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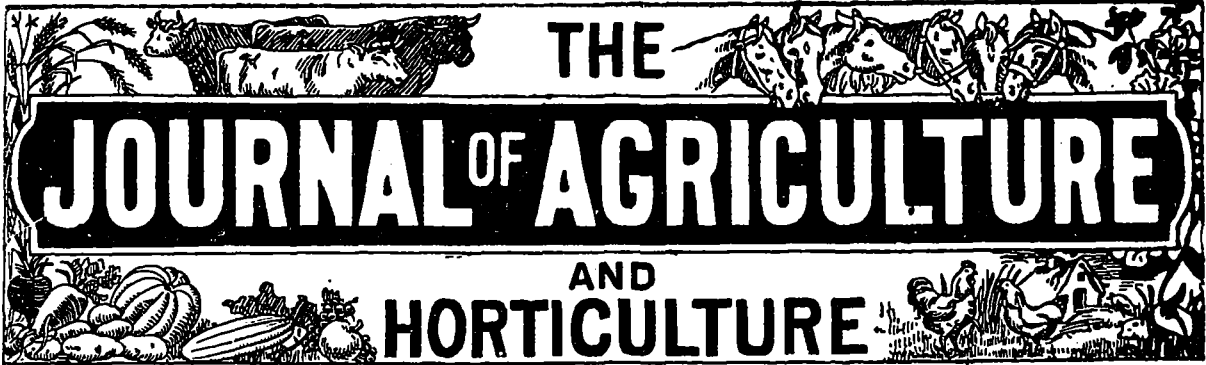
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VOL. 4. No. 14

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

JAN. 15th, 1901

**THE
Journal of Agriculture and Horticulture**

The Farm.

THE JOURNAL OF AGRICULTURE AND HORTICULTURE is the official organ of the Council of Agriculture of the Province of Quebec. It is issued Bi-monthly and is designed to include not only in name, but in fact, anything concerned with Agriculture and Stock-Raising, Horticulture etc. All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

LA PATRIE PUBLISHING CO.,
77, 79 & 81 St. James St., Montreal

Subscription: \$1.00 per Annum payable in advance

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"Sheep at the Smithfield Club."—The most wonderful things happened at the Christmas exhibition: the Suffolks won the Champion-prize for the best pen of three Short-wool sheep or lambs, as well as the Prince of Wales' Challenge plate for the best sheep or lambs in the show; beating, in the first case, the Duke of Richmond's Southdowns, (r.); and, in the second, J. Pears' Lincolns, (r.), that took the Champion plate for the best pen of long-wools.

The Carcass competition, at the same show, was intensely interesting; the chief features, at least in our opinion, were the following:

In the class of young beasts, i.e., not over 2-years old, four "subjects" were passed upon by the jury of butchers, all of them being cross-breds. The first-prize steer's carcass weighed 787 lbs., and took the Champion prize for the whole lot of beef-carcasses. The other three weighed, respectively, 847 lbs., 843 lbs., and 858 lbs.

In the class for beasts above two and not over three years, the Queen took the first prize with an Aberdeen-Angus heifer; her carcass weighed 878 lbs.; the weights of the other competing beasts in the class running from 897 lbs. to 1190 lbs.; so, here, as well as in the "baby-beef" class, the lightest beast pleased the butchers best!

In class 89, for heifers not over three years old, the Queen again took the first prize, with another Aberdeen-Angus, weighing 817 lbs., the second falling to the lot of the Duchess of Newcastle's Kerry, a perfect weight for the "West-end" trade, viz., 667 lbs.; the other two heifers in the class weighed respectively, 801 lbs., and 936 lbs., both cross-breeds.

We always found, when we used to send beasts to the London market, that a "home-bred" maiden-heifer, not too fat but fat enough, weighing about 80 stone London weight, i.e., 640 lbs., brought back the top price of the day. Big beasts are not the thing, in that very particular market, except a few at Christmastide for the butchers to make a show with.

The Queen's heifer is thus described by one who knows what he is talking about: "Very thick of lean on ribs, no waste anywhere." So both of the Queen's beasts must have been good indeed, as they won firsts both alive and dead.

"Sheep."—In the carcass competition for sheep, the jury of butchers evidently had no liking for fat lamb or mutton, Mr. Dudding's Lincoln lamb being passed over without notice, and, with the exception of a third prize given to a Border-Leicester, all the prizes for long-wools being awarded to cross-breeds, Cheviots, and Mountain sheep.

In the short-wool sheep and lamb carcass competition, in the lamb class, a Southdown, weight, 68 lbs., took the first prize, and a Hampshire the second, weight, 87 lbs., another of the same breed winning the third, weight, 95 lbs.

Of the oldest short-wools, those over one and not exceeding two years, a "Norfolk Horned," a breed we thought extinct, pleased the butchers most, weight, 106 lbs; a Hampshire second prize, and a Southdown third, two other Hampshires being reserved and highly commended, out of the six carcasses exhibited. A neat little carcass of mutton the Southdown, doubtless, but he only weighed 64 lbs., and was noted by the reporter of the "Agricultural Ga-

zette," as being "a menty sheep for the weight, with no superfluous fat." The three Hampshires are said, by the same authority, to have been (573) meaty and no waste; (574) weight, 162 lbs., good legs and shoulders, not too fat on loin, big kidney suet; while (569) the other Hampshire, was clearly too gross, as he was "too fat, though legs were good." Hampshires ought not to be kept so long; the above were probably over 22 months old, whereas they had most likely been fit for the best trade in the previous April.

Now let us see how the carcasses sold at the auction:

The lowest price paid for beef under two years old was 12 1-2 cts. a pound for a cross-bred (r. and h. c.) weighing 850 lbs.

The highest price was 18 cts. for one weighing 787 lbs., the winner of the first prize.

Of those over two and not over three years old, the lowest price paid was 9 1-2 cts. a pound for a cross-bred weighing 1188 lbs., and "too fat"; for the Queen's beast, weight, 878 lbs., and noted as being "colour dark, thick of lean, and no waste in brisket or flank"; a wonderful butcher's beast indeed; the highest price was paid, namely, all but 20 cts. a pound!

For the lowest priced heifer-carcass, rather over 13 cts., and for the highest, the Queen's Aberdeen-Angus, a fraction less than 20 cts. a pound was paid. The Kerry fetched a good price, as well only fair: 15 cts.

The above calculations will give our readers some idea of the style of beasts and sheep that is most likely to win favour in the eyes of the leading buyers of meat in our best market.

At the annual sale of "fat-stock" at the Queen's farms, at Windsor, the Hampshire-down wethers fetched an average of \$17.56 a head.

"Basic-slag."—Prof. Wrightson, whom we so often quote as a trustworthy au-

thority, speaks as follows of the value of the above manure :

BASIC SLAG FOR TURNIPS.

I have some experiments with basic slag upon swedes after trifolium which cannot yet be weighed up as the roots are still growing. Having used basic cinder pretty freely this year upon rape, turnips, and swedes, I have found it as good as superphosphate for these crops. The plant came up strongly to the hoe and grew apace up to the time of folding. I applied 4 cwt. per acre of the cinder. The curious feature is that the cinder should act in summer upon a summer crop. I have found it so before, as was shown as far back as 1885. The basic cinder was then as potent as superphosphate in producing turnip crops simultaneously in Durham and Hampshire. The number of cases in which basic cinder has shown itself equal to superphosphate as a turnip manure are too numerous to be discarded. It might be thought that a summer application of a raw and "insoluble" phosphate could not influence the growth of turnips, but such is not the case. The turnip root fibres find a way to negotiate the phosphoric acid of the cinder apparently as easily as they do that of the superphosphate. Hence there seems to be no valid reason why basic cinder should not be applied in summer as well as winter—and in winter as well as summer. Now is a good time to apply it to grass land, especially grass land of a clayey character, and abounding in vegetable matter. Apart from the question above discussed, there is that of the advisability of applying basic cinder to pastures in summer. It is not so much whether the cinder will take effect upon the grass by promoting its growth. It is a question of grazing, for it would not be well to sprinkle a quantity of an impalpable dust like basic cinder over growing grass. It might choke the pores of the leaves and prevent free transpiration. But, more serious still, it might injure cattle grazing upon the herbage. Both considerations point to the advisability of applying basic

cinder to grass land in winter, i.e., from the present time up to about the end of February. Arguing from analogy, there seems to be no objection to the application of basic cinder to crops in summer, at cruciferae at least seem well able to avail themselves of its presence. On the whole, however, and after taking into consideration the comfort and well-being of the live stock, it would appear better to make all applications of basic cinder to grass land in December, January, and February.

JOHN WRIGHTSON.

"Ploughing; deep or shallow."—At a meeting, held somewhat in Ontario; but in what specific locality the correspondent of the "Farming News" does not say; Professor Roberts, of Cornell University, delivered an address on "Improved Methods of Agriculture," in which he used these words: "The trouble is, we do not plough deep enough." To this perfectly true assertion, the correspondent adds: "The reference to ploughing deep caused a very large smile among the disciples of the apostle of shallow cultivation. And, then, he adds: "In England, I am told, they are getting the best results from their steam ploughs by not ploughing with them. They use these to loosen the subsoil to a depth of 20 inches or more, but they do not bring this subsoil to the top.

Prof. Roberts said "he did not advocate bringing up the subsoil from the bottom. In the United-States, however, too many farmers plowed to a depth of 4 inches, where it would be better to plough to a depth of 8 to 10 inches. It is not wise to turn the milk-pan up-side down, though I would rather have 8 or 10 inches of good soil on the surface than 4 inches."

Well, people will not see! Nobody in this senses proposes to jump in a moment from a furrow 4 inches deep to one 10 inches deep; no one, dreams, unless he is incapable of reasoning, of bringing up 6 inches of raw clay from the subsoil and sowing a crop of grain on it in its unprepared state. The English system of deep-ploughing is carried out in this simple

way; supposing a new occupant is at work:

Taking the last crop of the rotation to be a grain-crop, the land is scarified, grubbed, etc., by horse or steam-power, cleaned in fact, and when the time comes for the autumn furrow, the previously shallow-ploughed land is broken-up with the plough about 2 inches deeper than it had been the custom to treat the land, and this is always done in preparation for a "manured root-crop," to be followed by 1. grain of some kind; 2. seeds, clover or a mixture; 3. wheat. The average yield of which crop in the country where this is practised is all but 30 imperial bushels to the imperial acre, that is a much greater yield than is produced here. In Scotland, where deep work is the rule too, the average is only a fraction short of 35 bushels to the imperial acre.

This treatment will bring the depth of the surface soil from 4 inches to 6 inches; the next rotation will bring it, with the same addition, up to 8 inches, and with that depth most English and Scotch farmers are satisfied. The sooner our folk follow the same route, the better it will be for them, their families, and their country.

ROAD-MAKING.

Next month the statute labour work throughout the province will be performed, and path-masters should arrange beforehand for it to be done in the most economical and efficient manner. The statute labor plan is not the best that could be devised for insuring permanency and system in road-making, and where it is followed every effort should be made to get as much and as good work done as possible. In the report of the Provincial Instructor in Road-making, just published, a list of instructions to path-masters is given, which we give below for the benefit of those interested:

1. Every good road has two essential features:

(a) A thoroughly dry foundation.

(b) A smooth, hard, waterproof surface covering.

2. The foundation is the natural sub-soil, the "dirt road," which must be kept dry by good drainage.

3. The surface covering is generally a coating of gravel or broken stone, which should be put on the road in such a way that it will not, in wet weather, be churned up and mixed with the earth beneath. That is, it should form a distinct coating.

4. To accomplish this:

(a) The gravel or broken stone should contain very little sand or clay—it should be clean.

(b) The roads should be crowned or rounded in the centre so as to shed the water to the open drains.

(c) Ruts should not be allowed to form as they prevent water from passing to the open drains.

(d) The open drains should have a sufficient fall and free outlet so that the water will not stand in them but will be carried away immediately.

(e) Tile under-drains should be laid wherever the open drains are not sufficient and where the ground has a moist or wet appearance, with a tendency to absorb the gravel and rut readily. By this means the foundation is made dry.

5. Do not leave the gravel or stone just as it drops from the wagon, but spread it so that travel will at once pass over and consolidate it before the fall rains commence.

6. Keep the road metal raked or scraped into the wheel or horse tracks until consolidated.

7. Grade and crown the road before putting on gravel or stone.

8. If a grading machine is available, grade the roads which you intend to gravel before the time of statute labor, and use the statute labor as far as possible in drawing gravel.

9. A fair crown for gravel roads on level ground is one inch of rise to each foot of width from the side to the centre.

10. The road on hills should have a greater crown than on level ground, other-

wise the water will follow the wheel tracks and create deep ruts instead of passing to the side drains. One and one quarter inches to the foot from the side to centre will be sufficient.

11. Repair old gravel roads which have a hard centre but too little crown and which have high, square shoulders, by cutting off the shoulders, turning the material outward and placing new gravel or stone in the centre. Do not cover the old gravel foundation with the mixture of earth, sod and fine gravel of which the shoulders are composed. The shoulders can be most easily cut off by means of a grading machine.

12. A width of twenty-four feet between ditches will meet most conditions, with the central eight feet gravelled or metalled with broken stone.

13. Wherever water stands on the roadway or by the roadside, or whereaer the ground remains moist or is swampy in the spring and fall, better drainage is needed.

14. Look over the road under your charge after heavy rains and during spring freshets. The work of a few minutes in freeing drains from obstruction or diverting a current of water into a proper channel may become the work of days if neglected.

15. Surface water should be disposed of in small quantities; great accumulations are hard to handle and are destructive. Obtain outlets into natural watercourses as often as possible.

16. Instead of having deep open ditches to underdrain the road and dry the foundation use tile.

17. Give culverts a good fall and free outlet so that water will not freeze in them.

18. In taking gravel from the pit, see that precautions are taken to draw only clean material. Do not let the face of the pit be scraped down, mixing clay, sand and turf with good gravel.

19. Gravel which retains a perpendicular face in the pit in the spring, and shows no trace of slipping is generally fit for use on the road without treatment. Dirty

gravel should be screened.

20. Plan and lay out the work before calling out the men.

21. When preparing plans keep the work of succeeding years in view.

22. Call out for each day only such number of men and teams as can be properly directed.

23. In laying out the work estimate on a full day's work for each man and see that it is performed. Specify the number of loads of gravel to constitute a day's work. Every wagon-box should hold a quarter of a cord.

24. Make early arrangements for having on the road when required, and in good repair, all implements and tools to be used in the performance of statute labor.

25. Do all work with a view to permanence and durability.

"Farming."

TREATMENT OF MANURE.

In an article published in the "Journal" of the 15th December, we discussed the comparative merits of fresh and rotted manure more from a theoretic than a practical standpoint. We quoted however the results of careful and practical experiments, showing that manure by fermenting loses a large percentage of its weight, and if uncared for, also a large proportion of its fertilizing elements, but this loss of plant food being not in proportion to the loss of weight, well rotted manure is considerably richer, ton per ton, than fresh manure. Another experiment recently conducted at Ottawa, strikingly illustrates this point. Four tons of fresh manure were left exposed during twelve months on a wooden platform and analysed and weighed from month to month to ascertain the changes which took place during that time. At the start this manure contained per ton 12 lbs. of nitrogen, 6.2 of phosphoric acid, and 15 lbs. of potash, or a total for the 4 tons of 48 lbs. of nitrogen, 25 lbs. of phosphoric acid, and 62 lbs. of potash. After 6 months of exposure, though kept thoroughly compacted

throughout the experiment, the heap had lost to the weight of 4,124 lbs., or practically half of its original weight. Chemical analysis revealed that it still contained 33 lbs. of nitrogen, 22 lbs. of phosphoric acid, and 44 lbs. of potash. Therefore a ton of this rotted manure, compared with the fresh one, contained 4.1 lbs. more of nitrogen, 5 of phosphoric acid, and 7 of potash. It would be then reasonable to expect that, if applied to the land, a certain weight of this manure would give better results than an equal weight of fresh one, as the former would bring far more plant food for a given area of land.

In order to determine whether the surplus of crops obtained would be proportional to the greater contents of rotted manure of plant food, a series of experiments were also conducted at Ottawa during the last ten years. The results were rather surprising: fresh manure was shown to have as great a fertilizing value, ton per ton, as rotted manure.

Such an experiment, however, would need to be carefully examined before practical results might be drawn from it. Or the report lacks in details on the most essential points. All that we know is that an equal mixture of horse and cow manure was applied fresh at the rate of 15 tons to the acre on plots of 1-10 of an acre each, and manure of the same composition, kept until it was well rotted, was applied at the same rate on contiguous plots of the same area. The land was a "sandy loam more or less mixed with clay." The manure was applied and lightly plowed under just before sowing. As to the way the manure was cared for while fermenting, not a word is said about it, though undoubtedly the manner in which it was kept must have influenced a great deal on its composition. No chemical analysis being made of it, we do not know its contents. Assuming, however, that it was treated in the same way as the heap in the experiment quoted at the beginning of this article, and that it had after 6 months rotting the same composition, 15 tons of this manure would bring to the soil

approximately 297 lbs. of nitrogen, 165 lbs. of phosphoric acid, and 330 lbs. of potash, all of which are supposed to have become "more available" during the rotting process. On the other hand, 15 tons of fresh manure would have brought to the soil only 180 lbs. of nitrogen, 90 lbs. of phosphoric acid, and 225 lbs. of potash—considerably less of each element. The following are the averages of yield for the different crops experimented with; for eleven years:

	Well rotted manure. Bushels.	Fresh manure. Bushels.
Wheat.....	20.56	20.52
Barley.....	34.34	35.21
Oats.....	48.14	54.12
	Tons.	Tons.
Corn.....	16.240	17.724
Mangels.....	23.212	22.269
Turnips.....	15.196	15.854
Carrots.....	19.753	20.930
P.atoes (after wheat)	bush. 292.10	bush. 222.30
Potatoes (after ba ley)	bush. 217.10	bush. 233.20

These results strike us at first as not being very large for such a heavy rate of manuring. In experiments conducted at Rothamsted on the lasting influence of farm yard manure, land which received yearly 14 tons to the acre, gave an average for twenty years of 49 bushels of barley. However they give us the comparative merits—and in very unexpected manner—of fresh and rotted manure. Must it be concluded that fresh manure owes its equal fertilizing value to the larger amount of organic matter which it contains, for the experiment shows that in 6 months rotting exposed manure has lost 65 p.c. of its weight of organic matter? At all events, this experiment is striking enough to be presented in full to the readers of the "Journal." It shows that practice does not always agree with theory.



THE ABSOLUTE NEED OF FALL PLOWING AND EARLY SOWING OF SPRING CROPS.

Ed. "Hoard's Dairyman":—I do not know how it is in a very large part of the United States but in the eastern states and provinces the necessity for early sowing of all crops is becoming more important every year. In an extended trip through the eastern states and provinces in the last two weeks, this truth was brought home to me very forcibly. Where spring crops are almost wholly grown the necessity of fall plowing and the early sowing of all spring crops becomes more apparent every year. This year and last the late crops were caught by storms and utterly ruined.

Before leaving home, the first week in September, our crops were almost all harvested except one large field which gave promise of a bountiful crop. This field was not very late. In fact, much of the crops in those parts which were spring plowed, was sown about the same time, and in traveling through the other provinces, I could see for myself that lots of the crops were sown about the same time. But like last year, this moderately late sowing has been utterly ruined by the storms. This year the storm came a few days later than last year, but it has come in time to destroy fully one-third of the spring sown crops in eastern Canada. Last year the destructive storm came a week earlier than this. This year it came on Sept. 12th, and was felt to be the worst storm in twenty years. I was in Nova Scotia at the time, and on returning home could see the terrible havoc made. On returning home, this field of my own—a fine crop—was utterly destroyed, making it almost impossible to harvest. Last year fully half our crop was destroyed by the storm.

Now all this is a lesson to myself, at least, and I think should be to most of your readers in the eastern states and eastern Canada; we have been able to combat dried up pastures, flies, heat and

cold, but to combat the elements is a more difficult matter. But I believe it can be done. There is little use to think of keeping cows or even increasing our herds, if the fall and winter feed is destroyed each year. The matter of feed is an all important question with dairymen.

On account of the frequency of those fall storms the corn crop is a very uncertain one unless put in the ground very early, and even then the crop will hardly be fit to cut in these parts much before Sept. 15, and that probably is too late. From my own observation and experience, while I appreciate the corn crop and while many leading dairymen consider it indispensable, yet I think the surest crop for dairymen in Eastern Canada to bank on is cereal and root crops.

Root crops possess the advantage over corn in that the fall storms do not injure them. Just now, after the severe storms of the 12th the root crop seems uninjured; in fact the rain which accompanied it greatly helped the crops of turnips and mangels.

Regarding cereal crops, there is a certain possibility that almost all cereal crops, as oats, peas, barley, and wheat, millet, buckwheat, etc., can be grown with safety, but the "sine qua non" of successful crop growth—and the lesson which I desire to impress upon your readers is—to sow early.

To this end, all ground for spring forage and grain crops must be plowed in the fall, in order to have the seed put in the ground sufficiently early in the spring, so that the crop will be matured before the period when there is a likelihood of fall storms taking place.

No time, then, must be lost in starting the plows and turning over every inch of land intended for spring seeding. For growing grain crops, October is the best month to do the fall plowing. It is a better month than September for plowing for spring grain crops, as oats, peas, barley and wheat. The first half of November is often good, but in the Eastern Canada, if an early winter sets in, late plow-

ing of sod land is never a success.

If late fall plowing is to be done, in all cases plow weak land, as grain or other stubble. If the plowing for spring grain crops is done so early as September, weeds, grass, etc., make too much growth during the fall and spoil the chances for a good spring crop. October, then, is the month for plowing land for spring crops. Let your readers take heed, and plow all the ground possible for the coming spring crops of grain, and be thereby able to get the seed in the ground sufficiently early in May to have the crops matured before the fall storm that's sure to come, destroys the crops. Fall plow, fall plow! Sow early, sow early!

For the corn crop, October is too late a month to fall plow. Land intended for corn should be plowed in September, if at all. My idea of fall plowing for the corn crop is to plow a sod in September, preferably early in the month, and sow to rye and vetch, to be plowed under as early in the spring as the ground is fit, barn yard manure to be spread heavily on the ground during the winter and plowed under with the rye-vetch or cover crop. Cultivate them every few days for two weeks, and plant shallow. In this way the crop can be in by the 15th of May, and will be, possibly, matured before serious fall storms take place. But this procedure will not do now, as the time is past for plowing.

For the corn crop, when early fall plowing has not been done, the best way, as far as I have been able to determine, in order to get the crop in the ground early, is to this fall select a piece of clean, mellow grain stubble, where oats or barley grew. Manure heavily, not less than 20 tons per acre of good manure, this winter. Plow under very early in the spring, not more than three and four inches deep. Harrow thoroughly and again in a week's time. At the end of another week harrow again and plow deeply about seven inches. In this way the manure will be brought near the surface and the ground worked deeply. Harrow smooth and roll, and get

the seed in as quickly as possible. In this way it is possible to get the seed in the ground by May 20th, and, perhaps, a few days sooner.

The manner of sowing is important. After my experience this year I would never plant in hills again. This last spring I planted in hills, 30 inches apart each way, dropping four kernels in the hill. As the marker made but a light impression on the ground, the seed was dropped almost on the surface, and pretty good sized hills had to be made to cover sufficiently. This precluded harrowing. A Breed weeder might possibly be used but I had none, and I could not risk to harrow for fear of tearing out the plants.

The result was, that a hard rain came soon after the corn was planted, and much of the seed failed to germinate. By planting in drills, harrowing may proceed every few days and particularly after every rain, keeping the ground mellow and the surface open. In this way the sun can furnish the necessary warmth, and a good percentage of germination is almost certain. Drill planting, then, in eastern Canada is a matter of necessity and is indispensable to early planting, for when the corn is planted early in spring, harrowing, to keep the surface open and mellow every few days in the early part of the season, is of absolute importance for a successful crop. But as early planting calls for frequent loosening of the surface, the common spike harrow is too rank an implement to use so often as is necessary soon after planting which is oftener than once a week. A weeder such as Breeds, or one like it, is required. I never expect to get along another season without one of those weeders. For I think early sowed grain crops need such an implement as the weeder as well as corn. Early sown grain must be put in the ground before there is time to give the land a thorough cultivation, and I often think that thorough harrowing of the "onion bed" condition is a great waste of time in early spring seeding. After all your efforts to make a good seed bed, a heavy rain may come and run

that soil into a brick condition, making it worse than when only partial cultivation was given at the time of sowing. Here is when the weeder comes on, to go over that ground after a hard rain and loosen up the surface. Again, when the spring is cold and backward and weeds are making more progress than the crop, a scratch or two of the weeder will loosen up the surface, facilitate warmth and kill all weeds. Cultivation—light weeder cultivation—is very important to the success of early sowed crops of grain as well as corn.

In conclusion then, success with our forage and grain crops next year calls distinctly for (1), fall plowing; (2), early sowing; (3), frequent cultivation of all grain and forage crops with a weeder such as Breed's.

"In times of peace prepare for war."

(1)

J. A. M.

Hermanville, Canada.

(1) Worthy of all attention. Ed.



Automobile-mower at work.

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

We have duly honoured the great Festival of the year 1900.

With it ends the great century of wonders, in which the world at large has every reason to be proud that they have been privileged to live.

The starting of a new year is a sort of new life in many years; worries forgotten,

for the time being, are sure to turn up again; picking up the tangled thread of duties, and bringing them into working order once more, is a duty which few escape after great festivities.

In some cases it is just as well that there are duties to take the mind from dwelling too much on the past, and forgetting present blessings. There is no better cure for a morbid mind than constant activity, work of any sort, to keep the mind from roaming.

The mother of a large family is often a

very jolly person, she has little time for worry, and seems to enjoy herself as long as she sees her numerous flock happy and contented. She has them before her every hour of the day, she has to listen to their many little disputes and deal out to the best of her power justice to all; to comfort the ailing and in fact to be a source of dependence in any emergency.

These duties fill up her days and when night comes blessed sleep, without stint, takes her to a well earned rest.

Many young people of to-day grow up with the selfish idea that there are certain duties which mothers do for them, but it never occurs to them that many of these might be done by themselves, such as mending their own clothing, darning stockings, putting on fastenings where needed, little things, which seem small, but when done by one person become quite formidable, as might easily be seen any week when the stockings from the wash come to be darned.

The invention of the safety-pin is a source of great comfort to the idle and careless, who are so often caught in a trap of their own neglect. There is nothing some girls will not resort to save themselves from using a needle and thread, but just how they manage to get along without them is a source of wonder to the tidy ones. But such is a fact. A kind friend tried for a whole year to induce a young servant to mend and make for herself, but found the task perfectly hopeless.

It would be a good thing if the schools would take up the idea and carry it through, so as to make it a part of the education in a school. It is a sad thing to hear a girl confess, in these times, her ignorance of the first thing how to sew a button on, and that a button-hole is a mystery beyond them. Duty to those who do these things for themselves calls for admiration, while others rejoice at their ignorance of such trifles and prefer to pay

some one to do it for them, never thinking a day may come when they may have to fend for themselves.

SCALLOPED OYSTERS.

Butter a dish and sprinkle on the bottom a layer of bread crumbs; cover this with oysters and put in little pieces of butter and season to taste; then a layer of bread crumbs and oysters till the dish is filled, having the bread and seasoning and butter on top. Use bread sparingly.

AFTERNOON TEA SANDWICHES. CHICKEN SANDWICHES.

Ingredients:—

1-2 lb. cold chicken.

1 oz. butter.

1/2 teaspoonful pepper.

Grated nutmeg and salt to taste.

A small teaspoonful lemon juice.

1-2 teaspoonful minced parsley.

2 ozs. minced ham.

1-4 teaspoonful minced lemon peel.

Method: Either boiled or roasted chicken may be used. In either case the skin is removed and the meat passed twice through the mincing machine; it is then pounded in a mortar with the other ingredients; when thoroughly mixed it is ready for use. White bread is correct for these sandwiches; it is lightly buttered, one half spread with the chicken paste, then covered with another slice of the bread, and made up in the usual way. Prettiest cut into triangular shapes.

ROLLED SANDWICHES.

Ingredients:—

Slices of bread, an eighth of an inch in thickness.

1-4 lb. cold chicken.

2 ozs. cooked tongue.

3 tablespoonfuls of mayonnaise sauce.

Method: Mince the chicken and tongue very finely with a knife, or, better still, pass it twice through the mincing machine. It may be seasoned a little, and is then mixed with sufficient mayonnaise sauce to make a paste. Cut the bread into

squares of 4 inches, spread with the paste (no butter is required), and roll up tightly, pressing them under a light weight for a few minutes until they will keep in shape. To make the mayonnaise sauce, break the yolk only of an egg, into a deep basin; then stir into it, drop by drop, 1-2 gill or more of salad oil. If well stirred, the mixture will become quite white and thick; when this is the case a little vinegar (tarragon or plain—the former is the best) is stirred in. Less quantity than this cannot well be made; but probably it will not all be required for this dish.

A NURSERY PUDDING.

An old friend in a new guise is lemon rice, and it will, I am sure, be very acceptable as a change for the children's dinner. Wash a teacupful of rice in several waters. Place over the fire with sufficient water to cover it, and simmer gently. To this add the thin yellow rind of one lemon. When the rice becomes tender, add a good-sized lump of butter and sugar to sweeten. In the meantime squeeze the juice from two lemons and pare the other lemon very thin. Cut this yellow peel into tiny pieces or chop it finely. Place over the fire half a pound of sugar and half a gill of water with the strained lemon juice and the peel. Boil this syrup for ten minutes. Pile the rice on to a dish and pour over it the syrup, taking care the little shreds of lemon peel are equally distributed over the whole.

THE LAST NEW FAD.

Perhaps you do not know that perfumed hair is the "correct thing" for those who slavishly follow the dictates of Madame mode. There seems to be various ways of scenting one's locks, and one of them is to use a highly scented shampoo powder when washing the head; another method is to brush the extract of musk or some such scent into the hair daily. The most effective method I know of to impart a perfume to anything is to buy a piece of *peau-d'Espagne* (costing about 2s. 6d.

from any good perfumer), this will cut up into a lot of small pieces, and sew them into the hair frames which are much used in the hairdressing of the present day. This fragrance is very lasting, and the hair will, in time, become delicately perfumed. Some ladies wear a muslin cap lined with cotton wool thickly sprinkled with sachet powder. This, if occasionally worn for an hour or two, will impart a delicate odour to the locks of anyone desirous of being up-to-date in this matter.

TO ENCOURAGE THE LITTLE ONES TO SEW.

INDESTRUCTIBLE DOLLS.

All mothers and nurses know that a toy which a child has made or helped to make itself is a much more cherished possession than a more elaborate one which has been bought and presented to it. American clothes pegs will make a whole series of dolls, which little girls will take much delight in dressing and will find occupation for them when the weather is unfit for out-of-door recreations. First prepare the clothes peg by covering the round end with a wad of cotton wool, to make it spherical, stretching over it a piece of white calico, which is drawn tightly down and tied with thread around the groove of the clothes-pin. Stretch the calico on one side as smoothly as possible, and there mark a face in ink. Black strokes from the pen over the rest of the head form hair. Then fold a little piece of stout white calico into a band, pass it around the clothes-pin, and sew it very strongly up and down, fastening it also to the ends of the cloth that have been left below the neck. Little rolls of cloth fastened to this band form arms. This much it is well for the mother to do, that it may be strongly done, then the work of dressing can be given into childish hands.

A schoolgirl doll, with a white apron; a baby doll, with a tight little cap and a long petticoat and muslin robe; a grand lady with a train; a Chinese boy, with loose trousers and long upper sacque; a

nurse, with cap and apron; a Quaker lady, with grey dress and bonnet and white kerchief—all these can be fashioned out of clothes-pin dolls, which are positively indestructible if the sewing is strongly done.

HINTS TO REMEMBER AND KEEP FOR THE YEAR 1901.

Bad associates and good manners never affiliate.

A kindness should always be remembered, and a confidence sacredly kept.

Punctuality in keeping appointments is a cardinal virtue.

Young people should be prompt. Tardiness is truant to the best interests of life.

Be careful of your speech as of your actions. Be sure to pronounce correctly and enunciate distinctly, in a chest voice, avoiding shrill notes and nasal tones.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

INSECTS INJURIOUS TO VEGETATION.

(Continued).

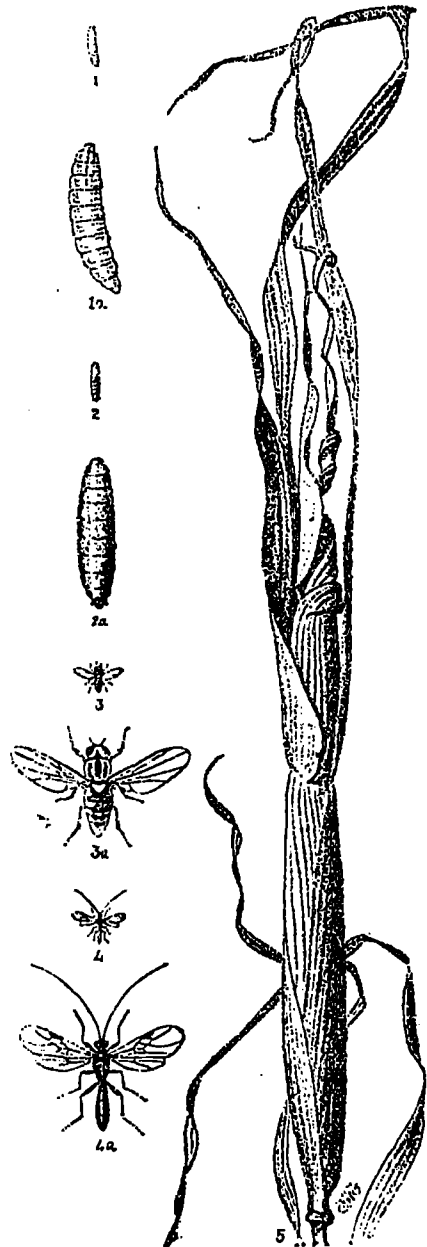
The maggots of this fly, which is sometimes called the "Gout Fly" cause an immense amount of harm to grain crops in some seasons.

The fly is very small, being only about one sixth of an inch long. (Fig. 3 natural size. Fig. 3a, magnified).

The larva or maggot (Fig. 1, natural size, Fig. 1a, magnified), has no legs; it is about one-fifth of an inch in length. White changing, in time, to pale yellow. When the larvae comes from the eggs which are laid on the leaves in May, they pierce their way through them directly to the base of the ear, and feed upon its sweet juices, and checking its growth, prevent it from pushing its way through the leaves.

Before the larva changes into the pupa,

or chrysalis state, which it does in about two weeks. (Fig. 2, natural size. Fig. 2a, magnified), it makes a channel, or furrow, down the stem to the first joint



THE RIBBON-FOOTED CORN-FLY.
(*Chlorops tenuipus*).

and changes there to a chrysalis, or in the folds of the sheathing leaves: (Fig. 5).

There are two broods of this insect each

year. The eggs of the first brood are deposited upon grasses, and upon early sown grain.

Prevention.

Keep land clean from couch-grass or other grasses which harbour the insects. Keep the land rich and well cultivated, and sow early in order that the crop may grow rapidly and vigorously away from the attack.

Remedies.

Nothing can be done in the way of remedies but to stimulate the infested plants with liberal dressings of nitrate of soda, or sulphate of ammonia, or guano, in order to encourage rapid growth, and to force the ears from the sheaths.

Natural enemies.

From a large percentage of the pupae-cases of the Ribbon-Footed Corn-Fly kept in grass-covered boxes, (1) a parasitic hymenopterous fly came forth. This fly (Fig. 4 natural size, 4a magnified) is known as "*Coelinus niger*," a pretty brown insect about a quarter of an inch long, with brilliant wings. In the body of the corn-fly larva it places an egg, from which a larva is hatched, and feeds upon its host.

There is another fly, "*Pteromalus micans*," which is parasitic in a similar manner upon the Ribbon-Footed Corn-Fly, and is described by Curtis as being very destructive to it.

ODDS AND ENDS.

The reckless and wanton destruction of forests has ruined some of the richest countries on earth.

(Sir John Lubbock).

Be careful not to wound a tree, an animal, even man himself, recovers from a wound or an operation more rapidly, and more perfectly than a tree.

(Sir J. Paget).

(1 Hymenopter is a fly or insect of which the wasp and bee are types. This one is a parasitic fly which lives upon the Ribbon-corn-fly as does the other one mentioned below.

Flowers which contain the most honey are usually tubular.

Flowers which are fertilized by moths, usually bloom in the night, and are of a colour easily seen in the dusk, as white or pale yellow, and often are highly perfumed, probably to attract the insects which are as necessary for their reproduction as the honey they contain is to sustain the life of the moth which collects it.

Boston Public Garden will have, next season, 164 beds of Tulips, the largest of which contains 500,000 bulbs. 100,000,000 bulbs will be used in all, beside 10,000 Hyacinths, 10,000 Scillas, 40 beds of crocuses, also 20,000 which are planted in the grass; these will be immediately succeeded by a show of Pansies and Daisies which are planted between the bulbs.

FAMILIAR TERMS.

It may be interesting to trace the meaning and origin of the terms and names of things and processes in daily use.

The term "acre" originally meant merely an open field unlimited in extent, until the reigns of Edward the third and Henry the eighth, when an acre was defined by Statute to be a piece of land containing 160 square rods or perches, or 4,840 square yards, this is still the size of the English and United States acre, but the Scotch acre is larger.

Rod, perch or pole, is a measurement of length, 5 1-2 yards long and the origin of this peculiar length is thus accounted for by Sir John Lubbock in his admirable work "*The Beauties of Nature*" 1893, Macmillan & Co., publishers.

"The "acre" is the amount of land "which a team of oxen was supposed to plough in a day.

"The furlong or long "furrow" (220 yards) is the distance a team of oxen "can plough conveniently without stopping to rest. Oxen were driven, not "with a whip, but with a goad or pole, "the most convenient length for which "was 16 1-2 feet, and the ancient ploughman used his "pole" or "perch" by

“ placing at right angles with his first furrow, thus measuring the amount he had to plough. Hence, the “ pole ” or “ perch ” of 16 1-2 feet, which at first sight seems a very singular unit to have selected.

“ But this width is convenient for turning the plough and also for sowing, (when this was also broad cast). And the most convenient piece of land for arable purposes, was a furlong in length and a perch or pole in width.”

In describing the career of the Potato beetle, Prof. Tower relates that during the rush of the gold seekers to California, in 1849 and 1850, the emigrants lost, and threw away potatoes which took root and grew until there was a continuous line of them from Council Bluffs to the canons of Colorado. The Beetles which had been previously confined to Colorado took advantage of this and invaded the east.

This accounts for the reason why Potato Beetles were not known here previous to the above dates.

Though we can never “ remount the river of our year ” he who loves nature is always young.

The Baobab of Africa (*Adansonia digitata*), named after Adanson, a traveler of the 17th century, is said to be the largest tree; it does not grow so high as the gum tree or the Sequoia, but to a height of 70 feet, and covers twice that diameter with its branches. It is calculated by De Candolle to have attained the age of 6,000 years.

Nature is beneficent, she not only supplies us with all that the body requires, but refreshes the souls of those who love her, with food for reflection and gratitude.

That man misses a good deal of the charm of life who sees nothing in the Horse but his money value, nothing in the sheep but wool and mutton, nothing in the fields but sacks of grain, nor in the meadows but tons of hay.

Leaves are well called the lungs of the tree; to look casually at a leaf one could scarcely imagine that this could be examined by means of a microscope, they

exhibit a marvelously complex structure, on the skin or epidermis are a number of fine hairs seated on a layer of cells flattened, and below these are lengthened cells, which are supposed to regulate the quantity of light entering the leaf. Under these, are layers of rounded cells with air spaces between. Among these are hollow fibre-bundles which form the skeleton of the leaf, the under surface of the leaf is formed by another layer of cells and hairs, having openings or “ stomata,” leading into the air passages. These stomata are so small that there are millions on a single leaf; and the whole is a marvelous contrivance of nature for the aeration and elaboration of the sap ere it is assimilated by the tree.

The Dairy.

CHURNING.

General knowledge of churning may be said to be entirely of a practical nature, at the same time there is no doubt that theory can and does help many to understand the process more thoroughly. If theory went hand in hand with practice a little more, the changes which take place in the churn during churning, from the solidifying of the fat of the individual fatty globules of the milk, to the appearance of the little lumps of butter about the size of pin-heads, and the individual circumstances which influence the firmness, and percentage of water, in the texture of the raw butter, would be better understood. Nearly all the rules for churning have been drawn from practical experience alone.

Experience demonstrates that butter of the best quality and having the best keeping properties, contains about 13 or 14 per cent of water. It is neither soft nor oily, nor on the other hand is it hard or friable, but possesses an average degree of softness and a characteristic texture of grain, by which its origin from countless quantities of individual fat globules and small lumps

of hard fat can be easily recognized under the microscope. But this uniform quality can only be obtained when churning is carried on during neither too long nor too short a time, and when the concussion is neither too fast nor too slow. Experience proves that best results are obtained when churning occupies from thirty to forty minutes, a period which is only directly limited by the exact violence of the movement and the exact temperature of the liquid which is being churned. Thus, within certain narrow limits the violence of the motion is in inverse proportion to the height of the temperature, so that with a more or less violent concussion the same effect can be produced as can be effected by a corresponding increase or decrease of temperature. The art of making good butter from good ripe cream consists chiefly, for the reasons I have given above, in so regulating the temperature of the liquid for each individual churn and quality of cream, and for quality of cream and churns of different kinds, that the production of the raw butter is effected in the prescribed time. Butter almost entirely receives its texture and its consistence in the churn during churning, and defects which are produced during churning, are most difficult to get rid of afterwards.

The obstacles which retard the union or the coalescence of the butter globules to form the lumps of fat are decreased with an increase in the temperature of the cream; and the more violent the concussion, even to such a degree that heat is produced, the more easily are they overcome.

Where churning is done too quickly, either through too high a temperature or too violent a concussion, the little grains of raw butter do not separate easily, but include, besides the solidified fat, fatty globules which are in the liquid condition, and I feel sure, that the little grains of fat take up more butter-milk, in the form of tiny microscopic drops, the quicker they are formed. It is evident, too, that if the little lumps of butter contain liquid fat, which is only solidified by the subsequent

treatment of the raw butter, and which becomes smeared between the previously solidified fat, the granulation of the texture is partly injured, and the finished butter must show a soft salve condition. In the same way, butter, which has taken up too much liquid in the churning, will be soft, and will contain an unusually high percentage of water, since, even after successive workings, only a small quantity of this water can be driven out, because it is present in the butter in such a fine state of division.

If butter does not "come" satisfactorily within the prescribed time, it is an indication that the temperature is not sufficiently high, or that the concussion is not sufficiently violent.

If the temperature is found to be more than two or three degrees higher at the conclusion of the churning, it cannot be expected that the little grains of butter will be of uniform nature. It is more probable that, in such a case, the limit of time is considerably exceeded, and owing to the weak motion in churning the raw butter will include much liquid fat, and that owing to the final quick churning at the raised temperature they will contain unusually large quantities of butter-milk. My experience shows that oily butter is obtained by too quick as well as by too slow churning, and not only does the quality of the butter suffer in such a case, but the yield of butter is also diminished. The motion of the cream in the churn is always closely connected with the development of temperature, the quicker the motion, the more does the temperature, which the cream originally had, rise, a fact which we have to reckon with in churning. The rise of temperature should not exceed 3 deg. F.

The following rules or points might be observed to advantage in churning.

In the first place, bring your ripened cream exactly to the temperature which, from experience, you know will effect churning in from thirty to forty five minutes. This temperature is by no means the same for similar cream in each place

and for each kind of churn, or even in the same creamery and for the same churn throughout the year, but varies according to different conditions. The size, the special arrangement of the churn, especially the speed with which the cream is churned, the quantity of the cream in proportion to the cubic contents of the churn, and the season of the year, will all influence it. During churning, nothing should be done to regulate the temperature. Cream from the milk of cows far advanced in their lactation period, on account of being more difficult to churn than cream from the milk of cows newly calved, must be churned at a higher temperature, and, as is to be expected, the yield in respect of quantity and condition of the butter is not very satisfactory. If in winter the room in which churning is to be carried on is not warm, or in summer summer is not cool enough, the churn should be cooled or heated before churning, in order to prevent change of temperature of the cream when it is run into the churn.

If the butter has to be coloured, carefully measure the required amount of colour, calculating the amount required from the amount of milk received for that churning, one ounce or one spoonful for a certain amount of milk, which amount can be determined after a couple of churnings.

Bear in mind, however, that colouring butter is far from being an improvement to the quality of the butter, and is really a filthy custom, and appeals alone to the sense of taste through the eye.

Mix the colour with the cream immediately before churning is commenced, taking care that none of the colour may come into contact with the wood of the churn and thus be lost, besides disfiguring the churn. I think it a good idea, to keep a daily register of the initial and final temperature of the cream and the length of time of churning ought to be kept, and this register ought to furnish a useful table of reference for judging of the best churning temperature, the most favourable churn room temperature and the correct speed at which the churn should revolve.

H. WESTON PARRY.

Compton Model Farm Creamery, Jan. 3rd,
1901.

REVIEW OF THE DAIRY SEASON 1900.

To the Editor of the "Journal of Agriculture."

Dear Sir,—Knowing that the great majority of your readers are engaged in farming, and more or less in the dairy business, a résumé of last year's operations will not be out of place.

I notice that some papers have fallen into error by saying that the past season was the best season in the history of the cheese trade as regards high prices.

The years 1873, 1880, 1881, and if I do not make a mistake, 1887, were years that the price of cheese for the whole season was a good deal higher than 1900.

I admit that last season was a good one, perhaps better than we shall have for a few years to come. There are a number of years besides the ones I have mentioned since 1873 that the price will equal the past season's, but owing to drought or other causes, the farmers were not in such a position to take advantage of the good prices.

Take the year 1880 for instance. In 1878 and 1879, the price was very low especially the latter year when first quality of cheese sold all the summer at 5 to 5 3-4 cents a lb., a great many farmers said the cheese business was over done and sold and killed off their stock of cattle so that in 1880 the price of cheese rose to an average price for the whole season to 11 1-2 and 11 3-4 cents per lb. It took the most of the year to pay old debts and in the fall the farmers were hardly aware that such prices were realized by their depleted pocket books. Some farmers who fed well and had faith in the dairy business made over \$50 per cow for a season of 6 1-2 months. The shipments last year of cheese and butter, were not equal to 1899, the only reason I can give for the discrepancy is that there is much more of both on hand than at the close of navigation in 1899.

The butter shipments are some 200,000 packages less than the year before, which was the banner year of butter shipments; while the shipments of cheese were some

257,830 ahead of 1899, if this were the total, the milk crop must have been much lighter than 1849, but I can hardly conceive such a thing. The early part of the season 1900 was not quite so good for grass as 1899, but the season after the 1st of September was much better, in fact, could hardly be beaten.

The shipments of cheese to the close of navigation from Montreal and Portland were 2,173,092, as per the figures of the "Trade Bulletin," and the estimated stock on hand, 350,000, making nearly 21 millions of dollars at the estimated value of \$8.25 per box, this only from the provinces of Quebec and Ontario, as the quantity made on Prince Edward Island was mostly shipped direct to Great Britain. The butter shipments were a fraction over 2 1-2 millions of dollars, making a grand total of 23 1-2 millions; and counting the quantity used in our large cities, would represent a grand total of 25 millions all told; a very handsome sum that the farmers realized in cash for their produce. This amount being received just after 2 years of fair prices, the 1899 one being a good year, the farmers pocket books are full and plenty to spare, to pay off obligations outstanding for years. It is no wonder land has gone up in price.

The make of cheese for Prince Edward Island was about 3-4 of a million with the output of butter making a grand total of one million, a tidy sum for the tight little sea girt isle. The make of cheese and butter in Nova Scotia, New Brunswick and the North West Territories and Manitoba were not needed for export, but were used for the home market. Take the whole Dominion, the cows must have brought in cash for their one product, milk, the large total of 30 millions of dollars. No wonder the value of cows has advanced to such a price, they are the means, if properly cared for, of working a great revolution in farming. I am sure, if the poor cow could speak, she would be giving a vote of thanks to those who have been advocating better care, and not standing on the lee side of a barb wire fence the greater part

of the day, and going down on their knees on the river to try and get a mouthful of ice cold water with the thermometer below zero! But times have changed for the poor cow, give her a chance and she will do her part.

Yours truly,

PETER MACFARLANE.

Chateauguay, December 31st, 1900.

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES.)

LATE HATCHING.

The late chicks are sometimes more profitable than the early broods, for the reason that as they are hatched after the weather becomes warm they do not require much attention. It may be mentioned, however, that many farmers object to late-hatched chicks, because they assert that they are attacked by lice when young, and do not thrive. That the younger chicks will not withstand the attacks of lice, which are more numerous after the weather becomes warm, is true, but it is the duty of all who expect to make profit from chicks to keep lice away, as it is not difficult to do so if the work is begun early. The cost of raising late chicks, when they can get grass, insects and curds in plenty, is almost nothing, and there are but few losses from exposure. Chicks hatched in June, July, or even as late as August, are preferred in market to fowls; but such chicks are sold when they weigh about two and one half pounds each, and they bring from fifteen to twenty cents a pound according to quality. It is a mistake to cease hatching chicks because spring has passed; and even if it is difficult to ship them to market they may be consumed at home; but in all sections where there are large cities that can be easily reached, late chicks that are fat and in good condition will sell rapidly, as there is a demand for such every fall. Sitting hens may be put to good service in summer at hatching broods.

NESTS.

In constructing nest boxes, three points should be kept constantly in mind: (1) The box should be of such a nature that it can be readily cleaned and thoroughly disinfected; if it is removable so that it can be taken out of doors so much the better; (2) it should be placed in the dark, or where there is only just sufficient light for the fowl to distinguish the nest and nest egg; (3) there should be plenty of room on two or three sides of the nest. It is a well-known fact that some hens in seeking a nest will always drive off other hens, no matter how many vacant nests may be available. If the nest is so arranged that it can be approached only from one side, when one hen is driving another from the nest there is likely to be more or less of a combat, the result of which is often a broken egg. This, perhaps, more than any other one thing, leads to the vice of egg eating. To our knowledge, the habit of egg eating is not contracted where the nests are arranged in the dark and open on two or three sides. Nests for Leghorns or Hamburgs may be made of 6-inch fence boards nailed together so as to form boxes 8 by 10 inches and 6 inches deep. Where perches are arranged with the platform underneath to catch the droppings, as previously described, the nests may be placed on the floor underneath this platform, the opening in front closed with a door which either lets down from the top or lifts from the bottom. Where nests are placed side by side it is necessary to have the partitions between them of sufficient height so that it will be impossible for a hen to draw eggs from one nest to another. Whenever the nest boxes are filled so full with nest material that a hen can draw an egg from one nest to another, some of the eggs are likely to be broken.

**ARTIFICIAL INCUBATION.**

Some readers of these columns may be testing artificial incubation for the first time and meeting with some trouble. First, it is a thing that cannot be learned by reading alone, but requires a great amount of careful practice and thinking. I found upon my first attempt, that my knowledge on the subject was exceedingly limited, even after having carefully studied it in books and papers. However, I must say that I gained much information from these sources which would have lost me much time and trouble had I relied wholly upon my own experience.

In purchasing an incubator, get a good one. I know of no cheap machines that are worth using. Poor eggs will not hatch. You may be having trouble with the eggs not hatching well. This is due to many causes. Poor eggs, eggs that have been handled with greasy hands, and old eggs never hatch well. Finding full grown chicks in many of the unhatched eggs, generally is due to chilling by opening incubator too often while hatching, to a weakness inherited from the parents, or to having used too much moisture. The first two difficulties can easily be corrected, but the last one is hard to understand.

Too little moisture is also bad on a hatch, so that to know just how much is required is quite a puzzle. I found that I had been using too much moisture, so I decreased the amount till now I use but very little and that not till the last few days of the hatch. Nature has so arranged the constituents of the eggs that but little moisture is needed where the ventilation is not too great. The egg has more moisture than is necessary to produce the chick, and this over amount and no more, must be taken out. So during the first few days of the hatch no moisture is needed, as too much water causes the chick to become too large to turn in the shell so as to pick its way out. After it is evaporated from the egg, just enough moisture is needed to keep the air in the incubator thoroughly saturated so that not another

drop can be evaporated from the egg until it is hatched.

To know when the right amount has been evaporated requires careful watching of the results of each hatch. I generally wait until the egg is about one-third occupied by the air space as seen by our egg tester. At the close of the hatch too much moisture cannot be used as it keeps the membrane beneath the shell tender so as to be broken easily by the chick. Never sprinkle the eggs with water, but let the water sit in flat pans and evaporate.

The Horse.

CHAPPED HEELS.

Cracked heels are brought about by chaps, and chaps by washing and sudden changes from cold to heat, and "vice versa," but in some horses there is a tendency to chapped heels, the skin being sensitive alike to summer dust and winter chills; such animals are a frequent source of trouble, and buyers should object to old scars, which are said to have been "caused by getting the leg over the halter"—an accident which may happen, but not more often than these lumpy knees which sellers declare to be the result of knocking the knees against the manger. Clipping the heels is often responsible for cracks, but there are hairy legged horses, whose heels will crack and bleed on a summer day, causing acute lameness after standing awhile, but passing off again with exercise. White heels are more liable to chaps than dark ones, but it should be remembered white legs are more frequently washed than dark ones, and often with soft soap which is not thoroughly rinsed out again and is a source of irritation in itself. It is better to insist on a soap nearly neutral as plain yellow being used, and carefully drying afterwards.

The skin of the heel is provided with glands which secrete an unctuous material sufficient in the ordinary way to keep supple and smooth a part which is perhaps

more than any other alternately stretched and relaxed: and it may be supposed that those horses hereditarily disposed to trouble of the kind we are considering have some defect in the quality or quantity of the lubricant which in the majority is so admirably adapted for the purpose.

Coarse skinned under bred animals with languid circulation, and gunny legs are prone to cracked heels, and this predisposition is not lessened by the perfunctory manner in which the heavy horse with hairy heels is commonly groomed: if washed at all, the dirt is washed "in," and the rapid evaporation which follows, leads to cracks, chaps, and grease. The hind heels are the more frequently affected, but in horses constitutionally disposed, all four heels may be affected at once. Inflammatory swelling or lameness may follow upon an attempt to heal them up at once without administering internally some of those remedies which old fashioned practitioners called derivatives. The early symptoms are only noticed by the careful man, who saves an infinite amount of vexation by the timely use of a little vaseline or lard, when a crack is altogether prevented: the majority of people who have to do with horses do not have the habit of observation sufficiently developed, but work the steed before discovering that he comes out stiff and sore. The crack generally bleeds at first, and by so doing relieves the tension and pain during exercise, only to take on more inflammation as the result of opening the wound to dust or wet and dirt. A poultice and a dose of salts in a mash at this stage may save much time and blemish, as the repeated breaking open necessitates more extensive granulations, and these, if not kept in check by judicious treatment, form hard and rough edges, which remain to permanently disfigure and reduce the value of the animal. Many and various are the poultices preferred by horse doctors; some attributing to turnips a special virtue, while others believe that no better poultice than bran can be used. Linseed crushed without removing the oil, has the adv-

antage of keeping the parts soft and moist for a longer time than any other agent, which is a desideratum in a night poultice, when some hours must elapse before attention can be given to see if it has slipped down, become too dry or, as often happens been applied internally by the patient.

The application of a poultice would seem too simple a matter to need comment here, but it is an every day's experience among veterinary surgeons to see horses' skins scalded or the circulation seriously interfered with by tying poultices on with a string. If I was directing a young practitioner to apply a poultice, I should insist on him putting the point of his naked elbow into it before applying it to the skin of the horse, whose cuticle is relatively more sensitive than man's. An eminent veterinary surgeon, whom I knew well in England, will never allow a tape or a string to be used at all in fastening a bandage, but always uses safety pins. There is, however, an objection to these, which is, that when a horse has a way of eating his poultices, he may also eat the pins.

A neglected cracked heel in which an unhealthy and unpleasant odour is observed, is best poulticed with powdered charcoal in the substance used. Animal charcoal is more convenient for use as being heavier and more manageable, or in its stead a small proportion of carbolic acid in oil or glycerine.

When the subsidence of inflammation is announced by reduction of heat, swelling, pain, and lameness, and the heel comes firmly to the ground, pulling open the crack, measures should be taken to heal it up slowly. Slowly, because rapid union by soft granulations is very often followed by reopening and giving way of the imperfect union, the wound looking very red and bleeding with the slightest touch. An astringent is then indicated, such as finely powdered sulphate of zinc, with three times its weight of oxide of zinc, dusted lightly over the raw surface, or, if this is found insufficient, a very weak solution of

chloride of zinc; one grain to the ounce is generally found sufficient.

Nitrate of silver has an excellent effect in repressing too profuse granulations, and it brings together the ragged edges of the skin with a minimum amount of blemish. But it has the disadvantage of staining a white heel, and needs to be applied with care.

In horses whose heels have been cracked before, or those having a sluggish circulation, the difficulty of curing them is of a precisely the opposite kind to that I have attempted to describe; a languid ulcer, pale and lifeless, refuses to make any progress; if poulticed, all the surrounding parts appear to be bent on turning into jelly, but the crack remains with but little alteration. Sulphate of copper, applied in the hard crystal form, has been found, capable of waking into activity such troublesome places; or, if that fails, equal parts of turpentine and oil may be painted in with an ordinary camel hair brush. To excite, not repress granulation, is the object to be sought in the treatment of the indolent cracked heel.

In any case, to effect repair with the least possible eye sore as a permanent result should be the aim; and to do this the scab must be rubbed off, not too roughly, when the wound is all but healed up underneath. At such a time, when a small amount of moist surface will be found under the scab, dusting it over with powdered alum will cause it to shrink. Unless this is done, a crust will remain permanently instead of falling off as is the wont of other scabs: when their time has come.

Nothing can be much better than the digestive ointment in use for generations, composed of resin, wax and oil, either in a poultice or applied on lint, and kept in its place by a bandage.

In indolent cases where poulticing has been discontinued, powdered resin, with a proportion of acetate of lead is a very favourite application, and one the writer can speak highly of.

W. R. GILBERT.

The Flock

THE CARE AND MANAGEMENT OF SHEEP.

By A. W. Smith, *Maple Lodge, Ont.*

Under this heading I would like to say a few words. First, upon the selection of the flock. It matters very little what the breed may be, for in our glorious Canadian climate any breed that has thrived in other places will also do well here. So the breed selected, from which we take our flock, is simply a matter of taste, and the ability of the individual to bring out the bestis seen in the animals he selects. If he fancies a black face, he will be more likely to succeed with them; or, if the long-wool breeds have a greater fascination for him, then his success will more likely be with them. For my own part, I think the Leicester the best sheep on earth, as a Yankee would express it, and breed them.

But, having decided on the breed he wishes to handle, there are a few rules of management the shepherd should have conspicuously before him, and from which he should not allow himself to drift—not in the least. And, standing out prominently above all others—after he has looked to the healthiness and robustness of his selection—is uniformity. I would nail that term high up, and in a most conspicuous place. For there is nothing in the management of sheep or of any other animal or commodity which has so much to do with profit or loss than uniformity, or the reverse. There is scarcely any farmer but knows the difficulty in making a bargain or sale of stock when a few culls or inferior animals have to be tacked on to the good ones in order to sell them at all, and what a drag they are to the good ones, and how much easier it would be to sell the good ones without the inferior ones. I have always believed it better to sell the good, even lots to the best advantage, and do the best possible with the poor ones by themselves; or, better still, get rid of the trash as quickly as possible, so that the

loss on them will be as small as it can be, and then hold the good, even lots for profit. If the quality be good, and they are in condition and appearance taking to the eye, a practical result of good breeding and attention, then, with the highest price being paid, which he will surely get, he will have the deserved satisfaction of success.

A few words as to how to secure this very desirable uniformity. First, the breeder must select his flock of ewes to that end, avoiding those that are under size or not strong and vigorous looking, and just as rigidly reject those that are abnormally large. Begin your uniformity with the size of your ewes, and let them be on the large size rather than the small, but alike as to size, strength of bone, quality of bone and general appearance, as far as possible. Having done this, you have made a good commencement, but only that and nothing more. The next step, and a very important one, is the selection of the ram. He must be a good one, and pure, or practically pure-bred, and of the same breed as your ewe flock, unless you are going to cross for some special purpose, and do not intend to keep the progeny for use in your breeding flock. For some purposes the crossing of breeds answers well, but never for a breeding flock. The ram must conform with the ewes in type, and let him be evenly proportioned, and not abnormally developed in some parts of the body and equally deficient in others, but as good as you can get all around. There is one opinion I have with regard to a sire that I would like to mention specially. He should be good in the hind quarters when young, because the male animal develops the fore quarters with age much more than the hind quarters. The only way you can keep your flock uniform and maintain a high excellence is by the constant use of a first class ram, all your selection of ewes is for nothing if you use an inferior ram. I have heard many men say "Oh! I have only grade ewes you know, and just raise lambs for the butcher, and of course can-

not afford to pay any more than a similar price for a ram." But I say he cannot afford to use anything else than a good one—the best available. Nowhere does the best blood and the best animal tell to better advantage than when taken to the block, and even in the days of greatest depression in farm products, the best has returned a profit to the producer. No effort or money should be spared in placing a good ram at the head of your flock, and when necessary replacing him with a better one if possible.

CARE OF THE FLOCK.

Then having the breeding flock complete, comes the care of the flock in order to ensure the profit to which the farmer is entitled. Men have said to me when I urged for humane reasons, the better care of their flocks: "Well if I have to pamper and nurse my sheep to make them pay me, I will get out of the business, for I have no time to fool away with them, and there is not money enough in the business to pay for stuffing them all the year round," and I agree with them if the profit be measured by the present returns from their flocks.

I shall now draw a picture of how he probably had been treating his flocks. In the beginning of winter and often a good while after winter had begun the sheep were to be seen in the fields, either scraping the snow away from the ground, looking for a bite of grass or a weed, or else huddled in a corner of the field anxiously looking for relief from the owner. This relief came after a long while and the sheep were driven to the barnyard, when they were turned in among a lot of cattle and pigs and colts perhaps, to be hooked or kicked or chased, and kept in constant terror—the sheep is a timid animal naturally—and all the time taking their chance of getting a bite to eat from among all the rest. While for shelter they perhaps had opening to the yard a small pen with cracks and openings all the way up and down and around the walls, built one could imagine to let in the greatest number of drafts possible. The door just wide

wedge themselves solidly between the jambs, and inside, the ceiling so low that when you went into the pen you are doubled up so you looked enough unlike a human being to scare the sheep into a stampede for the door, which is always conducive to some dead lambs. After a while the lambs began to come, a lot of weak ones among them, consequently a lot of dead ones, and for some reason the ewes did not seem to have much milk, and the wool on the older ones seemed to get kind of loose and a lot of it got rubbed off by the sheep trying to relieve themselves from the annoyance of the innumerable ticks and lice with which they were infested. In fact he had not very good luck so far with either the ewes or lambs. Then he thought if the grass would only come, that might "freshen them up a bit," and as soon as the snow was gone they went to the fields where the grass was hoped to be, picked some stubs of last season's grass and a few early weeds, and refused the poor quality of straw at the stack or pen. Some more lambs died, and a few of the weakest of the old ewes dropped off. Then the farmer was quite sure sheep did not pay, and turned them on the road.

After a while he wet them in the creek or river and a few days later cut some of the wool remaining on them, leaving lots of tags around the neck and legs and belly, and taking several pieces of the skin with the wool.

After the harvest is off the sheep are taken from the road or a bare pasture which had all the stock of other kinds to eat the grass that grew on it, and turned into the stubble field; and the man who attends to his sheep in the way described, generally lets the burrs grow to maturity also. The sheep and lambs get the full benefit, of course. And after a while when a buyer comes along, he sees a few lambs with their wool twisted and contorted with burrs, the tails will probably be long also—we feel sure, and honestly so, too, that he cannot give near the top price for these lambs, and if he buys them at all these three or four little fellows will have

to be kept out as they are of no use to him in any case, and besides he cannot give quite as much for these ram lambs as if they were wethers, in fact he is not anxious to buy them at any price. Then, convinced that there is no money in the flock, the cheapest kind of a ram he can get—no matter how mean—will do him, perhaps one of these same long-tailed ram lambs closely related to most of the ewes will do, and he can sell him to the butcher a little later.

THE BEST FOR PROFIT-MAKING.

But the object of this paper is to point out that this kind of profit need not fall to the lot of the intelligent shepherd. Beginning when the other man began—in the early winter, if you have a roughage on the pastures, or if a quantity of rape uncaten, sheep will do very well if an opportunity be given them to go under shelter in case of very disagreeable weather, and if a little grain (only a little) be given them along with what they gather from under the snow. But in bad weather all sheep should have a chance to go under shelter. Then when taken to the sheds for winter, see that their shelter is good. It need not be expensive. It should have a good roof, and the east, west and north sides double boarded and tar-papered between, or otherwise made close, so no drafts can injure the sheep, for sheep can stand any amount of cold better than a drafty pen. The south side can be left open and have good sized yards for the sheep to use exclusively, with no other stock to molest them, and try and have the racks arranged so as not to cover the backs of the sheep with chaff or dirt every time they are fed. It injures the value of the fleeces. Then with plenty of pea-straw which we can grow so abundantly in this province, a feed of clover hay once a day, and a few roots, which they always should have, or some other succulent food, sheep will require nothing more except salt and water, and a little regular attention, until they begin to lamb. Of course, a little grain, say one-half pound per day each to

the ewes, and double that amount to the lambs you are wintering will bring them through much stronger and in better flesh, and be more profitable as well, than they otherwise would be.

I need not point out the necessity of careful attention at lambing time, with the probable keeping of the lambs from young ewes having twins by giving the lambs a little milk in addition to that taken from the dam. There should be the most liberal feeding of the ewes after lambing. To have the lambs do the best—and it will pay you—a small pen should be arranged into which the lambs can go, but not the ewes, and in which a little ground grain and oil cake, if handy, is put a little at a time and often, which the lambs very soon learn to eat readily, and will grow much faster than without it. If the lambs are intended for mutton be sure and castrate the rams while young. It is easier on them than later, and the tails also should be cut at about 14 or 15 days old.

Do not let the ewes get to the fields until there is grass enough for them to get a reasonably full bite, and dock them carefully before they go. Wash them thoroughly, if you wash them at all, and shear them carefully. How much more pleasing it is to see a flock of sheep neatly shorn than those with all the tags, and ragged and scarred with the shearers. Roll up the wool carefully and neatly, leaving out any tags and dirt, and you will be sure of the best prices.

About two weeks later dip every one of them, lambs and ewes, thoroughly in some good sheep dip. We use McDougal's. Do not miss any for a very few ticks left will be sufficient to produce a full colony to annoy the sheep the next winter. About the middle of June have a piece of ground prepared and sow it with rape, which will be ready for the lambs in August. It is really surprising how lambs will grow and get fat while feeding on the luxuriant growth you will have from that patch of rape. 3 or 4 acres will feed 30 or 40 lambs nicely, and with a good season far more. If you put the rape in drills the same as

roots you can clean the ground thoroughly, and the droppings from the lambs will make a grand coating of manure. In connection with the rape you should always have a field of pasture for the lambs to run on. They do much better and it prevents loss from bloating, scouring or other causes.

About Sept. 1 I would recommend that you wash every lamb carefully with soft water and soap. It loosens out the tangles in the wool, adds luster to it, and adds 50 per cent. to the appearance of the lambs. I would not consider the washing so necessary with pure-bred downs as with long wools or crosses.

Then about December 1 you will have a flock of lambs beautiful to look at, fat and heavy, for which you are sure to get the very highest price, and which a buyer will not leave with you if it is possible to buy them. And if you have given the lambs the attention of trimming them a little, and squaring their tails off neatly, and leave no burrs around the fences—attention requiring very little time—you will reap abundant satisfaction from the flock as well as a substantial profit.

From the ewe flock remove all ewes too old to be profitable, and any that, from any causes, have dropped below your standard. If a ewe has failed to breed last season do not discard her on that account if you think well of her, she will probably bring you the best and strongest lambs you will have next year. Then breed them in October or November to the first-class ram you have already selected, and go on to renewed success and pleasure in your flock. (Very good indeed. Ed. J. of A.)

“Farming.”

LETTER FROM MR JAS. COCHRANE.

Hillhurst Station, Jan. 2nd., 1901.

Dear Mr. Jenner Fust,

Your letter was duly received but just as I was leaving home.

I am sending you a photograph of Shropshire ewes, but am sorry to say I have none of Cotswolds or Lincolns. I could send you a copy of London S. J. Journal Almanac if the illustrations could be reproduced.

I have just got Prof. Shaw's "Sheep Husbandry in Minnesota," which rather disappoints me. It seems to me that sheep are especially adapted to all parts of Canada from Ontario Eastward, where dairying is the rule and already so many lambs go to the American market. Properly grown and fattened, many more should go to Great Britain in autumn and winter, and the home market would take an increasing number if young mutton of good quality could be systematically supplied.

I shipped a pair of Hampshire ewe lambs not long since to Mr. J. J. Gareau, St. Roch de l'Acadian, Que., who had a ram lamb a year ago: he wrote me that he was much pleased with them.

I hope soon to be able to report the arrival of some 20th century Hampshire lambs.

With kind regards, and wishing you the compliments of the season,

I am, yours sincerely,

JAS. A. COCHRANE.

P. S.—I am glad to tell you that the first Hampshire Down lamb of the season, a very vigorous ram, made his appearance this morning (Jan. 2nd). His dam is a yearling ewe and his sire a ram lamb, both imported last season from the flock of Mr. James Flower, Chilmark.

Wishing you a happy new year,

I am, yours very truly,

JAS. A. COCHRANE.

