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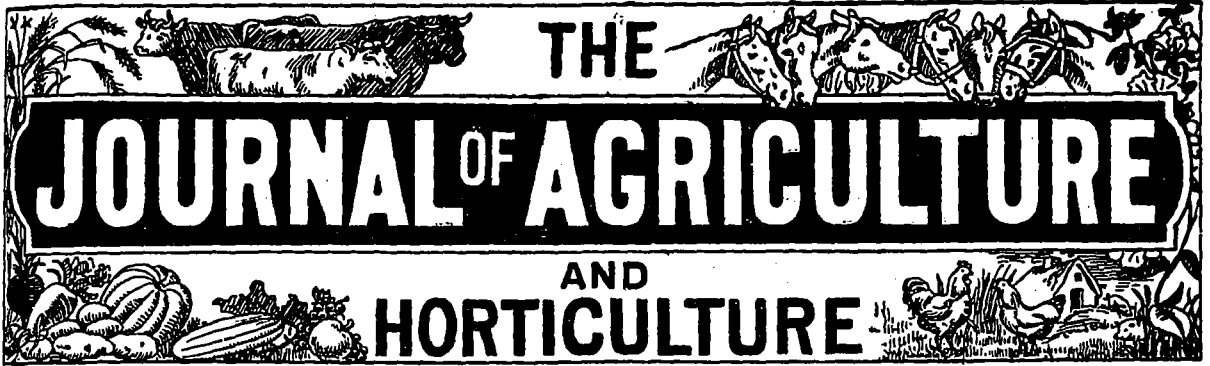
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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

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.. THE ..

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Table of Contents

NOTES BY THE WAY

Mangels.....	217
Value of stations.....	215
Manitoba wheat—crop.....	219
Food and milk.....	219
Markets in England.....	219
Cheddar-cheese	219
Slag vs. superphosphate.....	220

THE FARM

Laying down land to grass, Bunbury on.....	220
Fall-ploughing, Macfarlane on.....	222
Canadian farm-pupils, the Rev. F. Terry on.....	222

ORCHARD AND GARDEN

Quebec county-fair.....	224
Fruit-culture.....	225

THE DAIRY

Churns and churning, Weston Parry on	227
--	-----

HOUSEHOLD MATTERS

Experience teaches knowledge.....	228
Cutting-up a bullark.....	228
A few nice dishes.....	229

THE FLOCK

Losses at lambing-time, W. R. Gilbert on	232
--	-----

THE POULTRY YARD

How and for what purposes to breed, Andres on.....	233
Grains for poultry, Andres on	234
Moulting, care during, Andres on.....	235
Feeding for market, A. G. Gilbert on.....	236
Draining, continued.....	237

THE NEW SECRETARY OF THE COUNCIL OF AGRICULTURE OF THE PROV- INCE OF QUEBEC

By an order in Council, dated October 17th, 1898, the Lieutenant-Governor was pleased to appoint M. Octave Ouellette as secretary of the Council of Agriculture, in the place of the late Mr. Ed. A. Barnard.

In consequence of this nomination, all letters concerning any matter relating to the Council of Agriculture are to be addressed to M. Octave Ouellette, Department of Agriculture, Quebec.

To M. Ouellette, too, are to be addressed all letters and papers sent by the agricultural and horticultural societies, farmer's clubs, &c., to the Department of Agriculture.

Notes by the Way.

Mangels.—My farm-tutor, Wm. Rigden, the celebrated Southdown breeder, who, on his farm at Hove, near Brighton, had all through the summer unlimited supplies of all kinds of green-crops, always kept his mangels till June before using them; and when his own crop of that root was exhausted, he used to pay almost any price for mangels grown by his neighbours; so that, by the time the Royal Agricultural Society's show was held, i.e., mid-July, one might say that the ewes and rams preparing for exhibition had chiefly subsisted on that root: he knew what he was about, if any one did!

We were led to these remarks by a paragraph in the *North-West Farmer*:

"Mangolds as a root crop are less noticed than they deserve. Patches of them are grown, but these patches are the healthiest root crops to be

found in Manitoba. They seem less shy to grow than turnips. In the spring, even when fed in the smallest quantities, they are a valuable ingredient in the feeding of milking cows, to whose milk they add no unpleasant flavor. The excellent keeping qualities of the mangold are well known. Some authorities go so far as to contend that mangolds improve so much by keeping, that in the following April or May they are worth almost half as much again as when pulled. This improvement is attributed to a chemical change which takes place in the roots, and which results in an increase in the percentage of sugar and digestible albuminoids present." (1)

That those who go so far as to contend, that they improve so much by keeping that, in the following April and May—add June and July,—they are worth almost half as much again as when pulled, are right we are sure; but may the improvement in quality not be principally owing to the loss of water, just as old hay, in England, always fetches a pound a load more than new hay; old oats, a shilling a bushel more than new oats; old oatmeal, two or three pounds a ton more than new meal—i. e., when used for hounds;—and old beans, for horses, as much as fifteen pence a bushel more than new beans. There cannot be much theoretical value in the chemical changes in these articles of food; but practice says that the practical value of the loss of water in them is very great.

Value of Stations.—If all the experiments at the Stations in the United States are carried on in the same careless way as the following example, they must be valuable acquisitions:

"The old style idea was that manure must be properly rotted before being used, and if it is wanted for a limited quantity of green crop, it is perhaps best to rot it before it is used. But we grow very few green crops and must for the application of most of the manure we make find out how to apply it in the way that gives least trouble and brings most satisfactory results. Experiment stations have tried a good many varieties in the way of applying manure. The Ohio station has just published the results of two years' actual test of the difference between rotted manure and that drawn directly from the stable and found that on a corn crop the manure taken from the stable

made a good deal better yield than that from the yard and rotted. The second year the land was sown to wheat and the results were about equal. But at this stage it was recollected that the manure direct from the stable was dropped by richly fed cows, while that from the yard was from poorly fed stock. Such experiments are not worth the paper they are written on, because the main virtue in any manure comes from the quality of the feed."

We quite agree with the *North-West Farmer*, that such experiments are not worth the paper on which the results are written, and we very much fear, from the few numbers of the bulletins that reach us, that an enormous proportion of the money of the public is annually wasted at these institutions. We are still in favour of the "old style idea," and prefer rotting manure for all crops, even for top-dressing meadows. Those who like to see their fields full of weeds, can use fresh dung if they like, but as long as Lawes and Gilbert, at Rothamsted, England, allow their farmyard manure to rot, and turn over their mixens, we cannot possibly find fault with the practice. As for the heat of a properly made dung-heap not killing weed-seeds, theorists may oppose the doctrine; but as long as practice shows that weed-seeds are killed by a moist heat, such as is the heat in a mixen, we advise all our friends to rot their dung. An instance:

In 1884, we were manuring an acre of land for potatoes; the mixen, that we had carefully prepared by piling up in a square form, and turning over once, when the heat had risen to something like 160°, had just run short by two or three drills. We drew on enough *raw* dung, derived from the same source as the mixen, but never heated; the crop of weeds on the two or three drills was a sight to be seen, while the drills manured with the heated, rotted dung were as clean as usual.

Why should dung be rotted for "a limited quantity of green-crop and put on raw for a corn-crop?" Because the rotted manure would be ready to assist the young plant at the start, we suppose, and the great free-growing corn can look after itself. But a trifling dressing, say, 200 lbs. of superphosphate would, if drilled in close to the seed, be much more likely to bring on the turnip-crop in its early stages than the best dung, and the half of the dressing of farmyard dung would carry the growth on in the subsequent stages.

(1) The proper way to spell the name of the root is *Mangel*. Ed.

Of course, there are two ways of treating dung ; one way is to let it lie scattered about till wanted, then, gathering it together and applying it at once to the land ; the other, to cart it off to the stance, build it up, on a bed of earth, in a square heap ; the horses drawing it up on to the heap and thereby compressing it firmly, and covering it with six or eight inches of earth. Then, ten or twelve days before wanted, turning it over carefully, putting all the rough outsides into the middle, and taking care to keep the sides upright, and the top level all over, so that the heat may be equal in every part of the mixen. We, being decidedly of the "old style," prefer the latter way of working.

Manitoba crops of wheat.—Richard Davis, of Sidney, threshed 298 bushels of wheat off four acres (not *arpents*) of land, equal to 74½ bushels to the acre ! Peter McIntyre, of Neepawa, threshed 1926 bushels of wheat in ten hours, equal to 192 bushels, or 24 quarters, in an hour. A most marvellous day's work ! As, in England, we had three sets of Clayton and Shuttleworth's 8-horse power engines in constant work in the counties of Cambridge and Essex, we may be supposed to know what constitutes a good day's threshing in a good grain-district, and we must say that we never got through anything like what Mr. McIntyre seems to have done. Sixty quarters, equal to 480 bushels, were considered a good day's work, but then the wheat was mown pretty close to the ground. We heard of the men with one of Howard's, of Bedford, sets of tackle, jealous of our performance, cramming sheaves into their machine at an enormous rate, and turning out 17½ quarters, equal to 140 bushels, in an hour ; but these were reaped sheaves, and reaped pretty high up. No ; we never heard anything equal to 1926 bushels in a day.

Food and milk.—Practical people in England are getting hot upon the question : Can butter-fat be fed into milk ? As our readers know, we strongly adhere to the position that clover-hay, flax seed, and carrots will make richer milk than mangels, wheat straw, and brewer's grains. An experiment bearing upon the subject was recently conducted by a well-known continental investigator, and the results go to show that the percentage of fat in the milk was materially influenced by the richness of the food upon which the animals were fed. The experiment was divided into a series of periods,

during which foods of varied degrees of richness were given to the cows. Food very poor in fat was fed at first, and was afterwards substituted by another ration containing palm cake and cocoanut cake at separate periods, and later by an especially rich cocoanut-cake containing 30.24 per cent. of fat. Following this the cows were changed to the ration poor in fat. The results are given as under :

Period.	Ration.	Fat in the Food.	Fat in the Milk.
1	Ration poor in fat.....	0.297	3.21
2	Palm cake ration.....	0.437	3.52
3	Ration poor in fat.....	0.297	3.20
4	Cocoanut cake ration.....	0.747	3.48
5	Cocoanut cake ration (very rich in fat)	1.706	4.00
6	Ration poor in fat.....	0.297	3.23

Markets in England.—These have been in rather a quiet state lately, on account of the unsettled condition of foreign affairs ; but the tendency of prices for dairy-goods is decidedly upwards.

We are happy to see that Canada butter is fetching within 2½ cents a pound as much as the finest Danish ; if immense pains and exertion on the part of our Dairy instructors and inspectors cannot persuade our farmers to send nothing but pure, clean milk to our creameries, we must not be surprised to see so great a difference in the price of the best and the inferior qualities of our butter as in the following quotations :

BUTTER AND CHEESE.

London Central Market, Saturday.—English fresh butter (finest factory) 11s. 6d. to 14s. 0d. per dozen.

English dairy butter, as per value.

London, Friday.—The market is quieter, the higher prices having caused buyers to act with caution. For Irish creamery butter 106s. to 110s. is asked, for factories, 94s. to 102s., and for farmers' packages 80s. to 88s., with a steady inquiry. Cork quotations show only trifling changes—firsts at 88s. to 91s., seconds at 84s. to 86s., thirds at 74s. to 79s., and fourths at 65s. to 69s. f.o.b. The reduction in French has attracted additional attention. Fresh rolls, 11s. 6d. to 14s. 6d. ; extra mild baskets, 112s. to 114s. ; first quality, 106s. to 110s. ; second, 100s. ; crocks, 94s. to 104s. Finest Danish, casks, at 116s. to 118s. ; fine, at 106s. to 112s. ; and finest Finnish, casks, at 102s. to 106s., are quiet, the demand being checked by the high prices. Russian casks are offered at 86s.

to 92s.; Friesland factories at 106s., and casks at 104s. to 106s. experience a very dull trade, but finest Canadian continues in good request at 102s. to 108s., while fine makes 92s. to 100s., and inferior, 76s. to 84s. Sales of English cheese have been made on about the same terms as hitherto, including factory Derbys at 42s. to 46s., and Cheddar has changed hands at all manner of prices from 42s. upwards; medium ranging up to 52s., fine from 56s. to 66s., and finest at 70s. to 74s. per cwt., being, if anything, a shade higher for top quality. Canadian fresh landed goods of the finest quality sell well at 44s. and 45s., but for summer goods the demand is quiet at 38s. to 40s. A few United States offer at 40s. to 42s. Dutch sell well for finest selections at rates unchanged from those ruling at the close of last week.

By the bye, we saw a statement in an exchange the other day to the effect that our Cheddar is equal in value to the best Cheddars made in England! The difference, according to the list is rather great: "Finest Cheddars, 74s. per 112 lbs.; Canadian fresh landed goods of the finest quality, 45s., so Canadian is worth $9\frac{1}{2}$ cents and English 16 cents, upwards of 70% in the latter's favour. There must be something in the English pastures, after all.

Slag v. Superphosphate.—The instructive report by Professor Wright, of the Glasgow Technical College, on experiments carried out on a number of farms in the West of Scotland in 1897, with references to those of previous years, contains the results of some trials of basic slag against superphosphate. The first noticed in the report is one carried out on a single farm to compare the residual values of some phosphatic manure applied to the turnip crop in 1895, no manure being put on for the oat crop of 1896 or the grass crop of 1897. A dressing of 6 cwt. of superphosphate per acre, costing 18s., applied to the turnip crop only, gave the following yields in excess of those of the unmanured plot:—6 tons 9 cwt. of turnips, 460 lb. of oats, and 2 cwt. 16 lb. of hay. The corresponding increases resulting from the application of 688 lb. of basic slag, containing phosphoric acid equal to that of the superphosphate, and costing 16s. 11d., were 5 tons 5 cwt. of turnips, 260 lb. of oats, and 1 cwt. 108 lb. of hay. Valuing the produce equally, the total profit on the three crops was £4 0s. 7d. from the superphosphate, and £2 16s. 3d. from the slag. The results of 375 lb. of bone meal, costing 18s. 5d., were smaller than those of

slag in the turnip and oat crops, and the same in the hay crop, the total profit from its use on these crops being £2 0s. 1d. As superphosphate is a quick-acting manure, it has commonly been supposed that its residual value is less than that of slag or bone meal; but in the case under notice it appeared to be greatly superior to either. Again, in some hay experiments the average results of twenty plots on five farms showed that superphosphate proved more effective when applied to clover and rye grass for hay than a corresponding quantity of basic slag. "If the results be examined in detail," Professor Wright remarks, "it will be found that slag produced larger crops in only two plots out of twenty, and that on no single farm did it prove uniformly superior." In summing up the point, the professor adds: "For several years now an attempt has been made in these experiments to determine the merits of basic slag in comparison with superphosphate. They have been compared on the turnip crop, on ryegrass hay, and in respect of residual value, and in all these points, except on peat and mossy land, the superphosphate has proved itself superior. In residual value, and as a manure for turnips, the superiority has been great, though the experiments on turnips in 1896 appear to indicate that slag could be employed as a means of supplying part, though not the whole, of the phosphates for that crop with possible advantage. On ryegrass and clover hay the superiority of the superphosphate has been less decided."

The Farm.

CULTURAL PREPARATIONS FOR LAYING DOWN LAND TO GRASS

(PART I.)

Condition of seed-bed.—Kind of land most suitable.—Preparation of land.—Bare fallow and root-crop.

In the laying down of land to grass a great many questions have to be considered, but we often find, alas, that the condition of the soil at the time of sowing receives very little attention. Grass is frequently regarded as a last resource for land which is thoroughly exhausted, and which no longer pays for the cultivation of any other crop.

It is too often assumed that grass will come up and grow anywhere, and under all circumstances. And although the old and wasteful process of allowing land to go to grass (1) is no longer advocated to any extent, yet it is frequently considered sufficient to harrow in a few seeds, and let them take their chance.

Either practice is exceedingly improvident, resulting in immense loss of both time and money to those who follow it.

The fact is that no farm crop requires more care in the preparation of the land than does a crop of permanent grass; and there cannot be greater folly than to sow costly seeds, especially of the finer varieties, on land which has not been properly prepared to receive them.

The choice of suitable land for permanent pasture is seldom open. Other circumstances than its fitness for this purpose generally determine the matter. But occasionally it does happen that on some estate or farm there is a possibility of selecting the fields which are to be turned into grass. The guiding principles are few and simple. It may be accepted as an established conclusion, that sharp sands and gravels are not well adapted to the formation of pastures, but that heavy loams and most strong clays are eminently suitable for grasses and clovers, and will produce abundant crops. The fact that heavy soils are expensive to cultivate as arable is an additional reason why they should be laid down to grass. Again, if there be the choice of two fields, one sloping to the north and the other to the south, preference should be given to the former, because it will be less liable to burn in a hot summer.

Drainage is a matter of the utmost consequence. If the land is naturally well drained, there will be a fortunate saving of expense, but otherwise this operation should be preliminary to all others.

Beyond question, the very best preparation for a spring sowing of grass seeds is a bare fallow in the previous summer. This affords the opportunity of destroying successive crops of indigenous annual weeds, and, within three months from the date of sowing, it is important that these should be got rid of by cultivating and dragging, rather than by ploughing, for the plough is only too certain to bring to the surface a fresh stock of weed seeds ready to germinate in the following spring. Many instances may aid or hinder the work of

preparation. It depends not only upon the character of the soil and the previous cropping, but also upon the atmospheric conditions which prevail while the operations are in progress, and it is here that the advantage of a bare fallow is thoroughly realized. There is the whole summer and early autumn in which to accomplish the task.

Deep ploughing should be carried out fast, and if subsoiling is considered necessary there is all the greater reason for doing it early. Then, by means of the drag and the roller, the soil can be cleaned and so far prepared to receive the seeds that in the following spring only one or two turns with the harrow will be necessary to perfect the seed-bed. There are good reasons for insisting on a thorough preparation of the land in the first instance. Careless and half-hearted work wastes both seed and labour, and the necessary operations have to be attempted a second time under great disadvantages. Causes entirely beyond human control may sometimes render it needful to re-sow, even after great efforts; but no one should lay himself open to the possibility of self-reproach for having contributed to partial failure by neglect. More of the failures in attempting to create pastures could, if all the facts were known, be traced directly to the unfavourable state of the soil, and to its previous cultivation, than is generally believed, and it is true wisdom, as well as sound economy, to wait a year, or even two years, rather than risk sowing upon soil which is foul or out of condition. The bare fallow, however, will be the exception, but it is an expensive operation and, as a rule, cannot be afforded.

In the interests of the coming pasture, a root-crop is the next best preparation, and unless the land is capable of growing a first-class crop of roots, it will be incompetent to produce even a fair pasture. Now a root-crop offers this advantage, that, while few are disposed to manure a bare fallow at all heavily, a thorough dressing of farm-yard dung will not be denied to the mangels or swedes. To the young grasses also it is a great gain when the land can be made rich and put into good heart before the sowing takes place, in preference to their being dependent on manuring processes immediately before or after the seed is put in. The tender and delicate roots of young grasses may be seriously hurt by coming in contact with raw manure and the growth of the plants will be badly retarded. Whereas they can readily assimilate a rich dressing given in the previous year

(1) i. e., without seeding down. Ed.

which has had time to become mellow, or to be absorbed into the staple.

WALTER S. G. BUNBURY,
Compton Model Farm.

(*To be continued*)

FALL PLOUGHING.

To the Editor of the JOURNAL OF AGRICULTURE.

DEAR SIR :—This has been a fine season for getting work done, and consequently there is a very large area of ploughing done. They used to say you would have the best crops when land was very hard and dry when ploughed ; it looks as if this would hold good for the past year, any ploughing that was done last fall (1897) was done dry. This year we had a good crop. This year some land has been far too wet ; so if that sort of reasoning holds good we need hardly expect as good crops next year as this. There could be a great improvement in the general run of ploughing. Not one man in ten that I have noticed the past month has lifted what is called the hinting (1) furrow, that is the furrow after your grass furrows, or stubble as the case may be : the one furrow in my opinion as important as any, for the purpose of draining all the surface water off. I am positive that those ploughmen who go to, and compete for prizes, will always take up the hinting. Others think it a lost of time to do so. In some sections they also make very narrow ridges 8 and 10 feet wide. To my mind, where ploughing is properly done and the ridges well rounded, that 14 to 18 feet is narrow enough. It also seems so funny to look at some fields and see what a bend every ridge in the field has about it, in some instances to almost a half circle, how each one will regularly bend his furrows. You would naturally suppose they could plough straight, if they tried, they may be somewhat like an American farmer out West who could plough fairly well ; he started with a wild pair of oxen, he tried hard to plough straight, but could not guide the oxen and the plough very well at the same time. So, he said, we'll go ahead ; the field has all got to be ploughed any way !

There has been a great deal of ploughing done this year. Some farmers got all done some time ago, while others, if the season kept open until Christmas, they still would have some to do.

(1) Hint-end, or hinder-end? In England, "crumb-furrow." Ed.

There has been quite a number of ploughing matches this year. Huntingdon, Chateaugay, Beauharnois, Missisquoi, Bagot, Hochelaga, have all held competitions, while there may be other counties that have held them although I am not aware of the fact at the present writing. The one held at Longue Point being the most successful, not only did they give a prize for ploughing 2 ridges, and a good prize too (\$12 00) but they also gave prizes for the best 12 acres, 4 of sod land and 8 in stubble. This is something new, an innovation as it were but a first class idea, one that should commend itself to well thinking people. Some ploughmen have a fancy plough that they keep only for competitions and like their good clothes to be used on special occasions. They can be very particular and plough a couple of ridges at a match, but the rest of their ploughing is not first class. This new idea makes it imperative that all must be done well. I see that at the competition of Hochelaga, Mr. Louis Roy took first prize, and had the full 100 marks. He deserves to be congratulated. Mr. Henderson following him very close with 98 points. The men from old Scotia are generally good at holding the plough, but I see that quite a few in Hochelaga were of French origin. This is a good omen, long may it continue. I was just looking back a few days ago, and came to figure up it was just 32 years ago since I took my first prize at a ploughing match. I can remember it well : I went home quite proud of my success.

Yours truly,

PETER MACFARLANE.

Chateaugay,
October 29th, 1898.

CANADIAN FARM PUPILS.

Some few years ago, the great question amongst English parents was "what shall we do with our boys?" Of course among the wealthier and more influential classes, the question was not so hard to solve, the Army, the Navy or the Church being always open to that class. To the so called "middle class," however, the question was and still is, indeed a crucial one. With the idea then of solving this most difficult problem, by offering the sons of overcrowded England, some definite employment in Canada, an association was organized called "The Canadian Farm Pupil Association." The headquarters of this Association

were in Liverpool. On making an application to the Secretary, any boy or young man, after paying the sum of \$100.00 and signing certain papers, received in return a first class ticket from Liverpool to Montreal by the Beaver Line and from thence to London, Ontario, by the G. T. R. On his arrival in London, he was received by the Canadian agent, an English Church clergyman, who at once placed him on a suitable farm. By a special agreement with the farmer, the pupil was entitled to a room with board and washing, and also to a certain fixed amount of wages, from the time of his arrival. All this was included in the modest charge of \$100.00. The pupil was expected on his part to conduct himself properly, and to be willing to learn to do any kind of work on the farm, in the same way, as an ordinary "hired man."

By the aid therefore of the Association, the Canadian farmer could obtain a "farm-hand" at merely a nominal cost, and the English "boy" could secure a home in Canada, with some definite occupation at once, instead of spending time and money—as so many do—in looking about for a "job." At first sight therefore, it would appear, that this "Association" was a real "boom" both to the Farmer as well to the Pupil, and no doubt in some cases it has been of great advantage to both parties concerned.

But now let us look into this matter more closely and let us consider the pupil first of all. In the majority of cases, he will be a fairly well-educated lad, about 18 years old, who has just left one of the smaller Public Schools. Very likely he has not been altogether a success at school, and his parents are unable to manage him at home. He must, however, earn his own living in some way or other. After therefore causing much anxiety at home as to his future, the parents finally decide that they will send him out to "farm" in Canada. Now mind you, these good people would not think for a moment, of allowing their "dear boy" to work on a farm in England, and further, no English farmer would ever have such a class of boy to work for him. However, when he once arrives in Canada, the parents think that being "out of sight" it does not much matter what kind of work he attempts.

In former years, when this great country of ours was not so well known as is now happily the case, there was, naturally perhaps, any quantity of

Canadian Farm literature in the shape of circulars, leaflets, etc., spread broad-cast over England in order to "boom the country." This, then, is at once equally devoured both by anxious parents and "young hopeful" alike. The fond mother spends some days in preparing her son's wardrobe. With the mistaken idea that he is going to the Arctic regions, the son himself dreams of shooting bears, and persuades his father to give him a "Winchester repeating rifle," also a revolver, in case he may be attacked by wild Indians. Besides these dangerous weapons, he will also be very likely provided with a complete riding outfit, as he has already had his first taste of "riding to hounds" in the shires, and imagines that most of his time on a Canadian farm will be spent in the saddle. Notice, therefore, that in majority of cases these "Farm-Pupils" before leaving England are in a blissful ignorance both as regards the country generally, but more particularly as to the kind of life they are going to lead when they arrive here. This, of course in most cases, is entirely their own fault for not inquiring from those who have had some experience in Canadian life, and trusting to the kind of literature, which too often, gives them a false impression of farming in Canada.

To proceed, however, in following the steps of our Pupil on his journey to the "unknown country." We will pass over the many sad and pathetic scenes, which take place when he bids farewell to all his cousins, sisters and aunts, and imagine that, after rather a long voyage, he has safely landed with all his "impedimenta" at Montreal. After having passed the Customs with not much difficulty, he will very likely find, when he arrives at the G. T. R. depôt, that his baggage is over weight and the ordinary excess charge is demanded, before he can check it to London. After, however, cheerfully paying his dues, he "boards" the night express, and with his first experience of travelling on the cars by night and day, arrives in London, the less, the following afternoon. He then proceeds at once to the hotel specified in his papers and meets his first Canadian friend, an English Church clergyman, who, after showing him all the kindness in his power, either conducts him personally, or sends him to some farmer in the vicinity, who has made an application for a Farm-Pupil.

Now, of course, it is more or less a matter of chance as to the kind of farmer and size of the

farm to which the pupil is sent. Though, as a rule, some enquiries have been made before hand by the Canadian Agent. In any case the lad finds himself living with strangers in a strange land, and we can readily understand that during the first few days, he will succumb to home-sickness. He is not allowed to indulge very long in this weakness, as he soon finds out that he has very little spare time during the day in which his mind and body are not fully employed. "Early to bed and early to rise" is the orthodox rule on a farm, especially during the spring and summer months when every hour is precious.

Now for a glance at his ordinary day's work. To start with, he has not been accustomed at home to rise very early in the morning, and he finds it very difficult and against the grain to "turn out" at 5 a. m. and do all the "stable work" before breakfast. Possibly, however, he does not mind attention to the horses, as he has often watched the groom at home and may have had a pony of his own to feed and water. But farm horses and farm stables, are not quite the same as those of a private gentleman, and perhaps the pupil will very much dislike cleaning out, not only the horse and cow stables, but the pig-pen as well. Then how very "clumsy" he finds himself when he handles a plough for the first time. How difficult it is to keep the point from either dipping too deep or from jumping out of the furrow altogether! As for making a straight furrow, why, it seems an impossibility, and yet how easy all this seems to be to his instructor, or even to any other lad of his own age who has been brought upon a farm. Or, perhaps, he is asked to split up some wood, and an axe, which seems to be used for everything, is put into his hands. Alas! however, the blow which was so well intended, instead of striking the tough stick, glances off, and makes a deep gash, not only in his boot, but very likely in his foot, as well. This will cause the bystanders much fun and will be a standing joke against the "green-horn" for some little time, though rather an unpleasant one for the victim. Even such a small matter as "hitching up" a team will be quite an education for him, and it will be some time before he knows the names even of the different parts of the harness.

F. W. TERRY.

(To be continued.)



The Orchard and Garden.

(CONDUCTED BY MR. GEO. MOORE).

QUEBEC COUNTY FAIR.

A rainy day did not deter quite a number of visitors from attending the annual Fair of the Quebec County Agricultural Society. In the *cattle* department the show was not large but it had the merit of being strictly representative of the district, and the grade cattle, especially the one and two year old heifers, were of excellent quality, showed a marked improvement over former years, and when compared with the miserable creatures of ten or fifteen years ago gave proof that the attention, well directed and applied to breeding stock, had not been neglected, and had produced the best results. Horses were few. The breeders seem discouraged, which may turn out to be a mistake: the most useful and noble servant of man will never be dispensed with notwithstanding all the horse power saving machinery that may be invented. But the Exhibition was chiefly notable for its display of roots and vegetables. Indeed it would be impossible to conceive of finer specimens. This may be accounted for big the fact that the season has been more favourable for their growth, the frequent showers and intervening sun shine just suited the light land in the vicinity of Quebec, and where cultivation was carefully attended to the crops have scarcely ever been equalled either in quantity or quality. Of potatoes there were a great many exhibits, all more or less remarkable for size, cleanness of skin and form, and it was noticeable that the old "Early Rose" again came to the front, and a magnificent half bushel grown by Mr. J. Moore, of St. Foye, obtained the first premium. Nor could the judges have experienced much difficulty in according the prize, for amongst all the admirable baskets of specimens which surrounded it; its superiority in all points was easily perceptible.

And it was the very *beau idéal* of what good potatoes should be except perhaps they were like the gourmand said of the turkey, "one of them was two big for a meal for one person and too little for two." Quebec, especially the Little River and St. Foye neighbourhoods, have long been celebrated for the quality of their swedes; but surely such examples of them were never before produced. The first premium basket also grown

by Mr. Moore, were perfect globes, not too large, skin clean and smooth, without a wrinkle or excrescence. The carrots, beets, and mangels were equally smooth and good. The prize onions were of nearly equal size, sound and heavy and measured 5 to 5½ inches in diameter : variety, "Red Wethersfield."

There were some good dishes of apples of the few varieties that succeed well here, namely Alexander, Duchess, and Wealthy.

The horticultural part of the Exhibition was, as to quality, superior to the Provincial, and was a better exponent of what could be done in the County, all the specimens being, undoubtedly, the productions of local growers.

Alas ! there were some objectionable things which should be eliminated from all such gatherings held ostensibly, to educate the public sentiments and moral status. I allude to the presence of those miserable loafers and drones, the gamblers with their roulette-tables and dice-boards, at which *children* were risking their cents, and grown up men their dollars, with a certainty of ministering to the vicious propensities already found in the latter and inculcating them into the plastic minds of the former, thus counteracting all the good likely to be derived from the instructive portion of the proceedings.

In these days of advancement in the attempt, successfully made to improve the moral and religious character of the rising generation, one would think that such doings should not be permitted, and gamblers should not be allowed to enter the precincts of the Exhibition grounds to prosecute their nefarious and vitiating occupation ; worse than picking pockets because the victim of a pickpocket only loses his money or watch, while those wretches, not only steal this but rob the youth of their innocence and character for honesty.

A few friendly hints to the managers may not be out of place. The prize cards would be better if they were of various colors instead of all the same, so that visitors see at a glance which specimens had secured the 1st, 2nd or 3rd premiums ; and if the names of the winners were conspicuously written on each, that would be step in the right direction, because it is natural to suppose that each successful competitor would like his friends and the public to know of his success.

NOTES ON PRACTICAL ADVICE ON "FRUIT CULTURE"

The Reverend Fathers Trappists have contributed to the current literature of this important subject, a most useful and opportune essay, and it is easy to see that the good advice given is the result of practice. An epitome of the whole is comprised in the first fundamental principles with which the work begins and without the observance of which no success in fruit culture can be expected.

1st.—"Provide good, healthy and vigorous plants."

It frequently occurs that the inexperienced in fruit culture deceives himself and is deceived by being induced to purchase trees from some irresponsible agent because they are cheap, thinking that if he can save a few cents on the cost of each tree, he is making a good bargain whereas, in most instances, the very reverse is the case. A good article is always worth more than a poor one, and even one of medium quality, and this proposition applies with double force in the case of a living thing, such as a fruit tree, which we expect to thrive under our care. No farmer would think of buying an unhealthy calf for the purpose of rearing her into a first-class dairy-cow, unless he was prepared to try his veterinary ability, and, being assured that she had no organic disease, bear the risk and expense of curing her, nor by the same rule would any sensible man plant a tree which already showed signs of incipient decay.

Some nurserymen, unfortunately, are not particular enough as to the quality of the stock they send out, hence the absolute necessity of paying a fair price for a first-class article, and dealing with a firm who know their business, and whose integrity and reliability are "sans reproche."

The uninitiated may find the simple suggestions following useful in guiding their judgment as to what a good tree is ; as stated, trees three or at most four years old from the graft are to be preferred ; the caution against planting large, old trees is capital, it usually ends in loss and disappointment to the planter. The roots of a perfect tree should be equally distributed or, in other words, equally balanced round the base of the stem. This will be the case if the tree has been crown grafted on the whole root and not on pieces. Piece root-grafting is, to my mind, a mistake. I know it is an easy and economical method of propagation as far as time and material are concerned, and has

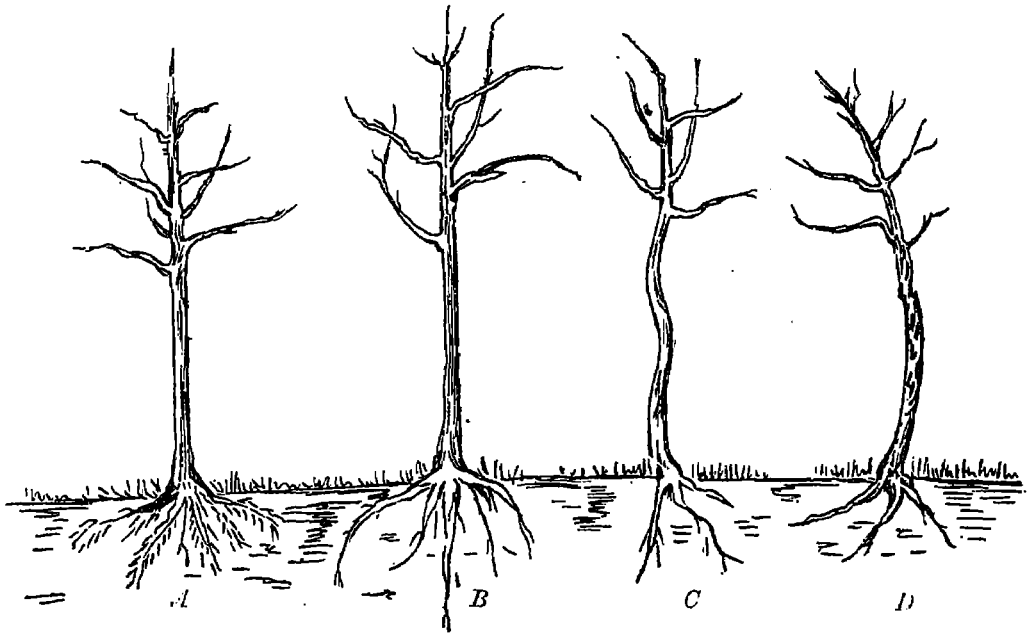


its advocates amongst our most eminent horticulturists, but it is doubtful whether such well proportioned and vigorous trees can be produced as when the whole stock is used. It is claimed by the advocates of this system that trees so grafted form roots on their own stems and are then no longer dependent upon the stock, but it is a well established fact that weak growing varieties partake, in some occult manner, of the natural quality of the stock on which they are worked, hence a slender growing apple will be more vigorous on a strong growing crab. We have notable examples of this in pears budded on the quince, and roses on the Manetti stock: the vigor of the pear is

the side shoots not being too long but short, stout and well ripened. The sketch will give an idea of perfect and imperfect trees (*see sketch*).

a, a perfect tree with fibrous roots, which have been produced by careful transplanting and previous care in cultivation.

b. represents a tap rooted tree without fibres and is not so good, because these tap roots will have to be shortened and new fibres formed before the tree can absorb its nutriment from the soil, involving a delay which if too prolonged, especially in dry seasons, will most likely cause its death. The long shoots seen in fig. *b* are produced by a too rapid and succulent growth consequent



checked and the tree rendered more prolific while that of the rose, placed on a more vigorous stock, is increased to a remarkable degree over plants on their own roots or budded on the dog-rose (I. of A., p. 33.)

The stem of a well-grown apple tree, except in some few varieties, which always have a tendency to grow crooked, will be straight as an arrow, 1 to 1½ inches in diameter at its base and gradually tapering to where the lateral branches originate. On the one hand bark bound trees should be discarded, and on the other, those of a soft and succulent habit are not so good as those of a solid and robust development. This will be shown by

upon the neglect of transplanting and therefore the formation of the top roots. Although these trees present an appearance of great health and vigor they are by no means the most desirable to plant.

C and d represent bad trees and are often the result of piece root grafting or want of careful and proper handling in the nursery.

The importance of selecting just the right quantity of trees to plant cannot be too strongly emphasized, for to overlook this, is the rock on which the hopes of many an amateur tree planter are dashed to pieces.

The Dairy.

CHURNS AND CHURNING.

Box churns are much more in use now than was the case a few years ago. At that time the barrel churn was frequently to be found in the creamery as well as the private dairy. The reason for the increasing use of the box churn is not easy to account for, unless it be their far simpler manufacture. However there are reasons to my knowledge, which support other claims of superiority of the box churn which are not universally known.

During a course at the Agricultural College, Tamworth, Warwickshire, England, in the winter of 1889-90, it was my fortune to attend a very extended trial of some six or eight different makes and shapes of hand churns. The barrel, diaphragm, square box, cylindrical and other churns, with some differences in construction or shape, were ranged side by side in the churning and butter-working room. Churning took place twice or three times a week, one churning day in each week for six weeks was set apart for the trial of churns. It was considered necessary to submit the churns to a trial under the different circumstances which are so frequently met with in butter making.

In one trial, the cream was divided up so that each of the churns was half full, the same amount of cream being in each churn, and churning commenced with the cream at the same temperature and acidity throughout. Time of commencing was recorded, churning beginning simultaneously with all the churns, temperature at starting was noted, and temperature at finishing; also time of finishing. In this case it took twenty-seven minutes for butter to come in the barrel churn, eighteen in the diaphragm churn, twenty-three in the box-churn, and twenty-nine in the cylinder churn. The temperature of the cream in the barrel churn rose from 54° F to 58° F, in the diaphragm churn from 54° F to 58° F in the box churn 54° to 57° F. and in the cylindrical churn from 54° F to 59° F. The grain was considered to be the same in each churn, although that in diaphragm churn was scarcely as perfect as that in any of the others. The amount of butter recovered in each churn was 10½ lbs. for the barrel, 9¾ lbs. for the diaphragm, 11 lbs for the box, and 10½ lbs. for the cylindrical, in one of the other churns, a dash churn, only

9 lbs. of butter was produced from the same quantity of cream.

This first experiment was in favour of the diaphragm churn in point of time, that is in length of churning, but the square box churn proved its superiority, in less increase in temperature and in total butter yield, and, on account of the 1° lower temperature at which butter came, less washing and working was required, and on the whole a rather finer product resulted.

Another experiment was made in precisely the similar manner with the exception that all the churns were rather overloaded, that is were a little more than three parts filled. The results from cream at a temperature of 56° was more pronounced in favour of the box churn than in the previous test. This time it took 28 min. for butter to come in the barrel churn, 26 min. in the diaphragm, 26 min. in the box churn and 35 min. in the cylinder; the temperature of the cream rose 2° in the barrel churn, 3° in the diaphragm, 1° in the box churn and 3° in the cylindrical churn; butter recovered 14 lbs. for the barrel, 12¾ lbs. for the diaphragm, 15½ lbs. for the box, and 13 lbs. for the cylindrical churn.

One of many other tests was made with all the churns but a quarter full, which again asserted the superiority of the box churn; the diaphragm, and cylindrical churn only being inferior in point of butter recovery ($\frac{1}{4}$ lb. less each), whilst in this case the barrel churn was left hopelessly behind, on account of the cream being carried round with the churn without concussion.

Some of the points noted during these trials were: the greater difficulty in washing a churn with any inside device such as the diaphragm, the excess of concussion caused by such inside devices, the regularity of concussion and uniformity of results from the box churn, the greater power required to revolve a barrel churn than any other shape, and above all the more exhaustive churning of the box churn under all circumstances than any other churn.

Since my interesting experiments with these "little fellows" great improvements have been made in churns both large and small.

Those awkward round covers, are done away with in the trunk churn of to-day. This churn, built exactly like a trunk, with a lid the size of half the top, will be hard to improve upon, it embodies durability, convenience, and facility of cleaning. There are no little round holes to poke

one's body into to reach all the butter and also all parts of the churn when washing it. Everything is in sight and easily within reach, and there is not the slightest chance for any specks of butter or particles of cream to escape the vigilance of the handler of the scrub brush.

This is the only perfect device too for the perfect ventilation of churns, which condition I hold to be absolutely essential, as a churn which does not dry thoroughly each day it is used, must needs be bad smelling, musty or sour. Undoubtedly the best wood for churns is hard wood which is not so easily acted upon by moisture, and which does not offer such a favourable field for the production of objectionable germs as do porous soft woods.

Churns require great care to prevent them getting foul. The following is the plan I adopt, daily, to keep mine clean: first wash with hot water and washing powder, then rinse with boiling water by shutting up the churn cover and revolving the churn a dozen times (with the butter-milk faucet open), then it is thoroughly steamed, and finally rinsed down with a pailfull of scalding water by means of a dipper, in order to get rid of any sediment which frequently will be found resting on the bottom. If this last water is extremely hot the churn will very quickly dry, if the air has free access into it, as in the case of the Trunk Churn.

Churns should always run at the same speed when possible, a churn more than half full should run no faster or slower than when half full or even less than half full. Speed should not be allowed to decrease if possible when butter comes, as this undoubtedly tends to an uneven grain or granules of different sizes, which means loss of butter.

In churning, one's object must always be to get as much butter out of the cream as it is possible to do, and not to churn quickly, as is often the case. With this object in view, thick cream, ripened and churned at low temperatures, will un-failingly give the most satisfactory results, as long as butter comes in a reasonable time, say thirty-five or forty minutes. But even these advantages may be easily offset, by a leaky churn or by carelessness when butter comes.

H. WESTON PARRY.

October 29th 1898.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

Knowledge bought by experience is very dearly bought, as the innocent often have to suffer in obtaining it.

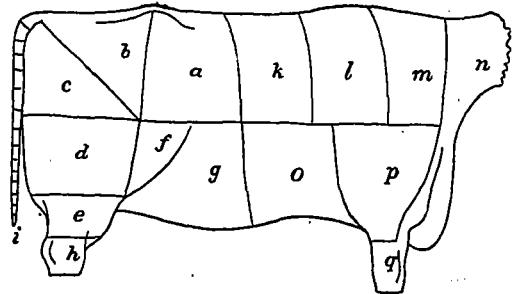
Practice must be made on somebody, and when the result turns out unsatisfactory, the practioner is covered with confusion and feels discouraged at the apparently hopeless task of ever doing well.

Time and perseverance are the only cure for this state of things. Much of this could be avoided by a short and constant study of the art of how and what to do in an emergency.

Those who contemplate housekeeping ought to study and practise earnestly the best way to do so before taking upon themselves this serious responsibility. There would then be no timidity on encountering the various shopkeepers, but knowing exactly what was wanted, the buyer could walk into a shop with perfect confidence and give their orders for it; no dread of encountering the butcher, but only to state what is wanted, and to be able to see the order carried out. The butcher would soon see with whom he had to deal, and would never palm off on such a person an inferior cut for the best. The illustration will help those who care to study the matter, how an animal ought to be cut up, and will serve to help them in the future and certainly add much to the comfort of the responsibility of housekeeping.

ILLUSTRATION

The English way of cutting up a carcass of beef



The proper way to cut-up a bullock.
is the following :

The hind-quarter.

A, the loin, is the principal roasting piece.
B, the rump, is the favourite steak-piece.

C, the aitch-bone, one of the favourite corning pieces.

D, the round.

E, hock-soup.

F, the thick flank.

G, the thin flank. F, and G, are fair boiling pieces when corned.

H, the shin for making stock for various purpose in cooking.

I, the tail for ox-tail soup, thought a great delicacy in England, but out here, it is thrown away.

The fore-quarter.

K, the fore-rib.

L, the middle-rib, and M, the chuck-rib, are all roasting pieces.

The shoulder-blade is cut out of the middle-rib and the spare-ribs below make a good roast or broil.

N, the sticking piece, good for stewing, but must be used when quite fresh.

O, brisket, boiled when corned, or stewed.

P, the leg-of-mutton piece, an excellent roasting piece if the beef is fat.

Q, Shin, used for the same purpose as the hock of the hind-quarter.

In addition to this there is the head, the two cheeks of which make a most excellent stew, and would be quite enough to feed a large family, any kind of vegetables can be used in this stew, the only difficulty is they are so cheap that the butcher won't take the trouble to get them for one, also the palate is very good indeed, and everybody knows how good the tongue is pickled, or stewed fresh, smothered with tomatoes.

The fore-quarter of beef is not thought as good as the hind, and is, in England, sold at a lower price.

A FEW NICE DISHES

A NOVEL FILLET OF MUTTON.

Take the thick end of a leg of mutton which has been hung till tender. Bone it carefully; fill the cavity with stuffing like that used for veal, and bind up tightly. Have ready some flour and water paste. Season the mutton with pepper and salt, and enclose in the paste. Tie it tightly in a cloth, and put it into boiling water and simmer it very slowly until cooked. It will take about one hour to each three pounds. Serve in the paste with red currant jelly.

TO BOIL MEAT.

To boil meats so as to retain the juice and soluble salts and yet cook it sufficiently, it should be plunged into boiling water and boiled rapidly for about five minutes. After this fast cooking the kettle must be pushed over to the back of the fire, where its contents will simmer gently. This tends to coagulate the outer rind of the meat so that the juices cannot escape. If meat is treated in this manner, the inside will be found juicy and tender, but if the meat is allowed to boil it will be found hard and chippy.

BAKED FILLETS OF FISH.

Fillet a good size haddock or a couple of soles. Lay the fillets one across the other on a dish that will stand the fire, with a small piece of butter on top of each. Pepper and salt them. A squeeze of lemon is an improvement. Lay over them a sheet of white buttered paper; bake in oven. For sauce melt an ounce of butter in pan, add one ounce of flour, and a cupful of milk, a little cream, and a few drops of lemon juice or essence of lemon. In making melted butter, the butter and flour should always be melted together in the saucepan. Then add the milk gradually, and stir all smoothly together to the consistence of thick cream. Allow it to boil for two or three minutes or the flour will not be properly cooked.

FILLETED FISH.

This is a novel way of cooking fillets of fish, but it makes a nice change from the fried ones, and is very suitable for people of weak digestion, or to those who are recovering from an illness. Take the number of fillets required, either plaice, whiting, or haddock will serve in the place of sole. Lay the fillets in a little oiled butter, and dust with pepper and salt, double each fillet in half, and place in a buttered tin or dish—use a fire-proof dish in preference to a tin one—pour round the fish a little stock made from the fish bones; cover the dish with a buttered paper, and bake in the oven till tender. When done, place the fillets on a hot dish and, with the liquor in which they were cooked, make a nice white sauce. Pour this over the fish and serve very hot. A nice change may be made by using tomatoes in the sauce.

TO BOIL SMALL FISH.

It is often inconvenient to put in a large fish kettle, say, two or three whiting or small haddock. These can be cooked just as well in a clean saucepan. Curl them round, and tie them on to a small plate, which will serve instead of a strainer and facilitate dishing up. As little water as possible should be used, covering the fish with a piece of well-buttered paper. Great care should be taken when dishing to keep the fish whole, and make them look as pretty as possible. Some fried parsley and cut rings of lemon should always be prepared for garnishing.

CRAB-APPLE JELLY.

A delicious jelly may be made from the common crab-apple, which is not useable in any other way that I know of. It is easily made, and makes a nice addition to our stock of jam on the store-room shelf. Carefully wash any quantity of crab-apples, remove the tops, and fill the preserving pan full of fruit, and then cover them with water. Boil them slowly till they are reduced to a pulp; now strain off the juice without any pressure through a piece of coarse muslin. For each pint of the juice thus obtained allow one pound of lump sugar and a little lemon juice. Put the juice back into a clean preserving pan, and let it boil for five minutes; then add the sugar and stir till it is quite dissolved; afterwards let it boil quietly till on dropping a little out of a spoon on to a plate it jellies. Put into small pots and cover down in the usual way. The lemon juice is entirely a matter of taste.

TO TURN OUT A MOULD.

To turn out a jelly or blancmange from a mould is not a very difficult matter, but it is often broken and spoilt from want of proper care. I think the best way is to immerse the entire mould in a basin of very hot water for about three seconds, then press the top edges of the pudding or sweet with the fingers. Place the dish upside down on to the mould, turn the whole right way up, and give one quick shake, when the pudding or cream should turn out perfectly clean and easily. Some cooks use a cloth dipped in hot water, and wrap this round the mould. I think, however, the first mentioned method is more likely to be successful when followed by an amateur.

SIFTING FLOUR.

It is necessary to sift flour for cake, and always before it is measured. A cupful is half a pint. The ordinary kitchen cup is made from tin, and is for convenience divided into halves and quarters. These cups may be purchased at any house-furnishing store for ten cents. All cooking teachers use the regulation measure of half a pint, which they call a cup.

SPONGE-PUDDING.

Half cup of flour and half pint of milk made smooth and run through a sieve. Stir this slowly into half a pint of boiling milk and cook slowly five minutes, stirring all the time. This should be done in a double boiler. Remove from stove and stir into it 3 even tablespoons butter. When cool add the well-beaten yolks of three eggs and half cup of sugar. Lastly, add the whites of three eggs whipped stiffed. Pour all this into a greased pudding dish and bake in a moderately hot oven from half to three quarters of an hour. Serve from the same dish.

P. S.—This is not an expensive pudding, but very good indeed.

TOMATO-CHUTNEY.

This is very much superior to anything which can be bought in a shop.

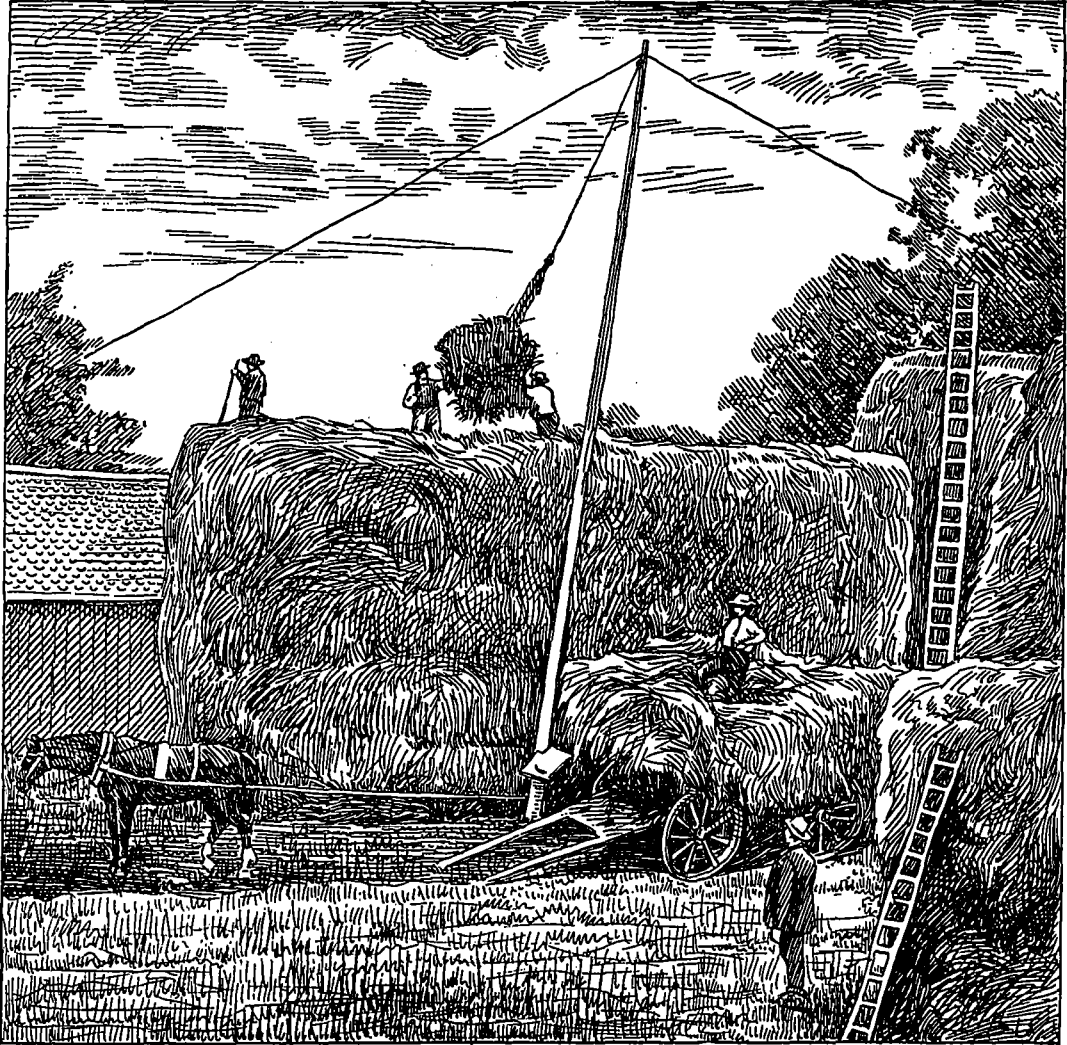
3½ pounds green tomatoes. 1 teaspoonful each of mustard-seed, ground ginger and alspice in powder. 1 onion, 10 cloves, 1 quart of vinegar, 1 pound of brown sugar. Peel the tomatoes, and cut them in small pieces, put them into a preserving pan with the spices and vinegar. When nearly boiling, add the sugar, and the onion whole. Boil gently for two hours, or until it looks clear; the onion is to be taken out before it breaks in pieces. The chutney is turned into small pots, and tied down like jam. It will keep a long time if properly boiled. If green tomatoes are not obtainable, use red ones, with rather less vinegar.



ELEVATOR FOR STACKING HAY, LOOSE CORN OR ENSILAGE.

By using one of these little implements a farmer is independent of his strong men. Will save its cost in the first two large stacks in harvest wages alone; will put as much in one stack as is gen-

each user can get in his own locality, a strong boy or man on load to thrust fork in, a single boy and pony to pull up with, this little implement, only 21 lbs. weight (the whole apparatus does not exceed $\frac{3}{4}$ cwt), is capable of elevating on the square of the highest stack, on an average of six good cart loads, or four big wagon loads, of hay per



Elevator for stacking hay, loose corn or ensilage.

erally put in two by manual labour.

It does entirely away with the jib and all its attendant complications and loose attachments, as in other systems, and at the same time avoids damaging the stack sides to any appreciable extent (see illustration taken from a photograph).

With an ordinary 40-ft. scaffold poll, which

hour, delivering each forkful to any part of the stack required with its seeds intact. It will finish each stack off to the very last forkful in the roof without having to call in extra men, doing entirely away with the stair holes in the roof.



The Flock

LOSSES AT LAMBING TIME

(Continued.)

In seeking to find out the actual cause of joint-ill, the question has naturally arisen as to the mode in which wet could act in producing changes which certainly indicate septic poisoning; and by following the line of reasoning which is suggested by the whole series of morbid conditions, something like a consistent explanation of the effects may be given.

For a long time it has been known that the swollen condition of the navel often existed in young animals, lamb in particular, and fatal consequences were not uncommon. Following closely on the recognition of this fact, comes the discovery of certain septic changes in different parts of the body associated with the disease of the navel—navel-ill, as it was called, and to the pathologist there was no difficulty in understanding the connection between the two. First, there was to be taken into account the very important fact that the navel is the entrance and exit of the main blood vessels which connect the circulation of the mother with the foetus, the cord consisting of two arteries and one large vein. At birth these vessels are severed, either by the strain which is put upon them by the weight of the foetus, or by the rough and ready, and we may add, dirty hands of the man in command. In the lambing pen, the farmer's hands are constantly in contact with animal matter in a state of decomposition, or in a state of readiness to become decomposed. Again, the litter and soil of the pen are not actually in a condition which is at all consistent with sanitary requirements, and whether the newly ruptured vessel come in contact with the dirty litter of the pen, or the contaminated soil, or the hands of the farmer covered with blood or other animal products, the chances of the entrance of septic organisms into the open blood vessel are very considerable: indeed it may be said that septic poisoning to some extent must occur in such circumstances.

Post mortem examination of calves and lambs which have died a few days after birth, from some ill-defined disease, often reveals an inflamed condition of the umbilical cord. This may be lightly regarded as an expected complication, having no

special significance; it is however in all probability a key to the problem in nearly every case, and experience fully justifies the statement that in the majority of sudden deaths of young animals soon after birth, the most probable cause is the entrance of septic organisms into the blood through the navel.

Treatment of joint-ill on the assumption that the foregoing is correct, may be arranged on a rational basis. First it will be necessary immediately on the appearance of the early symptoms of the disease—stiffness of movement—to disregard for the moment the affected joints and devote the attention to the condition of the navel. Any signs of disease in this region will assume a peculiar significance under the circumstances; and even if it is too late to do much for the relief of the diseased animals, the extension of the affection among the flock may be prevented.

Antiseptic applications to the diseased navel should precede other kinds of treatment, for obvious reasons. A weak solution of carbolic acid—one part of acid to fifty parts of water, in which a little soap has been dissolved—will be effective and harmless as an antiseptic, and should be applied often and liberally to the diseased parts, to the floor of the lambing pen, and, above all, to the farmer's hands. Local remedies to the swollen and painful joints are required for the animal's comfort, and warm fomentation are at once grateful and harmless. Counter irritants are, as a rule, worse than useless, as they add to the pain, which the sick animal suffers, and increases the exhaustion. To allay pain is always an important gain in treatment of diseases; and this object, in the case of joint-ill, is best secured by the use of warm water, followed by the application of a little extract of belladonna or tincture of opium. But after all the removal of the sick lambs and their mothers to a warm and dry place is a most essential part of the curative treatment.

A most unsuspected cause of serious mortality amongst lambs soon after birth is met with from time to time in the course of investigations, viz: want of sufficient nutriment. A number of lambs fall victims to some illness which their owner cannot make out, and a veterinary-surgeon is called in, who, on making post mortem examinations of some of the dead lambs, finds only the ordinary signs of starvation, a generally bloodless state of the system, deficiency of fat, pallor of what should be red muscles, and a watery appearance of all

the structures of the body. Directing his attention to the ewes, the enquirer finds that the animals are poor in condition, and on attempting to draw some milk from the udders, he fails to obtain more than a few drops.

Want of food is the conclusion which the observer arrives at from the evidence before him, but he may experience considerable difficulty in discovering at what time, and under what conditions the ewes have undergone the privations from which they and their offspring are evidently suffering. Shortness of keep during late autumn and winter—exactly the time when breeding ewes require the greatest care, and most liberal treatment—is the common explanation.

One remarkable feature in the above case is the failure of the farmer to realize the true state of affairs. He can understand lamb dying from cold, which he connects with inflammation, or from scouring, or from any form of disease with which he is familiar. But he listens with obvious doubt to the remark that the lambs are suffering from want of milk; and probably interposes the remark that the lambs suck as well as any lambs he ever saw. The fact that the sucking is barren of results to the unfortunate lambs has not occurred to him.

Of course when lambs are dying daily from want of food, with which the half-starved ewes cannot supply them, only one plan of treatment can be adopted. Artificial food must be substituted for the natural food, the supply of which has failed. The ewes must have their rations increased, but it is not possible to improve by such means their milk producing powers in time to save the lamb and fortunately the bottle is readily accepted by the young animals. At first cow's milk should be diluted with the eighth part of warm water in which a little sugar has been dissolved, but in a few days this preparation will not be necessary.

In the next number of the JOURNAL, I will conclude this series with the treatment of perhaps the lamb's worst foe, viz: Diarrhœa.

W. R. GILBERT.

The Poultry-Yard.

**KNOW FOR WHAT YOU BREED AND
KEEP THE END IN VIEW**

(S. J. Andres)

The time has long past when the all purpose animal found ready sale. The breeder of horses must know for what use he intends the animal. The breeders of cattle want animals for beef or for milk. (1) Milk and beef are no longer eminently contained in the same animal. They must be therefore bred specially for one purpose or the other. Sheep are no longer bred largely for wool and mutton. They are now bred principally for mutton, and incidentally for wool. In the same way is poultry raised, birds are bred for the fancy in five points of feather, and also for flesh and egg production as specialties. After all, the pure bred poultry industry, that is, the breeding of strictly fancy fowls as a fad or a fancy for exhibition, etc., is only the small end of a large thing. The chicken business of the country is a great thing—a very great one; and ought to be better developed and more attention paid to it, but the pure bred part of it is only a very small part of it. If the breeder is to breed for fancy points only, for exhibition, and not for utility, then he has the wrong end in view. That is not my idea of the thing at all, and I do not hesitate to say so. I like a fine fowl as well as any one, and desire to see the mongrels bred out, and the pure stock bred in; but I want to breed in the kind that will be superior, in practical sense, to the common hens of today.

Now, we will take a look at this thing and see what there is to it. If a man goes in for the fancy, and the fancy alone, and breeds this year for exhibition, and to win prizes, and then mates up next year to raise some more birds to win again; and then the third year breeds the same way again, and still another year the same, and so on to the end, as long as he is in the business, he amounts to the fancier only and stops right where he began; because he has been travelling in a circuit. Like him are all others of his kind. They see only the feathers and the show points; that's the end they have in view. Finally, they get discouraged and give up. That can hardly be called progress and it does not demonstrate to the

(1) By no means. The Dairy-Shorthorn, the glory of the English Dairyman, is good for both milk and beef. Ed.



public the superiority of the thoroughbred fowl in a practical sense. So there is not much in the fancy poultry business in that direction, but pastime, and a little profit in eggs, and the sale of a few exhibition birds. Such breeders are of but little use in the great practical field of poultry culture. There is, however, a different side to the question, and there are pure bred poultry breeders who have a different end in view. They are the breeders who maintain that the thoroughbred is superior to the mongrel; not so much because of its uniform plumage and its exhibition qualifications, but because of its superior practical value. The qualities that are embodied in its blood and breeding either as a bird superior to the dunghill fowl in size, early maturity or laying qualities; these are the three points that count in favor of the thoroughbred, and on these three things rest all that is worth having in the pure bred line when we get squarely down to a business basis. Those who so desire can breed for the fun of the thing and the fancy only. But that is not what tends to improve the common run of poultry, and fancy points do not count with business people when compared with utility. A hen may score 95 points, but if she is no larger, does not weigh more, or lays no more eggs than the one that has no score at all, she has no just claim to superiority in a business sense. The elevation of the general run of poultry in market value, in the way of quick growth, large size and prolific laying are the cardinal points that should be kept in view, and for this purpose the thoroughbred is useful and valuable, and is serving a good purpose when handled properly.

To raise chickens successfully, one must first of all understand what one intends to do. Study it, investigate and carefully decide whether he is qualified for the business. He must be fond of it or have such a fancy for it that he can cultivate a fondness, and love for it. It is the extreme of folly to pursue any business which is distasteful. The more the fondness the more interest he will take. I venture to say that if this interest once becomes firmly established he will not give up his efforts at the end of his first season, no matter whether he has been successful or not.

Second: he must have pluck and perseverance. Is not this necessary in any business? Poultry raising to any beginner is a new pursuit and requires naturally the same study and interest as any other new departure. If he, therefore, has

not the pluck to carry through his venture he had better not undertake it.

Third: he must attend to his business personally. The great majority of failures are caused by lack of personal attention.

GRAINS FOR POULTRY.

With the majority of poultry keepers grain constitutes the principal part of the feeding ration, at least in money value of the grain used in this country, probably Indian corn outweighs the rest. It is fed whole, cracked, ground into meal, raw or cooked. Corn contains very little bone forming material while it is very rich in fat forming and heat giving substances. Although corn produces eggs with dark colored yolks and of rich flavor it is not recommended for layers unmixed with other grains. For fattening purposes it cannot be excelled and should be fed in various forms to keep up the appetite of the birds. Oats are a good nerve food and are not fattening, but their sharpness is an objection to them as is the amount of waste or useless matter in the husks, especially in poor, light grain. The first objection may be removed by grinding them very fine, but this is very difficult to do. Oatmeal is an excellent food but is rather expensive. If oats are to be fed whole or ground, husks and all, the heavier and better they are the cheaper. Forty pound oats contain but little, if any, more weight of husks than twenty-eight or thirty pound oats. (1) Very light or small oats will often not be eaten unless they are soaked and made larger. This does not add to the nutriment but compels the bird to get out what little there is in them. If hens that ought to lay are too fat, a diet of oats will reduce the adipose matter. Ground oats and boiled potatoes make a most excellent food for producing fertile eggs and vigorous chickens. Wheat and its by-products, screenings, bran, and middlings, may form a part of an economical ration in many parts of our Dominion. If screenings they should be fed raw so the fowls should not be compelled to eat the dust, poisonous seeds and other foul stuff contained in them. Moistened bran is apt to produce looseness of the bowels or scours, especially during the winter and if fed at all should be alternated with whole grain. Though wheat

(1) i. e. to the bushel. Of course, the lighter oats contain much more husk in proportion to the kernel. Ed.

is rich in material which leads to quick growth, easy of digestion and stimulates egg production, it should be fed less freely than corn as too much of it will produce diarrhoea. In regions where corn cannot be successfully grown, barley can, barley be used as a fair substitute ; though all that is eaten does seem to be digested, fowls will thrive on it for a while and it may be used in the make up of a ration where grown or bought at a reasonable price. There is but little value in barley malt : (1) it must be fed fresh. If used too freely it scours.

In the United States buckwheat is fed more to make the plumage glossy than as a staple part of the daily ration. It is very fattening and in France where it is largely used it is said to be valuable in whitening the flesh. The yolks of eggs produced from it are pale in color. Sunflower seeds are also good for increasing the lustre and glossiness of the plumage and a few fed occasionally whet the appetite.

Millet and Hungarian on account of their small size are very nice grains for young chicks, and when they can be raised or when they can be bought at a reasonable price may help to make up a well balanced ration for adult fowls. In the rice growing states as well as China and Japan that grain is often the cheapest feed that can be procured. This is especially so when broken, or dirty, or discolored from wetting. It is claimed to be better than corn meal for young chickens. In India it is much used for fattening poultry. It produces white flesh. I have often used it for young chicks as a change in their diet when they seem to pall with almost everything of the grain kind ; they are very fond of it and eat it greedily when boiled in milk, and a little pepper and salt is used just to give it pleasant taste and a stimulant in wet and cold weather in early spring.

POULTRY ITEMS

Egg eating can be prevented by keeping plenty of ground bone-oyster shell, and fine gravel before your flock all the time so they may eat well, and construct the nests in a dark place ; by so doing, you will seldom be annoyed by those egg eaters. For those that have formed the habit, tear off the upper mandible quite blunt, also the lower, and

(1) Try a mash of one-tenth malt to nine-tenths barley-meal, made with water at 180° F. Ed.

put china nest eggs in the nests ; they will work a while at those artificial eggs to break them and, finding they cannot, will give it up. This is the best cure we know of. The hens save much loss on the farm by finding and appropriating material that might go to waste. It is a large annual loss of grains at times of harvesting, threshing and bagging, and this is all saved by the poultry. Small potatoes and turnips, seeds of grass, and many other articles are thus converted into poultry and eggs and sold, that could not be disposed of in any other manner.

Never feed whole grain in a trough. When so fed there will be domineering hens which will get more than their share, but when the grain is scattered, each hen must seek her portion and all will have an equal chance. You need not fear to scatter it over every square inch of ground, for not a grain will be wasted. It compels the hen to work instead of helping themselves.

Instead of feeding corn to poultry in summer, it is better to compel the hens to seek the whole of their food and they will be better for it by reason of the exercises and varied diet, but if it is desired to give a meal of grain, it should be given at night, and consist of oats, as oats are more suitable at this season. As a change of food, buckwheat may occasionally be substituted, but grain should not be given at all if the range affords plenty of grass, seeds and insects.

SOMETHING ABOUT MOULTING.

There are a good many farmers' hens yet who are not through the moulting season, particularly the older ones, and although I have already said something about it, it may not be out of order to treat the matter a little further. Moulting is not a disease but is a condition of the fowls or feathered race generally that is in accordance with the laws of nature, of Him who made all creatures and looked upon them as good. Many who witness the moulting of hens do not perhaps think or consider how important the operation is to the feathered tribe in general. It is the casting away of the old clothes or covering, and putting on of new clothes, so to speak, but the process is a gradual one, requiring three months for its completion. The majority of persons have no patience

with a moulting hen. They think she ought to lay when she is moulting, but, if they will think a little, they will decide that nature is economical in her workings and does not devolve on her creature the fulfilment of more than one task at a time. Now a hen cannot shed her feathers and lay at the same time. It is as much as she can do to pass through the period of moulting safely, for should she take cold or become ill from any cause her system will be too much out of condition to enable her to get into good health again. Although the hen becomes as a rule rather fat when moulting, this is due to the fact that when her food is assimilated she requires for their manufacture nearly all the lime, phosphoric acid and nitrogen that is contained in the food, but requires very little carbon. The hen may therefore grow fat and yet be weak, for she may be bountifully supplied with certain elements of which she always has an excess, while being very deficient in other elements that are very requisite for the purpose of moulting. As the hen has now to supply her own bodily wants as well as to grow feathers, she has a great drain on her system and to neglect her for a single day makes it very precarious further on. Then again during the process of feather forming there are other minerals that are urgently demanded by the system, such as iron and sulphur. When the hens are moulting, give them a generous supply of bone meal, charcoal meat and vegetables, tincture of iron in the drinking water and a very little cayenne pepper occasionally makes a fine tonic for them, increases the beauty of color in feather particularly of the barred Plymouth Rock. The hens that moult the earliest are the earliest layers and therefore it is best not to dispose of those that moult early. When once a hen has finished moulting she has a good start as a layer, and has no further work until the next fall but to lay; and if well fed will do well in the winter especially if the quarters are warm, dry, and free from lice. If early pullets are well grown, the late moulting hens may be sent to market and they will relax laying until warm weather in the spring: late pullets will not lay in winter at all unless they have matured quickly. I hope I am not making this article too long but the season of cold weather is upon us and I hope it may not be out of order but instructive to the readers of the JOURNAL.

Yours faithfully,

S. J. ANDRES.

Market-Fowls.

The great English market and its requirements—How our farmers may cater for it—How to get the superior quality of poultry wanted—Care of the chickens necessary.

(A. G. Gilbert)

Late returns from a reliable source show that England, alone, annually imports eggs and poultry to the value of TWENTY-EIGHT TO THIRTY MILLIONS of dollars! A great market truly, and one that, we realise with satisfaction, our Canadian farmers are eminently qualified to cater for as regards climatic conditions, quantity and superior quality of food cereals, abundance of milk, roots, clovers, grasses, and other essentials. And still further to aid them are the arrangements made by the Hon. Minister of Agriculture, whereby dressed poultry and eggs may be sent from different parts of our Dominion, by cold storage chambers on car and steamboat, to the English market. So far so good. But what are our farmers going to do in the way of taking advantage of the opportunities afforded them? We do not speak of our home markets on the present occasion. But we will consider briefly the great English market referred to and its requirements.

Nothing but the very best wanted.

There is one condition, in connection with the English market, compliance with which is absolutely necessary and it is the sending of nothing but of SUPERIOR QUALITY. And it is just as easy to produce the best, if the farmers take the trouble to do so, as it is the average, or, inferior quality. Indeed, in some cases it is much easier. For instance, it is not difficult with ordinary care and feeding to put flesh on Plymouth Rock and Wyandotte cockerels, so that they will weigh four pounds each at the end of four months, while it would take very much more effort, if it is not impossible to put the same weight on the ordinary "scrub," to be found unfortunately, in so many barnyards. This is not a new subject in the columns of the JOURNAL OF AGRICULTURE. Many times during the past few years have I urged the farmers of our country through its influential columns to keep the thoroughbreds which make the best egg producers and the heaviest and most rapid flesh formers. And now here we are face to face with a requirement, to fill which, the ad-

vice so long and often given in these columns, requires to be put into immediate practice, if it has not already been acted on. You cannot get the Clyde horse from the Shetland pony, neither will you get the fleshy and heavy weighing thoroughbred chickens from the nondescripts of the dunghill.

How to get the superior quality.

"How are we to get the large and rapid flesh forming chickens?" I am asked.

"By keeping the breeds which make them such as Plymouth Rocks and Wyandottes, or any of the thoroughbreds which will make four pounds of flesh in as many months," I reply.

"Oh!" says some one else, "I have cross-bred chickens that make the weight you mention. Would you have me destroy them?"

"Certainly not. But you have to renew your cross every season, or, it will soon run out. And again, for every farmer you will find with rapid flesh making cross-bred fowls, you will find fifty with "scrubs,"

"Then you advocate thoroughbreds from the start?"

"Yes, for it is better to begin right and go on to success than to find out after many years that you have been trying to make a chicken weigh five pounds, when its frame was built to hold only half that weight."

What we have been saying simply amounts to what has already been said, that to get the superior quality of flesh the farmers must keep the breeds which make it.

Early care of the chickens necessary.

Having got the stock which will make the rapid flesh forming chickens, the next step in the care of the chicken from the time that it is put outside on the grass in spring time with the mother hen, or put into the brooder from the incubator. The chicken must be well cared for, regularly fed and kept free from lice. We repeat what has been said before that a chicken which is ill fed, or, otherwise neglected during the first five weeks of its existence, will not make a satisfactory table fowl. The practice, too common with our farmers, of allowing the growing chickens to pick up their own living, cannot be too strongly condemned, for such practice tends to the development of muscles, sinew, etc., in the chick rather than the flesh that is so much desired. The mother hen should be so cooped that while she is kept within,

the chicks can run about. The latter should be fed 4 times per day and given plenty of skim milk to drink. The mother hen should also be fed and given drink and kept free from lice. Lice and chickens do not thrive well together. The former live at the cost of the life blood of the latter. When the chicks are fully feathered they are independent of maternal care. The mother hen ought to be laying by this time and may be put with the other laying stock. The chicks require to be carefully fed three times per day and when they are arrived at marketable age they should be penned up and fattened for ten or fifteen days previous to being killed.

Different methods of fattening.

There are different methods of fattening the chicks, which space will not permit a description of, on this occasion. Suffice it to say, that if the farmer who has a lot of good birds for market will only shut them in a pen or apartment, or, better still, if he could keep them separately and then feed them all they can eat, of a flesh-making ration, for the time mentioned above, he will be both surprised and gratified at the result. He will have his chickens in such condition as to be fit to send to the English, or any other market of equally high prices. At another time we will show the different methods of fattening the chicks by hand and machinery in vogue in England and France and the foods used to put on flesh rapidly. But meanwhile let our farmers think and think hard about the chicks which will make the greatest amount of flesh in the shortest time. And the keeping of which will be money in his pocket.

DRAINING.

(By the Editor.)

(Concluded.)

The most wonderful instance I ever saw of converting an enemy into a friend, from an agricultural point of view was at Lord Hatherton's Teddisley Manor, Staffordshire. Above the farm-buildings lay about 70 acres of bog, full of reeds and other water-plants, and affording shelter to wild-ducks and snipe. This was drained, and the springs were so copious that, being led to the yards, they drove an overshot wheel (12 horse power), which did all the threshing, grinding, chaffcutting, and sawing for 1200 acres of land; and having

performed these duties, it ran off into the brook in the valley, irrigating, on its road, 15 acres of meadow, the yearly produce of which was worth at least £12 (60) an acre. Unfortunately, I forget the name of the planner of this great work. He deserved immortality.

I have not laid down any hard and fast rules for the distance between the drains. It would be absurd to attempt it, without a trial, or experimental, drain in each field to be drained. I have never seen, however, any land here where I should fear to allow 40 feet between the drains if they are to be 4 feet, or so, deep. Our heaviest clays in England were dried at 33 feet intervals, and there is nothing like them here. If *pockets* of gravel or

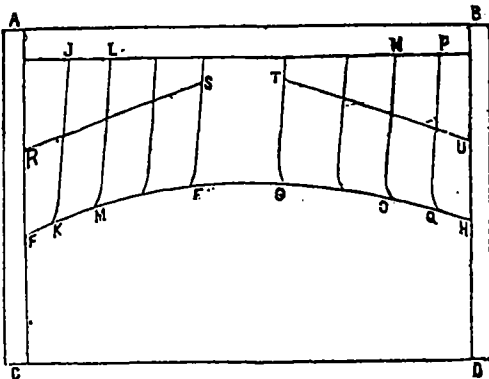


Fig. 6

sand occur, the distance may be safely 50 feet; and where the whole subsoil is broken, drains sunk 5 feet, or perhaps 6 feet, in the last few rods at the top of the incline, may be expected to answer well at from 60 to 90 feet. Remember that, as I said before, the wet spots on a slope are not the sites of the spring. They lie higher up; so there is no good in wasting money by placing the drains deep at their lower end; out of the reach of frost, is all that is necessary. Fig. 6 is an engraving of a field, all in one plane, with a fall from *ab* to *cd*. The outburst of the springs is along the lines *rs*, *tu*; and *efgh*, are the main drains emptying into the ditches *ac* and *bd*; *jk*, *lm*, &c., are the drains running deeply into the ground above the outburst. A really deep cut here may drain acres, but of course a large conduit will be required to carry off the water. Any one can see with half an eye, that in this harp-fashion of placing the drains they must cut into the site of the springs—they can't avoid it.

In the case of a hollow spot with a fall in the

upper part inclining on each side to the centre of the hollow, the main should run up the hollow, and the small drains still down the greatest fall—like what is called by ladies "herring-bone" fash-

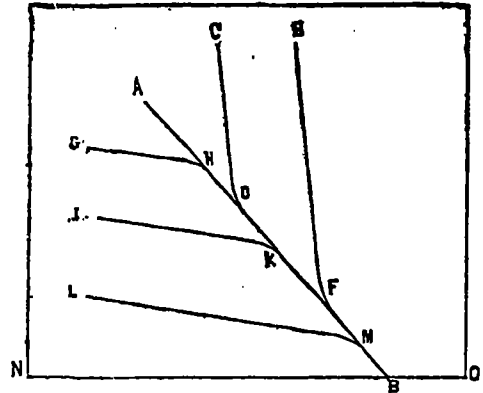


Fig. 7.

ion—see fig. 7, where *no* is the open ditch, into which the main *ab* empties, and *cd*, *ef* &c., the small drains running up and down the greatest fall in the direction of *cd*, *gh*. The part of the main next the ditch being the recipient of all the water should be of a safe size, the higher up we go the smaller may be the conduit. As drains should never be more than 200 yards long, if the small drain pipes be 1½ inches the main should be 2½ inches, for ordinary work, at the ditch, and 2 inches for the upper part—*i. e.* in fig. 1, *m* to *f* 2½ inches, and from *e* to *m* 2 inches—but the economy is hardly worth the trouble, except on a large scale.

And now we come to the cost of the work: and a difficult thing to calculate it is. If it is to be done by the rod, there is no fear of the men opening the top spit too wide; but if by the day, they will, for the sake of a trifling convenience, move many an unnecessary cubic yard of earth.

What adds so much to the expense here is, that we have no gangs accustomed to the work. Good spadesmen there are, I dare say, here and there, but draining tools of the proper sort are unknown to them, and without these, no economical operations can be conducted. I recollect perfectly the cost in England, and the number of rods (16½ feet) a gang of four men did in a day. From these data we may arrive at something like a conclusion, as to what the cost should be in this country. Day wages being 14s, or \$3.50 a week, the men expected to earn 18s, or \$4.50, in the

same time at draining. Season of the year, winter, —8 hours a day. In clay soil, with little pick-work required, they dug, laid the pipes, and filled in 6 rods of drains each, per day. This at 6d (12 cts), gave them just the 3s that satisfied them. Such land required 4 feet drains, 40 feet apart, and 1100 inch and a quarter pipes served for the 64 rods of drains wanted—some are sure to be broken. So we have :

64 rods of drains at 6d (12cts) per rod...\$7.68
 1100 pipes at 16s (\$4) per thousand..... 4.40

\$12.08

as the whole expense of draining an acre of land except the carriage of the pipes, which, as the kiln was with 1½ miles of my farm, was a mere trifle. When the land was stony, or rather, gravelly, the price for digging was higher, but the distance between the drains, which was sometimes 60 feet, made up for the extra cost per rod. I have paid as much as 20 cts, where the pick was much used.

Here, taking one soil with another, when the men get accustomed to the work, I think 20 cts. a rod should do it, and 60 rods ought to be enough per acre. Thus, we have :

60 rods of drains at 20 cts.....\$12.00
 950 pipes (13 inches in length here) at
 \$8 per thousand, and breakage..... 7.00

\$19.60

Cartage, of course, additionnal : a heavy charge, as 1000 of these pipes would be a two-horse load—to say nothing of railroad charges. But make the total \$22, and it is not much for an acre of land well drained. If this promising French company really lends money on mortgage at 6%, I cannot conceive any so profitable investment for a farmer as borrowing enough to drain all the land on his farm that wants it. The yearly interest will be only \$1.32 an acre—as to the profit, it may safely be put down as thrice that sum.

If my experience be thought worth anything, I shall always be happy to give any advice, or to answer any questions, either in the journal or by letter as may be preferred ; gratuitously of course. I saw so many thousand acres of land, during my tour through the Townships this summer, and in the French country at other times, perishing for want of draining, that I could not help thinking that for the neglect of this, the most profitable of all improvements, the educated part

of the community were sorely to blame ; since it is to them that our less enlightened population look to lead them into new ways, and shew them how to unite *theory with practice*.

That drainage does actually raise the temperature of the soil, may be shown by the following experiments made at Clarendon Park, Hampshire, England. The soil is a heavy clay—*impervious* they used to call it, before drainage proved the contrary. Here, the temperature was raised 15° F. by drains 4½ feet deep. The register seems to have been kept very accurately ; and it proves that not only was the summer and autumn heat of the soil greater, but the increased temperature was preserved for a long time—through the winter, in fact. March, 1850, was a peculiar month for the South of England : for seven nights out of the first eighteen, the mercury sank to 26° F. yet the following table shows a greater degree of heat, at one and two feet under the surface, than for several years previously in the same month, by 1.17 degrees at one foot, and 1.44 at two feet :

	1 foot deep.	2 feet deep.
Mean of March, 1838....	41°48	41°46
“ “ 1840....	39°24	41°71
“ “ 1839....	41°46	41°93
“ “ 1844....	41°55	42°14
“ “ 1845....	37°79	38°37
“ “ 1846....	44°47	45°55
“ “ 1847....	40°22	41°03
“ of these years....	41°16	41°75
“ of first 18 days March 1850.....	42°33	43°18

The land was drained in the autumn of 1848.

Draining Apophthegms

Go straight through springs from below the out-burst, deepening as you rise the slope.

Depth will more than compensat  for distance.

How many cubic yards can be drained for a dollar, is the point.

All water should enter the drains from below.

Never lay drains near trees ; particularly Ash or Elm, for fear the roots should choke the pipes.

Keep your ditches clear, and the mouth of the main open—your drains will, then, last a lifetime.

The narrower the drain, the less earth to be moved.

Divide the earth thrown out between both sides of the drain—less danger of caving-in from pressure.

Water will enter clay-pipes through the pores,

as well as between the joints—proof : soak one in water for 24 hours ; it will weigh more than when dry.

Air follows water as it sinks through to the drains : in spring, the air is warmer than the subsoil : evaporation produces cold : drainage prevents evaporation ; therefore, drainage increases temperature, and supplies fresh air to the subsoil.

Drainage by unskilled workmen, with improper tools, will cost from 50% to 100% more than it ought to cost.

“Draining is the most important, the most judicious, the most remunerative, of all land improvements.” Lord Stair.

If the main has to receive water from both sides, the small drains should never enter it opposite each other—they should meet the main at an acute angle ; thus avoiding, blocking back the water and washing down the sediment, which would prefer subsiding and choking the pipes.

Drain one acre perfectly rather than too partially.

Plough as deeply as possible two years after drainage.

Clays once dried and pulverised will be loath to cohere again—a brick won't, if broken.

USE OF MOLASSES FOR CATTLE.

At a late session of the French National Agricultural Society, Mr. Jules Bénard exhibited a molasses-cake, which he had used for his cattle, with excellent effect. They all liked it and did well upon it.

The cake was of the usual shape, brown in colour, with the characteristic smell of *treacle*—as we call it in England ;—something like a piece of coarse ginger-bread, and not unpleasant to the taste.

Seeking to know its origin, we found that it was the commencement of a new manufacture, whose processes are thoroughly organized, and which seems to be undubitably destined to be successful. This industry will probably resolve the problem of the utilization of the molasses of the beet-sugar factories, the solution of which problem has been entrusted to the committee of arts and manufactures.

The cake is made by a Parisian, Mr. A. Vaury, the well-known maker of the bread for the army. Its manufacture consists in the boiling of the molasses and working it up briskly with mixture of corn flour and bran, when it is pressed into the

ordinary form of a cake, and packed in bags for sale. The proportions used are : one-third molasses, one-third flour, one-third bran.

Up to the present time, Mr. Vaury has used only the molasses of the refinery, the product of which is always of the same quality, and which, according to analysis, consists of :

Nitrogenous matter.....	12.18
Mineral matter (ash).....	3.36
Sugar (as cane-juice).....	29.88
Starch, saccharisable cellulose	43.61
Fatty matters.....	0.85
Uncalculated matters, such as raw cellulose, etc.....	10.12

Total..... 100.00

Percentage of nitrogen..... 1.95

“ of phosphoric acid 1.16

Several others, besides Mr. Bénard, have used this kind of cake, especially the Paris draymen, and the suburban cow-keepers. The latter report that it not only adds to the yield of milk but increases the proportion of butter-fat.

Molasses-cake is not, of course, expected to form the basis of the food of cattle, but to act as an assistant and, probably, as a condiment (to flavour the coarser food, excite appetite, and assist digestion. Ed.) The quantity given is :

Daily.

Oxen and cows.....	6 to 10 lbs.
Horses.....	2 to 4 lbs.
Sheep.....	2 lbs.
Lambs.....	1 lb.

HENRI SAGNIER.

(From the French.)

Uneven Gait of Horse.

Question.—I have a fine-bred three-year-old carriage horse that wades a little with one fore foot. Her leg is straight and all right, but when bringing it forward throws it out. Can she be shod to help her ; if so, will you kindly let me know ?

Answer.—There are a great many shoeing smiths who profess to be able to change the gait of a horse by a variety of weighted shoes. I myself have not much confidence in the success, and have never been able to detect the slightest difference in the going when using the weights or heavy shoes. However, you might try having a shoe made heavy on the outside quarter and light on the inner with some chance of success.

(Farmer's Advocate.)