—in my last article—of "where do all the bad eggs come from in mid-summer?" has excited a good deal of interest and discussion. It is well that it has done so for the subject is one of very great importance. When I was examined two weeks ago, before the committee on Agriculture and Colonisation of the House of Commons, I made the subject a part of my address, and the lines I took were much the same as published in your paper. It is certainly calculated to create some surprise, at first hearing, to be told that there is a good market for new laid eggs, with the fine flavour that such eggs ought to have, in mid-summer. It is almost like saying that we ought to have warm weather in the dog days. But the fact remains that neither you nor I can purchase a couple of dozen eggs on the market, in mid-summer, and after having them cooked place them before our particular friends with a sense of security that they are the toothsome articles we would have them to be. I have spoken to numerous farmers on the subject and they all admit that the necessity of having non-fertilised eggs for the summer market, is a subject that has received no attention and one on which they require to be educated. If such be the case and undoubtedly it is, the work of education cannot be begun to soon.

HOW WE LOST OUR REPUTATION ON THE ENGLISH MARKET.

Speaking to me at the conclusion of my evidence, a member of Parliament said: "I never before understood why it was that our trade on eggs with the English market was so seriously injured. Thousands of partially hatched eggs must have been unwittingly shipped, as new laid ones." And then we talked the matter over. Four or five years ago, considerable agitation was made as to the necessity of having the refrigerator system on our Ocean steamships with the object of putting our Canadian eggs on the London market in as perfect condition as possible. I said at the time: "Gentlemen, your refrigerator system is excellent, but you are beginning at the wrong end. You must begin at the farmer and first get the new laid egg from him with its flavour perfect. No subsequent cold storage treatment will make an egg with bad flavour, good. First get your article from the farmer in prime condition, and then keep it so, in transit, by your cold storage." The statement was regarded seriously by some while others put it down as a "fad," the latter a common way of putting aside a subject that is not thoroughly understood. But, meanwhile, what did the London and Liverpool dealers say. To quote the words of one: "The first shipment or two of Canadian eggs, in spring, arrive in

good condition and are quickly disposed of at highest prices. Such eggs compare most favorably with selected eggs from France which always take the highest figure. Later shipments are not so good and subsequent shipments become so bad that we cannot handle them." What does that mean? Simply that as the summer season advances so do the eggs become worse in quality. Exactly our experience at home.

Of course it is possible and easy to recover our good reputation on the English market by shipping nothing but a new laid article, of fine flavour, but how to secure that desirable article.

BEGIN AT THE FARMER.

We must, in order to get the new laid article with the superior flavour so desirable, both for our home summer market and shipment, begin at the farmer and we tell him:

1. Keep no male bird with your laying hens.
2. If you want to raise chickens select nine or eleven of your best fowls and put them by themselves with the male bird.
3. Keep this breeding pen together until you have got all the eggs you want to hatch chickens from.
4. Then kill the cock bird, or put him away by himself or wade him with a neighbour, for change of blood.
5. Keep the hens, which you have been breeding from, together for a week or ten days longer (until the effect of the male bird is lost on the eggs) and then let them run with the rest of your laying stock.
6. Make it a strict rule to allow no cock bird with the hens which lay the eggs, at any season, but particularly in summer.
7. As the cockerels grow up, kill them as soon as fit, and send them to market. The pullets will make winter layers.

GETTING THE EGG WITH GOOD FLAVOUR.

Now, having done so much to keep the laying hens without the male are we shall get non-fertilised eggs, and to have them in perfect condition for home or foreign market, we tell the farmer:

1. To collect the eggs every day, twice per diem, if he has a large number of hens.
2. Keep the nests in which the hens lay sweet and clean.
3. See that your fowl houses, are free from lice.
4. See that your laying stock—particularly if limited as to run—are free from lice.
5. Lice infested hens and prolific egg laying do not go together.
6. Do not allow your laying hens to have access to decaying or decayed vegetable or animal substances.
7. The flavour of an egg from a hen fed on clean substances is better and the egg will keep its flavour longer.
8. Allow no broody hens to be among your layers. Remove them to a small compartment without nests and they will soon "break up."
9. Gather no eggs from nests which the hens may have stolen. Even if the eggs are not fertilised on which the hens have been setting and there can be no risk of the germ having started, yet the flavour of the egg will be affected. Keep such eggs for cooking purposes at home.

I have rapidly gone over some of the points on this important subject. We have seen the necessity for getting the egg with superior flavor for home use or shipment and I have shown how to get the egg with superior flavor. It is for the farmers to do the rest.

All information as to how to manage, feed and treat poultry, the kind of house required; what the house should contain and the different breeds and their merits may be had in preceding numbers of this paper, or may be had in pamphlet or report shape on application to the writer at the Experimental Farm, Ottawa.

I will refer to the subject again. It is one that our farmers cannot give too much attention to. There are millions of dollars in poultry and eggs for the farmers of this country.

Ottawa 14 June 1894.

MONTREAL PROVINCIAL EXHIBITION.

The Fourth Provincial Exhibition will be held this year in the City of Montreal from the 12th. to 21st. September. The Provincial Exhibition was held last year in Quebec.

From present indications there is every prospect of the forthcoming Exhibition being more successful than any of its predecessors. Many prominent firms have signified their intention of exhibiting this year, and an encouraging feature is the fact that a number of gentlemen have voluntarily offered gold medals and money prizes to induce competition.

The various committees have completed the revision of the different departments of the Prize-List which will be issued very shortly.

Considerable additions have been made in the premiums and the sections in all classes have been carefully revised. The Class for French Draught Horses has been altered to one for French Coach Horses with an increased number of sections; the Pony Class has been revised and extended and Gold and Silver Medals will be offered for competition in the High Jumping Contest. Messrs. Brunson, Carrio & Co. have offered a Gold Medal and a Silver Medal to the two exhibitors winning the largest number of prizes in the Live-Stock Classes; Mr. E. Dunham, of the Balmoral Hotel, has offered a Gold Medal for the best gentleman's turn-out; Mr. S. Osborne has offered a first prize of \$50.00 for the best pair of Matched Carriage Horses and Mr. Robert Wiseman a gold medal for the best Hackney.

In the Cattle Department the Class for working Cattle has been erased and the amount added to the Class for Fat Cattle. Mr. James Johnston has given special prizes to the amount of \$50.00 in the Ayrshire Class.

In the Sheep Department the Class for Cross-breeds has been struck out and the premiums for Cotswolds, Leicester and Lincolns have been increased. The American Oxford Down Association of Springfield, Ill. have given \$100.00 for competition in this class.

The Premiums in the Swine Department have been largely increased, as a special inducement to the breeders in the Province of Quebec who have of late years gone largely into this class of stock raising.

The prospects for the Poultry Show are far in excess of previous years. A considerable increase of exhibits is anticipated and to meet the extra accommodation required the Poultry Building will be enlarged.

The breeding pens have been altered to 1 male and 3 females, old or young and the black and white Wyandottes are separated.

Considerable additions have been made in the Dairy Department. Extra

premiums are offered to the Syndicates and Inspectors of Butter and Cheese Factories.

In the line of Agricultural Products greater importance has been given to the root sections.

The Machinery and Industrial Departments have been carefully reorganised. There will be no charge for entry, space or power in the Machinery Departments, and the exhibitors of Agricultural Implements will be permitted to provide power to suit their own requirements as at the Toronto and other Exhibitions.

The management trust that Manufacturers will determine to assist their own Provincial Exhibition by coming forward with a fine display of the material they produce and show to the farmers and people generally the value and character of their respective products.

The Ladies' and Children's Departments will be presided over and conducted by ladies who are experienced in that particular sphere and especial care will be taken to have the articles tastefully displayed.

The Horticultural Society of Montreal are co-operating with the Exposition Company to have a splendid floral display which they are determined shall excel all their previous efforts.

A pleasing feature in connection with the Horticultural Department will be the competition by the pupils of the various city Schools. Mr. Roy, the Superintendent of the Mount Royal Cemetery has supplied a special bulb to each pupil desiring to compete and the best specimens shown will be awarded prizes.

About 1200 bulbs were given away this spring.

Mr. R. Beullac, the well known decorator of this City, is arranging to have a grand historical museum and from his thorough knowledge of artistic details and elaborate designs the public may anticipate a thorough treat.

There will be an excellent programme of music and attractions provided and the citizens and public generally may confidently look forward to a very superior Exhibition.

The great success of the Bench Show of Dogs in 1891 has induced the management to arrange for another Dog Show in connection with this year's Exhibition under the auspices of the Montreal Kennel Association. The two Buildings on the Park Side adjoining Park Avenue will be utilized for the show and there is no doubt that the efforts of the Kennel Club will prove to be successful.

Swine.

THE BREEDING AND MANAGEMENT OF SWINE.

BY J. O. SNELL.

Circumstances of late years have brought the subject of swine breeding and feeding in Canada into special prominence and importance. The need of some other means of disposing of our grain, besides placing it on the market in competition with that more cheaply raised in other countries, and especially in our own north-western provinces, has been one factor in bringing about this change. Another has been the opening in our own country of large establishments for curing and packing pork, and which are in operation the year round, providing a more uniform market at all seasons of the year.

Formerly, hogs were only fattened, in any considerable numbers, at one

season of the year, and the market for hogs or for pork was regarded as lasting for only about three months, commencing in November, and frequently the result was a glutted market at that season, and buyers naturally took advantage of that fact and combined to keep down the price. Under such circumstances, only a limited number of hogs could be handled by any average farmer, since they all had to be fattened at the same time; but now, with a more uniform market all the year, and often a higher price in summer than in winter, a farmer can make his arrangements to turn off a few fat pigs at any season of the year, and may thus handle three, four or more different lots in the year, and thus have a little money coming in all the year round.

The improved markets for dairy produce, partly owing to the growth of our cities and towns, and partly to an increasing export trade, has been the means of turning the attention of a large proportion of our farmers to dairying, and the feeding of hogs is found to work in profitably with dairying, the skim milk being one of the very best adjuncts to successful pig raising. With these features prevailing, during the past few years the hog has proved to be one of the best, if not the very best, paying animals on the farm, and pork feeding one of most profitable departments of the farmer's business.

The demand for Canadian pork in the English market is practically unlimited, and our pork has a good reputation there, and commands a higher price than American pork; so much so that dealers have been accused of using the Canadian brand to sell American pork by.

Canadian farmers do not produce a tithe of the pork they are capable of producing. In 1892 the number of hogs in Ontario was 996,974, an average of less than five to each 100 acres of assessed farm lands. We export but a small proportion of the hog products imported by Great Britain. The United States supply sixty three times as much of hog products to the English market as we do, while their population is only thirteen times as great as ours, so that we are not getting anything like our share of a trade that is open and free to us, and which we are in a fair position to avail ourselves of. The question is, how are we to secure an increased export? It can only be done by keeping more breeding sows and increasing our output in these lines.

In treating the subject of breeding swine, I suppose the first thing to consider is the selection of a breed, and this is, with most people, a difficult question to decide. It is also a delicate subject for an interested person to discuss in a meeting of this character. I am not aware that the question, "Which is the best breed?" has been settled by any authority, and possibly it never will be settled to the satisfaction of every one. Even in Great Britain, the home of most of the breeds, it has not been settled, and men there, as here, honestly differ in their opinions on the subject.

Every man should if possible, be persuaded in his own mind which is the best breed for him—for his circumstances and surroundings, and for his market, and having so decided, should bend his energies to the development and improvement of the breed of his choice to the greatest perfection possible, by breeding to a fixed type or ideal, and making only such changes in the type as the demands of the times and the markets require. I contend that it is not necessary for a breeder to give up the breed he has

been handling when a change in the style is demanded by the market. Rather let him by judicious selection of animals within the breed he has, seek to get nearer to the desired type, and by good judgment and skill, he can in a few years make the desired change without giving up his breed, and without crossing with other breeds. This will prove a better test of a man's judgment than to drop the work of perhaps a lifetime at the call of fickle fashion, or a prevailing fad, and to rush after someone's untried and untested theory.

While the farmer and breeder should give due attention to what are likely to be permanent features in the market, he will do well to be cautious about making changes in his methods at the suggestion of interested parties—changes which are perhaps only in the interest of those who handle his produce after he has disposed of it, for what is for their interest is not always for his.

The farmer's first lookout should be for number one, and in this country, as in most countries, the farmer is number one; the pity is that so many of them fail to realize the fact.

The first thing for the farmer to consider, since he is the producer, is the cost of production; and unless some extra price, equal to the increased cost, is assured him for a product that is costing him more to produce, he will wisely reject the proposition, no matter how loudly or persistently the manufacturer may advocate it. The pork-packer may advocate a breed of hogs which the farmer finds from experience are like the daughters of the Horse-leech, crying, "Give, give," and are never satisfied. If he finds the breed does not make a fair return for the food consumed, he has no use for it. If the miller advocated a variety of wheat which the farmer finds from experience yields less than a fair average crop, he has no use for it. And new varieties have been advertised and trumpeted as yielding enormous crops, which upon trial have proved a miserable failure.

We would not be understood as discouraging experiments, for we all know that some of the most valuable discoveries in agriculture and stock raising have resulted from experimenting; but the general farmer will do well to experiment first on a small scale, and more cautiously, if he would avoid loss and disaster. We have now several experiment stations supported by public funds, and it may be well to leave the greater part of this business to them until we are satisfied they have proved some things that may safely be adopted.

If I were asked for advice as to the best course for the general farmer to follow in improving his stock of hogs, or any other class of stock, I should feel safe in advising him to improve the stock he has now by the use of only pure-bred males of a high standard of merit, and weeding out and feeding for the shambles all of the produce which does not come nearly up to the desired standard. This course will involve no great expense, for pure bred sires can now be bought at very moderate prices, and will certainly pay for themselves in the increased value of their offspring; and when they have served their term in the herd, may be sold for a fair percentage on the original cost, and in some cases for all their cost.

(To be continued.)

Farmer's Ad.

PASTURING SWINE.

EDS. COUNTRY GENTLEMAN—One point that the swine-grower should have constantly in mind, should be to supply pasture for his swine, and the greater number of months in a year that he can supply this, the better for the health of the swine and the desirable condition of the pocket-book. There is no time in the year that swine are averse to taking, a bite of grass, if they can get it.

As the season is now at hand for spring and summer pasturing, we will at this time note some points that the farmer should aim to practice: Hogs that have been lotted and fed grain alone, as is the custom with a great many, when turned out to pasture should not be wholly deprived of their grain ration, if it is expected that they make a gain. Many farmers are fully aware that they will not; still they argue that they believe it profitable for them in the long run to carry them for a time without gain; that the cleaning out of their systems and relieving them of their feverish condition caused by grain feeding is of great benefit. While this may be true as regards the necessity of clearing out the system, we cannot accept the plan as the most desirable or profitable. It is just as rational to speak of money yielding a profit when not in use. It is a practice with some farmers that pasture their hogs that they intend to prepare for market by summer feeding, to graze them for a month without grain, holding to the opinion that they gain so much faster when again given grain. Hogs pastured in this manner do not more than hold the weight they have when they go to pasture; consequently the grass is only a maintenance ration, and so far as yielding a profit to those concerned, is a total loss.

The swine farmer should not wholly depend on clover for his swine pasture. Blue grass should come in first, as it starts earlier than clover. Timothy is not in a general way considered of much value for pig grazing, but while young and tender, it is of great value; later, when the heads are forming and the seed is in the milk stage, they are very much relished by the hogs. We have often noticed them leisurely engaged picking off the heads.

While these three grasses are in general use by the swine growers, clover must be his main dependence for the swine. Blue grass in the late summer when dry weather comes on is a failure. Timothy soon becomes too woody, and is not eaten; but clover stands the drouths better, and will give good grazing when the others fail. Many farmers put too great dependence in grass for their hogs; it is much a matter a habit following the old customs of swine growing when a hog had two seasons at pasture before being fatted for market. The growth then was too slow for these pushing times. And the growth now is too slow when on grass alone. Another fact common to most men that depend on grass alone for the summer growth of their swine: They have too little pasture, or else the variety is limited—possibly both. If farmers would bring the scale into use, they would be surprised at the little profit in making grass the whole ration for swine. There is also a great loss when the farmer goes to the other extreme and feeds grain alone.

So far, we have considered only the provision or use of summer pastures, say four months. For the best work this time should be doubled, making calculations that the hogs shall have a

green bite eight months in the year. For fall, winter and early spring pasture, rye can be made to play an important part. Last year we "hogged" a field of rye to save the cost of cutting and threshing. Soon after the hogs went on the rye, there was a good rain, which sprouted the rye that had been covered by the hogs' tramping on it in their efforts to gather the grain. This volunteer rye gave excellent fall pasture, and had it been our wish, we could have gotten good use of it all winter, excepting when covered with snow. Now the stand of volunteer rye on that field is better than the original stand a year ago.

On good pasture, our mature breeding stock keep in as high flesh as desirable, but the young and growing stock must have an additional grain ration, if they are to do their best for us or make a desirable growth. For such stock grass is more important as an appetizer than as a factor for producing gain. Early in the pig's life is the time to make the most out of him but you cannot do it by compelling him to eat grass to live. Nor can you do it most profitably by eliminating grass entirely. Grass should be made to play an important part, and that is: a wise use of it in connection with grain.

JOHN M. JAMISON.

Ross County, O.

SPRAYING FRUIT TREES.

Professor Craig Demonstrates its Usefulness at Notre Dame de Grace.

A large number of farmers and fruit growers from the parishes of Cote St. Paul, Verdun, Coteau St. Pierre, St. Laurent and Lachine gathered yesterday afternoon at the residence of Mr. D. J. Decarie, Mayor of Notre Dame de Grace, to listen to a lecture by Professor John Craig, of the Government Experimental Farm, upon the benefits derived from spraying fruit trees. Among others present were Dr. Lachapelle, M. P., Messrs. D. Girouard, M. P., Robert Benny, John Crawford (Verdun), R. Brodie (Coteau St. Pierre), Peter Jackson (Cote St. Paul), Andrew Daves (Lachine), Charles Latourneaux and John L. Brodie.

Professor Craig explained that he had come amongst them to show how beneficial the use of the spraying machine was, and to demonstrate how easily one of them might be made. He had just come from Western Ontario, where last year he had tested the usefulness of spraying apple trees on seven blocks of orchards. The cost of spraying the trees had been \$6 per acre, and the net revenue on increased value of crop \$18 per acre, or a net average sale of the fruit at \$50 per acre. He felt sure that with such results no one would grudge the \$6 invested in the experiment.

The professor then proceeded to explain the use of the Bordeaux mixture—so called because first introduced in the city of Bordeaux, France. This mixture is composed of copper sulphate, 4 lbs., stone or unslacked lime, 4 lbs., and water, 50 gallons. An ordinary kerosene barrel is called into use, and the copper sulphate is put in first; then the barrel is half filled with water, and lastly, the lime is added, and the whole mixture is thoroughly stirred. Mr. Craig had brought one of the machines with him, and was able to demonstrate each point in connection with the working of it as he went along. The fittings are very simple, and consist of a forcump, the valves and

linings of which are of brass, to resist the corroding action of the copper salts, two lengths of rubber hose with gas pipe extensions, and each fitted with stop-cock and nozzle. The cost of one of these machines is a little over ten dollars. The lecturer explained that copper sulphate alone must never be

USED FOR SPRAYING PURPOSES

After the leaves are out on a tree, as it was so powerful that it would burn all the leaves right off. This was the reason for adding the lime, which mitigated this, and rendered the copper sulphate not only harmless, but very beneficial. Before the leaves come out, however, it is quite permissible to use copper sulphate alone in proportions of one pound to twenty-five gallons of water as a kind of general disinfectant. The Bordeaux mixture was not only good for apples and pears, but could be used with success against the ravages of the potato rot. This rot was generally in the soil, and would find its way up the stalk of the potato, making its appearance at first in the mildew, and afterwards in the brown and blighted look of the plants. To prevent it, spraying should be commenced about the 15th of July. Scabs can be prevented by soaking the seeds in corrosive sublimate before planting them. Mr. Craig then proceeded to point out how the spraying itself could be made easy and less annoying if care was taken to do it properly. It was not altogether easy work, and the speaker knew of nothing more trying to the temper if things went wrong. The Bordeaux mixture will not keep, but must be used soon after it is made, but when a large amount of spraying is contemplated, it is a good plan to make stock solutions separately of lime and blue stone, which can be diluted as needed: Dissolve 100 lbs. of copper sulphate in fifty gallons of water; two gallons when dissolved will contain 4 lbs. of the salt. In another barrel slake 100 lbs. of lime, and make up to a milk by adding 50 gallons of water, when well stirred two gallons should contain 4 lbs. of lime. When, as before, it is desired to make a barrel of Bordeaux mixture, take two gallons of the stock solution of copper sulphate and add the same quantity of the milk of lime.

Mr. McMurray, one of Professor Craig's assistants, repeated the lecture in French, and the audience separated well pleased with the many useful hints they had received during the course of the lecture.

Oil Meal for Calves—Manuring—Necessary Yield for Profit.

Roseland Plantation, Decatur Co., Ga., would ask:

1. Is lused oil meal ever fed to calves; without being cooked, i. e. simply stirred into the skim milk? If so, how much dry meal per animal daily?

2. In this mild climate cattle are rarely housed, which enables us to "cow-pen" land, i. e., hold the cattle during the feeding season on land to be cultivated. In this way, all the excrements are dropped just where they are needed, and no handling. Question: What percentage of the manure may be lost under these circumstances by evaporation, when exposed to our winter sun for two or three months?

1. This depends very much on the age of the calf. When we first commence feeding skim milk to the calf when 5 or 6 days old, it is our practice for 6 weeks or 2 months to scald the oil meal with boiling hot water,

and mix the jolly thus obtained with the warm skim milk. After the calf obtains a ruminating stomach (commence to chew its cud) which usually occurs in four to six weeks, it is much safer to feed the oil meal dry. When we commence with the young calf, and for 4 weeks after we use linseed meal (ground flax seed) and begin by feeding not to exceed a tablespoonful at one feeding—slowly increasing the amount until two to four tablespoonfuls of the ground flax seed is used daily. When the calf is two months old it is safe to feed from 4 to 8 ounces a day, and from that to one pound a day when 6 months old. There is no way, however, in which we think the calf assimilates the oil meal so fully and profitably as when it is scalded in boiling water and fed with the skim milk.

2. We think the loss from evaporation of manure is very trifling from droppings, when you have your usual amount of rain. Evaporation does not usually effect manure disastrously, except when high fermentation has taken place.—*Hoard.*

VARIATION OF ROOTS.

(*Eng. Ag. Gazette*)

"A. M.'s" idea of a third "something" is certainly attractive, and reveals our ignorance on matters upon which many persons discourse as though all were known. This unknown third something beyond what is weighable and nameable is probably really a matter of "condition" rather than of analysis, whether quantitative or qualitative. Chemical analysis is in truth a very crude gauge of nutrient properties in a food. As a guard against adulteration, or as a test of comparative richness in two samples of the same food, or as a means of detecting impurities or injurious matter which ought not to be present, it may be relied upon as a guide. When we reflect upon the effect of one food upon another in promoting digestion and assimilation, or on the different effects of the same food upon different species of animals, such, for example, as the different degrees of digestibility of hay when eaten by horses, cattle, or sheep, or on the physiological effects of certain foods if given in excess, we see how extremely difficult it must be to accurately measure their comparative values.

If we consider the case of natural foods such as grass and turnips, we see in the first place that these substances are tabulated in books of reference as possessing certain nutrient values, and young scientists are sometimes led from such statements to make generalisations as to the value of turnips or grass, positive as well as relative. Within certain wide limits we know the value of these ordinary foods, but the limits are so divergent that the information should not be too rigorously applied. Some herbage will fatten a large bullock, while some will only fatten a heifer. Some will fatten nothing, but may still produce milk or cheese, or maintain sheep. Other grass is very innutritious, and the various degrees of nutritive power appear to depend less upon the species of grasses which compose the herbage than upon the properties of the soil in which they grow. It is doubtful if any chemical analysis of the soil, or any botanical or chemical analysis of the herbage, can account for these variations. We know, generally, that good land produces a superior herbage in quality, as well as quantity, to poor land. We

know that a flock of sheep will fatten on one class of land and not on another. It is curious that with such palpable differences in the quality of the produce of land in the growing and fattening of animals that we never hear of similar differences in the quality of wheat or other corn crops grown upon different soils. The principal differences seem to be observable in grass, turnips, and other fodder crops grown for stock. Every sheep-breeder knows that his lambs will thrive very much better when eating the produce of one field than when eating identical crops upon other fields. The third something which causes these variations in quality of fodder crops, although difficult to measure is not hard to apprehend, if we take into consideration the conditions under which they are grown. Vegetation must be abundant, well matured, succulent, sweet and palatable, and perfect of its kind, and these properties can only be obtained upon good land in good condition, and well cultivated. Applying them to turnips and swedes, it is known that the conditions for their perfect development exist in a high degree in the North than in the South. South-country farmers can never obtain the same excellent results from feeding these roots that are achieved in Scotland, or even in the Northern counties of England. It is, we maintain, due to different climatic conditions which affect the development of the plant. Our correspondent "R." hits well the nail on the head when he quotes an old Northern farmer. He informs us that this old gentleman, when informed by a scientist that he was wasting his time in feeding swedes to stock, as they contained from 80 to 90 per cent. of water, simply remarked: "What a precious lot of feed there must be in that water!" Upon this point it may be remarked that water in a swede is in the condition of juice. It is true that the watery particles may be drawn off by heat, and that they sublimate as pure water. Still, it is, while living, incorporated in the fodder, and is in vital union, if not in organic combination, with the tissues of the plant. This fluid, sap, or juice may have fattening properties much beyond those of water. The proportion of water in a food does not, after all, injuriously affect its fattening properties. Soups, beer, milk, not less than turnips, contain a high percentage of water. The animal body is composed so largely of water that it is not a matter of surprise that natural foods should also contain a large percentage of the same substance. A fat calf is composed of 62.3 per cent. of water. Why, then, should it be considered strange that natural foods should contain a large proportion of the same element? Those who complain that a turnip contains 90 per cent. of water ought to ask what percentage of water exists in a peach, in an egg, in milk, in a mutton chop, or fresh beef-steak. They would probably be astounded to learn what percentage of water exists in their own brains, for there would be found to be about 60 per cent., or considerably above one-half. The animal body, when in a normal condition, is more than half water; and when fat—which in the human body, at least, is not a very desirable condition—it is rather less than half water. We must pause a moment before condemning a food because it contains the elements of water.

It is doubtful if water, as it exists in a turnip, in a peach, or in a beef-steak, is to be considered exactly on a par with water from the pump or well. The question is whether Divine Pro-

vidence, or, as some prefer to call it, "Nature," constructed milk or luscious fruits so that the "water" they contain is exactly the same as water from a pond. Suppose that instead of a fresh chop or steak the consumer were offered a perfectly dry chop, and an equivalent for the moisture in the form of a tumbler of well water, would he be equally well satisfied? Suppose a man were offered the desiccated remains of a peach, with an equivalent of water, would he relish it as much as a luscious fresh peach? Suppose, instead of a fresh egg, a man were offered a dry egg, and an equivalent of water from a well, would he relish that food or derive the same benefit from it as from a fresh egg? These questions deserve serious consideration, and the answer will undoubtedly be in favour of the form of food in which Providence has beneficently given them for our use. We therefore think that the percentage of water in a turnip, or a peach, or an egg is not to be ranked exactly as if the water were drawn from a pump and the dry matter of the turnip, peach or egg were served separately. A luscious fruit or fresh steak are more appetising and more likely to add to an animal's weight than dry matter of similar character and draught of spring water; and hence we believe that there is room for a serious error if living water in combination with animal or vegetable food is to be considered as on a par with water from a pail or pond.

Turnips in winter, given alone or in excessive quantity, may be cold and even injurious. A mangel in May or June may be a refreshing food, calculated to produce an enormous effect. It is reflections such as these which make us pause before relegating the luscious sap of fresh vegetables to the same category with water from the pond or pail. The "third something" may therefore be found in the wonderful alchemy of Nature, i. e., in the fitness of the combination of foods as elaborated in natural products in contrast to an artificial combination of dry matter with water.

As to turnips grown in the North or the South we are not prepared to say to what degree the former are superior to the latter, but it is probable that much depends upon the season and the general conditions under which each is grown. We therefore conclude that the scientist who rashly stigmatises a turnip as a thing which contains 80 or 90 per cent. of water may forget that he himself also contains about 60 per cent. of water, and that water is an essential ingredient of the animal body as well as of the vegetable food. That watery foods are fattening foods is well known, for what is more fattening than milk, beer, or soup? The question as to whether water from the pump is equally nutritious with water in combination with vegetable and animal tissues is very interesting, but experience seems to be on the side of the inimitable combinations of Nature.

One of the most striking illustrations of the difference between natural and artificial foods is seen in grass and hay. The latter is simply grass from which water has been eliminated by the process of natural drying. The difference between grass and hay is, however, extraordinary. Hay cheese and hay butter are very different from the same products made from succulent grass. Grass is an inimitable food, and in all respects superior to hay, and yet the chief difference is in the amount of water contained. This is scarcely what we are taught to believe by those who complain that a turnip contains 80 or 90 per cent. of water.

On what grounds can we explain the colour and flavour of butter from grass-fed cows and the pale and inferior butter from hay; or again, the palpable difference between hay cheese and grass made cheese? Surely these differences must be due to the conditions in which the water exists in grass. It is, in fact, not water, but a natural solution of materials such as cannot be imitated successfully by any combination of pump-water and artificial foods. JOHN WRIGHTSON.

REPORT OF MM. G. A. GIGAUT AND J. D. LECLAIR

(Continued)

ON FEEDING.

(EXTRACTS FROM THE WORKS OF MESSRS. BOGGILD AND SVENDBENS).

Opinions differ a great deal regarding the influence of food upon the quality and quantity of milk. This is very natural, seeing that not many satisfactory scientific experiments have been made.

Most of those experiments were made in Germany, but with such a limited number of animals that the individual qualities of these latter and the conditions of the place must have had influence that should be taken into account.

During the past year Dr. Fjord commenced experimenting on the feeding of dairy cattle and pigs on a large scale.

The most natural food for cows is grass and hay. We notice, however, that in the milk producing countries, such as Switzerland, Holland, Ireland, Italy, and others, the cows are almost entirely fed on grass in summer and hay in winter, and that they give great quantities of milk. In our country, the grass cannot grow so abundantly or be so good as in those countries; consequently, we must cultivate the land as well as different kinds of plants to feed the cows.

There was a time, not long since, when every farmer sold grain and when the cows were considered as a necessary evil for the consumption of the straw; in our days, when the butter is the greatest source of our agricultural revenue, we should spare no efforts to cultivate plants that give us the most abundant yield, and impart to our dairy products superior qualities.

As we have said, grass is an excellent food to secure good products, and the principal kinds of grass cultivated in this country are rye grass (*Lolium perenne*), Italian rye-grass, (*Lolium italicum*) (timothy), (*phleum pratense*), orchard-grass (*Dactylis glomerata*), tall oat-grass (*Avena elatior*), Bromegrass (*Bromus secalinus*), meadow-oats (*Avena pratensis*), meadow fox-tail (*Alopecurus pratensis*).

Rye-grass is one of the best for cows; it was specially liked in England, whence it spread into all the other countries; it is also called English rye-grass. It grows almost in any place, especially where the soil is sandy. It is better for grazing than for hay, as it tillers freely, putting forth numerous and strong culms, and prevents weeds from spreading, for this reason it is a first class grass for lawns; it is a perennial grass, while many of the other grasses die away in winter.

In moist places this grass is subject to ergot, which, when abundant, may cause miscarriage in cows.

The Italian rye-grass is of a more delicate tint, grows higher, and is consequently more suitable for hay. This grass grows rapidly and gives a splendid yield, even the first year; it develops best in a fertile and dry soil, cows like it very much, and it is considered to give a better flavor to the butter than does the English rye-grass.

Timothy, is a grass very much in use; it develops very late and can withstand considerable frost; so much of it should not be given as of other grasses.

Orchard-grass is a tall plant, very common, that grows well in both dry and moist soils; it develops rapidly, and gives a large yield; it should be cut before going to seed; if cut later, the cows do not take to it, as the stalk is hard and dry.

Prairie or meadow-oats is one of the best kinds of grass. It grows in many untilled places, along the ditches, by the roadsides, etc. The English consider that this grass contains a great deal of nourishment; during later years, in the artificial meadows, it is greatly cultivated. Mr. P. Nielsen, dairy expert, did much to teach farmers the raising of this plant.

The tall oat-grass, called also French rye-grass, has been long cultivated, but particularly during the past few years; it is a leafy plant, with a very soft stem, which reaches a height of two feet four inches (Danish). It suits as well for hay as for pasturage, since it gives a large amount of nourishment that the cows greatly like.

The fox-tail meadow-grass (*Alopecurus pratensis*) grows best in moist soil, but it can be advantageously cultivated, as a mixture, on common soil; it gives large yields of hay on artificial meadows, and is remarkable for its copious after-math. On drained land, as, for example, at Rosvang, it is raised considerably for feed. This plant also grows with rape, (1.) and yields a good quantity of seed that obtains easy sale.

The brome-grass (*brome des seigles*) is an annual plant that grows rapidly and almost everywhere; it reaches a height of two feet four inches (Danish)

Then come the red and white clovers, the yellow field clover or trefoil, peas, vetches, beans, which are our food plants. Like the grasses, these plants contain considerable sugar, but they also contain nitrogen, which is principally found in the seed, and this causes peas, beans and vetches to have a greater food-value than the grains.

Red clover has benefited agriculture more than any other plant in our time. Red clover, like all other kinds of clover, has flowers that gather in heads; the stem is divided, and grows about one to three feet high. In this country two kinds of red clover are grown—the early and the late, although the former is the more in use. Early red clover flowers in mid-June, at the same time as the rye-grass. If cut then, and the season is good, it will give another yield in August. It is preferable to raise it on ground where it is left for two years; the second year's crop and the after-math serve for grazing, while the first year's crop is cut for hay.

(To be continued.)

(1) *Raye and colza* or *colseed*, are almost identical except in the form of the leaf of the colza. A. R. J. F.

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