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THE ILLUSTRATED JOURNAL of AGRICULTURE

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The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly, and is designed to include not in name but in fact anything concerned with agriculture, as Stock-Raising, Horticulture, &c., &c.

All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Fust, Editor of the JOURNAL OF AGRICULTURE, 4 Lincoln Avenue, Montreal. For subscriptions and advertisements address the Publishers.

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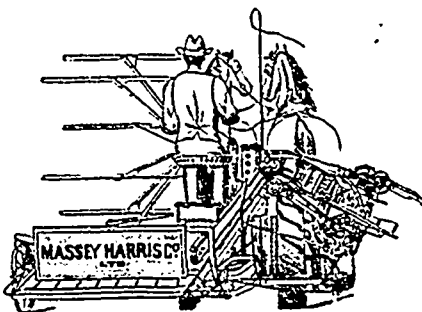
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We fed Herbageum to calves with skim milk—one tablespoonful to about a gallon and a-half of milk—and we consider that they did better than they would have done on new milk without it. HUMPHRY GIBSON, Kilmours, Ont., June 16, 1892.

I have used Herbageum with skim milk for calves and find it equal to new milk for them. It is also very good for cows bad after calving, and it is first-class for cleaning out lice. LOUIS MONDOUX, Thurso, Que, June 27, 1892.

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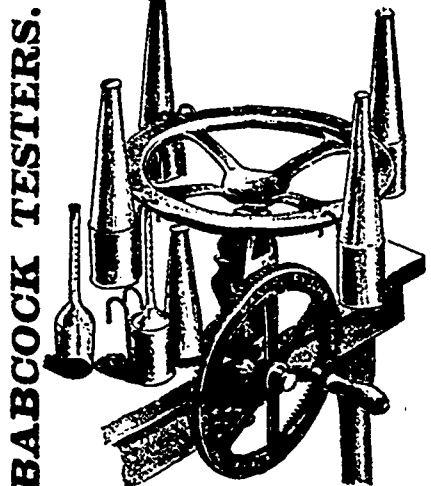


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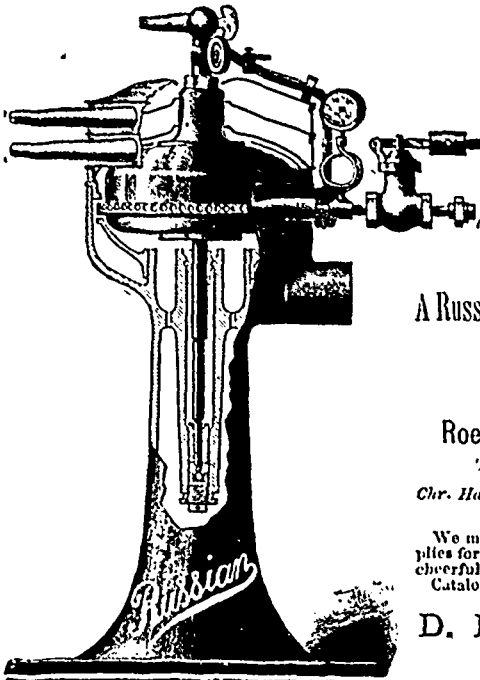
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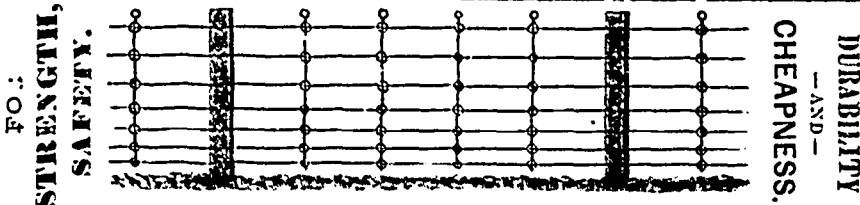
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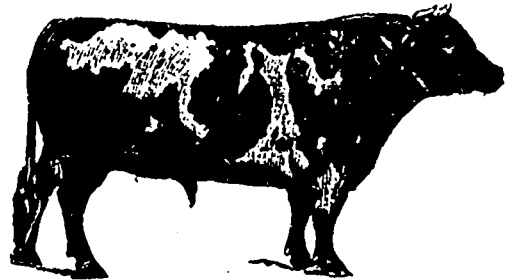
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Montreal, August 1, 1894.

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Notes by the Way.

RICHELIEU COUNTY'S FARMS.

St. Hyacinthe, July 17 (Special)—Mr. J. Poloquin, president of the Agricultural Society, who was chosen as judge for agricultural competition in the county of Richelieu, has just returned to this city. During the last three weeks he has visited eleven parishes, inspecting the farms and gardens. He speaks very highly of Mr. Séraphin Guévremont's farm. He thinks it would be in the interest of the county to employ such a man to give the farmers practical instruction. He reports that the hay crop is not so good as last year. Oats will not be so good, but wheat, barley and peas are better. Potatoes, corn and other garden produce look very well and are likely to turn out better.—*Montreal Star*.

As Monsieur Séraphin Guévremont is an old pupil of ours, we were delighted to see the above. We believe that he is thoroughly competent to "give the farmers practical instruction" in the nicer operations connected with their business. His root-growing, the foundation of his farming, is quite perfect.

Haymaking.—There are certain established rules that have long been settled about haymaking, at least in England. Even there, writers in the agricultural papers think it necessary to repeat them annually, as there are always fresh readers to profit by them: Some of them we append:

1. Cut early, and cut low.
 2. Never touch grass lying in swath in wet weather, unless it is turning yellow underneath.
 3. Meddle with clover, when being made into hay, as little as possible: the slightest hustling it about when partly dried knocks off the leaves.
 4. But ted and hustle meadow-hay about as much as possible; never fail to put it into cock at night; dew, worms, &c., injure it if left abroad.
 5. Turn clover as soon as the surface is wilted and then get it into cock; never turn it out of cock unless rain makes it absolutely necessary, but carry it from cock to stack, or, if you must, to barn.
 6. If you stack your hay, fill the stack well in the middle before leaving at night.
 7. Unless the stack heats or sweats a little, the hay has been either made too much or allowed to stand too long.
 8. Pull the outsides of the stack hard, and put the pullings on the top.
 9. Never make chimneys in a stack: they draw the heat that should pervade the whole into parts of the stack.
- Chief errors in haymaking:
Cutting too late.
Making too much.
What is wanted is in:
Meadow-hay; well coloured green, soft, bright stuff;

Clover-hay; rich brown coloured, fat-feeding stuff.

The aroma of clover-hay is very different from the aroma of meadow-hay. We intend to import a small truss of London-market clover-hay, packed in tin-foil, to exhibit as a specimen of what—right or wrong—is sought for there. There is no use our keeping on sending inferior manufactures to London when our raw materials are quite as good as those made up there.

It must be borne in mind that it is only in the home-counties of England that the perfect hay sought for by the wealthy inhabitants of that country is to be found. If you want to secure a market, you must fit your goods to the market, whether your taste agrees with it or not. We thought "unknow all about it," whatever it was, but we did not; for instance:

In September 1849, we sent two loads of superb white-turnips—for the table—to the Borough Market, London: Return expected, £15.0s.

Cash received £1.15s.
Why the disappointment? The salesman's note accounted for it thus:

The turnips were in bunches varying in number from 7 to 10, instead of 9 each, and they were tied with lay-cord instead of with *withies* (i. e., willow twigs.)

So the turnips, which would have fetched 2s. 6d. a dozen bunches, for the swellest of the swell Pall-Mall and St. James Street Clubs, were sold to some cow-keeper or other in Bermondsey or Whitechapel, because we did not know how to pack our goods to suit our market.

Again, we sent half-a-dozen perfect Southdown lambs, 10 lbs. the quarter, to Smithfield market—about 1850—Bad prices: why? We thought that as 3 months old bull-calves were never castrated for veal, lambs might be treated the same, but the West-End butchers were of a different opinion: Uncastrated lambs, said my salesman, are always red (foxy is the slang term at *Smiffel*) in flesh.

Do you see? The green-grocers, who sell turnips, wanted just the sized bunch that suited their trade, and the butchers of Mayfair and Belgravia were looking for lambs that would show well when hung up outside their shops.

And just so, the corn-chandlers, who provide the horse-keep of the great London nobleman's stables want hay that in colour, aroma, and texture will give satisfaction, not to the noblemen, but to those much more difficult persons, their stud-grooms and coachmen.

The changeable weather we have been having lately,—from the 18th June to the 4th July—has delayed haymaking even on farms where the owners would have begun had the chances been better. And this will tell on the second-cut clover, as the vitality of the plant is quickly impaired after the seed-heads have begun to mature.

The hay-crop in England is not nearly so good as it was expected to be, and for this reason hay will probably remain comparatively dear there, unless a heavy second-cut should render it abundant. (1) Of course, the second-cut is far from being as good as the first; not only so, but the weather in which it is made is usually more catchy, and however carefully it is put together, very few clover-haystacks of the second crop are to be found without some signs of mould in them.

(1) Later news says that the crop of hay is tremendous, nothing seen like it for several years!—Ed.

Pasture.—Mr. Sheldon, a well known English agronomer, well skilled in dairy-farming publishes the following advice on the improvement of grassland, in the *English Agricultural Gazette*;

"I have tried various methods of improving land—permanent grass land—and, so far as meadows are concerned, I think no other system of manuring is equal to that of feeding fattening sheep upon them through the autumn, when the sheep are getting as much corn and cake as they can conveniently eat—unless it be that of dressing the land with cow manure, to the composition of which decorticated cotton cake has greatly contributed. Perhaps the sheep are to be preferred, but on a dairy farm the other method is the more readily available. In practice, I have found it well worth while to use artificial with farmyard manure alternately, and sometimes I have given a fair dressing of both during the winter, the latter in the early and the former in the late winter months. It does not often occur that enough farmyard manure is made to dress all the meadows over once a year, and in this event it is sound practice to dress with farmyard one year and with artificial the next, and so on. The artificial I have found to be the best on land—a damp, retentive soil for the most part—is 1½ cwt. of nitrate of soda, 3 cwt. superphosphate of lime, and 2 cwt. kainit, bought separately, mixed at home, and put on the land in March. This dressing costs about 26s to 28s, an acre, and pays for itself thrice over. It may be objected by some that they cannot afford this outlay; to this I would reply that they can still less afford not to afford it, unless they have land good enough not to require it."

Barley.—The annexed extract from an exchange rather surprised us. That barley was grown in the States for malting purpose alone, and was never used for cattle or pig-food was quite new to us, as was the fact that "some years ago that grain was the common food for horses", as we always fancied that barley, unless sprouted, i. e., half-malted, was too heating for them though, if in a hot climate like Palestine, the Sultan Saladin Arabs thrived on "the Golden barley of Yemen", as he told Sir Kenneth in their conversation by the "Diamond of the Desert," that grain could not well disagree with horses in the less sultry atmosphere of the Northern States. Still, we prefer oats, with a dash of horse-beans in winter.

One thing is certain, though the reason for it is far to seek: barley is the best nurse for grass-seeds of all the grains. The reason may be, though we do not affirm that it is, that barley almost invariably following a hood-and-manured-crop, the land is in the best possible condition to grow any plant. The advice as to cultivation is good:

"The Barley Crop.—Barley has been grown heretofore solely for malting for the brewers; and its feeding qualities have been wholly ignored. Yet some years ago this grain was the common food for horses, and when ground into meal was used with waste milk and boiled potatoes for feeding pigs, and made the very best pork. The prejudice against the culture of barley, common among farmers, is, no doubt, due to the necessity for the thorough cultivation, which takes the head and hands more than is agreeable to them. But the times demand a great shaking up of dry bones, and one must put his hand to the plow in earnest if he will succeed in making the farm pay just now, and barley is a

good crop to grow for feeding if not for sale. Good barley brings sixty to seventy cents per bushel in New York, which is 50 per cent more than corn. Fifty bushels per acre may be grown with the right cultivation. The tillage of the land is the main point. Weeds and clods will not do. Clean land, thoroughly mellowed, and in good heart, will produce a full crop, and this is best for the land, as well as for the crop. We need better tillage, and, as there must be an incentive for every good act, so we would choose those crops which force us to till the soil perfectly."

Ayrshires.—Every one has observed that, among the very few points a really good Ayrshire cow is defective in, is the smallness of her teats. In our early days, it used to be said by Kent farmers that, if good, easy milking teats are desired in the cow, let the heifer suckle her first calf. By the bye, did any one ever hear of the common practice in England, common, that is, 50 years ago, of sprinkling the new-born calf with salt, that the mother, by licking it off, might get thirsty for her bran-mash? Did the glutinous matter that adhered to the hairy coat of the calf contain any medicinal properties? May the practice, certainly a natural one, have been better than the decidedly more convenient one of taking the calf away before the dam ever even sees it, as we do now, except in the herds of cattle kept solely for breeding pedigree stock? This is a *propos* of a question asked in "Hoard" as to the propriety of allowing a cow to eat the placenta, which certainly does not seem nice, but is evidently natural.

"Noticing Mr. Yapp's suggestions concerning the death of a neighbor's cow while eating the placenta, it occurs to me that for fifty consecutive years I have had charge of from one to fifteen cows. My people were Herkimer Co., N. Y., dairymen, I a farmer's boy in Illinois. During the earlier years we kept common stock, then grades, but always good milkers. Since 1875, Jerseys. Every cow in good health has been allowed to eat the placenta. Not one has seemingly suffered therefrom; have never lost a cow from milk fever."

Records.—Were, then, we who were utterly incredulous about the gigantic yields of certain much puffed cows in the States, and whose incredulity was increased by the very moderate products of the Jerseys at Chicago, were we, we say, justified in our want of faith? It seems to us that people who are "booming" any special breed of cow ought to be modest in some slight degree: for instance, the owner of a little runt of a thing at last autumn's Provincial Exhibition, a cow that might perhaps, weigh 600 lbs., with an udder the size of an ordinary swede; her owner, we say, looked us firmly in the face—our friends tell us we do not look quite like a fool—and with the composure that only a thoroughly practiced liar can assume, told us: "That cow, Sir, gives 45 lbs of milk a day, and it only takes 14 lbs. of her milk to make a pound of butter: she is a pure Canadian (which she was not)."

"For years our friend, J. McLain Smith, of Ohio, has by many been held up to the world as "An Infield," and no better that he ought to be, for the reason that he refused to believe that private records reported of famous cows that were being credited

with making from 7 to 1,200 pounds of butter each, more or less, in twelve months. The scattered reports from the stations and their trials, afforded him some satisfaction and proof, but at the close of the Chicago Fair and its great tests, where only the pick of the silk haired cows were put on trial, and none of them reached 20 pounds of butter in a week—not fat—Bro. Smith smiled all over, and for a prize of a cent, would have run one of his Red Polls against all comers, for all round profit for food consumed. The last *Dairyman* contains the very proof that J. McL. S. has been looking for, and that too from the camp of his friends—the enemy, and after he reads the "ad." of the Douglass Jersey Cattle Co., we will warrant that the above J. McL. S. will need to order clothes of 44 inch waist measure, for this "ad." page 260, says:

"All butter records exceeding 25 lbs. per week are false, and don't believe them. From the milk given by most of all the reported big butter makers, their milk must have yielded in most cases about 10% fat; but the World's Fair Records prove that they are all false and don't believe them. At the World's Fair they had the largest reported butter makers in the world and no cow made 20 lbs. in seven days, and all were heavy milkers. Small milkers had no show and could not make the butter. In our herd every cow and heifer, &c."

The beauty of the whole matter is that last week in his own journal, in commenting upon the *reduced claims* of the breeders Mr. Smith in an editorial has this to say on old scores, and future ones:

"Some years ago when the editor of this department urged, in farmer's meetings and through the press, the doubtful character of the phenomenal yields of butter claimed in private tests, he was very generally denounced, especially by Jersey breeders, as an irrational sceptic, if not more, and the evidence in support of the great yields announced, was proclaimed irrefragable, and abundantly sufficient to hang the sceptic in any court of law. But since the Chicago test big yields in private are, apparently, not so common, and the number of sceptics is wonderfully increased. Official testing is now generally accepted as necessary where anything extraordinary is claimed."

Potatoes.—Average crop in Scotland, 1893, was 247 bushels, of 60 lbs. each; average in England, 248 bushels an acre. As high as \$255 dollars an acre has been paid for early potatoes this year near the Carrick district: they had escaped the frost of May 20th.

Green-manuring.—We have no experience in green-manuring; for, even in England, where cattle feed on the pastures pretty nearly all the winter, people are not fools enough (we must use strong language sometimes) to bury a crop of 2 to 2½ tons of clover-hay, and, here, with our long, weary winters, we have yet to meet with a man who can afford to be guilty of such extravagance. A bit of mustard, where no sheep are kept, is about the extreme amount we ever saw ploughed in. Many and many an acre of rape and of turnips have we seen, in abundant years, given away to be fed off by sheep where they grew, but only once do we remember to have seen a piece of roots interred, and that belonged to an obstinate old fellow who waited to bargain till the turnips were too near seed to be worth sending sheep to eat

them. In ordinary seasons, sheep-keep can be had for three-pence a head a week, but many man will take them in for nothing if the owner will give them apound of cake a day each.

Green-manuring.—ED. HOARD'S DAIRYMAN.—Mr. Hitchcock's letter opens a very important question. In the example quoted by him from the Station Record, it is evident that so far as the mere effect upon the corn crop was concerned, the nitrate of soda was the cheaper application, valuing clover hay at its price here. But there would be a further value from the buried clover, in the nitrification kept up by the organic matter in the soil. But he is right in saying that the value of the clover seed sown is not the proper standard for comparison. The value as food of the crop buried, is the only thing to compare with the application of a fertilizer. The hay produced by an investment of \$1 in seed is shown in that experiment to be very low, but it was worth more for food than as manure, in comparison with nitrate of soda, for its manurial value could have been largely recovered in a proper saving of the manure. The term "green" manuring is a misleading term, and has led many, particularly in the South, into disastrous error. Leaving out of view the food value of the crop, it is never safe to turn under, in the South at least, a heavy green growth. Serious damage has often resulted, instead of a benefit, from the practice. A fine crop of clover hay of 2 to 2½ tons per acre, is far too valuable to plow under, if there was no risk in doing so. We should abolish the misleading phrase, "green manuring" and teach growers that it is the nitrogen fixing, by means of legumes which we want, and not the wasteful burying of a valuable food crop, which would enable us to return to the soil in an available shape the desired plant food. Unless upon a soil absolutely barren of vegetable matter, we never turn under a crop, and then only when dead ripe and weather cool. The man who buries a heavy crop of clover or peas on a fairly good soil, is certainly "green" at manuring.

(Prof.) W. F. MASSEY.

Raleigh, N. C.

The Management of a Dairy Herd.—

At a meeting of the Nantwich Farmers' Club, Mr. F. S. Gorton, lecturer appointed by the Cheshire County Council, delivered an address on "The Feeding and Management of a Dairy Herd," and referred to the recent experiments at the Worleston Dairy Farm, under the auspices of the Council. During January, February, and March experiments in the value of feeding-stuffs were tried upon three cows. In the first month the cows, being fed upon maize-meal 2 lb., crushed oats 2 lb., bran 2 lb., and hay and straw 28 lb., the aggregate yield for six days was 448½ lb. of milk; in the second month, when they were fed on 4 lb. of decorticated cotton cake and 28 lb. of hay and straw, the yield was 479½ lb.; and in the third month, when the feeding-stuffs were 6 lb. of maize-meal and 28 lb. of hay and straw, the yield was 424½ lb. As far as these experiments had gone, they had proved that the quality of the food influenced the quantity and quality of the milk.

Irrigation.—As we mention elsewhere in this number of the Journal, the same plan of irrigation will not answer for flooding meadows and watering strawberry-beds, &c.; but such a system as that described in the

annexed-extract from "Farm and Home" will answer very well in places where there are no springs or stream copious enough to flood grass-lands. We sincerely hope that those lovely hill-sides at Compton, now there is a Collogo of Agriculture established there, will soon be embellished by water meadows laid out after the Devonshire plan, by which a very small stream, at a very trifling expense, is made to do the work of a large stream on the *bed work* plan. An advertisement in the papers would probably discover a Devonshire immigrant who has been accustomed to the work of drawing out the necessary carriers, &c., and the services of such an one should be secured. (1)

Surface irrigation.—There are thousands of farms among the hills of New England on which may be found places of from a good-sized garden up to several acres which can be very easily and cheaply irrigated and in a dry season the productiveness doubled, or tripled, and oftentimes a whole crop saved by this alone. Where there is a living spring on a hillside above such a piece of land a few hogsheds placed on a framework to give 8 or 10 ft elevation above the crop and at short intervals of within 50 to 100 ft of each other, and fed by a line of ½ or 1 inch condemned gas pipe, laid on the surface, will give a constant and sufficient supply. Without the expense of conduits and checks for a system of flowage, you can with a hose pipe and nozzle-sprinkler, which can be attached to the hogsheds by means of a common coupling stopcock, apply the water in nature's way and as it is needed. Use the sprinkler early in the morning before the sun is high, or near evening, and you will have a very satisfactory system of irrigation, under your own control and at very little expense. The pipe can be obtained of any plumber and the hose and nozzle of a hardware dealer. Oftentimes second-hand hose can be bought at a low price that will answer the purpose as well. Such an investment will often pay 100% profit.—[A. J. Hanum, Carroll Co., N. H.—*Farm and Home*

ROOT-GROWING.

(Continued.)

BY THE EDITOR.

Kohl-Rabi and Cabbage.

Every autumn, we see, at the Provincial Exhibition, a lot of queer-looking things in the shape of cabbages with a great bulb growing at the base of the head. "What are these?" is a constant question put to the steward. "These are *Kohl-Rabi*," is the reply, and a very useful plant for cattle-food it is. As the treatment of both this plant and the cabbage is pretty nearly the same, we have classed them under one head. They have both to be transplanted, so may be grown as succession crops after fall-rye or early potatoes, and are suitable food for all farm-stock, though cows generally get the greatest share of them, as there is not the least danger of the milk acquiring any taste from either, unless, which heaven forbid, the cowman is careless enough to give his charge any of the leaves when rotten.

Seedbed.—The seedbed should be prepared in the autumn; carefully dug up in large blocks; which are not to be scratched about by poultry; and the more rotten manure dug down, the better. If the rough-dug land is un-

invaded by animals of any sort, it will need no digging in the spring, and, particularly on clay-soils, will be sown four or five days earlier in consequence.

As soon as the surface is dry, rake it fine, tramp it down firmly, and sow seed in rows 9 inches apart, and very thin. Keep the hoe at work between the rows, but not deep, as you want the roots to get a good firm hold of the ground, so that, in drawing the young plants for setting-out, each of them may bring away with it one or more little lump of earth adhering to the rootlets.

Should the fly (*haltica*) bother the plants, a sprinkling of wood-ashes and sulphur will check them; but this seed is sown so early that we have never suffered from insect-ravages.

Preparation of the land.—By the end of June, or the first week in July, some of the land that has borne a fodder-crop—fall-rye, or early sown pease, vetches, and oats—or early potatoes, will be vacant. Plough this at once, as soon as there is enough cleared to employ a pair of horses for what my Scotch friends call a "yoking," i. e. half a day, having given it as heavy a coat of rotten dung as you can afford, and as you have no time to waste at that season, the work must be done while the dew is on, or on a showery day, when the hay is better left alone. Grub, harrow, roll; draw the lines of transplantation with a marker of any kind, after the roller,—the garden-drill will do very well to set out the lines—at 24 inches apart, and all is ready for the plants.

As for waiting till the evening, or for a dull, showery time, to plant, do nothing of the kind. How would the market-gardeners get on, who set out 100,000 cabbages, and 15,000 or 16,000 tomato-plants, if they waited for a favourable opportunity? If the land is properly prepared, and the plants pressed tightly into the ground, they will take safe enough. And the same with watering; we used to set out thousands of plants in July, and never watered one. There is no secret about it: roll the land before planting; press the roots well and firmly all round, and if the land has been well pulverised, it will be all right.

Drawing the plants.—A couple of hours before you intend to begin transplanting, water the seed-bed copiously. Do not draw each plant separately, for you are more likely to get the aforesaid lumps of earth to adhere to the rootlets by pulling up a bunch of plants at once than by drawing each one up singly. As for making a puddle of mud and dipping each plant into it, that may answer very well when you have 50 or 100 cabbages to set out, but when thousands are concerned, it is out of the question.

Transplanting.—Make the holes with a dibber, formed from the handle of an old spade or digging-fork, and do not make them so deep as to leave a hollow space below the roots of the plants. Insert the plant as deep as is feasible, and ram down the earth round it, pressing it down as tight as possible. In fact, if after a row is done, a man were to tread down it taking the plants between his feet, it would be all the better. What did the Lady say? That her roses had taken much better that year than previously, because her new gardener weighed at least two stone more than her old one, and therefore pressed the ground down more forcibly.

Horse- and hand hoe as often and as deeply as possible. We say as deeply

as possible, because the objection to the deep-hoeing of corn does not apply to roots. Corn has to ripen its seed, roots have no seed to ripen—at least the year they are sown—and for every radicle cut off by the hoe, nature will immediately exert her influence and make the plant throw out three to five.

The head of the Kohl-Rabi may be given to the stock when required; the bulb can be stored like swedes. Some of the States people talk of eating the bulb boiled like a turnip. This was tried in England, as a succedaneum for the potato in 1845-6; I remember it well; but I do not think anything but starvation would make any one eat it; better give it to the milch-cows.

The distance between the plants may be, for Kohl-Rabi, 10 inches, and for cabbages, a foot. Seedsman, in their catalogues, talk of 2½ feet each way for cabbages, but the bigger weight to the acre will be grown at 24 x 12 inches.

The green-Kohl-Rabi gives the larger crop, though the purple is said to be of finer quality.

For keeping, no cabbage is equal to the *Savoy*; for autumn use, any of the *Drumheads* will answer; we prefer the *St-Denis*: probably, for old acquaintance sake.

To store cabbages, take them up as late as possible, with their roots on; place them in beds on the frozen ground heels in air, say 8 feet wide; lay other cabbages on them, in the same position, 5 feet wide, and, again, others, till the pile is say 3 feet high, drawing in as if you were building a hay-stack; throw up earth to keep the pile steady; the snow will be arrested by the legs and roots, and, unless a dozen alternate thaws and frost occur, your cabbages will come out fresh at Easter.

Strawberries.—A correspondent, see p. 147 wants to know the best strawberries for planting in the Western part of the province. From what we can gather; for we have no experience in growing this berry since we left England, 36 years ago; the best kinds are the *Sharplex*, the *Bubach* the *Beverley*, and the *Haviland*, but Mr.—should visit the nurseries of some of our large growers and get their opinion. As to fall planting, unless he uses potted plants, we do not think he will succeed in getting a crop next spring. Mr. Moore, the lecturer on Agriculture, would, we doubt not, give him any information he may desire on the subject. Mr. Moore's address is: Department of Agriculture; Quebec

July 7th.—Haying just begun here (Beaconsfield); white-and Alsike-clover dead, and timothy dry already, before being mown. Weather *catchy*. Our neighbour has about 5 acres of hood-crops: Corn, pretty well done by, though very backward; potatoes, though very heavily manured, spindly, being drawn up by weeds, and nearly devoured by beetles; carrots seed was bad, i. e. plants lost among weeds; sugar-beets, about one plant to a yard, drawn up, and disgraceful. No wonder people say root-growing does not pay. The piece was manured with raw dung out of the yard, and it never having been turned, every weed-seed grew. Promises to do better next year!

Oats look rusty, but very thick on the ground; barley changing colour; lots of grass.

FARM-WORK FOR AUGUST.

The harvest will probably be in full swing by the first week of this month. Haying, in such an early season must

have, or ought to have been finished except the second-cut clover, by the end of July.

Keep the horse-hoe going between the rows of the root-crops as often as possible, until the leaves "shake hands" across the rows.

When early potatoes, sweet-corn, &c., have been marketed, break up the land and sow 5 lbs. or 6 lbs., an acre, of rape seed, if a large crop cannot be expected, there is every chance of a good bite for the sheep. At all events, the cultivation of the land will do it good as regards the next year's grain crop.

Those who mowed their clover early may expect a good second-cut by about the 15th of this month. It is of more importance to mow this aftermath when in full vigour than people fancy; it is even more important than to treat the first crop so; for the second is never so good as its predecessor, and if allowed to stand too long and it gets into the September rains, it will be pretty sure to mould and be worthless for anything but sheep: mouldy clover is the worst thing you can put before a horse; very apt to injure his wind.

We were told a funny thing to-day. "You have left your hay too long before cutting," said we to a young farmer; "it is dead-ripe. That is one of the reasons why last year your hay sold for \$11.00 a ton in England less than the English hay; none of you cut your crop soon enough." "Oh," replied he, "if we cut it before it is ripe, it always moulds in the barn." We tried to convince him that even that inconvenience might be avoided by not taking it into the barn till it was fit to carry; but it was time and argument wasted. The season had arrived at which his people had always cut their hay, and that was enough for him; it being at least ten days more forward this year than usual made no difference; the tenth of July was here, and that was the proper date to start *les foins*. Of course, as long as this routine work is practised, so long will the farmer remain poor. It is sad, very sad.

Potatoes, look well, even very well, but they are earthed-up too high; a fault, this, that a little consideration would make plain. A broad, flat earthing would give more room to the roots to spread freely, and would hold the moisture better. All the good, in general, to be derived from the process is the preventing of the tubers from greening. Even if a few do green in a heavy crop, they can be kept for seed! The less potatoes are earthed-up the better; on heavy land a passage of the double mouldboard plough may be necessary to act as a water-furrow; but, here, the same deep earthing-up is given on the light land by the lake-side that is practised on the heavy land in the moist climate of Ayrshire.

And the potato-beetle, too; there is another bother. Close by our summer residence, are too lovely potato-fields—rich, rich!—but there are several hundred fresh hatches of eggs, and the young beetles are just as active! We spoke to the owner of these fields, asking whether it would not be well to treat them to another dose of Paris-green. "Oh, no," replied he: "it is too late for them to do any harm to the crop." Useless to tell the man that those young ones he saw, fat and lazy now, would in a few days be the active propagators of a numerous progeny that would keep him at work next summer. It is this easy going behaviour that prevents the entire suppression of this dire scourge.

Why not unite, and at the end of the season, say, Sept. 1st, all set to work and exterminate the pest?

All grain, except malting barley, should be cut on the green side, the stuff in the straw will mount up into the ear and fill the grain, while the bran will be much thinner. And why thrash the oats you intend to consume at home? Just as well keep them stored in the straw, and pass the whole through the chaff-cutter as you want them. Oat-straw, cut greenish, and fresh from the bay where the sheaves were originally stored, is worth for cattle food 25% more than threshed, loose mowed stuff; and the grain, given with the chaffed straw, is pretty certain to be well chewed. In our younger days, when the flail was at work, the straw was put out into the yard, for the young beasts and the colts, fresh every evening, and the stock ate it freely and did well upon it.

Now, the land and the grass must be getting dried up; but of course all our readers have prepared for it. Fodder-crops have doubtless been sown, and are ready for consumption. With watery food, like immature green-corn, two or three pounds per head per diem of cotton-seed meal will help your cows to resist the scour.

On the whole, we think any one who tries it, will prefer a mixture of grain and pulse, as fodder for his milch-cows, to maize. Two bushels of oats, one of tares, and one of pease, to the imperial acre, will give a swathe that has more proof in it than any amount of corn. If cut when the tares and pease are in bloom, horses do well on it, and the young pigs in the yard will be grateful for their leavings. This mixture, taking one year with the other, if sown as soon as the land is ready, will be fit to begin upon by the end of June, and if sown in three lots, with a fortnight between the sowings, what with it and the clover, there should be no lack of green-meat throughout the season. When the fodder-corn has ears in the roasting stage, we would not be thought to undervalue it; but, when young and watery, there cannot be much good in it.

This is the month for clearing the land. As fast as the grain-crops are carried, the land should be broken up, scarified, and harrowed; the root-weeds raked together, and burnt. Make as much use as possible of the glorious sunshine you are blessed with here. Let the land, if dry, lie two or three weeks, to allow the seed-weeds to start into life, and then harrow them to death. More still will sprout, and be buried by the deep fall-furrow in October.

Young pigs do well on clover with a few pease; see that the rings are not discarded; nothing looks more slovenly than the signs of the rooting-hog.

If you want your sheep and lambs to pass the winter in comfort, dip them in one or other of the preparation sold for that purpose. Mr. Gray's letter in the July number of the *Journal* you probably saw. Sir John Lawes' dip is sure to be trustworthy. Remember that ewes, if you want twins, will disappoint you if they are not in good order when put to the ram, and that the shorter time that elapses between the beginning and the ending of the lambing season the better, because, when lambs come slowly, the shepherd wearies in his attendance; wherefore, as rape has a peculiar effect upon ewes, bringing them into season more rapidly than anything else, see that your ewes have a piece prepared for them, on which they may feed for two or three weeks before they are put with the ram. The ram, too, should be well fed,

but not awkward-fat. Why not make preparation for a good lot of early lamb? Ewes put to the ram about the middle of August should lamb in January, and if the lambs are well treated, with cake and white pease as well as their natural food, they should be a little better by the end of March than those wretched little black rats we see every season in Ste-Catharine street butchers' shops.

We hear from our energetic friend, M. le Comte des Etanges, that he is working 70 acres of sugar-beets at Sorel! A large undertaking. If our health permits, we hope to see the crop this month: but, alas we have had but a poor life of it this summer

HILL-SIDE WATER-MEADOWS.

BY THE EDITOR.

Any one who has driven along the upper-road from Richmond to Coaticook must remember the innumerable rills which, gushing from the rock on the south side of the hills, run trickling down the slopes, wandering here and there through the meadows, and freshening up the grass for a few feet on each side as they pass; supplying this farmhouse and that cattleyard with the finest and most pellucid water; and gradually augmenting in volume, by and by form brooks of moderate width, which feed trout, the beauty, activity, and quality of which I, with my fifty years experience of that fish, have never seen surpassed.

Ten years ago, happening to pass the summer in the neighbourhood of Compton, we tried an experiment, on a very small scale, to see if the water of one of these bright, clear streams would act on grass in the same manner as streams of the same character act on grass in England. Beginning on the second of May, we led the water over about a quarter of an acre of old, rugged grass; let it run for four days; then dried it for three days, working thus until the end of the month, which, fortunately for our experiment, remained cold and backward throughout its duration. We showed the piece to an old inhabitant of the district on the 25th of June, without having told him what fantastical tricks we had been playing with it, and his opinion was, that there was three times as much grass on the plot as on any other part of the meadow. We think he overrated the crop, but the difference was very striking, and could be seen from afar. And this, remember, was an experiment under great disadvantages, autumn being, as was stated in the last number of the Journal, the best season for watering.

Now, this little stream, a mere rill, runs past three farms, and, trifling as its volume is, it would irrigate, if properly managed, at least seven acres on each of them. Any one can see it: it crosses the road above the ravine between Compton Centre and Mr. Cochrane's farm at Hillhurst. A lovely spot—nothing more beautiful in our own dear old country: an immense admission for us to make! The trout, many in number, are brilliant in colour; the grass on each side of the stream is of good quality, and the land, being rocky and uncomfortable to plough, would be all the more useful if it could be kept in permanent meadow. It is no trifling advantage on a farm of 150 acres, to have 7 acres of meadow, yielding a maximum crop, or crops, of hay, with good pasturage afterwards, and, at the same time, absolutely independent of manure. Neither, in such a situation as I have described—and

there are hundreds of similar ones in the townships—would the cost be worth talking about: We have seen on Exmoor, Devonshire, many an acre laid out for \$4 each, including large and small water-carriers, culverts under fences, hatches, and flood gates. A great part of the work may be done with the plough, in the hands of a skillful ploughman, and the annual expenditure for dressing-up the carriages &c., would be a mere nothing.

The main carriages, which take the water in the first instance from the brook, are formed three feet wide and six inches deep on the lower side, and

frightens even the most enthusiastic improver. But where, as in the Compton case, the brook travels close to the side of the farm-building, there is no trouble at all in carrying out the contents of the tank. The urine from the cattle, the contents of the privies, the sewerage, in fact, of the whole establishment, might be collected by the stream, and carried over the meadows at any time thought desirable. As the water filters over the grass—or rather through it—nothing is lost, but all is deposited where it is wanted; and, thus, early and abundant crops are produced for pasturage, or for sciling

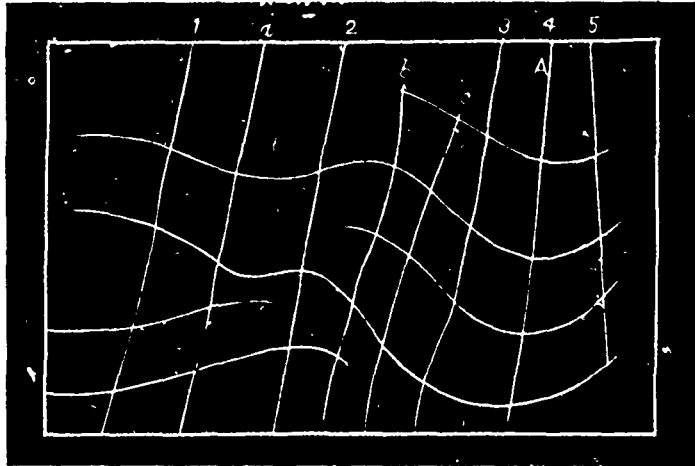


FIG. 1.

forty-four yards apart, with a full of two inches in a chain of twenty-two yards, or one in 396. Between these a smaller gutter is cut, eighteen inches deep, at a distance of three-fifths from the upper carriage, and two-fifths from the lower one. The gutters again collect the water into a sheet, that it may be the more evenly distributed over the piece than under treatment: but for this, the water would get into little streams, and cut its way in small furrows.

If, from too-long persistence in mowing, the grass has given place to moss, the best plan is to let the water flow over it for a week at a stretch. This will soon kill out the moss, while

in the cattleyard or stables, the manure made from the consumption of which may be carried on to the arable land, and so increase, in a very short time, the gross produce of the entire farm. It is a well known fact, that, after passing over the grass, the water, however foul it may have been at first, becomes perfectly clear, and fit for all domestic purposes. And these meadows will pay for any judicious labour you may lay out on them. When eaten bare, they should be bush-harrowed, and heavily rolled when the land is moderately damp. After the hay crop is severed, a gentle watering for, say, 24 hours, will do no harm, but, as I mentioned last month, summer flood-

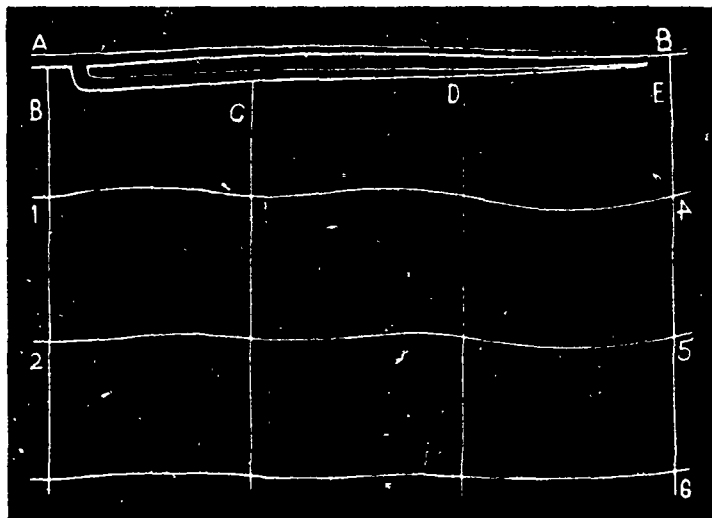


FIG. 2.

a thin sheet of water has but little effect. Continue the watering at intervals; always letting the land get dry between whiles, but never allowing the land to get sodden by the water remaining on it too long a time; by neglect of this sort, coarse aquatic grasses are sure to take the place of those of superior quality.

Liquid manure tanks.--As we have before remarked in this Journal, we have seen many liquid manure tanks built, and many carts for its distribution bought, but never saw their use persisted in; the tremendous labour connected with the system soon

ing had better be avoided altogether, if sheep are to be pastured: fear of rot. There is no reason why—where, as at Compton, land, exposure, and water, are all propitious—strawberries should not be cultivated for the market. Irrigation—in summer, of course, in this case—would double the size of the berries, and consequently, more than double the value of the crop: fine fruit, as my readers know, always fetches an extra price. It would pay well to lay out the beds for the strawberries as described in the December, 1833 number of the Journal, p. 124 eng. bedwork. A very thin sheet of water, running for about

12 hours at a time, will be sufficient. In the early stages of growth, the land should be stirred frequently with the hoe round the plants. The last watering should be given just before the berries begin to colour; after which the beds should be kept as dry as possible: strawberries ripened in rainy weather have no flavour. The wild strawberries on the slopes below the upper road at Compton are, without any exaggeration, enormous; many of them as large as our thumbnail! Superb in colour, and full of flavour, if the season is suitable. We fancy there are many hundred acres in the Townships which offer equal inducements to the fruit grower, but we know what we are talking about as to Compton. We studied the country thoroughly in 1873, and we are sure that an enterprising man, who would be willing to invest a few thousand dollars in intensive farming on any of the sunny, well-watered banks along the hill-side, might double his capital in a very few years. The soil is willing to grow any thing you like to ask it. We never saw such swedes in England—the station is handy, and the neighbourhood pleasant beyond description.

And, now, having described as well as we could the advantages and the general plan of the simplest and cheapest form of water meadows, we proceed to show how such a meadow, in land of the most irregular shape, may be laid out. The level used for the purpose is the ordinary one, an engraving of which was given in our Dec. 1833 number. Many of our readers are, doubtless, accustomed to its use, inditching, &c., but others may be glad of information on the subject. It is to be observed that on the cross-pieces above the weight there is a notch in which, when the line lies straight, the plumb-level is attained.

Taking the fig. 3 to be a meadow, or a piece of a meadow, we must first consider where the irrigating stream can most easily be introduced, consideration being given to cheapness combined with practical utility. Let us suppose that the point A is the most convenient spot. Next, consider in what direction the water, if left to itself, would probably run: take the line, for instance, from 1 to 2. Take the level, and proceed to mark out that line in the following way: set the feet 1 and 2 level on the ground by means of the plumb line 3; mark the place of no. 1; then advance the level, putting no. 1 in the place of no. 2, and finding a new place for no. 2 by means of the plumb-line. Go on in the same way until you have got a level line across the meadow. Some one, following, should make a mark with a hoe or other tool at every other move of the level—there will thus be a sign at every ten feet. Now, begin this levelling at B, and, if the ground is tolerably flat, you will get a line somewhat in the same direction as B. C. The arrows indicate the way in which the water is to be made to run on in the gutter-line. To manage this, you must deviate a little from the precise level, letting the plumb-line drop a little before the level mark when you are inclining down the meadow, and behind it when the inclination is up the meadow. The water will, then, run out of the low places, and upon the high places. Follow all the indications, of the level, however curved or crooked they may be.

When you have finished the line B C, return to a point D, which should be, generally speaking about thirty feet from B. Going on as before, you will probably make a line something like D. E. You see by fig. 3 that the distance from C to E is too great, therefore, a subsidiary gutter, F G must be inserted

to collect the water flowing from the farthest part of B C, to spread again over the interval between D E and B C. And in like manner, the subsidiary lines L K and I H must be drawn, always remembering that the distance between the gutters should not exceed thirty feet, or thereabouts, in this comparatively flat sort of work. The plough, with one steady horse, will complete this part of the job.

The next thing we have to do is to draw out the gutters to carry the water from the carriers to the gutters we have just made, and as nearly at right angles to them as possible: see fig. 1. In this plan, the curves of the lines form a series of loops, and the undulations of the meadow are mapped out by them as they go down round the hills, and up round the valleys. The water will be principally wanted about A in the figure. Taking care to go as nearly through the centre of the downward loops as possible, draw out with the plough, the line, 1, 2, 3, 4, 5, and fill up the interval with a, b, c. The intervals between these lines should not exceed forty-five, or, at most, fifty feet.

The next step is to bring in the water. First, clear the turf out of the gutters, and then, with a spirit level, setting a mark every two rods, allow the carrier a fall of about 2 inches if the nature of the ground will admit of it: less will do, but the carrier must then be made wider in proportion. The carrier must be carefully, very carefully, drawn out; if the greater quantity of water be required at A, it must retain its width and fall to that point; but if the water is chiefly required at the beginning end, the carrier should taper away to a point and the fall be lessened.

Supposing we have not enough water to irrigate the whole of the meadow at once, we must divide it into two or more parts: see fig. 4, where A B is a carrier as far as c and a watering gutter from c to B; a and b are watering gutters taken out of it. Now, to water the part on the left hand of the plan fig. 4, all that is necessary is to put a stop in A B at the point 1; and so on at 2, to fill the gutter b. Stops may be made of turves cut in wedge-form.

Lastly we have fig. 2, wherein will be seen the meadow finished for irrigation. This sketch will, we think, give a better idea of the whole arrangement of a meadow than our laboured explanation. A B is a carrier from the stream, tapering towards B; a is an irrigating gutter, also tapering towards B; b, c, d, e, are feeders perpendicular to the level-gutters 1, 4; 2, 5; and 3, 6.

The gutters are not to be cut every year in the same place, but there will be no loss of space in making new ones, as the turf taken from them will just fill up the old ones.

As this, the best and most modern of all the plans of laying out catch water-meadows, and the one that will work with the smallest supply of water, is also the cheapest to put into operation, we presume it will be acknowledged to be the best suited to this country. We can't see how it can cost five dollars an acre to lay out, and the annual expense of clearing out the gutters, repairing pen-stocks, etc., must be very trifling. The two principal things to be attended to in irrigation are no stagnation, and no rush of water to create furrows in the land.

Household-Matters.

Care of the sick.—Owing to the epidemic of scarlet fever just at present, a few hints about the care of the sick ones, might be useful to those who may not happen to know, or think much about it till it comes home to them, as it did to the farmer the other day, who lost 5 children out of six in a few days. One cannot but think, had every precaution been taken in the first case, the loss of life would not have been so great.

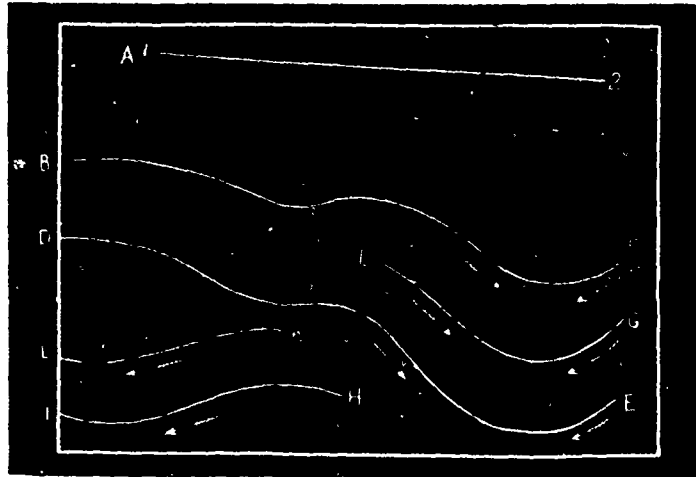


FIG. 3.

The first thing to do.—Take every article of furniture not absolutely necessary out of the room. Take up the carpet, put your patient into bed, tack up a sheet over the door, after dipping it into a solution of carbolic acid. Darken the window, if desired by the patient, put two or three saucers of chloride of lime about the room. Never allow child or animal

Sippets when the stomach will not receive meat.—On a very hot plate put two or three sippets of bread, pour over them some gravy from beef, mutton, or veal; sprinkle over a little salt, and serve up to the patient hot.

Macaroni.—Half apound of macaroni, broken up into pieces of about

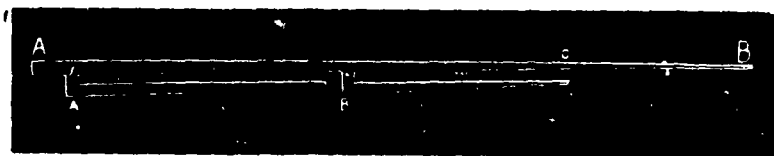


FIG. 4.

to taste anything left by the sick one, but get rid of it as soon as possible. A pail into which every thing is thrown when done with, with a sprinkling of chloride of lime over the top, then get it burnt, or buried, deep in the field.

One person must attend the patient and not leave the room till danger from contagion is over. If these small matters are attended to on the very first symptoms, life may be saved, and at any rate the rest of the family have every chance of keeping free. If these precautions are taken, or a doctor called in at once, and every care taken in carrying out his orders, as to time to give medicine, diet, &c., the patient will have every chance of recovery and you will have the satisfaction of having done your very best. As soon as nourishment is allowed, such as beef-tea, chicken-or mutton-broth, you will find a very nice way to make either by attending to the following rules.

Chicken-broth.—Cut up into small pieces the half of an old, or the whole of a young chicken. Take off the skin, and remove every particle of fat. Simmer in one quart of water till well reduced, a little salt. Strain while hot, then let it cool and take off every particle of fat remaining on the top. When required, warm it up and give the patient a little as directed by the doctor.

two inches long, put into boiling water and cooked till quite tender, but firm. It will not keep its shape if too much cooked. Strain away the water, and add half a teacup of gravy, or milk, about 1/2 pound of



FIG. 5.

cheese grated or cut into very thin slices, a very little butter, a little salt, and a very small quantity of pepper. Throw these into the macaroni and stir gently. Be careful not to break it up too much: serve very hot. Another way is very good; turn the whole into a pie dish, and put into the oven just to brown over the top. (1)

(1) More indigestible than the former.—Ed.

Is cheese digestible?—May people complain that cheese with them is indigestible. We believe that in the majority of instances this trouble arises from eating uncured cheese. The people of England and Continental Europe eat largely of cheese, but almost invariably it is well cured and of good age. Old cheese is considered to be an aid to digestion. The high livers of England after a heavy dinner finish with a bit of rich old cheese and a cracker. They do this with the belief that it assists in promoting the healthful and vigorous action of the stomach. New cheese is well known to be very indigestible and instances are known when the eating of it has suspended the peristaltic motion of the bowels. If people would provide themselves with good cheese, and then refuse to consume it under three or six months after being made, we are convinced they would find almost invariably that it would prove a promoter of digestion. The grocers all over the land are greatly lacking in common sense enterprise in the matter of providing their customers with good well cured cheese. All Cheddar-made cheese is hard, unpalatable, and indigestible when young. When it has time to cure perfectly, and the rennet has opportunity to pre-digest and break down the curd, the cheese is softer and much more palatable as well as healthful. A good grocer will buy his cheese ahead of consumption and provide a good cellar or cool curing room were it may be cured at least three months before being put on the market. By buying two or three new cheese a week and developing them to a proper digestible stage he can soon quadruple his cheese trade. We know of grocers who have tried this plan and have increased the consumption of cheese in their locality as well as their own profits very considerably.

Hoard.

Another pretty dress.—This very pretty dress will answer for a child of 2 years, or any age up to five. It will look well made in two shades, one for the waist, skirt, and puffs, and the other shade for the frilling. A very handsome little dress would be one made in white, with insertion for the band, an embroidered frill round the neck, and a narrower one for the bottom of the puffed sleeves. This would make it a little more expensive, but



would always look new after every careful washing. It would be a very pretty cool dress for a little party. Made in printed calico for a very little child where it would want frequent washing, it will look and pay well for the trouble of making up. The quantity for making either of these dresses must be bought according to the age of the child and width of material.

Poultry-Yard.

Something more about Dorkings — What an Ontario breeder says about them — Strong endorsement of the breed—Eggs or stock to begin with—Miscellaneous.—Illustrated.

A. G. Gilbert.

I should like to say something in addition to what has been said in a previous letter and in a later edition of your paper in relation to the Dorking fowl. It is a breed that certainly deserves more attention from our farmers than it receives, particularly in parts of the country which act as feeders to the large cities. In certain portions of England the breed is so common, as to be known as the barn-door fowl, and on the markets of that country the superiority of the Dorking, as a table fowl, has long been recognised. There are three varieties of the Dorking viz White, Silver Grey and Coloured. The latter variety is more numerous on this side of the water than the others.

WHAT THE "STANDARD" SAYS.

Turning to the American standard of Perfection we find the breed classed as "English" and the following are the weights required :

White Dorkings.—Cock $7\frac{1}{2}$ lbs.; hen 6 lbs.; cockerel $6\frac{1}{2}$ lbs.; pullet 5 lbs.

Silver Grey.—Cock 8 lbs.; hen $6\frac{1}{2}$ lbs.; cockerel 7 lbs.; pullet $5\frac{1}{2}$ lbs.

Coloured Dorkings.—Cock $9\frac{1}{2}$ lbs.; hen $7\frac{1}{2}$ lbs.; cockerel 8 lbs.; pullet 6 lbs. The body requires to be long, broad and deep; the breast broad, deep, full, and the thighs of the male of medium length and large. The five toes so characteristic of the breed are of course required. It will be noticed that the Coloured variety weighs heavier than the others. It will also be remarked that all the good points of a market-fowl are embraced in the breed.

STRONG APPROVAL OF THE COLOURED VARIETY.

In our country there has been an unwritten prejudice against the Dorking on the ground of so called tenderness in rearing and susceptibility to the cold of our winters. But Mr. E. D. Dickinson, of Barrie, Ont., gives strong evidence to the contrary in a letter to the *Poultry Review* of Toronto in which he says: "I would have started coloured Dorkings long ago but I heard they were tender, bad layers and good for nothing outside of England. But last spring I began by getting a few settings of the best eggs I could get in Ontario and hatched and reared them very successfully. In all respects I found them very thrifty youngsters, with the only drawback that they had healthy appetites and you will count that for what it is worth when I tell you that from chicks hatched on May 26th, some of the cockerels about four months old weighed nine to nine and a-half pounds and in six months about eleven pounds. But the principle point after their eating ability is their hardiness, for although the winter was cold the Dorkings seemed not to mind it as much as a few white Leg-horns and although as I said the Dorking is credited with being a bad layer * * * I am now getting eight to ten eggs a day from twelve hens. I strongly recommend the rearing of coloured Dorkings by farmers or poul-

trymen who want a good broiler or full sized fowl."

Mr. Dickinson also says that they laid as well during the winter as any other fowls in the neighborhood. I place importance upon Mr. Dickinson's statement because Barrie is fairly representative of our eastern winter climate, as to steady cold and length of season.

A writer in *Farm-Poultry* of Boston also strongly endorses the Coloured Dorking as a rapidly maturing market-fowl of superior flesh properties.

A Dorking capon properly fattened is as dainty a dish in England as any epicure could wish.

APPARENT INCONSISTENCY.

The foregoing remarks, I hope, will go to make our farmers think more about the merits of the Dorking breed. It may be said that in previous letters I have strongly recommended the Plymouth Rock as *par excellence* the fowl for the farmer. Certainly, I have done so, and for the reason, which I hope I made plain at the time—"that for one Dorking in the country there are hundreds of Plymouth Rocks." And it will be so until the Dorking breed are more extensively bred throughout the country. Of course, it is understood that while speaking

of the merits of any breed, which may happen for the time being to be the subject of discussion, there is no intention to run down the merits of any other. My primary object is to get our farmers to bring larger and heavier chickens to market and Plymouth Rock, barred or white, will furnish the means to accomplish that object without any possible excuse of difficulty in obtaining them.

EGGS OR STOCK TO BEGIN WITH.

I was asked by a correspondent in the North West not long ago to send him a setting of eggs from one of the popular breeds as he was anxious to get some good laying and market stock. I advised him not to buy eggs for the following reasons: 1. That after travelling so far the eggs would not likely to hatch well; 2. That if he did get a few chickens the most of them might be cockerels, and he would only have one or two pullets; 3. That any way he would have to breed from brother and sister the next season, unless he imported a male bird; 4. That all things considered it would be better for him to purchase a trio of fowls—not related—and then he could breed as many chicks as he pleased. The first cost might be greater, but he could make that up by selling any spare eggs for breeding

purposes, later he could sell any spare cockerels for the same purpose.

And the same may be said to persons nearer home. The first cost of purchasing a trio of good stock from a reliable dealer may be greater than that of a setting of eggs, but I dare to say in competent and careful hands the results will be more satisfactory.

ANSWERS TO QUESTIONS.

I think I have already stated my willingness to answer question asked through you, or addressed directly to me, in relation to poultry or poultry raising. The questions will be answered in your columns unless otherwise requested. I think I have occupied enough of your space on this occasion. I have some very promising chickens—from different crosses—and some particulars about them in a future number may be of interest to you readers.

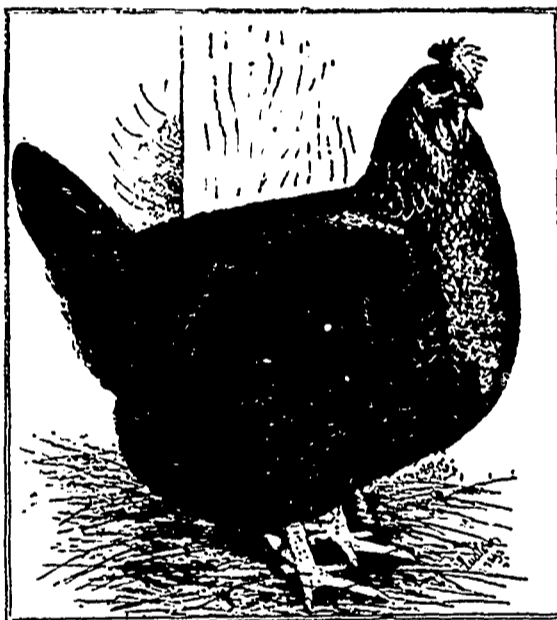
Ottawa, June 18 1894.

Correspondence.

Abercorn, July 7th 1894

TO THE "JOURNAL OF AGRICULTURE."

Sir,—In commenting on the way of feeding but twice a day as practised



by myself and many others you say (you never met a good feeder who only fed twice a day) I will define more clearly my meaning by saying that I only alluded to the hay ration grain we all feed and don't consider it a poor investment to feed it liberally, but the cow that chews the cud must have a little time to raise and chew between meal times and with such men as Prof. Hazen with his hundreds of pure bred Jerseys and unrivalled success in dairy farming who would not have the third feed of hay given his herd if it was furnished and fed gratis, I feel that after my own experience of the last few years as well as some of the best farmers in this town Sutton, (by the way do you remember that Sutton took first prize on cheese last year at Chicago?) that we can afford to continue at our present way of feeding, *Hoard* and *Hoard's Dairyman* and the *Journal of Agriculture* to the contrary notwithstanding, and when you come out to our Knowlton meeting, August 14 and 15 just run down to Abercorn and see how much milk we are getting per cow at the same time you can feast your eyes on one of the finest and best farmed river valleys in Quebec. I will not trouble you further than to say that every thing goes by comparison and as my way of watering outside with warm spring water

and feeding hay rations twice a day has given me as good or better returns than others have received from watering inside and feeding three times I think I will continue this way. A while longer but there will be no horns to dominate at the watering tank, no not any for me. Yours truly,

J. L. SHEPARD,

Abercorn township of Sutton,
Co. of Brome, Que.

STATE OF THE CROPS.

St-Hyacinthe Dairy School,
July 7th 1894.

Hay and clover looking well; quite a few cutting timothy which is uneven but turning out better than anticipated some time ago, done well the past fortnight.

Wheat, very little sown, doing fairly well.

Oats. Have a reddish appearance like rust or blight, although some say it is a small fly that is causing it, it seems to be very general.

Barley doing well. Some will be ready to cut before the 15th July. (1)

Pease look rather sickly. Too much wet weather.

Rye, very little sown, looking fairly well.

Flaxseed, quite a fair quantity sown in the French parishes, doing very well.

Corn has done well the past month. Good nice dark green color.

Potatoes, doing well. Bugs or beetles doing a good deal of harm. A dose of Paris green needed, other roots, doing well; turnips seem to be doing the best.

Small fruits such as currants and gooseberries doing well.

Apples. The rust spots are again on the Fameuse, Duchess doing well, St. Lawrence have nearly all fallen off the trees, other kinds looking well and lots of them.

Weeds and thistles, have done first class although the latter are not so abundant as a few years ago, mustard (wild) a grand crop? riding in the cars a few days ago one of the passengers remarked it is a very rich part of the country here, some asked why, he says why the people raise gold, (yellow mustard) all they have to do is to go out and gather it.

Milk has been abundant this year, it has reached the flush, is now going down a little, the hornfly so far not so bad as last year. Cheese has sold well and does not seem to go down in price, notwithstanding the heavy shipments. Butter doing fairly well.

PETER MACFARLANE.

St-Hyacinthe, July 7th 1894.

P. S.—This report includes South-West portion of Quebec. P. M.

CLOVER AND HAYCAPS.

I do occasionally enjoy drawing the fire of the critical editor of the *Journal of Agriculture* and one of my late rash statements that I believed that if we took pains to keep our hard-wood ashes from going to our neighbors across the line and applied them to our clover field that we need never fear the appearance of the so called "clover sickness" so much dreaded in England.

Mr. Jenner Fust's theories are always based upon close study and long personal experience and it seems like heresy not to accept them as final

(1) If for malt, let it stand till dead ripe. Eo.

but when he says that we are in danger of overdoing the clover sowing, even with the application of ashes I can only devoutly hope that he for once is not right. Ashes and clover seem to solve the problem of restoring lost fertility on much of our land that has been over cropped. Manure we can seldom get enough of and besides, particularly that from bones, it does not seem to suit clover as do ashes, and with the potash and phosphoric acid that they contain and the nitrogen that the clover extracts from the atmosphere the combination seems to give about as well balanced a fertilizer as can be desired. What seems to be the weak point in bringing clover into more general use is the want of proper curing and as generally made it is no wonder that many object to even a mixture of it in the hay they use. That it can be well cured and made fit for the most fastidious horseman there is no doubt, and the fact that during the last winter the London market asked for clover and clover mixtures in much of the hay sent from this Province shows that in many parts of England clover is appreciated as it should be. As to the time of day that clover ought to be cut opinions differ but so long as it is free from dew and rain and can be partially wilted before being cocked the time of cutting is not of so much importance as the after process of curing in the cock. It is to the want of this curing process, fermenting, sweating or whatever you prefer to call it, that so much of the dark, dusty, mouldy clover that one so often sees is due and, in order to allow time to insure this process being properly completed without the clover being sun-burned and darkened with dew and rain, hay caps should be resorted to and wherever tried there seem to be no form of cap so practical as the one made by the Symmes Hay Cap Co. of Sawyerville, Q. These are perfectly waterproof, light, and easily put on, do not rot as cloth caps are so liable to do when packed away damp, and are now so made that they cling on to the clover or hay cock without the trouble of tying or pegging down. Under these caps the clover can go on curing regardless of weather and remain uninjured till one has time to open it out for a short airing before carrying to the barn, and now I pause in hopes of bringing out from the editor a lecture on this most important subject about which I for one am always anxious to learn something new and who is so able to instruct as he?

W. A. HALE, Sherbrooke.

Answer.—Mr. Hale seems to have completely misunderstood my observations concerning clover. For an Englishman to undervalue hay made from that plant would be indeed strange, seeing that in the London market it, as a rule, sells for 25 shillings a load of 18 gross cwts = 2016 lbs, more than picked meadow-hay. What I wish to guard against is the too frequent repetition of the red-clover on the same land, since, as has been known to every farmer of the Eastern counties of England for at least 45 years, clover sown at short intervals ends by making the land *clover-sick*. Many farms in Essex, Cambridgeshire, &c, had, in 1850, to be content with sowing clover once in 12 years; as thus:

1st rotation :	Roots, barley, clover, wheat.
2nd do	Roots, barley, beans, wheat.
3rd do	Roots, barley, trefoil, wheat.

Pease were taken in the second rotation, on light land, instead of beans; the trefoil in the third rotation, is the yellow, or hop-clover (*trifolium lupulinum*?).

Sir John Lawes devoted several years to the study of this disease, and could discover no remedy for it: it comes, destroys the crop, and leaves no trace behind it. Manuring can hardly be a cure, for with us the majority of farmers manured for roots heavily, both with dung and bones; half or two-third of the roots were fed off with sheep eating in addition a pound of cake &c., a day apiece; and the young clovers generally received a dressing of 10 or 12 tons of dung in their first winter after the barley. Clover was never allowed to stand more than the one summer.

This past winter, picked meadow-hay in England sold higher than clover of the best quality: quite an exception to the rule. By our last mail, we find that in London (White-chapel and other markets), best meadow hay sold for 140s. for 2016 lbs., best Canadian hay, 95s. Why this difference exists may puzzle any Canadian who has not seen a stack of hay put up in the South-east of England.

In that part of the world hay is very carefully treated. Meadow-hay is, say, mown on Monday afternoon; broken-out by the tedder as soon as the dew is off on Tuesday, turned two or three times; raked into winrows and invariably put into grass-cocks (very small ones) before the dew falls; turned out next morning and worked all day; made more by wind than by sun; kept as "green as grass"; and carried on Thursday. A deal of work! but, then, we do not allow our grass and clover to stand till they are as dry as straw. (N. R.) On the 15th June, as we were on our road to Beaconsfield, we saw, at Valois, a piece of red-clover quite fit to cut, which we should have managed thus:

Mow Monday morning as soon as dew off;

Turn Tuesday as soon as upper side wilted;

Cock Wednesday, and, with the hay-caps Mr. Hale recommends, keep in cock till fit to carry.

If the piece in question is allowed to stand, as it probably will be, till the middle of July, it will be much easier to make; but the quality and the second-cut?

Oh! for goodness sake, don't imagine that we undervalue clover! It is one of the most useful of all fodders, and when we hear of its being ploughed in instead of being given to stock, it drives us frantic. Sow acres upon acres of it, but don't repeat it more than once in 7 years on the same land. And when we say sow plenty, we not only mean sow it extensively, but sow plenty of seed to the acre; 14 lbs. of red-clover alone, and 7 lbs. or 8 lbs. if mixed with other seed.

Cut early; keep it still, and don't stir it with the tedder, thereby knocking the leaves off. If it is cocked and broken out of cock once or twice, there will be only stem and blossom left.

Keep your ashes at home by all means; a good dressing will grow a fair crop of turnips, alone.

Lots more to say, but we have been so ill for the last two months that we must defer the rest to a future opportunity.

June 26th 1894.

MR. A. R. JENNER FUST.

Sir.—I am a reader of the *Journal of Agriculture* and by reading it I saw that you took a great interest in farm-

ing. As I am a young farmer myself I always take much interest in reading your articles. Having two years ago come into possession of a farm I thought that I would devote myself to farming. I made up my mind that if I farmed I would do good farming or else not do it at all. I have often wanted to write to you for information but always was afraid to trouble you. And being laid up in the house through sickness I thought this would be a good time to do so. My farm is situated near the village of there was no milkman so I started a small milk round to try and make my farm pay. I will tell you how I conduct things and if you would write to me and tell me where I could make improvements you would oblige me.

My cows last winter got all the hay or cured corn stalk they could eat, one basket full of swedes, and a pail of moulé in the morning the same thing at night and only hay at dinner; they got water once a day at the well. In summer they get good pasture and as soon as the Western corn gets fit to eat, I give them all they want and when they fall off in milk in the warm weather I give them each a pail of moulé every evening. I have a small box in the pasture which I have nailed to a stump and I always keep it full of coarse salt; the cows often go to it. In winter I brush and comb my cows when I can spare time which is about 2 or 3 times a week: I find it does them good. I milk them at half past four in the morning and at three o'clock in the afternoon. What I milk in the afternoon I put into ice water until the next morning for delivery. I deliver at 50¢ quart.

I followed the direction you gave for growing turnips in the *Journal* and I have succeeded to perfection. My cows generally calve in the spring but this year I want to make them calve in the fall, say, November: what do you think of my plan? All my manure goes to fodder corn and turnips, the following year I sow barley with timothy end clover.

I want to plant some straw-berries this fall, what kind would you advise me to plant? I am a believer in mixed farming. And my opinion on the improvement of farming is this: a farmer must have a first class education. Hoping I am not troubling you too much. I remain,

Your Obt. Svt.

E. D.

Answer.—Mr. E. D. feeds his cows liberally; a pound of linseed (flaxseed) and a couple of pounds of pease ground up with the grain, that compose the moulé would make immense good to the health of the cows, the sleekness of their skin, and the richness of the milk they give.

Water should be always before your cows; I would only turn them out on fine days. Plenty of liberty for young stock, but the udder is a delicate thing. Turnips supply drink, of course.

Rock-salt in the box you mention is a good thing.

We should not use a curry-comb (*card*) on my cows any more than I would allow one to be used on my hunters in England; a *dandy brush* and the linseed will be quite enough; the curry-comb makes the hair too open.

Milking-times should be as nearly 12 hours apart as possible.

Aerate your milk; if you have no machine, pouring from one vessel into another will do: takes off the "cowy-taste."

Always give turnips and swedes the very moment the cows are milked, and preferentially, when the largest inter-

val is to elapse, i. e. after the 3 o'clock milking. A piece of saltpetre, as large as a hazel-nut, to each cow's milk will do no harm. The demand for milk must regulate the calving of your cows. A good, fresh one now and then improves the look and taste.

Try 2 bushels of oats, 1 of pease, and 1 of vetches to the acre for green-feed for cows next year.

We, too, believe in mixed farming, including sheep.

Summer Meeting of the Pomological and Fruit growing Society of the Province of Quebec.

The first summer meeting of this Society will be held at Knowlton, P. Q., on the 14th and 15th of August. Amongst those who have signified their intention to be present, and deliver address on that occasion are the Director and Messrs. James Fletcher and John Craig, of the Experimental Farm, Ottawa. The Hon. Mr. Joly de Lotbinière, Messrs. Ed. A. Barnard, J. C. Chapais and Aug. Dupuis.

It is intended to hold an evening session only, on the 14th, and three sessions on the 15th.

The following is a synopsis of the programme. The gentlemen above named will deliver addresses on Fruit-Culture. J. C. Chapais on "How to plant an orchard in the Province of Quebec." J. M. Fisk, the president, on "Summer Apples." R. Brodie on "Melons." W. W. Dunlop, "Gooseberries," with discussions on methods of culture, &c., varieties of small and other fruits, &c.

In accepting the invitation of Mr. Fisher to hold the first summer meeting at Knowlton, the Society is assured of the active cooperation of the horticulturists of this enterprising locality and that nothing will be left undone to make the meeting a success.

All are cordially invited to be present at these meetings, and specimens and samples of choice fruit are specially solicited.

It is expected that the report of the first winter meeting, which is now in the printers' hands, will be ready for distribution at this meeting.

ROBT. HAMILTON.

AUGUST CHEESE.

Receive the milk with great care, see that it has no bad taints or odors, nor sour. Heat it when nearly all in so as to have it fit to try with the rennet test as soon as possible. Use rennet enough to have it fit to cut in 10 to 45 minutes. Cut in the usual way with the horizontal knife first and finish with the vertical one. See that it is cut fine, should there be any pieces not cut when the stirring begins have your vertical knife close by, and do the work in a thorough manner. Remove the curd from the bottom and sides with the hands, stir very slowly at first, heat to 98° or 99°; after stirring for 10 minutes remove, say half of the whey, then stir well and get your curd firm in the whey before your acid arrives, draw the rest of the whey when it strings $\frac{1}{2}$ to $\frac{1}{2}$ an inch with the hot iron test according to your milk, if gassey a little more than usual, stir the curd to remove the whey and until you get it to the proper firmness, pack it on each side of the vat, or put it into the curd sink to drain, cut into blocks say from 6 to 8 in. wide and turn over in 30 minutes, see that no whey is allowed to gather around it. Double it the second turning so on increasing each time for

4 or 5 times. When it reaches across the vat cut through the middle, see that the ends of the pieces are maturing at the same time, and when you have that fine glossy, rubbery appearance put through the mill; should you have a gassey curd pile it higher keeping the temperature above 94°. Keep it longer before grinding, give it what is usually called the sheep-skin pack. The pieces will not be over $\frac{1}{2}$ an inch thick, some call them pancakes, salt with $2\frac{3}{4}$ lbs. of salt in say 20 minutes after passing through the mill. Stir the salt well in the curd, put to press in 15 to 20 minutes after salting, press your cheese as large as possible in 15 inch hoops up to 75 or 80 lbs. weight. Press gently at first but often, pulling up the bandage in about 5 minutes—trim your bandage neatly not leaving too much over at the ends; press even and apply full pressure before leaving them for the night. Turn them in the morning and get them into a nice shape before they leave the press, leave them in at least 20 hours. The table, if possible should all be in one piece without any cracks. Turn the cheeses every day for the first 2 weeks, every other day after that. Keep your curing room as cool as possible, sprinkle with cold water 2 or 3 times per week in the dry weather. Air the rooms in the evening and morning. Examine your weigh can and other utensils in use. Take a pointed piece of wood and run up down the seams and see that there is no dirt anywhere. In many places there will be found bits of it, of a yellow appearance, use washing soda, it is cheap and very effective, look after the drains and see that there is none of the dirty water allowed to run into the well. Keep your tank cleaned out at least once a week, have your factory kept tidy, neat, and clean, and then ask your patrons to deliver their milk in like manner.

PETER MACFARLANE.

St Hyacinth, June 20th 1891

The Dairy.

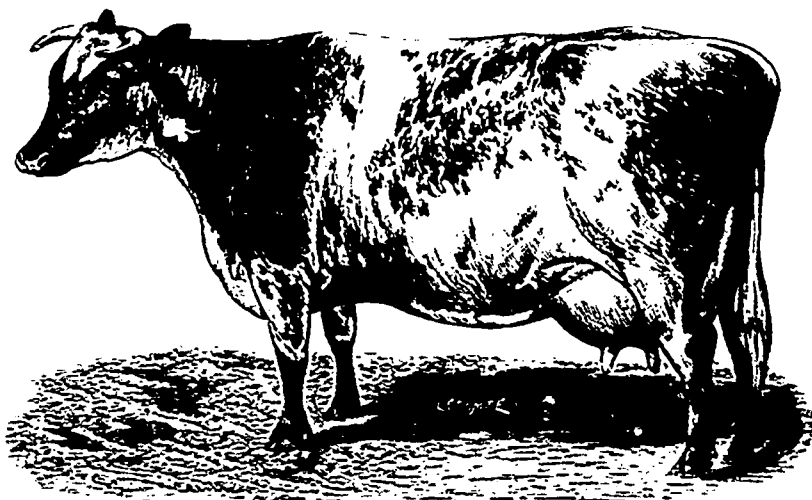
BREEDING OF DAIRY COWS.

The prizes offered for essays on this subject, brought out a good many essays from readers widely separated from each other. Those who read with any degree of care the three essays published last month, must have seen that the writers had given the subject a good deal of intelligent attention. Of course their principal points were in the main in general accord, while in points of detail they differed, as was to be expected. These differences are often full of profitable suggestion, as they give hints that the studious enquirer will always turn to good account. Pressure on space this month makes it impossible to find room for more than the special points brought out in the experience of the writers, who on general principles are in accord with the papers given last month. It is gratifying to find so wide spread and accurate knowledge of dairy principles as these essays reveal.

CHRIS. HALLIDAY, WINLAW, ASSA.,

says:—We must do as circumstances and our position in this Western country will allow us. To the majority of our settlers the question is not so much the preference of any particular breed, as the being able to start with cows at all. In breeding a good dairy cow strive in the start to get a good

average milker, not necessarily thorough-bred, as they are generally speaking too high in price, but a good grade cow. Serve with the best bull you can get. The time of service depends on what mode of dairying you mean to follow. If for butter, I would prefer them coming in in the fall, for then you have them in full flow of milk when butter is highest in price, and there is not the risk in shipping during the heat of summer. For cheese making, which we have followed for the last six years, I prefer them coming in during March and April. Then your calves have a good start before you commence to make cheese, and are ready to wean or put on skim milk or whey when grass comes. Be kind to the calves, especially the first winter. Good hay and some chopped grain should bring them through in good order. As we do not keep any pigs during winter, the calves get all the skim milk we can spare, which keeps them growing right along. How soon to breed heifers is a matter of circumstances. As most people are in a hurry to get into stock, they often breed early. In such case, they ought to run farrow the next year or they are apt to be stunted in growth. I prefer letting them run until two years old. A month or so previous to their calving accustom



A NOTED ENGLISH MILKING SHORT-HORN.

them to handling their teats and rub their udder so that by the time they calve you can sit down to milk with as great freedom as to an old cow. My experience is that a wild cow is of no use. Be punctual in your hour for milking, milk quickly and milk clean. Some think March a little early, that they fail before the grass comes, and a month later would eventually give as much, but with a liberal allowance of bran and chop your cows will milk as well through summer as if they were calving when the grass is full bite. Keep your heifers milking up to within a month of their time of calving again, for if allowed to run dry for three months they will always do so. One great drawback to this country for dairying is that pastures get so dry and parched in autumn that cows require to have some green succulent food to keep up the flow of milk. I see in your valuable paper, showing a late crop of oats or other grain on the fallow is recommended, to be eaten off by cows. I have always sown a good breadth of rape on the summer fallow and turn the cows on say a couple of hours before being corralled for the night, and it is surprising how quickly they improve in quality. After the freeze up, a few turnips sliced, or mangolds, twice a day, with a little chopped grain and wheat or oat straw, will carry them

on as long as you want them. With such treatment your heifers will develop into good dairy cows. My own cows were ordinary grades. The first year I took them eight miles to the best bull in the neighborhood. Then I got King William, a pedigree Durham, Dominion Herd Book, and kept him for three years. I have now had Captain Boreford, also a Dominion Herd Book pedigree bull, for two seasons, and will return him for this year also. Like your correspondent, Mr. Knowles, of Edmonton, I am of opinion that their milking capacity is, if not entirely, mainly governed by their feed. If liberally fed and kindly cared for, they will assuredly give returns in proportion. I see he has always fed his chop dry, whereas I have always scalded with boiling water, not to make it sloppy, but just as much as thoroughly swells it out. I think, where scalding is possible, they will find for the extra trouble a corresponding result in benefit." (1)

J. F. HINDMARSH, CANNINGTON, ASSA.,

says:—The management of our cows is considerably responsible for a short milk period as year after year they calve just as spring opens and little or nothing is fed to uphold the full flow of milk, which is checked

be so fed as to develop her powers to assimilated large quantities of food of a bulky but nutritious kind and of such a composition that she will make more growth than flesh and it is surprising what great growth can be made without carrying superfluous flesh. She should be well fed right through the first winter and get at least 4 lbs. of grain a day till she gets into grass again. She should be bred to come in at two years old, then if she shows signs of being a big eater and correspondingly large producer she should be fed to the measure of her appetite and ability to convert her food into milk at a profit and she should be kept milking to within 6 or 8 weeks of dropping her next calf. I have a heifer that will drop her first calf at 23 months old, she was raised by hand, never was fat, but kept growing and she is a fine, big, strong heifer, promising to be a great producer, but she is bred for it. One g. dam has a record of 24 lbs. of butter at 3 years old in 7 days and the other g. dam has a 7 day record of 12 lbs. butter. I doubt the profit of winter dairying out here, no doubt some cows will give a great deal more milk if they calve in the fall, but I believe good cows will bear more profit to us here if they calve from March 1st to April 10th, they would not often require any grain after June 1st and if fed a little bran and green oats by Sept. 1st to keep up milk flow, they will then be making about as much butter as when they were fresh, because I find we skimmed 30 lbs. milk in April last for 1 lb. butter, in May they yield increased till in Sept. it took rather less than 20 lbs. milk to 1 lb. butter and for this reason I think we can make more profit by putting our winter grain ration into the richer milk of the spring calved cows that are proper dairy cows and will respond to feed, than by putting it into fresh calved fall cows, but for good results the milk flow must not be allowed to shrink in the fall. Cows must be stabled at nights in Sept. and in October the grain must be increased according to the milk value of the cow, as it takes a very small difference in cost of production to make a big difference in the profit of a herd of cows. It is the cost of production that decides the profit in dairying and the great factor in the cost of production is the quantity of food we have to supply to make a pound of butter and not the number of pounds of butter a cow can make in a year."

G. W. BATEMAN, HARTNEY, MAN.,

says: "The calf is better not to suck its mother, but to be fed right from the pail. (1) Take care, however, that it gets the first few milkings (or colostrum) as that is the natural purgative, thus cleaning the intestinal track of any fatal debris. You will need to continue feeding new milk for about six weeks. During the latter part of the time you will add flax seed and perhaps a little oatmeal, you will find benefit from so doing. As the calf grows skim milk can be substituted, and as soon as it will eat give crushed oats and bran, a few pulped roots, hay, etc. The advantage can be clearly seen in raising the calf early in the season. It is not as likely to be stunted with sour milk or whey as in summer, and it has, or should have a better chance of feeding than it otherwise would have in a different pasture, and then there is the absence of flies. Breed your heifers to a pure bred bull of the dairy breed selected,

(1) If for milk to sell *en nature*, slop; if for butter or cheese, damp the chaff and meal, and let lie for a couple of hours. cold water is as good as hot.—Ed.

(1) Quite right.—Ed.

so as to have them come in between two and three years old. Your heifer has now become a dairy cow (or will if properly looked after.) She may possibly be a little irritable at the first milking, but patience and attention will overcome these difficulties. Feed well and develop the milking trait as much as possible, in this direction, milk your cow up to within six or eight weeks of the next calving, thus getting the young cow into a good habit. Of course she must be fed well to make it at all worth while, and with succulent food such as green oats, oats and pease, corn or even rape. I might mention the danger of milk fever, but as this is more particularly a disease of older cows I will desist. To sum up, I would impress the necessity of first, selection; secondly, good care; without either the object aimed at cannot be obtained."

N. W. Farmer.

viously soaked in cold brine, fill above tub and cut off even with top with a thread. Wet parchment circle in cold water, spread over the top and paste with salt. Keep cool till it reaches market and it will bring the top." Windsor, Mo. S.

MISLEADING CONCLUSIONS.

A correspondent of the *Farmer's Review* writing under the head of "Some Valuable Dairy Suggestions" speaks of the very excellent address made by Prof. E. H. Farrington before the Illinois Dairy convention last winter, and among other things the correspondent says:

ACID AND FAT.

There is a notion prevailing in some localities that if the milk be left unskimmed for a long time the acid of

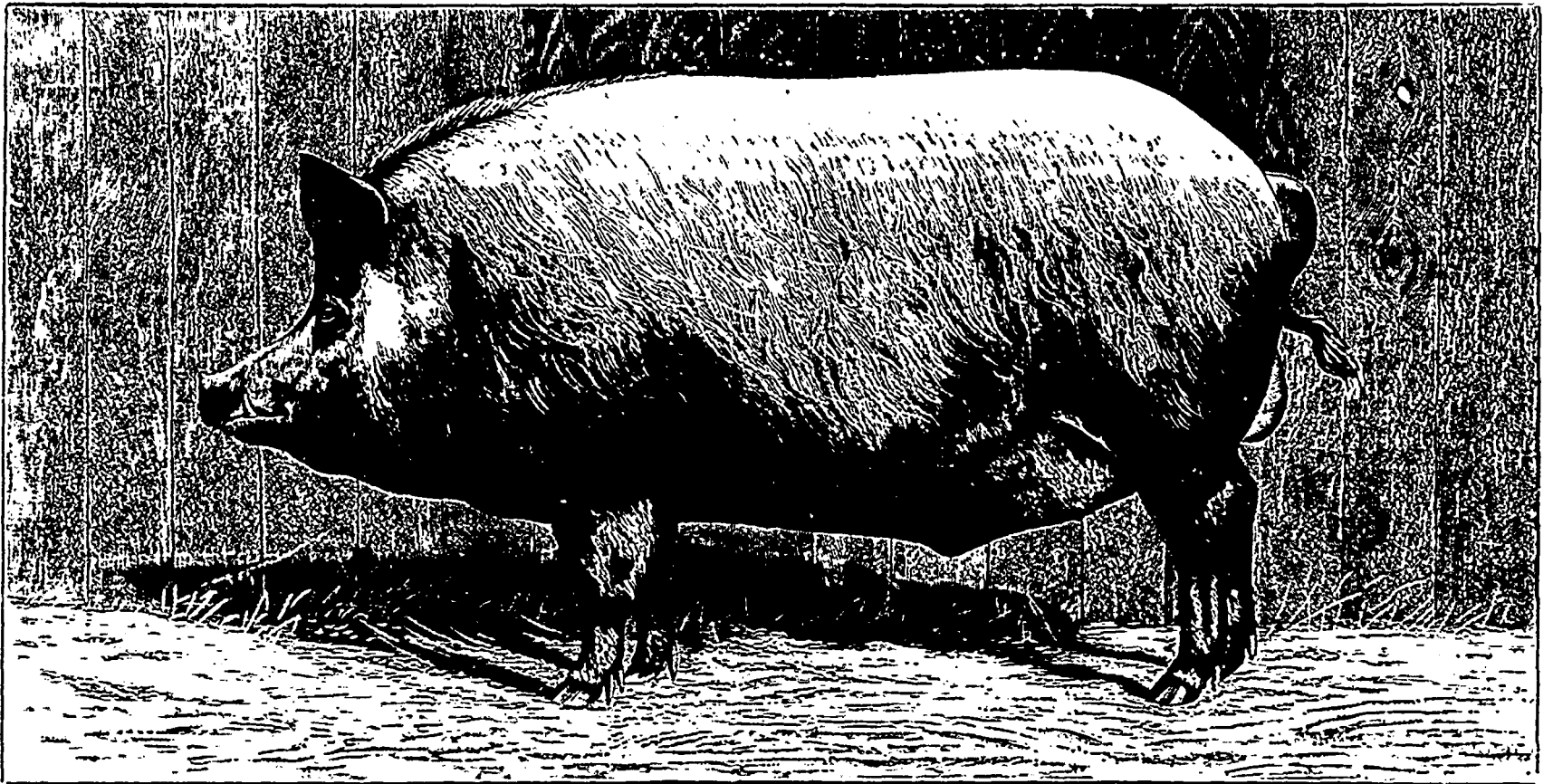
he would soon find that somehow or other he had lost butter. Every housewife knows that where the cream stands until the milk is very sour it renders the cream very thin, and the fat seems to pass into the sour casein and thus practically occasions loss of fat. To all practical intents and purposes then, it is true under some conditions that the acid will eat up the fat. Very likely it was experience of this kind which led to the existence of the idea which the correspondent combats

RUNNING A FARM SEPARATOR BY WATER.

Somebody is constantly trying to find a shorter or more economical way of doing the ordinary work of a farm dairy. One of the advantages of the live dairy paper is that it is cons-

motor is pumped by a windmill into an elevated tank and is drawn out through a two and one-half inch pipe to the motor. The latter is placed on a platform down in the well directly under the tank and discharges the water back into the well. By placing it in the well we get more fall, and the water can be pumped into the tank for use again. We have seventy feet fall, and this gives about thirty pounds to the square inch pressure, so it takes very little water. The tank is eight feet in diameter, and I find by actual measure that twenty inches in depth of water will run the separator for thirty minutes, and in this length of time we can run the milk of twenty cows through.

We have been using this arrangement eight months, and during that time have not failed a single time to have water to run the machine. In addition to running the separator we use water from the tank for watering



TAMWORTH BOAR, THETFORD'S PRIDE 6th.—(Nor.-West Farmer.)

CONCISE SUMMER BUTTER-MAKING RULES.

ED. HOARD'S DAIRYMAN.—The following concise rules for making butter were given a lady in this neighborhood by an old creamery man. Can they be beaten?

"Presuming that your cows have good pasture, good shade and good water, that they are otherwise treated kindly, that they are milked at a regular intervals, and that everything is scrupulously clean:—Keep your cream at low temperature, say 50°, if possible, until about twelve hours before churning time, then raise it to 70°. Maintain this temperature, as near as may be, for twelve hours, or until it thickens, then reduce temperature to 56° and churn, stopping when the butter is in granules, the size of wheat grains or smaller, draw off the buttermilk, wash in water at 55° until the water runs off clear. Work into it from three fourths to an ounce of fine salt to the pound. Never touch it with your hands, or let your ladle slip on your butter, or the butter on the table or vessel you work it in. All slipping motions injure the grain of the butter. Pack firmly in tub, pre-

the milk will "eat up" the butter fat or a portion of it. What the origin was of this strange idea is not known. It certainly rests on mis-observation, instead of on any fact. It is akin to that idea that prevails quite widely yet that wheat can, under certain conditions, turn into "cheat" or "chess." Prof. Farrington has settled the acid fat theory by a clover test. He took milk of a certain quality and carefully mixed it. Then he filled six pipettes, and tested one of them, setting the others away. He tested one bottle each month throughout the summer. These tests running over a period of five months gave the same results, which, of course, proved the acid did not "eat" the fat, for the fat in the last bottle had been exposed to the milk acid for five months and yet is contained the same amount of fat as the first bottle, where the fat had not been exposed at all.

Now while the above is all true under the circumstances named, tested chemically and mechanically by the Babcock method, it is not true practically, when we consider the open setting method of obtaining cream. If any dairy farmer should let his cream stand on the milk in the pans too long,

stantly on the watch for practical suggestions and the reader gets the benefit of them. Otherwise he might live years, and thousands do, and never know the better way.

W. L. Williamson, of Colorado, is evidently a thinking, ingenious dairy farmer. He writes to the *Field and Farm* detailing how he has solved the problem of running a No. 3 separator with ordinary well water.

He says:

We have a De Laval Baby Separator No. 3, and find it easy enough to run by hand—quite as easy, after getting up speed, as the No. 2—but we are now milking twenty cows, and found it would save the work of one hand nearly one hour each day by getting some kind of power. I thought of buying a small engine, but felt I could not afford it at present. Animal power I did not think would be reliable, so I arranged to use a water motor, and found that it was just the thing. There is no power that could be more regular in its work. The separator pulley does not vary one half of one revolution during the thirty minutes that it runs, night and morning.

The water necessary to run the

horses and cattle, besides 100 gallons a day in the kitchen. Those who already have windmills and tanks can fit up this power very cheaply; but even if it costs more than an engine it is better to use the water power, because there is no danger of explosion, no expense for fuel, and other advantages, which for a Baby separator make it the most desirable of all powers.

MILKING SHORT-HORNS.

We have had a great deal of discussion among the breeders of Short-horn cattle in the past years, and more especially since the Columbian test demonstrated the possibilities of the breed in this direction, about milking Short-horns, and we notice that Short horn breeders are careful in advertising and in making sales to call attention to the milking qualities of their herd. This is all right. There is a world of undeveloped milking capacity in Short-horn cattle. The mischief is that the course of breeding until the last year or two has been persistently, though unintentionally so shaped as to drive as far as possible the milking qualities out of these

animals. That it remains in spite of the course pursued is to us the strongest proof of the inherent, though latent milking qualities of this breed. We suggest, however, to breeders that it is now time to quit talking or else do something to give the world the indisputable proof, and place this breed of cattle to the front in all those sections of the country where the farmer cannot afford to keep a cow for the chance of a calf, but must have a good return from the milk. We venture to suggest a method by which this can be done. First, let a few breeders at the earliest opportunity hold a meeting, and as opportunities occur talk the matter over at Short horn sales or wherever farmers congregate to talk over live-stock matters. Let steps be taken for the establishment of a milking Short horn herd (1' book, from which nothing will be excluded in the line of pedigree that is eligible to registry in the American Short horn herd book, and in which nothing will be eligible that does not give two hundred pounds of butter fat within the year, or from calf to calf within twelve months. The amount of butter fat mentioned above may be thought by some too low. We merely state it as a suggestion, but let there be some fixed, stated amount which will be required in order to secure registry. An appendix might be added to this herd book, to which grades might be admitted on giving the same amount of milk, and in order to keep up the standard we would exclude from registry the descendants of these cattle until they had fulfilled the requirements in the way of butter fat production. In the case of bulls we would require pail performance to the amount specified on the part of the dam. We believe in this way a strain of Short-horn cattle could be established, differing in type somewhat from the beef form, that would be of the highest value to the country at large, and would win its way rapidly into public favor.

The above are simply the brief outlines of the plan which might be modified and improved after a thorough discussion, and to which other features that have not occurred to us might be added. The point we insist on is that instead of talk there should be action. Instead of claims made on the basis of the opinion of the owner or seller there should be ground work for making claims on actual performance. As intimated in a recent article we have not much hope that the older breeders will put this plan in practice, but we do have hope in the younger men that are coming to the front in the way of cattle breeding, and to those we submit the above proposition.

We copy the above from the *Iowa Homestead*, largely because of the soundness of the argument, and incidentally in proof of the progress that is following the persistent advocacy by HOARD'S DAIRYMAN of the doctrine of breeding for a specific purpose. If you want a dairy cow you must look for her among the descendants of dairy cows mated with bulls of like descent.

THE ILLUSTRATION

On this page shows the prize winning Tamworth boar. Thetford's Pride 6th, shown at the World's Fair by Jas Calvert, Thetford, Ont. The illustration barely brings out the great depth and length of the animal, and its consequent special fitness as a

(1) The Dairy-short-horn is not a herd-book animal at all. She has no pedigree.—Ed.

bacon pig. The Breeder's Gazette, from which the illustration is copied, says the Tamworths were the sensation of the Canadian swine exhibit. The hams and shoulders are not equal to those of most other breeds, but the length and depth of the sides make it an ideal bacon pig. It stands on very strong legs and is of sound and vigorous constitution.

The snout of the boar in this illustration is decidedly of the *Berkshire* type. We have always seen Tamworths with much thicker snouts, measured through from above. The hams, the most valuable part of a bacon-hog, are poor. A cross of the Yorkshire would do these pigs no harm.—Ed.

We reengrave from the London Live Stock Journal the accompanying portrait of a cow belonging to a class of Short-Horns of which we have far too few in this country—the rich and heavy milkers. The animal is a seven year old roan, bred by Mr. Chas. A. Pratt of Rushford, Evesham, and called Dowager 3d. She won first prize at the shows of the Royal Agricultural Society of England at Warwick in 1892 and at Chester in 1893 as best Shorthorn dairy cow by actual test, and she has taken many prizes at other exhibitions. At the Royal Show last year she gave 44 lb. 9 oz. of milk, from which 1 lb. 10½ oz. of butter was made about 27 lb. of milk to the pound of butter. Her strongly marked dairy build, rather unusual among highbred Short-Horns in the United States, is noticeable at a glance, and affords a good model for imitation."

Country Gent.

The Farm.

A NOTE ABOUT CURING CLOVER HAY.

I have at last learned how to cure clover hay so as to be sure of a sweet article, free from must and mold. The secret lies in what I call double curing. In bright, good hay weather, clover will dry in a single day until one can feel no moisture with the hand, and no water can be wrung out of it by twisting the stems, but if put in bulk for a night it will be found damp and clammy. For several years past I have followed this rule:

We start the machine in the afternoon, and if we wish to cut only one or two acres, not until after 5 o'clock supper. There is no moisture on the clover at this time, and it is so late it does not wilt at all that night, and so the dew does not injure it. The next day at 11 o'clock we turn it, and again at 1, and an hour later rake it up, and by 5 o'clock we have it all in cocks. The next day, after the outside is thoroughly dry, we open the cocks and invariably find them damp, but we shake them out so that sun and air have access to every part, and when the second moisture has dried out we know that our hay is so well cured as to be safe in the mow. Should the day prove cloudy or a poor hay day, we do not disturb that cut the night before, but leave it in the swath, for it will endure a long rain with but little damage in this shape, but if it has been dried and then stands out through a rain either in the cock or windrow it is greatly damaged. One Saturday I put in clover hay in good condition which had lain in the swath from Monday night till Friday morning, through several rains, but when we turned it on Friday we found it had not wilted underneath, and it

cured out almost as bright as fresh out hay. (1)

I also take a good deal of pains in mowing the hay. We do not leave it in the mow in the great bunches which the horse fork drops, for it is almost sure to mold, but I have two hands in the mow and every load the heavy fork drops is taken apart and evenly spread before the next comes. Managed in this way all parts of the mow settle alike, then, when we wish to take it out to feed, it comes out as easily as though it had been pitched off by hand. Usually two men can do this as fast as it comes, but if necessary we let the horse fork wait a little, for I want this job done well even at the sacrifice of a little time.

Country Gentlemen.

EXPERIMENTS IN POTATO

Growing in Ireland.

We have received from the Agricultural Superintendent of the Royal Dublin Society the report of a series of experiments in potato growing which have been carried on this year by the Royal Dublin Society. The report deals with the yields of marketable and sound tubers of various varieties, together with their cooking qualities, and these are based on no fewer than fifty-four experiments in as many parts of Ireland, the results should be very valuable. The following table gives the summary of the whole of the experiments, as far as yields are concerned:—

SUMMARY OF POTATO FIELDS FOR ALL IRELAND.

Variety.	No of Trials, 1892.	Small (Sound) per Statute Acre, 1892.			Marketable (Sound per) Statute Acre, 1892.			Total (Sound) per Statute Acre, 1892.			Total Produce Diseased, 1892.
		Ton.	Cwt.	Qr.	Ton.	Cwt.	Qr.	Ton.	Cwt.	Qr.	
Champion	49	1	5	3	8	12	1	9	18	0	7.81
The Bruce	47	1	0	3	8	18	1	9	19	0	1.49
Farmer	45	1	4	3	9	8	2	10	13	1	5.49
Colonel	42	0	19	0	7	14	2	8	13	2	2.04
Antrim	46	1	0	2	8	15	2	9	16	0	1.23

The total yields for 1891, in a similar series of trials, were as follows:

Variety.	Total Sound for 1891.			Per cent of total produce diseased 1891.
	Tons	Cwt.	Qrs.	
Champion	10	16	2	6.35
The Bruce.....	9	17	1	1.13
Farmer.....	11	12	3	5.18
Colonel	8	13	3	1.18

There is considerable vagueness in the reports as to the quality of the potatoes when boiled. In a few instances this year, no report regarding quality has, as yet, been received. The following table may be taken as fairly accurate:—

Variety.	Soft, Waxy, or Bad.	Fair or Middling.	Good	Very good or Excellent.	Number of Trials.
1892.					
Champion	Nil	2	17	28	47
Bruce.....	9	12	17	9	47
Farmer	19	14	9	3	45
Colonel.....	17	9	10	5	41
Antrim.....	6	10	21	9	46
1891.					
Champion	Nil	8	24	36	68
Bruce.....	9	17	29	15	70
Farmer.....	25	19	15	8	67
Colonel.....	16	18	22	11	67

(1) In England, hay has lain this year in wet weather untouched in the swath for 16 days unhurt, but they mow green grass there.—Ed.

It is pointed out in the summary of the results that an interesting feature is the striking uniformity obtained in the two years trials. This year the produce in most cases is somewhat lower, and the percentage of disease a trifle higher than in 1891. But in all respects, alike as to weight of sound produce, percentage of disease, and quality when cooked, the four varieties selected for experiment stand in, as near as might be, the same order of merit in 1892 as they did in 1891. This order is as shown below:—

Weight of produce.—In weight of produce the Farmer comes first in both years by about 15 cwt. per acre. In 1891 the Champion stood second, but in 1892 the Bruce beats it by a fraction. The Colonel ranks lowest in both years. It will be noticed that the average produce of the Bruce and the Colonel is almost precisely the same this year as in 1891—a somewhat peculiar result from so many trials. The Bruce is the only variety that shows an increase over 1891—in gross yield of sound potatoes. This increase, however, is entirely in "small" potatoes. It will be observed that the Antrim (which was not tried in 1891) stands fourth—before the Colonel—in weight of produce.

Disease.—Reckoned by their power of resisting disease, the four varieties tried in the two years stand as follows:—First, the Bruce; second, the Colonel; third, the Farmer; and last, the Champion. In all the four varieties there is rather more disease this year than last. The greatest increase is in the Champion, a fact which affords another indication of the declining vitality of this much-valued potato. It will be observed that in ten trials in the province of Munster the percentage of diseased potatoes in the Champion was no less than 12.34. It is interesting to note that the Antrim, the newest potato of the five tried this year, comes out with the lowest percentage of disease.

Quality when cooked.—The uniformity in the results for the two years are just as striking in regard to quality as to weight of produce and percentage disease. The Champion still maintains a long lead in respect of quality. The Bruce, Colonel, and Farmer follow in the same order in both years. The Antrim just beats the Bruce for the second place.

SWISS AGRICULTURE.

The article on Brown Swiss cattle and the extent of dairying in Switzerland, which recently appeared in the *Farmer's Advocate*, has occasioned further enquiry into the status of agriculture in that wonderful little republic. At a convention held in connection with the visit of the British Dairy Farmers' Association to Switzerland, Herr Mettler, medical officer of health at Zurich, imparted some interesting information which our readers will appreciate. He said the Swiss farmers were not troubled very much with the rent question, most of the land being in the hands of the owners; in fact, not more than five per cent. of the cultivated land in Switzerland is rented. The average value of agricultural land in rural districts is £60 per English acre. The value increases, of course, according to proximity to a town, rising in the immediate neighborhood of large towns to £500 or £600 per acre. What little land is in the hands of tenant farmers bears an average rent of 35s per English acre. Judging from the extensive practice of house-feeding in the valleys, we expected to hear that

labor is cheap, but this is hardly the case so far as continuous work is concerned. The Swiss farmers recognise the fact that if they are to keep the laborers on the land they must pay wages equivalent to those which the laborers could earn in the towns. There seems no difficulty about the extra labor required in hay-making, though the Swiss farmers very rarely co-operate. At such times there is less difficulty in getting occasional laborers than permanent ones.

Agricultural laborers are of two classes—(1) Those receiving board and lodging and from 8s to 20 per week in addition, according to the quality of the men. (2) Those which are not boarded or lodged. These receive more near towns than they would in the country, the minimum daily wage being 2s in the country and the maximum 4s around Zurich. Farm rates are altogether unknown in Switzerland. All the taxes are massed together and take the form of an income tax, every man being taxed according to his ability to pay.

This Utopian state of agricultural bliss caused much discussion, and some surprise was exhibited when Mr. Jesse Collings, M. P., asked if a laborer getting 15s a week would be required to pay income tax. To this Herr Mettler replied that ever man had to pay. A reduction of £20 is allowed to every one, and every Swiss who has a yearly income exceeding this amount has to pay tax on that excess. In some cantons (Zurich, for example) the tax is a progressive one, the rate of taxation increasing with the income. The announcement of this fact was received by the British dairy farmers with prolonged cheers.

Farmer's Advocate.

CLEANING LAND.

The colder and drier winds, which have checked superabundant growth in some quarters, and caused disappointment in others, have been favourable for cleaning operations. Light lands are not difficult to clean, but are unfortunately only too liable to fall back into a foul condition. The plan we find best in order to destroy couch is to carry out the various operations somewhat in the following order:

	£	s.	d.
1 Ploughing before winter..	0	10	0
1 Cross ploughing in winter or early spring.....	0	8	0
2 Heavy harrowings in dry weather.....	0	1	6
1 Rolling.....	0	1	0
2 Harrowings.....	0	1	0
2 Chain-harrowings.....	0	1	0
Collecting and burning couch on the ground or in larger heaps.....	0	5	0
1 Cultivation or thorough dragging.....	0	5	0
1 or 2 heavy harrowing....	0	1	0
1 Rolling.....	0	1	0
2 Harrowings.....	0	1	0
2 Chain-harrowings.....	0	1	0
Collecting and burning couch.....	0	3	6
1 Ploughing.....	0	6	0
2 Harrowings.....	0	1	0
1 Roll.....	0	1	0
1 Drill.....	0	5	0
1 Harrow.....	0	0	6
	£2	13	0

This should be a sufficient preparation of the land. In looking over it we think that the last ploughing might, in the case of light, dry soil, be omitted in which, case we should

drill, and pick up the last coat of couch after drilling. We are not in favour of working light land too much, as it produces a dry and hollow condition, unfavourable for germination and rapid growth.—*Eng. Ag. Gazette.*

GREEN MANURING AGAIN

Corn Cultivation in New England.

"ED. HOARD'S DAIRYMAN.—Since writing the note on "Green Manuring," which appeared in your issue of May 11th, I have seen in the Experiment Station Record (Vol. 5, No. 8) a brief report of the result of plowing under a heavy crop of crimson clover as a fertiliser for corn as compared with a top dressing of nitrate of soda. The result noted is that "Eight tons 600 lbs. of crimson clover, from seed which cost one dollar per acre, added 24 bushels to the corn crop. One dollar invested in nitrate of soda and used as a top dressing added 6 bushels to the corn crop." Apparently the conclusions to be drawn is that in this case green manuring was profitable. Actually, no such conclusion is warranted. To obtain any valuable results, the value of a leguminous crop, as green manure, should be compared with its value as a food crop, crediting to the last term of the comparison the full manural value of the residuum of the crop after it has served as a food.

Farmers' Bulletin No. 16, (United States Department of Agriculture) gives a very complete resume of the entire subject. Its conclusions are fully in harmony with the views previously presented in your columns. As pertinent hereto I quote: "The leguminous crop is best utilized when it is fed out on the farm and the manure saved and applied to the soil; the greatest profit is thus secured and nearly the same fertility is maintained as in green manuring. * * * The practice of green manuring on medium and better classes of soils is irrational and wasteful."

We fully agree with every word of the last paragraph. Ed.

PLANTS AND FLOWERS.

Varieties of Phlox Paniculata.

Prominent among hardy perennials are the garden varieties of Phlox paniculata in their many brilliant colors. Phlox paniculata itself is a native American plant, but the skill of the gardener has brought its fine varieties far above the wild one in beauty both in size and shape of flower as well as in brilliant coloring. These phloxes bloom from midsummer through the fall and their perfumed broad, clean and delicately tinted flowers are seen in their prime during the months of August and September. The following standard varieties can be easily procured from any one dealing in hardy plants, and they will be found hardy in almost every portion of the states excepting the extreme North.

Of the red varieties, Isaby has a clear, bright color, termed a fiery salmon. The center is of deep, purplish carmine. Triumph de Twickle, a little less brilliant than Isaby, the florets having more of a lilac coloring in the red. The centre is dark crimson. It stands the sun very well and holds a good truss. Miss Buckner, another step darker than the last, the color throughout being guided by a purplish tendency. Lothair, very much of the same color as Triumph de Twickle, but several shades lighter,

and having a faint suggestion of salmon pink, centre bright crimson. Flora McNab, a clear, pleasing pinkish lilac colored floret with a scarlet centre. The truss is compact and perfect, an excellent sort. Mme P. Languier, color same as of Flora McNab, a pinkish lilac, but without the darker center. A pretty color and a good flower.

Among other colors Maid of Kent has a pure white ground and shows a beautiful pale lilac coloring extending through the center of each petal, leaving a broad white margin on both sides and meeting at the centre. It is a handsome variety. The Pearl is pure white without a blotch or stain, is dwarf, compact, perfect, and the best white. Bridesmaid, pure white with a deep clear carmine centre, has a perfect floret and fine truss. Josephine Geobeaux, white with bright pink centre, is not nearly as striking as the last, yet very tasty and refined in effect. Queen Victoria, coloring much the same as in Bridesmaid, but the white, instead of being pure as in the other sort, is suffused with pink. This lessens the effect of the carmine centre, but does not reduce the value of the variety. The Bride is of the same type as Josephine Geobeaux, only a little paler in the centre and having a tendency to fade to almost pure white as the floret grows older. It is very neat. Adolph Wick is the same color as Bride, but the florets are smaller and truss more compact.—[E. H. Michel.

Gladiolus.—For profuse blooming plant strong bulbs. Set them about three inches deep in light soil and manure well. Deep planting makes stronger plants, finer blossoms and borne on longer spikes, and will sometimes render staking unnecessary. Plant them from ten days to two weeks in succession until the middle of June, for an all summer and autumn bloom.

Clematis (1) should now be trimmed to insure strong vines and plenty of bloom. Cut off a few of the side shoots. Give them a good deep loam and give only enough water to sustain life during the dry season, as excessive wetness is apt to bring on diseases. The Jackmanii variety is probably the most popular of any kind; it bears large purple flowers and is an unequalled bloomer. For white flowers plant the Henryi.

Abutilons for winter flowering must be started from cuttings now. Set them out in the open ground when warm enough and apply strong cow manure water occasionally. If you want them for late blooming head back a few times during the summer. Treated thus you will be rewarded by their bloom a long time.

Asters.—By all means plant some of the Comet variety, they attain a large size and are very beautiful. They resemble chrysanthemums very much with their long, wavy petals of delicate pink and white. The German quilled variety is also very pretty.

To distribute Seeds Evenly a salt shaker is just the thing.

For Transplanting Seedlings a teaspoon is much better than a trowel.

(1) The accent on the first syllable please. Ed.

If You Want an Ornament in your yard, plant a row of sweet peas, using wire netting as a support.

Cinerarias.—Seed should be sown at once for early winter flowering and when the plants are large enough, transplant to small pots, using loam, sand and leaf soil well sifted. When the pots become filled with roots but are not pot-bound, transfer to a larger size pot and finally into 6 or 7 in. pots. Keep them in as cool a spot as possible and give drainage. Watch carefully for the aphid or green-fly and use tobacco stems chopped up, freely around the plants as a mulch. This villainous little insect is easier kept away than driven away and cinerarias are troubled by them very much, as much as any other plant. It does not pay to keep the cineraria after a full crop of flowers. By cutting off the faded flowers a few extra ones can be obtained, but they will be greatly inferior to the first blossoms. The double flowers are not nearly as handsome as the single ones, as when the flower becomes double it loses its distinct markings and coloring, which are its chief beauty.

Farm and Home.

Manures.

A Pembrokeshire farmer once asked Mr. Bernard Dyor, consulting chemist to the Pembrokeshire Farmers' Club.—"Do you consider that phosphates derived from bones are better than those obtained from minerals?" The answer was:—"I do not think plants are as yet sufficient educated to distinguish the difference." This I heartily endorsed. It matters not from whence the elements of fertility are drawn and supplied to the soil, so long as they reach the crop in a suitable form and in a sufficient quantity. The crucial point, and the only one of importance to the farmer, is that of cost; and as such the cheapest per unit of strength is the best, if it is applicable to the soil and crop. We will now turn for a moment to an old and well-known fertiliser—farmyard dung. This is suitable in certain quantities to almost every soil and crop. Is this always handled in the most economic manner? I think it would be too much to say "always." The most economic fashion known to the writer would be to keep it unmoved where it is made until autumn. Cart direct to the field, either lea or stubble, then spread, and plough in with digging ploughs (other ploughs would not cover long dung, with a shallow furrow immediately). Will anyone say that the value of manure is enhanced by being carted about from place to place, or by being put into mixens in the field, with an occasionally turn over with the hoe and shovel? I think not. Exposure to atmospheric influence would seriously deteriorate its value, by allowing the fertility to escape in the air; to say nothing of the cost of extra labour, which, of course, we know is a serious item, and must be reckoned with. Every practical farmer will understand that those remarks do not apply to compost for meadows or grass land, where the use of straw dung in a semi-rotten state would be absolute waste. We are all familiar with the term "muck." Every homestead and road, if kept in a decent state, must yield "scrapings" at times, which generally contain more fertilising matter than field soil, and as such it claims the title of manure. Other-wise soil must be richer, much richer,

in fertility than field soil before I should be disposed to give it a ride from one part of the farm to the other. Since there are cheaper methods of manuring, it could not rank within the rules of farming economy. Of course our fathers used muck in the absence of fertilisers, at that time unknown. We should no more call them "dolts" than we would apply that epithet to George Stephenson simply because his locomotive was not equal to those which ply on the Great Western Railway to-day. Our fathers were equal to the exigence of the age in which they lived; and it will be well if the same may be said of ourselves.—*Ag. Gazette.*

AGRICULTURAL EXPERIMENTS.

I am exceedingly glad to see that Dr. Newton draws attention to the uselessness of most of the agricultural experiments which have been conducted for many years past in different parts of the country, so far as regards the effects of manures. More than ten years ago I gave up the study of the records of such experiments, as they only led to a hopeless muddle, and for at least the last five years, in lectures and published articles, have affirmed that these inquiries are only a waste of time, money, and nervous energy, leading to no good results in ninety-nine cases out of a hundred. I have therefore studiously kept myself free of connection with any series of such trials in recent years, because of the excessively doubtful results which are obtained.

Let anyone who is interested in such matters just think for a moment what it is he is inquiring into, and the circumstances under which such an inquiry is made. The experiments at Rothamsted and other places have shown a generation ago that what plants require for their successful growth are nitrogen, phosphoric acid, and potash, and that all other things may be left out of account. Manurial experiments, therefore, resolve themselves into a ringing of the changes on all possible combinations of these three substances in the various commercial forms in which they are to be had. But all this has been done over and over again, and long ago, and there is nothing further to be gained by repeating *ad lib.* To quote my own words, delivered to a class of teachers some five years ago—"The great outstanding truths were demonstrated at Rothamsted long ago. If any set of experiments corroborate these, then they teach nothing we do not already know, if they disagree with Rothamsted, then they are open to grave suspicion." The reason for this state of matter is not difficult to find, as it is wholly due to the immense variation we find among soils, coupled with the uncertain effects of successive seasons. If the soils of a whole district were alike, or even that on one field, there would be some good derived from these laborious inquiries; but if there is one thing certain about the whole matter, it is that the results derived from even large plots only apply to the plots on which they have been tried, and in the majority of cases do not apply anywhere else. If a ridge or stretch of a field is dressed with a mixture of chemicals, it will often be found that the crop is affected at the top and not at the bottom of the field or *vice versa*. If, therefore, a series of plots were tried on a part of a field, they would give results which might be entirely wrong for another part of the same field, and therefore still more wrong for the neighbouring farm or the next parish. Results, again, are

still further complicated by the conflicting figures obtained on the same plots in successive years (caused by variations in the seasons) by the previous manuring and cropping on other farms which apparently have the "same soil similarly situated," so that we are brought back to the inference that manurial experiments produce results which are only true for their own particular plots and that particular season. There is an exception in the case of any new manurial substance which is brought out. We can always, from analysis, tell what is the valuable ingredient in such, but we cannot tell, till tried, how it will affect crops on all the varieties of soils. Such substances as basic slag and mummy cats have to be tried to find out how they will act; but in the case of the great majority of standard commercial manures the ordinary run of experimental plots with these, as carried out, at great expense of money, time and worry, by county councils, societies, and institutions, is complete waste of their resources. There are many problems awaiting solution, as pointed out by Dr. Newton, but I do not think that manurial experimental plots will solve any of them. I do not, of course mean to say that such experiments are absolutely worthless, because here and there some one may get a valuable hint, but the game is certainly not worth the candle. Let any reader take up the records of any set of experiments and just see how little there is shown from them he did not know in a general way before; let him follow out the records of successive years and see how often the results are negative or actually contradictory—owing, no doubt, to the vagaries of the seasons—and I think he will come to the same conclusion that I have, that these inquiries, as usually conducted, are of little use, and only tend to bamboozle ordinary folks.

On the other hand, I have maintained for many years that every farmer ought to experiment for himself. Farms and their circumstances are so dissimilar that results obtained on one do not apply over the edge, and it is only by endless little trials that a farmer can find out what suits his own farm. For many years I have had little experiments going on at home, which cost nothing and do not interfere with the ordinary cropping and work, but which have given me information of the utmost value. For instance, if I manure a field with an artificial manure, I leave a ridge undressed from top to bottom, so as to see the effects. Sometimes the ingredients have been tried separately, and also in different combinations and quantities. In this way I have found out what manures and mixtures I may rely upon, but as there are other matters of quite as much importance, these have not been neglected. This year I am trying seven different kinds of oats—not less than 3 acres of each—to see if I cannot find some to do better than the usual black oats of the district, which have never satisfied me. Again, the grass-seed mixture which I use has been arrived at after ten years of watching the results of various different mixtures. And so on. I shall probably have some twenty little experiments going on like this during the present year; with none shall I take the trouble to weigh or measure, but judge by appearances alone. None of these experiments are important enough to publish the results, and it is doubtful if they could be depended upon by my nearest neighbour, but I certainly have gained and will gain information of great value to myself. It is such-like trials by farmers that I advocate, believing

that they will do more good than the more expensive official trials conducted by committees and institutions.

P. McCONNELL, B. Sc.

Ag. Gazette.

POTATO MANURE.

We have received the complete Report of the Wiltshire Technical Education Committee on experiments with potatoes and onions in the Warminster district, carried out under the superintendence of Mr. BEAVEN, Mr. E. H. SMITH, and Dr. MUNRO. The soil must be remarkably well suited for potatoes, and in very good condition too, if there is no miscalculation in the reckoning which credits three unmanured plots with an average yield of 17 tons 9 cwt. of tubers. The size of each plot was one perch. No doubt a good deal is due to the variety, Reading Giant. The same variety on one of the plots dressed with the complete chemical manure is reported to have yielded at the rate of 22 tons 14 cwt. per acre, while Imperator, on a plot dressed with 4 cwt. of farmyard manure to the perch, is credited with 21 tons 11½ cwt. per acre. Several other plots are said to have yielded at the rates of 15 to 22 tons per acre. As confirmatory of the heaviness of the crops credited to the small plots, it is stated that 21 tons 14 cwt. were taken out of an acre of land upon which Dr. MUNRO experimented with various quantities of nitrate of soda.

The complete chemical manure in the Warminster experiments was a mixture of sulphate of ammonia, superphosphate, and kainit. It was applied on the plots which yielded the greatest crops at the rate of 12 cwt. per acre, which gave better results than 32 tons of farmyard manure. The proportions of the mixture of the three manures are not stated, but the mixture contained 53½ per cent. of nitrogen 4.2 per cent. of phosphoric acid, and 4 per cent. of potash. But when the sulphate of ammonia was omitted, the yield was no greater than on the unmanured land, and this was the case also in the preceding season. Trials were made with different quantities of manure, winter and spring planting, close and wide planting different varieties of potatoes cut and uncut seed tubers, deep and shallow cultivation, and spraying with Bordeaux mixture.

The conclusions indicated by the Warminster experiments of last season are (1) that close planting is best in a very dry season, (2) that deep cultivation increases the yield, (3) that uncut tubers are most productive, (4) that chemical manure containing the proper proportions of nitrogen, phosphoric acid and potash is more profitable than farmyard manure for potatoes, (5) that the application of mineral manure without nitrogen has proved useless, (6) that very heavy crops of late varieties can be grown on good soil in a very dry season (7) that Imperator is of exceptional feeding value, (8) that dressings of the Bordeaux mixture are of uncertain effect in a dry season, but have proved profitable on an average for two seasons, one wet and one dry (9) that late varieties of the Imperator type under favourable condition will probably yield a larger quantity of digestible matter per acre than any other crop in cultivation. With respect to onions, it is concluded that the onion maggot is unaffected by dressings of paraffin, root, gas liquor, gaslime, and wood

ashes in quantities not injurious to the plants, and that mechanical extirpation and careful cultivation are apparently the only remedies after the maggot appears, but that it may be found possible to keep off the fly which produces the maggots by means of insecticides.

Agricultural Gazette.

WHAT TO DO WITH HEN MANURE.

P. C. S. Elizabeth, N. J.—I have enough hen manure to fertilize my garden at the rate of 300 bushels (allowing for the coal ashes in it) of pure droppings per acre. I intend to rake it in the spring after digging. Will it require anything else? I want that ground so that it will grow cabbage anywhere. It received a good coat of barnyard manure last spring. My hens are fed principally wheat and corn, the manure with a dust of coal ashes taken up once a week and put in covered barrels. What should be mixed with it to make a good potato fertilizer? If a good fertilizer cannot be made of it, say so, for I want to do my best on some Carman No 1. What are the comparative analyses of hen manure to guano?

Ans.—If you had said, "we have 10 pounds of good coffee; how much should we use so that five persons may have each a good cup?" you would have given us just as easy a question as is the above. Coffee varies no more in strength than does hen manure. What we say here is based on an average analysis. No farm fertilizer is so deceptive as poultry droppings. Farmers usually grade it too high, because guano, which is the manure from sea birds, is a very strong fertilizer. Average hen manure and guano compare about as follows:

	POUNDS IN 100.		
	Nitrogen.	Phos. acid.	Potash.
Guano.....	12	12	2½
Hon manure...	1½	1½	½

The sea birds feed largely on fish and in the mass are found many bones and offal mixed with the manure. When hens are fed on the food given cows or horses their manure is no stronger except that it has less water and is therefore more concentrated. The best way to save hen manure ordinarily is to keep it well sprinkled with plaster or kainit under the roosts. Remove often and keep in a dry place. In the spring it will usually be in hard, dry "chunks." These should be crushed or broken as fine as possible before applying to the soil. In our own practice, we use hen manure on corn or vegetables never on potatoes. Mr. A. Johnson makes a very successful fertilizer by mixing 400 pounds of dried and sifted hen manure, 200 pounds of dissolved bone black, 100 pounds muriate of potash and 150 pounds of plaster. This he uses on potatoes and gets a good crop from it. His soil is very rich naturally. On ordinary soils one should add 200 pounds of nitrate of soda to this mixture. In your case we would not try to make a fertilizer with the hen manure, but crush and sift it and use for corn or broadcast over the garden working it in with the rake. Then use a good potato fertilizer. Make the drills wide. Plant the seed and cover with earth. Then spread the fertilizer over in the space two feet wide and partly fill drill levelling all at after hoeings.—*R. N. Yorker.*

Science.

FOOD PRESERVATIVES.

From a paper on this subject by county analyst Embury, read before the Gloucestershire Chamber of Agriculture and published in the *London Dairy*, we copy as follows.

We are all concerned in making the most of our food supply, and therefore the question of preserving it from decay is one which should interest us. Decay of organic matter is now known to be due to minute living things, called by scientific men micro-organisms, or microbes. In consequence of their shape a considerable number of them are known as bacteria. We are very much inclined to look upon these as our enemies, but generally they are our greatest friends, and life such as ours, would be impossible without them, our duty is to control and direct them—in fact, make them our slaves; or else they soon become our masters; nay, even tyrants. The conversion of sugar into alcohol, as in the production of beer, cider, etc., is due to one of the largest of these micro-organisms, the yeast plant; but even these are so small that 6,250,000 lie on the space of one square inch. When all the sugar is used up, another member of the family the mycoderma aceti, or vinegar producer, uses up all the alcohol and yields acetic acid; lastly the putrefactive ferment comes in and breaks up the whole thing, and the organic character is destroyed. Something like this takes place in all kinds of food. Take the case of butter. As soon as the fat is removed from the milk one of these things brings about what is known as the ripening, and this microbe is our friend; but if one of the putrefactive series be allowed to reach the butter it becomes our enemy, and the butter is spoiled. I think I have now sufficiently indicated the enemy we have to fight. We wish to encourage the friendly microbes and to exclude or destroy those which spoil our food. The first method of preserving food to which I would refer is extreme cold. You all know the benefit gained by passing milk over a refrigerator, or by placing milk or butter in a chamber kept near the freezing point of water. Hitherto cold water and ice were the only things by which this has been carried out; but within the last week I have had an opportunity of examining a method by which water may be frozen or a chamber kept cool at very small cost by means of liquid carbonic acid kept in steel cylinders; when the pressure is removed the liquid becomes a gas, and robs heat from all surrounding bodies. I think before long you will hear more about this method, which I consider most valuable. The second method of preservation is by extreme heat. We have illustrations of this in the production of condensed milk, and the sterilization of fruit juice in the preservation of fruit, as in the making of jam. The third method is, in every form, one of the oldest. In the good old days, when wholesome beer was brewed from fat malt produced from good English barley, it was discovered that the casks, when empty, soon became foul, and if the new beer were introduced it soon turned sour, the enemy being present in large numbers; so our forefathers took a lump of sulphur, set it ablaze and lowered it into the casks; sulphurous acid was

first formed, which being a greedy sort of a thing, soon devoured the oxygen and killed the microbes which would have turned the beer sour. The objection to this method is that the sulphurous acid is converted into sulphuric acid—i. e., oil of vitriol, and unless the casks be well washed the beer would be somewhat injured. Chemists, however, found a way out of this difficulty by neutralizing or killing the acid with lime, and then we get the valuable substance known as bisulphite of lime, without which the modern beer, vinegar or cider maker could hardly carry on his work. I think the farmer would find this substance of great value; paper soaked in it, then wrapped around butter, will keep it sweet for a very long time—in fact, quite as long as needful. Of all of the materials used for the preservation of food, this I consider the most valuable, and, in fact, almost the only one required. Now we come to carbonate of soda. In the hands of medical men it is valuable enough, but its continued use by persons whose digestive powers are weak, must sooner or later cause trouble. The principal use of this substance is to neutralize the acidity of milk and cream, and enable the milk obtained on summer's day to be kept for use the following day. If a sample of milk or cream containing this substance be submitted to a public analyst, I think he would be justified in reporting it adulterated. The question to be considered is, which is better, to keep the milk good by adding this substance, or let it turn sour and give it to the pigs? Well, as far as our health is concerned, I should say let the pigs have it. Fortunately, there is no need either to give it to the pigs or physic the consumer. In a properly cooled chamber, milk may be kept sweet for three or four days in the hot summer weather, and this is surely long enough. Even in the hottest of English summers milk will remain good and sweet for several days, if it be refrigerated as soon as it comes from the cow. Now I come to the group of substances known as antiseptics, all of them most potent drugs. The chief of these are salicylic acid, boric acid, borax, and glycerin. Boric acid and borax are substances so well known that I need say but little about them. I think they are the least objectionable if used sparingly. Salicylic acid occurs in two forms, the natural and the artificial. The natural acid is obtained from the willow bark or from the oil of wintergreen, but the greater position is obtained from coal tar, and always contaminated with tar acid. Glycerin is rarely used alone, but is combined with boric acid, to form boroglyceride. Glycerin is obtained by heating fat with an alkali, as soda, forming soap, then precipitating the soap with salt, and distilling with superheated steam. Glycerine imported from Germany frequently contains arsenic. In addition to these substances, I have recently found a sample of condensed milk preserved with benzoic aldehyde, which is itself preserved with prussic acid. Now, after mentioning the various substances used as preservatives, let us consider the foods for which they are used. I sit down to breakfast: my butter contains salicylic acid, my bloater contains boroglyceride, my rasher of bacon may have boroglyceride, salicylic acid or even silicate of soda in it, and if it be smoked, coal tar creosote. If during the daytime I incline to a glass of beer or cider, still salicylic acid, and so on through the day. I may be asked, then, are we wrong in preserving our food from decay? I

should answer, certainly not, but you have no right to use a drug which, if constantly taken, will tend to induce dyspepsia. (1)

WEEDS.

By Thomas Shaw, Professor of Animal Husbandry, Minnesota State Experiment Station.

The weed problem in Manitoba is soon likely to prove a serious one, unless farmers modify their methods. The continuous cropping with wheat year after year, is the chief cause of the rapid spread of weeds in the soil. It would be the same were any other kind of grain grown continuously on the same piece of land, only in the one case the weeds that would prevail might be somewhat different in kind from those that would flourish in the other. The exuberant fertility of the soil is also favorable to weed propagation where careless methods of tillage are adopted. With careful tillage fertility may be made a means of smothering weeds rather than of encouraging their growth.

It would not be in good taste for me to tell Manitoba farmers that certain weeds are in their midst. They themselves know that. But it may not be out of place to enumerate some of the kinds that I consider the most troublesome. First in the list I would place Penny Cross or French weed. Owing to the early season of the year at which it commences to grow and produce seed, to the continuity of the period of seed production, and to the fact that, in consequence, it can grow in any kind of crop, I would be inclined to set it down as first in the list of weed pests. Moreover, it is a weed that live stock do not care to feed upon and its powers of reproduction are very great. Farmers should exercise very great care in rooting out this weed wherever it makes its appearance.

Next to the French weed in badness, I would be inclined to name rag weed. I notice that three kinds of rag weed exist in the country. First, there is a large variety that grows tall and rank. In the states south from Manitoba it is known as horse weed (ambrosia tri-pida). This is not the most dangerous variety, but when it grows in a wheat crop the seeds impair the wheat materially for milling purposes. The second variety, (ambrosia artemisiofolia) does not grow nearly so tall. It is by far the most troublesome kind. The leaves of this variety are very much jagged in their outer edges, hence the name rag weed. I saw it growing in great luxuriance on the southern boundary of the province, and no doubt it will rapidly push its way northward. Look out for it. It is a troublesome weed, and I think I am safe in saying your soils will be very congenial to its growth. It is an annual like the larger variety. Then there is a third kind of rag weed, which I saw growing in many parts of the country, but I do not look upon it as being very troublesome. It seems to increase by means of root-stocks and probably also by seed bearing. The growth did not seem to be so very vigorous.

Next to the rag weed I would place the Canada thistle. I do not think this invader will be nearly so troublesome as in Ontario. The soil conditions are not so favorable to its growth. Hence, when properly attacked there should be no difficulty in rooting it out. How-

(1) Wherefore we refused last winter a request from a dealer in the stuff to be allowed to puff his nostrum in this periodical.—*Ed.*

ever, it should not be trifled with, but should rather be smitten wherever it is seen.

I did not see any wild mustard in Manitoba, nor wild oats, but I am told both are there. If so they will become great scourges in such a soil and under the present conditions of agriculture. Either one would be nearly if not quite as bad as French weed. Therefore look out for them and give them no place.

I saw wild flax, lots of it, but I do not think it should harass your farmers very much if the land is carefully stirred before sowing wheat or spring crops. It should commence to grow in autumn to be seriously harmful. Pig weed and lamb's quarter are very plentiful, but with careful cultivation they should be kept at bay.

It seemed to me a great pity that weeds should, so soon in the history of the country, have been allowed to get so extensive a foothold. They were not there when the prairie was broken. The farmers brought them, therefore they are responsible. They might have been kept away. The measures that should be adopted for the destruction of these pests cannot be discussed at length in this paper. To do that would be to write a book. But I may say I think it quite possible in Manitoba, as in other countries, to destroy noxious weed life, if the farmers would only set about the work in earnest. With a continuance of their present system of farming, the outlook on the weed question is not encouraging. It looks dark. Think of it, farmers! Continue to grow one crop only, and, in a good many instances, in a careless way, and the country will be filled with weeds. A heritage will be handed down to the next generation, which will give them great labor and no end of trouble. I will only touch upon two remedial measures that may be adopted, because of their extreme adaptability to your conditions. First, modify the rotation. This would mean destruction to great numbers of weeds, for the cultivation given at different seasons would first make havoc with one kind and then with another. Second, summer fallow often, and when this is undertaken, make thorough work. When a field is summer fallowed, let it be stirred often. The work of summer fallowing should commence the previous autumn. The cultivation in the summer should be by stirring the soil rather than by plowing it. Weed seeds would thus be encouraged to grow. Each successive stirring of the soil would encourage many seeds to sprout, and would destroy those that had sprouted.

Two very dangerous weeds do not seem to have obtained a footing in Manitoba. Farmers, keep them out. In your country they would work great harm, owing to the nature of the tillage. These are the Russian thistle and a species of mustard, which is rapidly spreading in the neighborhood of Indian Head. Both are tumbling weeds, and both will become scourges in wheat-growing sections where they once get a footing. The former is looked upon with alarm in Dakota. The legislators of the state are calling upon the Congress of the United States to come to their help. I have seen these weeds tumbling about in the neighborhood of Minneapolis, but this state is going to take the bull by the horns in time—at least the indications point in that way now. The other species is spreading like wildfire over the prairies around Indian Head. Both species produce an enormous number of seeds. Both readily break off when they have ripened, and then tumble before the winds in every direction, scattering their seeds where

ever they go. See to it that they never get a footing in Manitoba, for if they do it will be a long, costly, and stubborn fight to get rid of them.

N. W. Farmer.

Breeder and Grazier.

STOCK FEEDING.

Following is the substance of two addresses given before the Douglas, Man., Farmers' Institute, by R. Waugh, of *The Nor'-West Farmer*:—Mixed farming is the cuckoo cry of the day. Men with a great deal of reliable knowledge tell us so, and men with little or no skill repeat the advice till it has become stale. In my opinion, mixed farming is the only kind of farming that can permanently enrich any country, the profit of it will depend largely on the way the mixing is done. One man has a natural taste for horses, another for cattle, another for sheep, and if his past experience and present conditions are fairly suitable, he is likely to succeed best by making his natural taste a guide in his selection. If even with that taste, he is easy and careless, and not habitually attentive to the every day details of his work, such a man is bound to prove a failure in any kind of stock breeding he may put his hand to. We hear a good deal of the unprofitableness of stock feeding just now, and certainly the prices for most kinds of stock are very discouraging. But if we follow the majority of the complainers for a month we must come to the conclusion that it would be a very bad thing for the rest of the world if prices were high enough to afford that sort of men a good living. We may as well make up our minds at once that it is only by superior skill and diligence that a profit can be taken out of any kind of farming.

How is that skill to be got? One way to get it is to set to work under the eye of a man with sufficient skill, and persevere at the work till we have got to be able to do it as well as himself. Knowledge got in that way we call experience. But if a man is ever to be worth his salt in any calling he will want not only to be able to do a thing well and do it always at the right time as a matter of habit, but he will want to know why it is done in his teacher's way, and not in some other man's way. To know is important, to know why is a stage in advance, and the man who knows why is a scientific farmer, no matter where or how he got his knowledge. When we have found a man fairly well acquainted with the how and why of everything he does, and steadily carrying out that knowledge in his every day practice, it will be found, as a rule, that he can make a living by his business, and every one is pleased with his success. If he will not take the pains to learn, and put in practice what he knows, he is a fraud and a humbug and has no right to succeed in any calling.

Keeping these points in our mind's eye all along, let us now try to investigate in a methodical way the main points of stock feeding. Take the feed to start with. The cheapest and most digestible of all foods is grass, and we find it here in abundance. The weeds growing among the grass furnish variety and there are still places here where, in addition to abundant summer herbage, hay can be put up at a dollar a ton, and cattle made into fair beef on such feed. This easy way of doing it is fast going out, and food produced by cultivation must be the general practice henceforth.

There are half a dozen ways of producing very cheap feed on any average farm. One of the first and best is sheaf oats cut on the green side. One acre of oats will maintain a full grown horse, steer or cow from 100 to 125 days, and as far as one kind of food can be depended on there is no better combination of bulk and nutrition. If it is butter fat we are after, there is more butter in oats than in anything else I know of, and every kind of beast will eat them heartily. Peas and oats are, if possible, still better than oats alone. Turnips and rape are also extremely palatable to all kinds of stock, and I need not repeat what every reader of *The Nor'-West Farmer* sees there so frequently about their production at very low cost. I do not think it will ever pay to grow turnips here as a bulk feed, like Scotland and Ontario, but if we sow them very thinly with a drill on the flat, and horse to keep down weeds, or grow them broadcast on clean summer fallow, gathering the best to be stored for winter use and letting the stock have the rest in the fall on the ground, turnips will be found both cheap and highly profitable feed. If I were feeding I would want to have an acre or two of flax, most of it to be cut green and used the same way as sheaf oats. Indian corn is one of the very cheapest and most palatable feeds, and, with reasonable treatment, a very heavy yield per acre can always be depended on. Even when dried in the sheaf, it is profitable, but its great value in this country of long winters is as ensilage. Either for store or fat stock, ensilage furnishes a most agreeable variety of food and as a succulent feed that can be stored in small bulk, it cannot be beaten. Either along with straw or hay, or in combination with more concentrated feed, the man who can put up a silo and fill it, must come out ahead of all other feeders. Everybody knows the feed value of bran, shorts and oil cake, and it is only necessary to use these feeds with judgment to get their full value out of them. The same may be said of wheat, barley, oats and peas.

The nutritive value of all these feeds is largely dependent on the skill with which they are cured and put up. Ensilage, either of oats, peas or corn, if cut too green will be of less value. Hay, cut when ripe, is half valueless, and the straw of ripe cut grain has much less feeding value than if it had been cut a week earlier. Either in plants or animals, nature concentrates her best efforts in the way of reproduction, and that is the reason for the high feeding value of all the seeds we use for that purpose. But if cut early a part of the strength of the plant is still in straw, and therefore the straw will be more palatable and more nutritious. You cannot have ripe timothy seed and choice timothy hay. Musty feed is always more or less unsafe and in many cases positively dangerous. To make our feeding successful, we ought always to know a good deal about the digestive organs of the different animals we feed. A full grown ox or cow has room for 60 lbs. a day of feed, but the horse could never use such a load and therefore wants his feed in more concentrated form. The cow has, I may say, 3 or 4 stomachs on a string, and all the bulky feed it eats is stowed away in the uppermost, to be brought up and chewed over again at its leisure, and so prepared for perfect digestion in the last stomach of the string. Rich food, such as bran or chop, goes past the pouch in which the grass or straw is stored for a second chowing. Because of this digestive arrangement, a cow or steer does

not need more than one-sixth of its winter feed in a concentrated form. In fact, the necessity is all the other way. An animal of the ox species ought to have its stomach fully distended with bulk feed if digestion is to be carried on satisfactorily, and a young beast that for the sake of show form gets more than a proper proportion of concentrated feed will always be deficient in the power to take good value out of its feed. An important point in the up-bringing of heifers meant for milch cows is to keep stretching the stomach with bulky but nutritious food. If I could get plenty of turnips or ensilage I would never give a growing heifer any chop, just for the reason here stated. The pig has a small stomach and needs its food in concentrated form, the same as the horse. Let me remind you here, that the greater demand you mean to make on the muscles of a horse the more concentrated must his feed be. A 240 horse would be spoiled by getting all the good hay he would eat, just as a feeding steer would be spoiled by giving him 15 or 20 pounds of chop a day. A good cow or steer will take profit out of 10 or 12 pounds of chop and cake a day. All they get beyond that is wasted or positively injurious. If any one of you has taken in hand to fatten a scrub steer or an old ox, you will find them sadly deficient in the faculty of taking the full value out of any kind of rich feed. And it will soon be noticed by every wide awake feeder, that there is a considerable difference between two animals of the same breed in their capacity to take profit out of the same feed. The Scotch proverb about putting good food in a bad skin has ample illustration here. One man buys a big coarse boned hard skinned steer with tucked up flanks, and thinks it a big bargain. Another selects one with a thick soft, mossy skin, low set and front legs wide apart, with a lazy contented look, and every day they live this last will furnish an object lesson on the difference between two things that to a careless eye are very much alike. If milk is wanted, the same look out will select a female of milking type and reject one with good beef form.

There is a right and wrong time of the year to feed for profit. Nature supplies abundance of the best of food in the season of Indian summer, so that all wild animals may get well hearted up against the cold and privations of winter. The bigger half of my farming friends do exactly the reverse. They think it would never do to waste good feed in fine weather when there is such a long winter ahead of them. Dry prairie grass and weedy stubble are good enough to support any beast in good weather, and when I go out to an institute and tell them to sow an acre of turnips or rape, and throw a good feed of them over the fence every night in the fall, they smile very loud and say to themselves: "That's all a city farmer knows about feeding." I say here plainly and defy contradiction, that it is easier to make two pounds of gain on any healthy animal in October than it is to make one in March off the very same feed, and if you scrimp and pinch in the fall, or feed half-dead hay to save better feed, the chances are you could not do more with stock so fed, than keep them from making a loss even if your feed later in winter is all right. For dairy cows I would be still more emphatic on this point. Liberal treatment in the fall is money made next summer. If we do not know our business, nature knows here. She does not make milk freely till the living machine that makes it has been

properly fixed up, thus insuring a poor butter yield and short milking season, as a direct consequence of mean feeding months back.

The age of the animal has a great connection with the profit made. A 79 pound pig or a yearling steer or heifer, will make more gain from decent feed every day than a full grown one that costs twice as much to maintain it. I cannot expatiate on this important fact in stock feeding, but every farmer should keep it in mind.

A milch cow, worth calling a cow, is a decided exception to this rule. She will make more profit out of proper feed when she is 10 years old than she is likely to do at 5. The more carefully she is trained and fed for milk production, the more will she be able to turn the feed into the right channel. The management is an important part of feeding. Regularity and kindness are always a source of profit. A cold drafty stable is a steady drain on profit, and to take a beast out of a warm stable and to drive it away to a water hole in a wind swept prairie is about as wise as to pour feed into a rat hole. Some one once asked an old neighbor of mine how he managed to get rich when every body else was getting poorer. "That's easily settled," said Johnny, "Set your heart and soul on it." Whole hearted attention to any beast, especially if that beast is a good cow, will insure profit in very hard times.

RAPE FOR COWS.

I have a thoroughbred Holstein cow. On August 6 I sowed one pound of rape seed on a piece 165 x 13 feet, and in five weeks it was five feet high and very thick. I picketed my cow so that she could get at two feet on one corner; she looked at it, then tasted it, but did not eat much as good grass and clover were on the border. I put her in the same place the next two days; the third day it looked as though it had been sheared, it was eaten so close. After that, she would eat rape before she would grass. The flow of milk increased about one-quarter with no bad flavor. (1) It was eaten all over three times before the cold weather prevented it from growing again.

Berlin, N. J.—R. W. Yorker.
C. M.

YOUNG STEERS.

2. H. will soon have to abandon his idea of fattening what he calls "young steers" (three years old.) Rapid growth and early maturity must be the system which pays. All experiments to that end have shown that it cost less to put 10 lb. on the 3 months' calf than on the 6 months' calf, less on the 6 months' than on the 10 months' calf, and less upon the animal 10 months' old than upon one 15 months' old—or that it constantly cost more to put on a pound live weight as the animal grows older and heavier. And as H. has the book on "Feeding Animals" let him turn to page 249, and read all that is said upon "baby beef," and he will see that he cannot afford to feed 3-year-old steers. H. may make his fattening ration in grain in the proportion of 3 lb. brand and 4 lb. gluten feed. If the steers weigh 800 or 900 lb. he may use 12 lb. hay, 20 lb. pulped roots, 6 lb. bran and 8 lb. gluten feed. The roots may be turnips, beets or carrots, and if the

(1) We have often fed our cows on rape, and never found a bad taste from it.—Ed.

animals are thrifty it will produce rapid fattening. But they should get all they can digest after a few weeks of feeding. A skillful feeder can push them rapidly on this ration. The bran and roots will keep them in good health. E. W. S.

Country Gentlemen.

RAISING DAIRY HEIFERS AND COWS FOR SALE.

The marked success of a few dairy farmers in the vicinity of Fort Atkinson last spring in the sale of grade Jersey and Guernsey calves through advertising in this paper finds a counterpart in the sale of several car loads of grade Jersey cows from the town of Bovina, Delaware Co., N. Y. These cows also owe their sale to *Hoard's Dairyman* as was clearly shown by Josiah D. Smith in a recent communication.

These facts lead us to the consideration of some things: First, why are there not a great many more enterprising dairy farmers who make a business of breeding good grade heifers for sale? It is a fact that the fewest heifer calves are raised in the heaviest dairy districts. This is a serious mistake. The dairy farmers can use his skim milk to no better purpose than to raise a fine grade calf. If he does not want her for his own dairy, she is surely wanted somewhere else. The three and six months old calves sold from Fort Atkinson last spring brought from \$16 to \$22 a head. This was a good profit for the cost of keeping. All over the state of New York, Ohio, Pennsylvania, and other eastern states, as well as in the west, are communities of dairy farmers who could each easily raise and sell from six to fifteen likely heifer calves each year. All that is necessary to do is for a number of such farmers to combine and advertise their heifers in the *Dairyman*, and the ad. will be quite sure to find a purchaser somewhere. It is easy to charter a car and send the young things anywhere in the United States or Canada. A little good business sense and Yankee enterprise only is needed on the part of these farmers to add a good sum to their yearly revenue. The same argument applies to the sale of good grade cows. Last spring there were dozens of purchasers who wrote us and who were ready to take good grade heifers or cows by the car load, but who could not find them, because dairy farmers did not take advantage of this want.

Farmers need to learn how to apply the old business adage, "If you have a good thing to sell, advertise it." It is easy to hold the cent of expense so close to our eyes that we cannot see a ten dollar note of profit behind it. When a dairyman knows of a good likely grade heifer for sale at moderate price it is well to buy it if the farm will admit of its keeping. Why should not a smart dairyman be a good cattle merchant as well? No one need to worry about the market. It is always in front of any man who has the gumption to advertise and let the buyer know what he has and where he lives. And this very fact is one of the strongest arguments for a dairy farmer keeping a live dairy paper on his table. It puts him in the current of dairy business, where he can see and take advantage of a thousand things and suggestions to his own personal good. One enterprising dairyman in Pennsylvania said to us last winter, that this paper had been worth

more than a thousand dollars to him in the last four years in helping him to buy and sell, alone. A good dairyman needs to get into the current of his own business the same as other men.

ORIGIN OF AYRSHIRE CATTLE.

The Ayrshire breed of cattle is of comparatively recent origin, and it would seem that the books ought to give us a pretty accurate description of the time, place and manner of its development. No work, that we have seen or heard of, published prior to 1825, makes any mention of such a race of cattle. The name indicates that it must have originated in Scotland. Prof. Geo. W. Curtis, in his work on Horses, Cattle, Sheep and Swine, quotes from a work published in 1842 as follows:

"We may assume, then, from all the evidence, which in the absence of authentic documents, the case admits of, that the dairy breed of Ayrshire owes the characters which distinguish it from the older races to a mixture with the blood of races of the continent and of the dairy breed of Alderney."

But now comes a Mr. J. A. Wallace Dunlop, of Poowong, Australia, who assumes to settle this much mooted question by writing to the *Australasian* as follows:

My great-grandfather, John Dunlop, of Dunlop, about the year 1740, crossed a Devon bull on some Guernsey cows, and a Guernsey bull on some Devon cows; selections were made and re-crossed, from which crosses sprang the renowned 'Dunlop' or Ayrshire cattle. It is a matter of family history that the foregoing is the true origin of the Ayrshire cattle.—*Hoard*.

Swine.

THE MODERN RENT PAYER.

There can be no doubt but that the popular type of American hog has undergone a marked modification in recent years. The writer recently marketed some 450 pounds hogs in Chicago, the first buyer who saw them said, "don't want them at any price," other buyers were found who were willing to handle them at a reduction of 25 cents per hundred below hogs of equal quality 150 pounds lighter, which price was finally accepted as the best that could be done with them. The hogs in question were all barrows and as smooth a lot of 450 pound hogs as the most exacting buyer could ask; in this respect they were faultless, but too large for modern demands. The sacrifice of 25 cents a hundred on selling price was by no means the only loss sustained in making hogs of this weight as the last 150 pounds of weight probably cost as much as the 200 pounds preceding it. It is a well established fact that gain can be made in hogs weighing 200 pounds much cheaper than in those weighing 400 or over.

Another modification that is just now demanded is a hog with less fat and more well flavored lean meat, larger and better bacon cuts. While corn must remain our chief hog feed, it will nevertheless pay to heed the demand for an improved bacon hog in our methods of feeding and breeding. The dairy fed hog will possess improved qualities in this respect.

Farm and Dairy.

DAIRY CONFERENCE IN SWITZERLAND.

ZURICH, MONDAY, JUNE 4TH.

A glorious change in the weather came just in time for the members of the British Dairy Farmers' Association and their friends, 145 in number, now in Switzerland for the annual conference and excursions.

The rail journey of some 700 miles from Calais to Zurich, occupying nearly nineteen hours, was rather tedious and wearisome until the old frontier between France and Germany was reached, and the train passed into the beautiful and fertile Elsass (formerly Alsace) country, where the Rhine soon came into view. From that point the scenery became more and more beautiful, when the Swiss frontier was passed and a distant view of one of the finest of snow-clad Alpine ranges was obtained.

On Monday morning the first move was to the Federal Seed-Control Station in Zurich, managed by Dr. Stebler (the director), for testing the purity and germinating power of seeds. The arrangements for testing are excellent and the establishment has obtained so high a reputation that seeds are sent from many countries to be tested in it. Last year 400 samples were sent from England and 200 from Scotland. Thirty samples are tested for £4. Beautiful preserved specimens of grasses and forage plants are to be seen in the institution. Only 25,000 francs (£1,000) per annum of public money are required for the maintenance of this excellent institution, which is partly self-supporting.

The party next visited the Zurich Cantonal Agricultural School at Strickhof, about three miles from Zurich, where the attendance is forty to fifty-two, the pupils remaining during a two years course. Swiss boys pay 200 francs per annum; others 600 francs. Instruction is given in agricultural, natural history, chemistry, languages, &c. Boys who require dairy instruction go to the Sornthal Dairy School, not far distant. The Strickhof School was established in 1853, and nearly a thousand young men have passed through it. The Principal is Herr Lutz, who is assisted by ten indoor teachers in winter and eight in summer. There is a farm of 90 acres attached to the school, upon which the pupils do all the work, including the milking of the cows, under the direction of workmasters. Ordinary farm crops and fruit are grown, the purpose of the farm being to afford the means of practical instruction in farming and fruit-growing. Bee-keeping also is taught, and there is a capital bee-house, a small circular building, in which the operations of the bees can be seen through glass. The annual cost of the institution is 30,000 francs, paid partly by the Federal Government and partly by the Canton of Zurich.

Cows of two breeds—the Schuytz and the Simmenthal—the two national breeds of Switzerland—are kept. The former are noted chiefly as milk producers, and the latter for beef. The Schuytz are of a greyish mouse colour, some being silver-grey. The Simmenthal cattle are of a yellowish-fawn and white. The specimens of the former breed were very much admired by the visitors. The other animals are less symmetrical. Twenty-six cows, besides young ones, are kept, the milk being sold in Zurich. The average yield during the whole period of milking for the cows is about 10 litres, or 17½ pints, a day; but whether this

applies to all the cows or only to those of the Schuytz breed is uncertain. At the conclusion of the visit a hearty vote of thanks was conveyed by Professor Sheldon, on behalf of the Association, to Herr Lutz, who responded.

Returning to their numerous carriages, the visitors next proceeded to Dr. Gerber's dairy, in the city of Zurich, where butter, skim-milk cheese, and soft cheese are made, Gruyère and Emmenthaler being made by him in a country establishment. From his town dairy most of the milk is sent for town use, some of it, after being sterilised, in stoppered bottles. The arrangements of the dairy are good on the whole, but not remarkable. Laval separators are used in it. One of the best features is a large cistern in which all the milk is strained. On the other hand, it is not a good plan to make cheese in the same set of rooms (opening one into another) as that in which milk is dealt with and cream is separated. A notable thing in the dairy is a condensing machine, sent for experiment, its purpose being that of condensing separated milk for soap-making. Most remarkable of all, however, is Dr. Gerber's method of testing milk butter, and cheese, shown in operation in the laboratory. It is apparently superior to the Badock tester, for two reasons. In the first place, the revolving disc in which the tubes containing milk, &c., are placed is a covered one, so that nothing can fly out of it; and, secondly, instead of by turning a crank, the motion is obtained by winding a piece of string round the spindle and rapidly withdrawing it, causing the cylinder to spin like a top for about five minutes.

After luncheon a conference was held at the Hotel Bellevue, at which Herr Beachler, editor of the principal Swiss dairy paper, the *Schweizer (1) Molkereizeitung*, read a paper on "The Dairy Industry of Switzerland." He said that the climatic conditions and the soil of the country suited the breeding of cattle, so that in early times attention was paid to it, and to dairying with it. Even in the times of the Romans, cheese was carried from the Swiss Alps to Italy. After a time the making of cheese, chiefly Emmenthaler, became highly developed, and the green cheese Schabziger, now widely known, has been produced in the Canton of Glarus since the fifteenth century. The other cheeses made are the Gruyère, Ursoren, Glarner Ziger, Saanen, Welsh, and Bellelaye among hard cheese, and Limburgh, Romador, Vachorn, cream, and Sarassin among soft ones. The production of condensed milk has been an important industry in the country since 1866, when the first factory was established by the Anglo-Swiss Company in Cham, followed by the Nestlé factory at Vevey in 1868, and others later on. Dairying and breeding are now the most profitable branches of agriculture in Switzerland.

The cultivated area, including pasture, of Switzerland cover about 5,359,700 acres. The latest returns of live stock were those of the census of 1886, when there were 98,622 horses, 4,788 mules and asses, 1,212,538 cattle (or 223 per 1,000 acres of cultivated area), 341,804 sheep, 416,323 goats, and 394,917 pigs. The number of cows is put at 663,102, and that of heifer over one year at 186,983.

Except in the Alps, where they are out during the whole summer, the cattle are turned out only in the early

(1) "The Swiss Milk-Gazette."

spring and the late autumn. They get grass, clover, lucerne, green maize, rye, green oats, spurry, and other forage during the forage season, with rare addition of cake, &c. In winter they have hay, turnips, potatoes, beans, and cake, or other dry food. The speckled Fleckvieh cattle will yield 2,800 to 3,000 litres (622 to 666 gallons) per annum; but Herr Beachler puts the average yield of cows in Switzerland at 487 gallons. The estimated value of the cattle produce of Switzerland per annum is 285,242,000 francs, of which the share allowed for milk and its products is 174,263,200 francs. The net exports of cheese in 1893 were valued at 25,920,849 francs. Imports of butter exceed the exports. Last year 28,263 cows, 7,153 heifers, 5,730 young cattle, and 14,458 calves were exported, and 3,388 cows and heifers, and 17,188 young cattle and calves were exported.

The farmers combine to start and carry on cheese factories. In making fat or half fat cheese of the Emmenthal and Gruyère types the milk is warmed up to 35 deg. Centigrade with an extract produced by heating whey one or two days, and curdles in half an hour. After this the curds are well broken up and stirred until the particles are not larger than peas. These are left alone for about fifteen minutes, after which they are stirred again until they no longer shrivel up. Next they are warmed up to 55 to 60 deg. Centigrade, and stirred for half an hour to an hour, until they have the desired consistency, and no longer fall asunder, but they must not be hard, nor grate between the teeth when bitten. The right judgment as to the proper degree of maturity is said to be difficult, and only to be acquired by experience. In the handling of the curds they are carefully gathered in a cloth within the kettle and taken out of it; then they are put into a wooden ring, and with this under a press. Here the mass remains, the cloth being frequently changed, and the pressure heightened from 15 to 20 kilogrammes per kilo. of cheese for the next twenty-four hours. After this the cheese is taken out of the press and into the cellar (temperature, 10 to 12 deg. Centigrade,) and left in the wooden ring until it is hard enough and strown with dry salt. After three or four weeks the cheese is brought into the cellar, where it has to ferment. This cellar is mostly an apartment with a temperature of 18 to 22 deg. Centigrade, and very damp air. Here the holes are formed. The curing takes from six to eight weeks. Next the cheese is put into the store-cellar, where it must be every day, or every other day, strown with dry salt. It is also essential that it be regularly turned. The whey that is left yields whey butter. For that purpose it is either put into skimming vessels, or, with an addition of whey vinegar, warmed from 80 to 85 centigrades, until the butter-fat separates. This is taken off and cooled, and churned like common butter. If the remaining whey is heated from 90 to 95 centigrades, the albumen it contains curdles, which represents the Ziger cheese. Mostly the whey is, without extracting the Ziger, given to the pigs.

In the course of the discussion, which chiefly consisted in answers to questions. Herr Mettler said 95 per cent. of the farmers owned their farms. He also stated that all taxes were practically levied in one tax, in proportion to income, no distinction between realty and personalty being made.

After the conference the Local Committee conducted the party on a pleasure excursion up the Uetliberg Mountain, (1) the summit of which is reached by a winding railway.

LUCERNE TUESDAY.

This morning a start was made at 6.45 for Cham, Lake Zug, where the Farmers' Co-operative Cheese Factory was first inspected. This is owned by twenty farmers, who supply the milk of about 300 cows. The temperature of the milk in cheese-making is varied by means of a movable grate under them. Emmenthaler is the variety of cheeses made, 12 lb. of milk making a pound of cheese. As soon as the cheese have been pressed they are soaked in brine strong enough to make them float for two or three days. Afterwards the cheese is kept in a cool chamber for a month; next in a warm room from two to four months—long enough to cause the holes found in this cheese to form by means of the fermentation set up by the high temperature. Salt has to be rubbed upon the cheese daily when in the cold and warm rooms alike. The usual price at the factory is 10d. a pound. Whey butter is made, and some cream-butter from milk set in shallow pans.

The most important business of the day was the inspection of the Anglo-Swiss Condensed Milk Company's factory at Cham, after the visitors had been hospitably entertained at luncheon.

This is a great building, and in it about 250 men and women are employed, working usually ten hours a day, the wages of men being four to five francs a day, and those of women two to three francs. The Company have three factories in Switzerland, two in England, and two in America. The three Swiss factories take the milk of 10,000 cows. The arrangements and appliances are in a high state of perfection. First the visitors were shown into the milk-receiving room, where the milk is weighed, next to the evaporating room, where it is condensed in five great condensers, holding a thousand gallons each. The boiling-room was next seen. There, the sugar is added before the condensing takes place. Here, the milk is cooled after being condensed to as low a temperature as possible, with the use of water, in which the cans of milk are stood. Next it is put into tins and rapidly soldered down. The box-making and tin-making rooms attracted most attention, particularly the latter, where wonderful machinery is in use. In another building butter and skim-milk cheese are made. At this factory alone the milk of 6,000 cows is taken, it being much bigger than the others in Switzerland.

The model farm at Langrütli, now owned by Herr Lustenberger, was last visited to day. It is about 210 acres, nearly all grass, and seventy two cows are kept. They are kept tied up all the summer, and fed on grass and other green stuff. In winter they have corn as well as hay. There are two breeds here, the Schuytz and the Simmenthal. The manager says the former is the better for milk; but this is the home of that breed, and in other districts the verdict is in favour of the rival breed.

BERNE, WEDNESDAY NIGHT.

This has been a red-letter day for the members of the British Dairy Farmers' Association and their friends, not only because some places of dairy interest have been visited, but also,

(1) Berg means a mountain.—Ed.

and mainly, because it has given the visitors an opportunity of seeing more of Swiss life and character and social condition than either of the preceding days. The goodness of Colonel von Wattonwyl is referred to in our leading columns, and we need not here repeat the brief description of the very remarkable entertainment at Konolfingen-Stalden. The rail ride from Lucerne to that place was a charming one, not only in relation to scenery in the ordinary sense of the word, but also for the great show of their farms and farmhouses which it afforded. Land in small patches was seen to be cultivated up to nearly the tops of high hills, and the sizes of the houses belonging to very small farms were very striking. Men, women, and children were busy hay-making all along the route up to the evening, when rain fell heavily—the first experienced here since Saturday. Splendid crops of hay were seen wherever good land was passed.

Arrived at Konolfingen-Stalden, the first proceeding was a short walk along a fertile valley to the village dairy, in front of which some excellent bulls and cows of the Simmenthal breed were exhibited. They were collected from the animals bred by four local syndicates of cattle-breeders' associations formed to improve the breed by the selection and purchase of first-class bulls, and recording the pedigrees of cows and bulls. In the dairy first-class Emmenthaler cheese was being made. The members of the village association—27 in number—divide the proceeds of the sale of cheese and of the butter which they also make. They are not paid for their milk, but wait till they have realised the value of its products before getting their respective shares of the money. The plan of steeping the cheese in brine, noticed at Cham, is not pursued here. It appears, too, that there must be some mistake about the price undertood to be realised for cheese at Cham, namely, a franc a pound, as that is the retail price for the best cheese in towns. About 8d. a pound is obtained at this village dairy. Visitors were much struck with the size and excellence of the farm buildings on Adolf Stucki's farm of 40 acres. He has twenty capital cows of the Simmenthal breed. The cows are kept tied up (as elsewhere throughout the districts visited) in summer as well as in winter, and are only let out in the autumn, after the second (or third in some cases) cut of grass has been cleared off the pasture. They are fed exclusively upon green forage, cut and brought into the cowhouse for them in summer, and on hay and oatmeal mixed with water in winter.

(To be continued.)

Butter not coming.—There are various causes why butter sometimes does not come, or is very reluctant to come, in churning, but the following recorded in the German periodical, the *Milk Zeitung*, or as we should say, the *Dairy Journal*, is quite new to us.

"The cream was found to contain bacteria, which caused a soapy consistency and an unpleasant odour and flavour, and the microbes were traced to mouldy hay with which the cows had been fed, or mouldy straw with which they were littered. Even the pasturage of cows upon grass land upon which manure made from mouldy straw has been spread has been known to produce the trouble referred to according to the authority named."

Are we not going rather too deeply into this style of argument?

COW MANAGEMENT.

Mr. H. C. Taylor, the owner of Brown Bessie, was in attendance at the Wisconsin Dairyman's Convention at Neenah, last February. He gave the following statement on the "Selection and Handling of Dairy Cows," which was also followed by an interesting discussion reported by the Farmers' Review.

The calf to be developed into a dairy cow, should be handled from the first with that object in view. She should be fed with the idea of increasing growth, but not of laying on fat. She should have her mother's milk for a few days, and then be put gradually on a ration of skim milk, ground oats, and so forth. Dairying in winter is a modern invention, and as to its general value dairymen are not agreed. There are plenty of men that will say it pays, but the man is not yet born that can prove that it is a success with all men, for conditions vary so much. As to shelter, your stables may be costly or cheap, as you desire, but in either case they must be warm. How many stables are there in this state where the mercury will not go below 50° in the coldest days in winter? There should be many, but there are probably very few. More barns there are where the mercury will go below 30°. If you will have a winter dairy, have a warm barn. The usefulness of a cow largely depends on her ability to stand still. A part of the cow's ration should be twenty-six pounds of dry matter per day. Of course you all have silos now, or soon will have. As you commence feeding silage, haul in the dry corn stalks and cut them up to mix with the silage. Put on some water, and the stock will eat the whole of it with a relish. You will be surprised to see how much stock a small patch of corn will winter. Add to the ration, oats, corn meal, oil meal and wheat bran to balance it. This makes you independent of the hay crop. Do not husk your corn and leave half of your stalks to dry up in the winter air. It is held by many that good flesh invites milk fever. But this is not true. Milk fever is due to plethoric condition, and not to good condition. Many men are feeding their dry cows as well as they do their milking cows, and those men have no more trouble with milk fever than others. It tying the cows in the stable, give them sufficient room so they can reach their flanks with their tongues. After freshening do not give the cow too much sloppy food for two or three weeks. She should be brought up to her full capacity gradually, and should not reach it before she has been fresh for two months. Remember also that the more milk you make the cow give during this period, the more she will be able to give in subsequent years. In milking the cow after the birth of her calf, do not take all the milk, but leave a part in the bag.

Q—Why do you not draw off all the milk after parturition?
A—Because, if the udder is emptied it will have a tendency to collapse and bring on milk fever.
W. D. Hoard—More than 3,000 cases of milk fever have been found in England, where this was the cause.

Q—Do you warm the water for your cows?
A—Yes, sir; I keep the temperature of the water at about 60°.

Q—How much good feed will the dairy cow consume per day?
A—She will take eighteen pounds of meal per day when she is giving a supply of milk. I have some that

take twenty-four pounds per day. We also feed them forty pounds of silage per day.

Q—How do you feed your meal?
A—I feed it dry.

Q—Do you feed your meal mixed with silage?
A—No, sir.

Q—What is your rotation of feeding?
A—We feed hay first. Then we milk, and then feed the grain ration dry. Then we feed twenty pounds of corn silage, and let them rest till noon. In the afternoon we give twenty pounds of silage, and then grain, and lastly hay, as in the morning. Cows that are getting into a full flow of milk we feed three times a day.

Q—Are you careful to keep the mangers clean?
A—Yes, sir. We have found that stuff will collect in the mangers, and so we scald them out frequently.

Q—After a calf is born will not she take all the milk out of the cow's udder?
—The calf does not do it at first, for he can't take it all.

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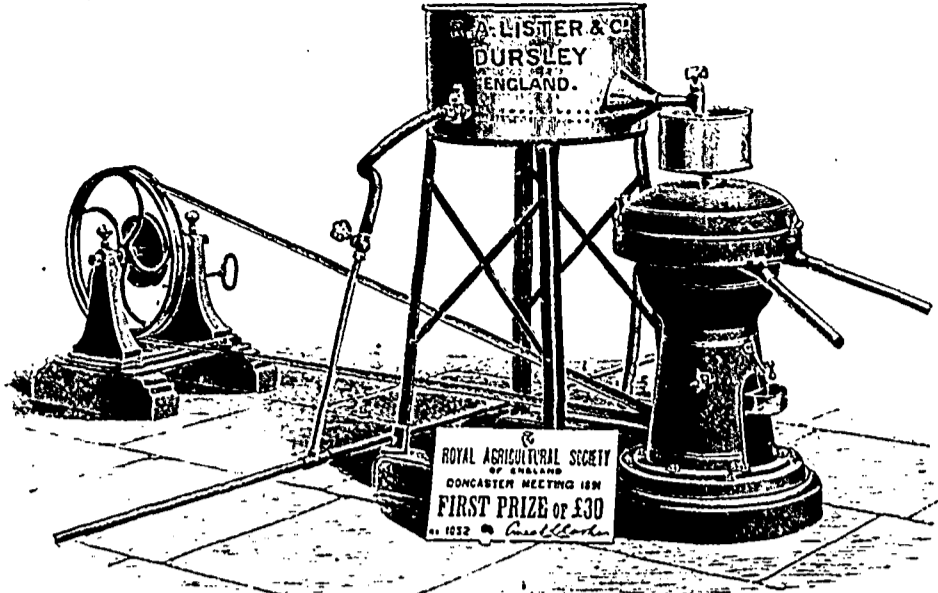
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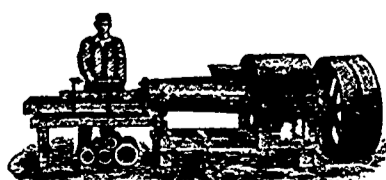
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