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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

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JULY 15th, 1900

- THE -

Journal of Agriculture and Horticulture

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. Jeanner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

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The Farm.

NOTES BY THE WAY.

Ste-Anne de Bellevue; where we are passing that season of the year which is commonly called *summer*, the sight of which season would gladden our eyes, for we, as yet have had but a fore-taste of it; *Ste.-Anne's*, we say, is, generally speaking, situated on a bed of stone, the upper soil being a very light sand, of no great fertility, but which, in dripping springs, produces wonderful crops of clover, provided always that there is a "catch" of that legume in its infancy and that there is snow enough on the ground in its first winter to protect its roots. The two last years have been, unfortunately, anything but propitious to the growth of clover; indeed, there is not, on one farm that we have under daily inspection, a single patch of the plant to be seen; and, yet, in the summer of 1898, there was one piece of about 7 arpents on which grew the most superb crop of red-clover we ever saw either in England or on this side of the Atlantic! Nature, it would seem, is, so to speak, in fault, for this uncertainty of the most valuable of our green-crops, for there is no cause, as far as we can see, for its failure except that the seasons have been against it. Plenty of seed has always been sown; the roller has invariably been used as soon as the land would bear it; and the plant has not been too frequently repeated on the same field.

Alsike-clover.—We remarked, in a field on the same farm of which we have been speaking, a rather curious appearance with what peculiarities plants are somewhat gifted. In a piece of some dozen arpents, that had been seeded down with

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a mixture of timothy and red clover in the spring of 1899, there was in the beginning of June, this year, not a sign of clover over the whole field, but on one patch; here, on a space about ten feet long by five feet broad, Alsike had taken, and, finding, probably, that either the situation agreed with it, or that the soil contained some special constituent that suited its taste, the growth of this hybrid was most luxuriant. Have any of my readers ever remarked a parallel instance? No Alsike was sown.

Crop-reports.—How marvellous are the crop-reports in their statements of the changes worked by the weather in the shortest space of time. It all depends upon the writer's being *bulls* or *bears*.

Only the other day, one, writing from the great wheat-growing district of the West, stated that the absence of rain this summer, has reduced the prospects of the yield of wheat in Manitoba to one-fourth of the average; for, he did not really think that there could possibly be more than fifteen bushels of wheat grown to the acre over the whole province! Now if fifteen bushels of wheat is one-fourth of the average yield, one year with another, of Manitoba, it follows that the average yield is 60 bushels an acre! Of what possible use can it be to the public that such evident nonsense should be published in a respectable paper? Sixty bushels an acre of wheat, is just double the yield of England, and five times as much as the average of the whole of the United States.

Again, a few showers fall in some districts of the Winnipeg country; to work goes the reporter—on the 4th of July, recollect,—and impresses on his readers that “The recent rains have been general all over the province and the wheat crop is experiencing a thorough reviving, which promises to make the yield fully double of what was expected by the most hopeful a week ago. The other cereals have benefited even more than wheat, and the oat, barley, and root crops will be fairly good. The grass has sprung up and the wells and streams, which were drying up, have again filled up much to the relief of live stock. Altogether the rains of the past week have saved millions of dollars to the province. This is the sum of the reports made by the local legislators.”

And all this miraculous change worked in less than a week.

Now and then, we meet with an honest correspondent from the West, as, for instance, the following, dated only four days earlier than the above:

Weather and crops.—The weather has been more favorable this week. The temperature has been moderate and the best rains of the season have been experienced. On Tuesday, and again on Thursday, rain fell over a wide area of country. In some districts the rain was heavy enough to afford temporary relief from the drought, but in other sections, there was not enough to materially improve the outlook. Unless the rain is followed by further good showers soon it will not help the late crops very much. Wheat is generally too far advanced to expect any great improvement in the yield from favorable weather now. Of course, the condition of the crops varies much in different sections. The best in the drought districts may give half an average wheat yield, and from that downward to lands that are a total failure. Some overly enthusiastic reports have been published as a result of the rains this week, which it would be well to receive with caution.—Winnipeg ‘Commercial,’ June 30.

That the state of the wheat-crop in the West is by no means flattering to the *bears* is pretty clear; a great many acres have been ploughed up as hopeless, particularly in North Dakota, and however favourable the weather may have been since June 30th, no great improvement can be hoped for so late in the season as that date. Spring-wheat never tillers much, and when summer once sets in, it throws up its stems to do what they can, be they few or many.

Superstition.—Here is one of the drollest instances of rural superstitions with which we ever met.

Mary Bellenden, writing to Lady Suffolk (*circa* 1740) about her “home-farm” and its produce, says:

“It is well known to the whole country of Kent, that I have four fat calves, two fat hogs, twelve promising black pigs, two chickens, three fine geese, with thirteen eggs under each (*several being duck-eggs, else the others do not come to maturity*); all this, with rabbits and pigeons, and carp in plenty, beef and mutton at reasonable rates. Now, Howard, if you have a mind to *stick a knife* into anything I have named, say so.”

Talk about modern damsels dealing in slang ! These dames, *très grandes dames, toujours*, dealt in far greater vulgarity of language than anything we hear to-day.

Such a thunder-storm this morning, July 7th ! The land is soaked even on this sandy soil, and the heavy land will do without more rain till harvest. Very little, if any, hay down yet. The chief grasses in the meadows seem to be weeds ; pastures are looking fresh, and the "mud-holes," in which the cows drink, are pretty full.

Just began cutting vetches and oats for the stock ; vetches hardly out in bloom, so, perhaps, the cows will scour.

Plenty of oats and pease (*meslin* or *gabourage*) to succeed the vetches and oats, if the "boss" will stand it ; far better to give them to the cows than to let them fall off in their milk and allow the *meslin* to ripen.

Root-crop.—The roots came up very irregularly and are going to be very costly to single Swedes, mangels, and carrots very late in sowing ; not fit for the hoe yet (July 7th).

Charlock is looking brilliant in some places between Ste-Anne and Montreal ; no one seems to be spraying it with the sulphate of copper, though I saw a very fair apparatus at work, on potatoes, for the "bug," which would answer as well for the other purpose.

Tobacco-plants seem to be recovering from the effects of the wind-storm on the 29th and 30th of June ; so do the pease, but the corn and haricot-beans are, I fear, ruined *à tout jamais*, and the Virginia creeper (*ampelopsis*) that we had succeeded, after two seasons' hard work, in getting nearly perfect round our house-gallery, will take at least another season to attain its previous condition. We like a hill-side, if it is sheltered from the S. W. ; but, here, we get that wind rather too strong.

O. M. Hatcher, manager at Winnipeg for the Deering Harvester Company, returned recently from a trip to headquarters at Chicago. Mr. Hatcher gives a gloomy report of the crop situation in the northwestern states. The drought has extended all the way to Chicago, and even south of that, the States of Illinois and Indiana having suffered

severely. On the big farms in North Dakota the wheat was being ploughed up as fast as the men and teams could do it. On the great Dalrymple farm 60 gang ploughs were at work turning the crop under and preparing the land for next year. At the Grandin farm, at Hague, 40 ploughs were at work ploughing up 12,000 acres of wheat. At the big Elk Valley farm the wheat was also being ploughed up. A great deal of the wheat was ploughed up earlier in the season, and the land resown to other crop, such as oats and flax, but the second crop was not proving a success. The smaller farmers were also busy ploughing up their crops. The Deering Harvester Company have representatives in almost every district throughout the grain states, and they have an excellent system of crop reporting—probably equal to the best. Their estimate is that the three great spring wheat states of Minnesota and the two Dakotas will produce not more than 50,000,000 bushels of wheat, where they should have a crop of 200,000,000 bushels or more. Including Michigan, Wisconsin, Illinois, Indiana, and Ohio, they estimate a crop of 150,000,000 to 175,000,000 bushels. Altogether the spring wheat states will not produce more than is required for home consumption. Fodder crops, Mr. Hatcher says, are very poor and hay has already advanced much.

The tap-root of wheat.—A special correspondent of a Montreal paper has the following : A feature brought out emphatically by many Northwestern correspondents is that much of the wheat which looks well and is being figured by those who do not make a careful examination to yield an average crop will not in reality produce much of anything, owing to the fact that the tap root is dried up and the plant supported merely by superficial roots along the surface of the ground. Wheat in this condition, it is stated, will not develop as sound grain. This seems a reasonable proposition, in view of the weather conditions that have prevailed, and if at all prevalent, it may result in an even greater loss than yet appreciated.

The idea is practically correct, but the words *tap-root* are wrong, for wheat has not a tap-root. Its growth is peculiar : sow wheat and cover it in 4 inches deep, and you will find upon examination that the grain has given rise to two different sets of roots, the *coronal* and the *germinal* ; the latter

proceeding from the seed itself, the former from the stem; it is the *coronal* roots that support the stem during its tender youth, acting like the *stays* of the rigging in a ship, or the gye-ropes of a flag-staff. When wheat is sown and covered in very slightly, both sets of roots, after germination, will be found huddled-up together, and, as will be easily seen, the great services of the *coronal* roots will be undischarged.

Pasture.—Mr. Macpherson, of Lancaster, states, in a letter to the Editor of *Farming*, that "one acre of first-rate pasture will give 5,000 pounds of milk, and will therefore produce 40 dollars' worth of milk at a cost of 15 dollars." Now, we are well acquainted with some of the finest pastures in England, from which the well known "Glo'ster-cheese" is derived. These have been in grass from time immemorial, the tenants pay at least ten dollars an acre annual rent for them, and they would be delighted to get such a return from them. It takes three acres of this superb old grass to keep a cow throughout the year; each cow yields, on an average, 448 lbs. of cheese in the season; a calf, say, \$15.00, whey, etc., from each cow makes, say, ten dollars' worth of pork; in all:

4 cwts. of cheese at \$10.50	\$42.00
Calf	15 00
Pork	10.00
	\$67.00

Now, if we divide this sum of \$67.00 by three, the number of acres required to keep a cow, we shall find the quotient to be \$22.33: a very long way from \$40 00 an acre!

Whale oil soap.—It seems as if this very strong smelling soap is likely to prove a practical deterrent of those hideous cut-worms that vex the growers of garden vegetables, pansies, mignonette, etc.

Remounts.—Major Dent, employed by the British War Office to collect remounts for the various branches of the service, finds that the best stamp he has come across for the mounted-infantry cobs is the French-Canadian.

Harrowing grain in spring.—A writer in an exchange says that he has "doubled his wheat-crop by harrowing it in the spring! A large order;

but, deducting one-half of the increase, it is still, as Voltaire would say, "admirable."

This breaking of the crust on all soils, heavy or light, is what we have been trying to persuade people to do ever since the year 1860, but without much success, except at Chambly and Sorel.

SEASONABLE NOTES.

The "Fly."

Never have I known the turnip fly more destructive than during last month. One piece of turnip, 12 acres in extent, has now been drilled for the third time, and other fields are sadly tormented by this pin-pricking, pertinacious little foe. The mischief is quickly done, and constant watchfulness is required in order to be certain as to whether the seed has germinated and the young plants have disappeared, or whether the seed has still to come. Like all insect attacks, it is difficult to fight, and many of the entomological remedies are of such a nature as to render them inconvenient and expensive. There are, however, means for evading or combating the turnip fly, which have been already laid before readers in this column, and there are others successfully practised which do not find their way into print. The tarred board, or board on low wheels, tarred on the under side, is an old plan which was approved by the late Professor Buckman many years ago. It was never widely adopted, on account of its uncertainty of action. If the fly could be always induced to jump against the tarry surface the success would be perfect, but if he resists the temptation, or jumps downwards instead of upwards, or fails in jumping quite high enough, he escapes. I have been experimenting upon the paraffin drag, and am pleased with the result. About $\frac{1}{2}$ part paraffin to $\frac{3}{4}$ water is a suitable proportion, and by offering a small increase in pay and sending up two horses, one to rest the other, 27 acres were done in one day. The effect was very marked, as scarcely a fly was to be seen on the the following day. They appeared stupefied by the paraffin, and ceased to plague the young plants. Another piece which was threatened with extermination is now easily seen in row from end to end of the field, and will be soon fit for hoeing. This is a simple means of fighting the fly. A twelve foot rail, with any old fabric nailed on whole or in strips, is required. It resembles a

flag drawn by the staff crossways over the surface, and is kept moist with paraffin and water. It is light work for a horse, and the cost is not appreciable. The effect is, however, immediate, and deserves to be tested and reported upon, so that the plan may be generally adopted or abandoned, according to results obtained.

CHARLOCK SPRAYING.

The use of paraffin for turnip fly has some resemblance to spraying charlock, which seems this season to be again in the ascendant. The trials made by the Yorkshire College are declared to be eminently successful, and experience teaches that the charlock is most successfully treated when very young. Charlock spraying is not quite so easy to put in practice as might at first appear. The difficulty of providing water on the dry uplands where the weed is most rife; the objection to taking horses from the pressing work of root cultivation at the busiest time; the cost of purchasing sprayers, and the uncertainty which still hangs over the process, are all deterrents. Besides, when charlock is in the early stages of growth it is a question not to be too rashly dismissed whether it may not be equally well destroyed by harrowing. When young corn is seen to be invaded by the small cotyledon leaves of the charlock a fine-toothed harrow will draw them by the million, and expose their white filaments to the sun and air

Charlock is often very erratic in its germination. In some cases it refuses to show itself, although land may be ploughed and harrowed and left for a period which ought to suffice. After the Farmer's patience is exhausted, and the land has been drilled, then the weed will appear in countless numbers, and threaten to smother the crop. In a case now before me, part of a field was early ploughed and harrowed, and the charlock still refused to come. After drilling with turnips I see it is covered with seedlings of charlock. The other half of this field was ploughed and drilled without waiting a day, and there the turnips are in row, and no charlock is yet to be seen. It is difficult to know what to recommend in such cases—whether quick drilling, or waiting for the appearance of the charlock.

HAY MAKING.

Cutting has commenced, and it is possible that ricks have been made. The cut of clover hay is sure to be light, as the season has not been favour-

able. There is no advantage in postponing cutting, as young hay is always best. Early cutting ensures a better aftermath either for a second crop or grazing. The right moment for cutting is when both grass and clovers are in full bloom. The most rapid growth takes place during flowering, but after the bloom is out every day tells against the quality of the hay. The nutritive juices begin to gravitate towards the seed, which is not desirable in hay; the soluble cellulose begins to change into woody fibre, and the leaves lose their succulence. Good hay is made from young herbage, and is better made quickly, without too long exposure to either rain or sun. Clover hay should be as little moved as is consistent with keeping, as frequent turning only causes the leaf to drop. Light crops only require once turning, and may be then raked together and carted as soon as the hay is judged fit to keep in rick. A certain amount of heating and sweating in the rick is desirable, and does not produce mouldiness. It is rain water that makes hay mouldy. Cocking is practised in the North, but South-country farmers prefer to cart straight from the swaths, only throwing them together into heaps convenient for the pitchers. Meadow hay is different, and requires much more working, and is better cured in cock. We have at present to do with clover hay, and the above advice is sound regarding it.

The best plan is to cut it with a machine; to allow it to lie untouched for three or four days (1); to turn the swath and allow it to remain two days longer, and to cart it to the rick. The cost ought not to exceed 10s. per acre even in the case of heavy crops. It may be liberally computed as follows:

	s. d.	
Cutting with machine.....	2 6	per acre.
Once turning.....	1 0	"
Gathering the swaths and piling them for pitchers.....	1 0	"
Carting and rick building.....	4 3	"
Pulling, topping, and thatching...	1 0	"
	9 9	

JOHN WRIGHTSON.

CO-OPERATIVE CREDIT.

Co-operation has done wonders for Ireland. Co-operative dairies were first started and since then co-operation has been introduced in nearly

(1) Here, two days will be found long enough; if very hot, 36 hours might do. *Ed.*

all lines of farm work. The latest application of it has been in the way of raising money. Of this plan Hon. Horace Plunkett, M. P., President of the Irish Agricultural Organization Society, says :—

There is one form of agricultural co-operation upon which I would like to say a few words, as we have recently come to the conclusion that it is, on account of its educational and social effect, by far the most valuable of all our projects. I refer to agricultural banks, more properly called credit associations on the Raffeisen System. We have read of these institutions and of the marvellously beneficial effect they have produced among the most depressed rural communities abroad. But it was not until the last four years that we have been convinced by practical experience that they are even more required, and are likely to do more good in Ireland than in any other European country. Up to last week we had organized 31 of these associations, with a membership of nearly 2,000 and the system is now likely to be rapidly extended throughout the rural districts of Ireland.

The constitution of these bodies, which, of course, can only be described in broad outline, is somewhat startling. They have no subscribed capital, but unlimited liability, and are therefore intended for, and only applicable to men who live on or about the same scale, and that a low one. The association, which only admits men of approved character and capacity, borrows money on the joint and several security of its members. The member wishing to borrow from the association need not give tangible security, but must bring two sureties. He must also state, among other particulars, what he wants the money for. The rules provide, and this is the salient feature of the system, that money shall only be lent for a productive purpose, that is, a purpose which, in the judgment of the other members of the association, will enable the borrower to repay the loan out of the application of the money lent. Raffeisen held, and our experience in Ireland has fully confirmed his opinion, that in the poorest communities there is a perfectly safe basis of security in the honesty and industry of its members. This security is not available to the ordinary commercial lender. Even if he had the intimate knowledge possessed by the committee of one of these associations of the character and capacity of the borrower, he would not be able to satisfy himself that the purpose for which the loan was required

was really a productive purpose. Nor would he be able to see that the loan was properly applied to the stipulated object. In practice we find that the borrower from the association generally makes an enormous profit on the loan, and always repays punctually.

The rules which provide for the expulsion of a member who does not apply the money to the agreed productive purpose never have to be put in force. Social influences seem to be quite sufficient to secure obedience to the association's laws. Another advantage conferred by the association is that the term for which money is advanced is a matter of agreement between the borrower and the association. The hard and fast term of three months which prevails in Ireland for small loans is unsuited to the requirements of the agricultural industry—as for instance, when a man borrows money to sow a crop, and has to repay it before harvest. The society borrows at 4 or 5 per cent. and lends at 6 per cent. The expenses of administration are very small. As the credit of these associations develops, they will become a depository for the savings of the community, to the great advantage of both lender and borrower. Perhaps the sketch I have given of the agricultural bank will be sufficient to show what an immense educational and economic benefit they are widely extended throughout Ireland, which I hope they will be in the near future. Under this system you have men who had no clear idea before of the meaning or functions of capital or credit, who were generally unable to get capital into their industry except at exorbitant rates of interest and upon unsuitable terms, now able to get, not all the money they want, but all money they ought to want for the improvement of their industry. There is no fear of rash investment of capital in enterprises believed to be, but not in reality productive—the committee take good care of that. The whole community is taught the difference between borrowing to spend and borrowing to make. You have the collective wisdom of the best men in the association helping the borrower to decide whether he ought to borrow or not, and then assisting him, if only from motives of self-interest, to make the loan fulfil the purpose for which it was made.—Hon. Horace Plunkett.



RENNIE ON CULTIVATION.

In another article in this issue attention is drawn to the principles that underlie successful cultivation, especially in seasons when rainfall is almost absent. Ontario has up to the end of May had a very dry spring and the Farmer's Sun takes occasion to bring forward the address given by William Rennie at an institute meeting a few days ago, part of which we now quote :—

“There is no such thing as a worn-out sub-soil. Sub-soil possesses unlimited richness; but in many cases, owing to the exhaustion of the vegetable matter in the surface, farms are no longer productive. Vegetable matter requires a temperature of 60 to 70 degrees for the purpose of rotting it. If we turn this down by deep plowing, it is impossible for the heat to reach it and carry on the work of decomposition. You can find vegetable matter 6 or 8 inches below the surface, in the same condition to-day as when buried seven or eight years ago. If the ground is wet and cold the work of decomposition cannot go on.

“Instead of summer fallowing, sow peas and buckwheat in the spring, and plow this down about August, or when in bloom. If to this green matter you add ten loads of barnyard manure, to each acre of land treated, you will add fertility to the soil equal to that produced by 20 loads of manure to the acre. After plowing under, roll the ground and then harrow it. The rolling will pack down the soil and so bring up the moisture from below by capillary attraction; the harrowing will break up the surface of the soil, and so retain the moisture when brought to the surface. The heat and moisture combined will rot the vegetable matter, and put your field in first-class condition for wheat.

“Soil with plenty of vegetable matter in the surface will not dry out, even if you do not have rain for a month or two. This vegetable matter also fixes the animal ammonia in the soil, and with the barnyard manure gives all the food required for all kinds of plants. If there is a clay sub soil, this should be loosened up occasionally by sub-soiling. With a regular crop rotation the clover roots will assist you in this loosening.

“There is no occasion for buying mineral fertilizers. The clover will give you all the nitrogen required, and the barnyard manure the phosphates and potash. There is an unlimited supply of mineral in the subsoil, and the clover will bring

that up and make it soluble as fast as it is required. You have no use whatever for chemical fertilizers. In the six years spent at the Agricultural College I never paid out a dollar in this way.

“The roots of such weeds as Canada thistles are only feeders. All that is necessary in order to destroy them is to cut off the buds which are just below the surface. A wide point on your plow, cutting two inches below the surface, will do the work. The work may be done more quickly by points now supplied by manufacturers for attachment to a cultivator. Cut off the thistles just below the surface, and then harrow so as to expose the top to the sun. Three cultivations will fix them. Even bind weed may be destroyed in a single summer in the same way.

“For roots or corn the land should be cleaned the year before. By plowing sod under in August, and adding barnyard manure, in the manner already described, you can have the land not only clean for next year's crop, but rich enough to grow anything.”

Henry Glendinning is also quoted by The Sun as saying. “That by under-draining of stiff clay and plowing under of clover, the mechanical condition of the soil has been improved and productivity increased to a wonderful degree. More thorough cultivation in combination with these has made it possible to get good crops in spite of very limited rainfall and by the use of comparatively new implements, like the weeder, we are now able to go over the growing grain crops, and, besides killing weeds, to give the soil a still later stirring, and thereby still further aid in conserving the moisture in the land. The whole method of farming has been revolutionized, and, as a result of that revolution, we are able to-day to produce fair crops, even in a season when the rainfall largely fails.”

Little can now be done to retrieve the mistakes of our past methods here in the west, but, if we will carefully investigate the teachings supplied by our growing crops, and follow them up in the future, this untoward spring will have done real good as well as harm.



KALE AND KOHL RABI.

PROFESSOR WRIGHTSON only hits the right nail on the head in his recommendations to the arable sheep farmers of the southern half of England to take kale into more general favour, and to grow it in the way he and Mr. Gorrings and some few other advanced agriculturists have found so very successful, because it saves entirely the heavy cost of singling out plants by the hand hoe, and has the ulterior advantage of preventing the crop going to waste in short, woody stalks, calculated to give some trouble afterwards. This method is that of drilling kale seed into the land direct from which the crop is to be obtained, and only to thin the plants by drawing a light pair of harrows across the rows when they are young. This way of thinning is often adopted in the case of turnips, but only to make the hand labour of singling more easy afterwards. In the case of kale it obviates the necessity of doing so altogether, as the plant does not bulb like swedes, mangels, and turnips, and being valuable alone for edible stalks and leaves, bottom room to expand is by no means a necessity, and heavy crops of great value can be raised without any thinning out beyond the costly one above mentioned.

There can be not the slightest doubt that existing circumstances cause this consideration to be one of great urgency. Apprehensions have been rife in the reports of practical farmers for some time past that unprecedented difficulties are likely to be met with in the coming summer for the ingathering of harvests from the scarcity of labour evil, which from having been a chronic affection has been made acute by the war. If there are likely to be few harvest men, the labourers who can single out root plants properly, we may be well assured, will be scarcer still. The operation is a highly-skilled one requiring technical training and experience. Besides which the work often clashes either with haying or corn-harvesting.

Special reasons, therefore, offer themselves why Professor WRIGHTSON'S advice should be taken by arable sheep farmers south of Yorkshire who have not already adopted it. The present is still a very favourable time to drill kale seed, for kale culture as well as consumption of kale crops is well adapted to cover a very protracted season. Indeed, the late Mr. Robert Russell was considered once to have made it his boast that he could grow kale so as to have it for consumption all the year

round, and after reading his paper on the subject to the Farmers' Club in the seventies, Mr. Clare Sewell Read remarked that kale was the most accommodating crop he ever heard of.

Moreover, there is another feature of the subject by which kale and kohlrabi alike may be made instrumental in obviating the necessity of the singling out, handhoeing process, which it is feared there will be few labourers left in the country to perform. From small breadths of either drilled in May surplus young plants may be obtained throughout summer, to be transferred to larger breadths where trifolium or vetches have been fed off or grown for soiling or silage purposes. Under ordinary circumstances these lands have been reploughed and the seed of turnips drilled into them; but with this singling out difficulty for plants in view, a change of tactics is exceedingly desirable. As soon as the early fodder crop has been fed or rid off, and the land has been reploughed and worked down to tilth, it should be marked out into squares for the pricking in of young kale or kohlrabi plants. By reversing the tines of a horsehoe, and making straight lines by drawing it one way, and then by drawing it the opposite way form lines transverse to the others, the surface would be easily marked into squares; and by putting in a young plant at each point where two lines intersect, which any woman, lad, or child could do, the sets would be all at equal distances one from another, rendering subsequently the horse-hoeing or stirring of the intervals in any direction deemed best to be practical.

That a crop of kale or kohlrabi thus raised would be considerably more valuable than one of common turnips will be generally admitted, and when it is considered how very uncertain the latter are to succeed at all when sown for in the midst of summer, the rationale of adopting this course whenever a second crop for the same season is required to succeed earlier ones of rye, winter barley, winter oats, trifolium, or vetches, must be readily allowed. Indeed, in deep, nice-working soils the same practice has been fully extended to lands after winter beans and flax, or where rye or winter barley has been allowed to ripen as a corn crop. As it would be late in July when recropings of the last-mentioned kind could take place, the transplanting system is still more preferable than that of drilling turnip seed.

Kohlrabi is well adapted to heavier soils than kale, which accounts perhaps for it being grown

in the Eastern Counties to a greater extent than in many other parts of England. It bears a similarity to kale both in transplanting readily and in hardihood in winter to resist frosts, which kindred characteristics have often caused the two crops to be joined together as suitable ones for lands where turnips often fail. Another point of resemblance lies in the fact that either crop may enter into consumption at any time from the end of autumn all through winter and spring. But the chief wealth of kohl, like that of mangels and swedes, lies in a large-sized, rich-fleshed bulb, so that the plants must be singled out unless the crop be raised from transplanted sets. This is frequently done owing to the high price of the seed, and knowledge of the fact that young kohl plants bear transplanting better than almost any others do. There is another resemblance between kale and kohl in the early first shoots being available to be picked for human consumption without the value of either crop being much deteriorated for subsequent stock feeding. Mr. Robert Russell was accustomed sometimes to realise very large sums from the marketmen by allowing them to pick what they liked, after which fresh shoots shot out still more abundantly for his ewes and lambs; and according to Mr. WM EARLEY'S instructive article in the AGRICULTURAL GAZETTE of the 30th ult., the like practice has been extensively pursued this year where crops of kohl had been left growing. Two harvests are thus realised, and, indeed, Mr. Russell once secured three—the first sproutings yielding £10 per acre from the marketmen, the second consumed by sheep, the third allowed to mature a good crop of seed.

J. D.

SUMMER CULTIVATION

So much has been said of late, on this subject, that to bring it up again seems at first a needless repetition. Yet our summer season is so short, other work is at times so pressing that we often give our hoed crops only the cultivation required in order to rid them of unsightly weeds. The benefit thus secured to our plants through the eradication of weeds fully justifies this saying: that weeds are a blessing in disguise since they compel us to stir a moisture wasting crust in order to remove them.

Yet weeds should not be needed to make us perform inter-tillage in summer, for tillage has

enough to commend itself, even were weeds not present. Its effects, though not long since explained have always been known: long before the problem of the conservation of moisture through summer cultivation had been scientifically demonstrated, careful farmers had observed that plants do much better when the crust around their roots is stirred with the hoe. All experiments conducted lately on this question have shown the same results in favor of this practice.

Our plants require large amounts of water during their growth: a crop of corn takes up from the soil over 300 tons of water for every ton of dry matter, while potatoes use no less than 422 tons for the same amount. To provide these amounts, the soil, during the season's growth should not contain less than from 15 to 25 of water. But in the hot, sultry summer days, the evaporation from a compacted land surface is excessive, and, in many cases, the proportion of water, especially in soils which have but an insufficient supply of humus, falls much below this standard. Above all things this lack of water is most seriously felt by our plants, being very often the cause of a considerable decrease in the yield of crops. Hence the necessity of a method by which all needless evaporation of soil moisture can be prevented, by which all water falling on the soil can be stored into it for the needs of plants. The earth mulch formed by intertilling with a cultivator fully answers these requirements.

The question, how does this earth mulch, or this carpet of loose earth prevent evaporation may be answered in a few words: In a fairly compact soil, water moves from particle to particle in all directions, but always from a wet spot to a dry one. The surface soil being constantly kept dryer than the sub-surface through evaporation, the water continually moves upwards. A part of it meeting the roots of the plant is absorbed by them, while the rest, continuing its ascensional motion reaches the top and evaporates. This upward movement, however, cannot take place if the top of the soil instead of being compact, is loosened. The fine tubes through which the water ascended are broken, the connexion no longer exist, and the water stays beneath this carpet of loose earth, all available for the plants roots.

The depth of this earth mulch necessarily varies according to the depth at which the roots

of the plants are found. In the case of corn, care must be taken not to injure the rootlets by going too deep. At the Ontario Agricultural College, a two horse corn cultivator which stirs the soil to the depth of 3 inches is kept going until the corn is 4 feet high, when its place is taken by two home-made harrows with ordinary harrow teeth, set on a slant, and projecting $4\frac{1}{2}$ below the frame. These harrows are weighted with two blocks of wood and kept going until the corn is in tassel. The cultivators are of numberless patterns; those with many fine teeth should be preferred as they secure a more thorough pulverization of the soil.

The cultivation of the soil should go on as often as necessary in order to keep the surface thoroughly loosened. It is especially needed after a heavy shower, for the water, in compacting the mulch re-establishes the communication with the soil water and evaporation begins anew. Thus if the loose mulch is not quickly restored by cultivation, the soil may, a few hours after a heavy shower, contain less water than before rain.

But the effects of inter-tillage are not limited to the conservation of soil moisture: Air penetrates more freely into the sub-surface soil, and through its influence, many chemical changes take place of which our plants avail themselves: inert plant food is rendered available; the work of nitrifying bacteria is accelerated. Thorough inter-tillage, during the whole of the plant's growth is now considered by advanced farmers as essential to success. Experiments carried on with intertilled cereal crops, such as wheat and oats have given surprising results in favor of this method, and the time is perhaps not far distant when these crops will be intertilled as well as corn or potatoes. (1) C. M.

STATE OF THE CROPS.

To the Editor of the JOURNAL OF AGRICULTURE.

The season has been rather peculiar on the whole. May was cold and backward, the early part of June a very severe rain set in and did a good deal of damage, then we had a dry spell, and this week a great rain storm accompanied with a good deal of thunder and lightening. A

(1) We "intertilled" wheat 50 years ago, in England, En.

great quantity of rain fell in these two periods, more than fell during the whole month of June last, in fact for many Junes.

Wheat.—What was sown in good soil, well drained, has done fairly well, but the crop will not be a large one.

Oats.—In some low lying fields, the early June rain did considerable harm; but on side hills or warm soil they have done excellently; some few pieces that I have seen are beginning to lodge.

Barley.—I saw several pieces of early barley that were all shot out, it is not often we have it so far advanced during this month of June. What little of this grain is sown is looking fairly well.

Pease.—I have seen one or two patches of this pulse that looked fairly well; but, as I mentioned previously, not much of this pulse is grown in this province.

Buckwheat.—It is just now the season of the year for this kind of grain—any one having it in the ground previous to the 29th inst.—got the benefit of the moisture and it will be up in a day or two. Anyone sowing it shortly will also make no mistake, as the soil will take a few days before it will get dried up. I have no doubt there are some sections where they cannot sow on account of the ground being too wet.

Corn.—Very few had their silage corn planted before the first heavy rain took place, therefore they were very fortunate. Of those who had got their work completed, the great majority had to do it over again. Lately, corn has done remarkably well, in some sections a great deal of corn is used as silage. Some few farmers speak against using it for the very reason that they have not seen good silage. Silage must be used in moderation, and in combination with other foods.

Potatoes.—Nearly all the potatoes had to be replanted this year. I think it was in 1864 or 65 there was a very heavy rain storm early in June, which flooded the low lying lands. On our farm we had planted nearly 30 bush of potatoes, the whole field was covered except a few feet, just a few days after the potatoes were planted. My father thought he would not need to replant as the water soon fell, but we did not have quite our seed back, and that only where it was not covered with water. We had to go to the United States, which was not far from my home in my early days, and bought 100 bush of potatoes and had only to pay \$14 for them; and such fine potatoes too, raised on sand. Those who did not replant

this year, if their land was covered with water, will regret it.

Hay.—I see that in some sections they have begun haying. In the south western part of the province the hay crop should be cut within the next fortnight. The crop is only fair, some excellent fields—old meadows very poor. It is now in the first bloom.

Grass is very good; the recent rain, have freshened up the pastures, and a good bite for the cows is the result.

But very few have provided themselves with green food; they will find the difference before a month passes over. It takes time to work or make great changes.

Cheese has been selling at a great price for the past two months—the shipments to the end of June are away ahead of last year—and the price too has been over a cent a lb. on the average more than last year; the two combined mean half a million more dollars to Canada.

Butter.—The shipments of butter are behind those of last year, for the very reason that cheese has paid better than butter; recently, the margin between the two has been getting closer, so that now the gap is not so very wide. The two combined, though, are still away ahead of last year, and last year was a record breaker.

Small fruits, such as gooseberries, strawberries and raspberries, are going to be a fair crop, currants quite plenty.

Apples.—The show of blossom was excellent, but the crop I should say will only be a fair one. Caterpillars not so plenty as last season. I see by recent accounts that they are doing a good deal of damage in some parts of Ontario.

Plums make a very good showing for the season.

The most of these reports are for the western counties of the province, East of Levis, the crops look rather poor, on the South side of the St. Lawrence river. Not much fruit grown in that section except wild berries, such as blueberries and raspberries. On the whole there will be sufficient for both man and beast, for which we should be truly thankful.

PETER MACFARLANE.

Chateauguay, June 28th, 1900.



Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

ILLUSTRATIONS

The sketch shows a medium fashionable dress suitable for a matron. It is not too pronounced in any way, but is composed of parts which are fashionable and most becoming to anybody who wishes to strike the happy medium.



Its colour is nut brown cloth, reverses of cream satin covered with straw coloured lace. Yoke of the satin crossed with a very narrow brown velvet ribbon.

Drape and tie of brown or white silk net. Togue of brown tulle, black sequined quills, pink roses, and buckle.

My young artist has rather high flown ideas of

a head covering for a maatron, but she does love to see a well dressed woman, and this toque must be very handsome and is certainly artistic, if the gloves and parasol are chosen of a suitable colour to match.

This same dress with the addition of a few yards of lace could be made suitable to a person of any age, old or young; a few yards of lace one might say thrown artistically about it make and quite alters the appearance of a dress.

Lace is worn on almost every garment that is made now. Cream lace is most becoming to everybody and elderly people would do well to wear no other; it softens and tones down any little defect, where white seems too harsh for some complexions, and also adds to instead of helping those people with a pallid complexion; by such white should be avoided as much as possible.

It is wonderful how a little cream lace, with the least sprinkling of pink, blue, rose, or violet ribbon, will brighten up and take off a few years in appearance from the wearer.

(The Editor of the J. of A. is happy to say that is pet horror, the loose wristband, the worst finish to the slum ever invented, has been abolished since the sketch was made.)

SOME SEASONABLE RECIPES.

A FEW SIMPLE AND EASILY PREPARED SWEETS.

To Make Rice Cream simmer four ounces of rice in a pint of milk with an ounce of sugar till it is reduced to pulp; turn out to cool. Whip half a pint of cream to a stiff froth, and when the rice is cold mix the cream with it. Set on rice or in a very cold place till wanted.

ORANGE TAPIOCA.

Wash one cupful of tapioca through several waters, cover with cold water, and soak over night. Add one pint of boiling water in the morning and cook slowly in a double boiler until the tapioca is clear. Remove the skin and seeds of one sour orange; cut in slices and stir in the boiling tapioca. Add sufficient sugar to sweeten and pour in a dish to cool. When ice cold serve with cream and sugar. This can be made the day before using if preferred.

To make Chocolate Omelet put into a basin four or five whole raw eggs, well beaten, with the

finely-chopped peel of one lemon and a few drops of vanilla essence; mix with three tablespoonfuls of thick cream one ounce of icing sugar. Mix well, and pour the mixture into a hot omelet pan in which one ounce of butter has been made hot but not browned; mix it about with a wooden spoon until it like a half moon, turn out on a hot dish and serve with chocolate sauce, which is made by putting into stewpan half a pint of hot water, two ounces of icing sugar, a teaspoonful of coffee essence, and a quarter of a pound of ground chocolate. Bring to the boil and simmer for about ten minutes.

Bacon is improved by serving with tomato purée. Cook a pound of tomatoes in a teacupful of stock, with a blade of mace, some vinegar, and half an ounce of butter, with the usual seasoning of pepper and salt. When tender pass through a sieve. Daintily fry some nice slices of streaky bacon, serve them on very thin slices of buttered toast, pour over all the tomato purée, and garnish the dish with crisped parsley.

TREATMENT OF CANS.

To prevent the cans breaking when pouring in the hot fruit, wet a cloth and fold it several thicknesses, lay this under the can and you will never break a can in filling it unless it was cracked before. A silver spoon placed in a can and allowed to rest upon the bottom of can will also insure the safety of the can. When the final screwing up is accomplished, put the can in a dark place and cool. Light will fade the color of the fruit and will cause some kinds to spoil. The dark is always best for all canned goods. Examine the canned fruit after a week's time, and if intact then it will keep for years. It cannot fail to be intact the cans, tops and rubbers are perfect. Sometimes when a can is difficult to open, one will try to insert a knife under the edge to get it started. This in some cases will bend the rim of the cover a little, and such covers should not be used, as a little air is likely to force its way through this opening and cause disaster. There is no need for anxiety about the keeping of canned fruit at all, if clean cans, new rubbers and perfect covers are used. If cans have been used for pickles some think they are ever after unsafe for other things, but if these cans are properly cleansed fruit will keep as well in them as in new cans.

Heat water to the boiling point and add some concentrated lye, put the cans in this solution and let them lie until the water is cool enough, so that the cans may easily be taken out. If the water is strong with lye be careful not to get the hands into it any more than can be helped. They may be taken out with a stick and rolled in clean hot water and will be ready for immediate use if wanted. Let them lie out of doors in the sunshine for a few days; this will sweeten the sourest can and make it fit for any use.

ABUSE OF DISINFECTANTS.

Remember that to mitigate a foul smell by sprinkling a disinfecting powder over it, is only to conceal, and not to remove the evil. You may for a time overcome a nauseous odor by the use of a disinfectant, but because you temporarily abolish a smell you certainly do not remove its cause. Like the person who, possessing an insanitary drain, uses a disinfectant powder to lessen the nuisance it causes, the man who thinks he has "disinfected" everything by sprinkling a powder on decomposing matter, is living in a sanitary fool's paradise. The only safety for the one is to replace his defective drain by one of proper make, and for the other to clear away the filth heap that so long as it is permitted to exist near human habitation must inevitably form a source of disease.

USES OF SALT.

The simplicity of a remedy has much to do with people using—the more simple the less disposed to use. Salt has a dozen uses which might be termed great blessings in the way of relieving the ills of humanity; and yet, if one were to name the benefits to be derived from salt, not one-half of its sick readers will use it, if for no other reason because salt is an everyday, common thing. Here are a few of the uses to which common salt can be applied:—

Salt cleanses the palate and furred tongue, and a gargle of salt water is often efficacious.

A pinch of salt on the tongue, followed ten minutes afterward by a drink of cold water, often cures a sick headache.

Salt hardens the gums, makes teeth white, and sweetens the breath.

Cut flowers may be kept fresh by adding salt to the water.

Weak ankles should be rubbed with a solution of salt water and alcohol.

Dyspepsia, heartburn and indigestion are relieved by a cup of hot water, in which a teaspoonful of salt has been dissolved.

Hemorrhage from tooth-pulling can be stopped by filling the month with salt and water.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

ORIGIN OF THE SEEDLESS ORANGE.

Twenty-five years ago there were no seedless oranges.

The first of these were freaks of Nature, their counterparts have never been found. In the summer of 1872, William F. Judson, United States consul at Bahia, Brazil, heard an account from natives of a few trees in the swamps, on the north bank of the Amazon, some sixty miles inland that bore oranges without seeds. He believed that seedless oranges were worth experimenting with in Florida. So he sent a native up the river to get some fruit and cut some shoots off the trees. When the native returned the consul was delighted with the specimens, and at once sent six of the orange-tree shoots, carefully packed in wet moss and clay, to the Agriculturist Department, at Washington, for propagation. Two of the shoots died and the others were almost forgotten in a few months. In the winter of 1873, Mrs. Tibbetts, a lady of Maine, was visiting her cousin Gen. B. F. Butler, of Massachusetts. Her husband had recently moved from Boston to Los Angeles, California, where he intended to grow semi-tropical fruits. Gen. Butler gave Mrs. Tibbetts an introduction to the Department of Agriculture, from which she obtained specimens of fruits and shrubs suitable for experiment purposes in Southern California, and among these were the four surviving orange-trees from Brazil; they reached safety in it and were immediately planted; this was in 1873. Two of these shoots died and another was broken and partially destroyed by a cow.

Five years passed and the two surviving trees came into bearing. In the winter of 1878 and 1879 they bore 16 oranges, the first seedless

oranges ever grown in North America. The specimens were carried about southern California and shown to all ranchmen and fruit-growers. There were many who doubted whether the trees would annually bear such royal specimens of orange culture. Nearly every one believed that the fruit would become coarse and tough in a few years more. So the second crop was awaited with curiosity among the neighbours. There was about a box of oranges in the second yield, and they were even better than the first crop.

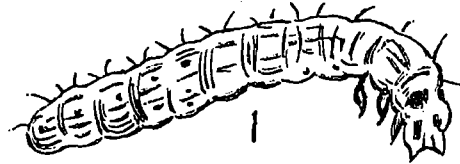
The planting of groves of seedless orange-trees on the Tibbetts' place, propagated from buds from the two original trees began in earnest in 1882.

In the following year, the demand for buds from the Tibbett trees was so large that a dozen buds sold for \$5, and some growers desirous of getting seedless oranges of genuine quality paid \$1.00 each for buds. In 1884, the two Tibbetts' trees furnished buds that sold for \$1,500, and a tall fence was built about them to keep people from stealing the buds. A year or two later, the trees that had been propagated from the Tibbetts' trees began to bear and they themselves furnished tens of thousands of buds as good as those from the original trees. Then, the first navel orange-groves began to bear fruit, and from that time the boom navel or seedless oranges has been continued.

The introduction of the seedless orange into California has, in less than twenty years, been the means of adding to the wealth of that State in a remarkable degree. Previous to this, the total annual yield of oranges was less than 5 carloads, now it is 15,000 carloads and next year it is expected to reach 20,000.

The total amount invested in orange culture 25 years ago was \$23,000, and now it is about \$43,000,000 and the industry in the State is increasing at the rate of \$2,000,000 every year. 13,000 men have been drawn from other pursuits, vast areas of sun-baked land has been transformed into the most beautiful orange groves. A dozen or more towns of 5,000, 6,000 and 10,000 people have grown up in Southern California, and it has added directly \$43,000,000, and indirectly \$60,000,000 to the taxable wealth of the State. — *New York Sun*.

SURFACE CATERpillARS.



1. Caterpillar of turnip moth (*Agrostis segetum*).
2. Caterpillar of heart and dart moth (*A. exclamatoris*).

These caterpillars cause very serious injury to many crops of the farm, market garden, and garden, and particularly to mangels and turnips. They, with some others, are called "surface caterpillars" because they hide just beneath the surface of the soil and attack most kinds of plants at, or just below the surface, and always in the night-time. They correspond with cut worms.

The eggs of these moths are like poppy seed and are, when laid, fastened to the leaves of the cultivated plants and some weeds. Caterpillars come from these in 10 to 12 days and begin to feed and grow, and, continuing to feed all summer, when full grown are 1½ inches long and produce moths the same autumn, and then wintering larvæ. In the spring the caterpillars change into pupæ and remain in this inactive state for about 28 days.

Liberal dressings of lime are good preventatives. All kinds of weeds, especially charlock which affords so good a shelter for the eggs, should be destroyed.

Frequent stirring of the soil is also desirable and drawing drags and harrows over young plants of turnips and mangels when possible will have a good effect.

3 or 4 bushels of lime and one bushel of well powdered soot or wood ashes, to which is added 1 lb. of sulphur to the bushel, sprinkled near the roots of the plants will prove offensive to the caterpillars. Hand-picking where the crop is not very extensive, is advocated. And baits of clover, lettuce, etc., sprinkled with Paris green will attract and poison the insects.

Birds are, many of them, great devourers of these caterpillars, and moles, which it is the fashion



to kill, eat them, and for this cause the moles should be protected rather than destroyed for they do much good and but little comparative harm.

A PEACE PROBLEM.

What shall we do to reward our brave boys who return from the war?

One of the ways in which the Romans rewarded their heroes, and made good and useful citizens of them after a certain term of military service, was to make them free grants of land, and may not we copy the Romans in this respect. There are millions of acres of good land in Canada awaiting the work of the husbandman to make it productive. Agriculture is admitted to be the true basis of prosperity, and the occupation most conducive to welfare and happiness.

Our sons have most nobly distinguished themselves and won glory in the defence of the Empire; their deeds deserve more than mere thanks or some gaudy decoration or empty title at the hands of a grateful people.

Many a young man, when he returns, will be seeking employment, and others may, if not encouraged, fall into dissolute habits, not unlikely to have been engendered by campaigning; to these we have very responsible duty to perform, and if we can assist them in the pursuit of wealth and happiness we shall have made a move in the right direction, and can refer them with better grace to the refrain of Mr. Alex McLachlan's admirable song:

Up, up, be stirring, be alive,
Get upon a farm, and thrive,
He's a king upon his throne
Who has acres of his own.

GEO. MOORE.

KNOWLEDGE.

The Arabians have a proverb which reads: Mankind are of four classes. 1st. He who knows not, and knows not he knows not, he is a fool—shun him. 2nd. He who knows not, and knows he knows not, he is simple—teach him. 3rd. He who knows and knows not he knows, he is asleep—awake him. 4th. He who knows and knows he knows, he is wise—follow him.

This proverb is particularly applicable to some; it is not uncommon to meet with persons who

despise instruction, and scoff at knowledge in others, because they think they already know all that is worth knowing about their business, and so they keep in the same old ruts in which their forefathers travelled, and look upon suggested improvements as new-fangled nonsense, not worthy their attention. The Arabs' advice is to shun such as fools, and it does appear that such treatment is what they deserve; and yet, seeing the harm they are capable of; it seems quite desirable that they should be convinced of their folly. Egotism and self sufficiency are two of the worst qualities that can enter into the mental composition, and the sooner they are overcome the better. The greatest men in all scientific pursuits are those whose thirst for knowledge has been the greatest, and the least successful those who have had too good an opinion of their own attainments and ability.

The simple minded man who is ever ready to receive advice and then, by study and observation, prove whether it is good and worth following, is no fool, because he is teachable: if he does not belong to the sleepy class he will soon be able to put the knowledge he is gradually acquiring into practical effect, and when, in due time, he joins the happy fourth class, who knows, and knows he knows, he will be possessed of a power, which will not only be the means of providing him a ladder by which he may climb to affluence, but make him worth following, and thus he will spread the advantage of his acquired knowledge among his neighbours.

Let us ever bear in mind that ignorance is *not* bliss, but that "knowledge is power." There never was a time before when agricultural and horticultural education was so easily attainable; during the present century all sorts of efforts have been made to put these most important sciences, upon a practical basis. The discoveries and writings of such men as Young, Sinclair, Mills, Loudon, Hunter and a host of others have served to encourage thought and study, and to show the whys and wherefores of certain methods and operations, to the end that they may be more intelligently adopted and performed.

And this awakening of the cultivators of the soil has given encouragement to inventors and machinists who have supplied us with a great variety a labor saving implements which have made farming and gardening comparatively easy occupations.

The chemist has also been active with his experiments and deductions, and has been able to demonstrate the value of manures and the effect that certain crops produce upon the land. The more comfortable housing and correct methods of breeding and feeding live-stock have been exemplified and, by many, adopted. All governments which have the true advancement of people at heart are using means to impart scientific knowledge to those interested in agriculture. Colleges, institutes, farmers' and gardeners' clubs, experimental farms, orchards and gardens have been established and lecturers sent round to give instruction. The press has been brought into the service and reports, bulletins and journals are scattered, as it were broadcast, in all progressive countries, Canada being no exception.

It has been said that "you can take a horse to the water but you cannot make him drink" which is of course true, but that is no reason why water should not be placed within his reach so that he may have it when he becomes thirsty; and so it is with knowledge, if we place it within easy reach of all, we shall perhaps induce some to taste it, and when once they get an idea of its sweetness and refreshing quality they will drink deeply.

The poet says :

A little learning is a dangerous thing,
Drink deep or taste not the Pierian spring.

With this we do not entirely agree as to not tasting, we would rather say taste, and then the pleasant flavour will induce you to drink deeply.

To sum up, the farmer or gardener who will not take advantage of the facilities for acquiring knowledge, offered at the present day, is to be pitied because, unfortunately, both for himself and others, he belongs to the first of the four classes of the Arabian proverb.

GEO. MOORE.

The Dairy.

PASTEURIZING CREAM FOR BUTTER-MAKING.

In the twenty fifth annual report (just issued) of the Ontario Agricultural College and Experimental Farm, Professor Dean describes and tabulates the effects of pasteurisation upon the flavour and grain of butter. The experiments were conducted during the months of April and May, and the total quantity of milk used was 52,968 lb. The

temperature of pasteurisation ranged from 155 deg. Fahr. to 162 deg. Fahr., but the length of time the milk was submitted to this temperature not stated. The average percentage of fat in the wholemilk was 3.5. It is interesting to note from the data given that there was less loss of fat in the skim-milk from the pasteurised whole milk than from the unpasteurised. Again, pasteurised wholemilk yields according to these experiments a comparatively richer cream, that is to say while a given quantity of pasteurised milk yields a smaller weight of cream than that from the same quantity of untreated, milk, yet the percentage of fat in the cream is higher than in the unpasteurised samples.

In both cases the cream was allowed to ripen, and of course, a "starter" was used in every instance where the milk was run through the pasteuriser. The kind of starter used is not mentioned, but no difficulty was experienced in getting a proper acidity. The average percentage of acid in the cream before churning was for the pasteurised series .515 and for the untreated .498. The actual time taken in churning was shorter by a few minutes for the pasteurised cream.

Concerning the yield of butter from the two kinds of cream the average weight per 1,000 lb. of milk was greater in the case of the natural or untreated samples, but then, as everyone knows who has had experience in the making of pasteurised butter, it (the pasteurised kind) is always drier than butter made in the ordinary way, so that the increased yield in the latter is entirely due to a higher percentage of moisture in the product. It is a pity that the experimenter gives no record of the comparative percentage of residue fat in the butter-milks of the two series of churning, but in one or two instances in which such comparative tests were made by the present writer, there was, if anything, rather a smaller percentage of fat in the butter-milk from pasteurised cream than from the unpasteurised.

The butter was judged and scored as to flavour and grain by two large and well known Canadian firms of wholesale dealers. The freshly-made butters scored equally, but it was invariably found that the pasteurised butter possessed much higher keeping qualities than the unpasteurised. This result entirely agrees with our own experience, and shows the value of pasteurisation in the making of butter for the export trade.

There are other advantages, of course, arising from pasteurisation. Undesirable odours in the

milk arising either from injudicious feeding or the presence of certain kinds of bacteria that liberate volatile compounds are, for example, completely expelled by the process, while all disease-producing germs unable to form spores are also destroyed which is an additional and important fact from the consumer's point of view.

As might be expected, the pasteurised skim-milk (pasteurised either before or after separation) retained its sweetness for a longer period than that from untreated milk.

The report contains a good deal of other interesting reading for dairy farmers, and again demonstrates the activity of Guelph College staff. Bacteriology is usually well in evidence in the annual report, but last year the professors visited Europe and his deputy (Mr. Ross, so the President explains) "suddenly enlisted and left with the first second contingent for South Africa." We wish him luck and a safe return!

DAVID HOUSTON.

WATER FOR THE COWS.

There is a class of dairymen whose cows are well cared for, as to water, but a few months of the year. The few months in the spring when water is plenty and not too cold, and an equal time in the fall before ice forms, is about the only time when the cows can obtain a satisfactory supply of water. The rest of the year the water is so cold that a cow in milk cannot use a sufficient amount without a serious likelihood of a chill, and in the drouth which usually comes on in summer, a sun-burnt pasture with a mud hole in one corner does not afford an ample supply of good water.

The consequence is, that the cow is obliged to go without water at a time when a good supply is absolutely necessary if the milk flow is to be kept up.

The cow needs water to digest her food, to keep the body in running order, to wash out the products of digestion, and for the milk supply, and if all these are to be kept in their normal condition water must be supplied or the milk flow suffers.

It takes 4 lbs. of water for every pound of dry matter in the food, or if the cow is on dry food it will require nearly 100 lbs. of water to enable the cow to work up her daily ration.

For every pound of milk given, the cow requires four and three-fifths pounds of water, or 115 lbs.

of water for 25 lbs. of milk. What between the food and the milk supply a cow needs an abundant supply of good, clean water, and if that cannot be obtained she will endeavor to make up the deficiency at the nearest mud hole—a place that is neither good for the health of the animal, her udder nor the cleanliness of the milk.

Mud holes for watering cows have been responsible for muchropy milk, gassy curd and poor flavored butter, to say nothing of the liability of disease bacteria invading the udder. Whether in summer or winter, water for the cows, clean and in the proper quantities and at the proper time, should be supplied. The want of it may cause a loss to the dairyman even if the animal is supplied with an abundance of proper food.—*Hoard.*

AS TO PEA MEAL FOR DAIRY COWS.

Ed. Hoard's Dairyman :—Enclosed find clipping from weekly *Star*, published in Montreal, in regard to pea meal as a food for dairy cows. I have always considered pea meal as a first-class food for dairy cows and would like your opinion on the matter.

Barnston, Que.

J. F. P.

J. W. G., Ont.—Does pea meal tend to dry the milk of cows?

Ans —Pea meal is not a good food for cows. As compared with corn meal it is quite a defective kind of food, as may be seen by these figures :

	Percentage composition of	
	Pea Meal.	Corn Meal.
Protein.....	18.0	7.1
Carbohydrate.....	56.1	62.7
Fats.....	0.9	5.8

For the production of milk the food should have a much larger proportion of the carbonaceous elements and fat in it, than of the protein, for it is reasonable, and indeed it is unavoidably necessary, that for a cow to make milk she must be fully supplied with the necessary substances for the milk and the butter as well in the food. Butter is fat, pure fat, and we see that there is so little fat in the pea meal that six times as much of it will be necessary as of corn meal. A cow, in fact cannot eat as much pea meal healthfully in a day, as will enable her to make butter. As a rule then pea meal is not a proper food for dairy cows, and so being we cannot expect a cow to give us anything that does not exist in the food. To feed

all pea meal to a cow would soon make her ill, but we may quite safely feed corn to a cow wholly, and without mixture, and get her full possible product of butter. So we may say to feed pea meal to a cow will tend to dry a cow, at least to largely reduce the quantity of milk, and by continuance of this the cow will become dry in time.

There is some truth in the answer submitted by the *Star* and a good deal of error. It would not answer, as the *Star* says, to feed pea meal exclusively, in small part for the reason stated, but principally because it is too concentrated, that is, carries too much nutriment in small bulk. The same objection but in a somewhat modified degree, applies to the exclusive feeding of corn meal.

Experience has shown that the cow can transform either the protein, the carbohydrates or the fat in the feed into milk at will, but unfortunately the only ascertained source for the casein in the milk is the protein in the feed, and the cow has no choice as to the composition of the milk she yields. Cows vary in this respect, but each individual cow is born with her own personal limitations and within very narrow limits must give milk with a fixed proportion of a casein, fat and milk sugar. It follows therefore that the yield of milk is dependent upon a proper supply of protein in the feed. There must be carbohydrates and fat also, but these are usually over abundant on the farm and are cheaply supplied.

Pea meal is very rich in protein and hence is a very useful feed—in moderate amounts—for the dairy cow, but should always be lightened up or extended with some much lighter and more bulky substances. Nothing is quite so good for this purpose as light, flaky bran. A mixture of pea meal, corn meal and finely chaffed hay, will serve a good purpose where bran cannot be had.

BUTTER MAKING.—FROM THE COW TO THE CONSUMER.—SUGGESTIONS BY A PRACTICAL EXPERT.

Mr. Geo. D. Mansfield, of Elgerton, Wis., who has been in the butter making and butter selling business from boyhood, at first under the able instruction and supervision of his father, Mr. Geo. C. Mansfield, but for several years now on his own account with entire satisfaction to the patrons of the several creameries under his successful management, writes to *Chicago Produce* as follows :

July and August are the trying months on all of us who handle dairy products, and only those buttermakers who use every known precaution can expect to deliver to the railroad refrigerator cars clean flavored and full-flavored butter during extreme hot weather. This can be done in hot as well as cool weather (at least while we have green pastures) if creamerymen and their makers will see carefully to carrying out the following necessary details :

First—Use continuous, gentle persuasion with your patrons toward cooling and treating the milk and keeping the same away from the barn and any other place where there are bad odors, and to positively keep cans and all milk vessels thoroughly clean.

Second—Make a polite request of each patron and hauler to cover his or their cans when leaving home for the creamery, and to get to be creamery not later than 8 o'clock a. m., and thus avoid exposing the milk to the sun's hot rays.

Third—The milk should be carefully inspected by the maker before accepting, and, if not reasonably sweet and clean flavored, reject it; or, if your business judgment advises you to accept it on account of policy, then dump it into the skim milk or where you think most advisable outside of the receiving vat. Losing the cost of 300 to 500 pounds of milk is cheaper than to lose the customers for your factory's make and possibly stand a reduction of \$25 to \$40 on a week's make, all on account of mixing with your day's receipt of milk a few hundred pounds of tainted milk.

Fourth—If your quality is suiting your customer, continue ripening your cream the same as you have previously. However, churning at a very low temperature, say not above 50 deg., is a rule that works to advantage with any cream ready to churn. Working and packing your butter in the early cool of the morning is another rule that always works to perfection. If butter is allowed to become heated and consequently soft during the handling before packing, it is very liable to show up a flavor sometimes termed fishy or brackish.

Fifth—When packing in ash tubs, buy only the best of five hoop tubs, with perfect-fitting covers. Drive bottom hoop even with stave before soaking and soak over night. Always line your tubs with the best quality of parchment paper, and just before placing your lining into the tub put a handful of dry salt over the entire inside of the

tub, as an antiseptic to prevent mould growth on the inside of tub and the lining. Be careful in packing the butter into the tubs, using the packer in such a way that the butter will be a solid mass in the tub, thus leaving no air chambers and getting the full worth of the tub by crowding in all the weight it will hold. Always strike the butter down from top of a tub about three-sixteenths of an inch. This is advisable in cold as well as hot weather, as the three-sixteenths of an inch space allows a give to the butter when stripping the tub to determine tare. It is next to impossible to do a neat job of stripping a tub of butter that has been filled to the top of the stave in the tub.

Always use a cloth circle for tops, which fully covers the butter. Dampen the circle slightly before sprinkling the salt over it, and never use more than four or five ounces of salt on top unless by special request of your customer. If you leave the circle and salt dry, the salt will all be over to one side of the tub the first time it is handled.

The cover should fit the tub perfectly. Three tins should be used. Three are enough. The quality of the tin should be good enough so that when a buyer opens a tub for inspection the tin will pull the tacks instead of pulling in two, which necessitates putting on a new tin. If the broken tin is again used it leaves an uninviting appearing package.

One half inch wire nails should be used for nailing on tins. Five-eighths inch are usually too long and go through into the butter and catch into the cloth. When the buyer raises the cover, up comes the cloth with the tack, thus spilling the salt over the naked butter and displacing the circle. In putting the tins on the cover, the tin should lap over on top only far enough to nail. This will allow the long end of the tin to come on the side of the tub where it is needed in order to allow a purchase for an opener under the tin when wanting to open the tub. Place the knee on the cover when fastening tins so as to draw the cover hard down to the top of the staves. Always use two tacks in the end of the tin on the side of a tub.

Now your butter in packed, use a small number, about three-eighths inch size, for dating each day's make. For the churning the first day of the week stencil on the side of each tub next to the tub tin the number 1. This will designate the first day's churning. On the next day's churning

stencil a 2, and so on up to 6 or 7, according to how many days you operate your creamery during the week. By designating your each day's make in the above manner, you prepare your shipments so your customer or a buyer can inspect your whole week's make for flavor by simply examining one tub of each date. Again, if any day's make is off, the same can be rejected from the lot by the date numbers, and thus avoid boring every tub of the lot to pick out the off quality.

Sixth—Your butter is now ready for shipping day. When the team comes for the same, first see that there is some clean hay or straw in the bottom of the wagon box. Then load the tubs in snarly, never cocking the tubs so that one edge of a cover rests on top of the cover of another tub; for, if it does, the tin or the cover will be broken when the load gets to the depot, and it seldom gets fixed in a case of this kind. Therefore, it goes to market, or to your customer in bad condition. Your wagon cover should be enough so it will double and still cover the load. Then during the extreme hot weather, you can place between the folds of the cover a layer of green grass, which will very materially aid in keeping out the heat and retaining the cold that the butter contained when taken from the refrigerator. Have your teamster use only a spring wagon. It will get your butter to the depot in better shape, and he will save in the wear of his wagon, more than the cost of the springs.

If every butter maker who reads this article will carry out the above instructions, he will have made a long stride toward placing on the market, goods that will sell close to, if not at the highest quotations, and at the same time the condition and make up of the entire package and contents should please the most critical buyer.

Important instructions, which, when closely followed, will avoid mouldy butter tubs and mouldy butter: The time of year when mouldy butter makes its appearance is here, and as the weather gets hot the danger from mould increases. Mould can be avoided by adhering to the following instructions:

First—Never prepare a tub for butter, that shows the least sign of mould inside, and to avoid mould growth starting on tubs while they are in store, keep them in a dry place, allowing no steam to escape into the room where the tubs are stored.

Second—Before packing butter always soak

your tubs well, and just before lining them, and while tubs are wet inside, rub the whole inside of the tub with a handful of salt. Then dip the linings into a strong salt brine just before placing them into the tub. Salt is one of the most convenient, and one of the best preventers of mould growth in butter tubs there is to be found.

Third—Your butter refrigerator positively should be so constructed that there is a continual circulation of air in same when the ice box is filled. Never allow the floor of your butter refrigerator to remain damp or wet. Go over the floor with your rubber mop every time you clear the room of butter. Never allow the temperature of butter room to remain above 55° and 50° is preferable.

Fourth—Now by following carefully the above instructions, which long practical experience has demonstrated to us as along the right lines, you will avoid having any mouldy butter, which, when you do have it, makes an endless amount of trouble, and a heavy financial loss on the butter.

GIVE THE COWS A CHANCE.

Farmers generally keep all kinds of cattle together in the pastures field. This is said to be a mistake by old experienced dairymen. If possible let the cows have the best pasture and keep them by themselves. Give the cows a chance. Where horses, cattle, sheep and pigs are all running on the same pasture the cows have not a fair chance. The dry stock look after all the fresh nice bites that a cow likes and which is so needed to keep up her flow of milk. The calves worry them if running in the field and are better to be kept away from the sight and hearing of the cows when they come in at milking time. Cows are fastidious, something like young ladies, they want things nice, better, if possible, than the other stock get. Give them the best chance.

WHAT KIND OF FEED WILL PRODUCE THE RICHEST MILK?

Ed. HOARD'S DAIRYMAN:—It is almost the universal opinion among practical dairymen that some kinds of feed will produce milk that will test higher than that produced by other feeds. The use of the Babcock test in the creameries and

on the farms, has not tended to change this opinion to any great extent. In fact, in some instances it has tended to strengthen the belief. But, the great trouble is, each person has a different kind of feed that will produce rich milk. Each one is sure he is right for he has tried it to his own satisfaction.

In my creamery investigation, this subject often comes up. On my last trip I called on a young man who owns a fine herd of dairy cows that are great producers, and of course he is a good feeder; has been familiar with feeding cows from his boyhood up.

He said his cows were fed last winter bran and corn meal for a while, then he got some gluten feed and fed some of that in place of a part of the bran. Immediately the test went up two or three tenths. After awhile he was out of gluten feed and he went back to bran: and straightway the test went back to the old notch. He got more gluten feed and the test went up again. He changed several times just to see if it worked the same every time. And he says that it did. This young man comes pretty near knowing that gluten feed and corn meal well make a higher test in the milk, as well as more milk, than corn meal and bran.

Another young man who is a neighbor of this last one is also a student of cow feeding. He has had a good deal to do with one of the best producing herds in the county, and he is also secretary of the Creamery Co. I next called on him. He also had been feeding gluten, then leaving it off and then feeding it again, making the change several times during last winter, but instead of gluten making the milk test higher, it tested lower every time. Of course he does not think as much of gluten feed as the other young man does.

A creameryman near here who takes a great interest in what his patrons feed, says that last winter several of his patrons had oat hay. He says that when they commenced to feed it, the test went up in every instance, in some cases as much as one-half of one per cent and in one case one per cent. He knows that oat hay makes the milk richer.

Another creameryman says that one year when pastures were rather dry the last of July he advised his patrons to feed better; some he advised to cut green oats that were not yet quite ripe and others he advised to turn into second crop of clover, telling them he would watch the

result and see what the effect would be on the quality of the milk. In this case the test went down with every one who fed green oats and went up where clover was fed; but they all got more milk and more butter fat. And so it goes, each one has his favorite feed for making rich milk, but they all differ. A man once said: "The trouble is, we all know a lot of things that aint so." Is not that the case with these persons that have found some certain feed that will make richer milk than any other feed?

When any one asks me what feed will make the richest milk I tell him, "I don't know." I say this because the result of my own feeding experiments and the conflicting testimony of others compels me to. The food that will produce the most good flavored milk for the least money, if it is healthful for the cows, is the feed for me to give cows. I'll risk the test.

C. P. GOODRICH.

Fort Atkinson, Wis.

Hoard.

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

POULTRY PARAGRAPHS.

A teaspoonful of sulphur in a quart of soft food given the hens on dry days is one of the best medicine where disease appears, and it is excellent when burned in the poultry house, as the fumes of burning sulphur will not only destroy the lice, but also the germs of the disease. Do not add it to the food during damp weather. As it is cheap, a supply should be kept constantly for use.

Broilers may be hatched as late as April, or even May, but the earlier the better, as it is the early chicks that bring the prices. Large numbers cannot be raised by hens in winter, as hens will not sit until they are so inclined; but there are many makes of incubators on the market and they have long ago passed the experimental stage. Artificial incubation is now an accepted portion of poultry raising, and incubators are essential to success in getting broilers to market in time for high prices.

WHY HATCHING FAILS.

When chicks do not begin to hatch uniformly, the fault is with the eggs. In summer or in warm climate, the trouble is due mostly to the eggs and not to the incubator or hen. If the incubator can hatch a dozen strong chicks, why not all? The reason is that all the eggs differ, and the chicks in the shell are just what their parents are, weak, strong or having some other fault. Old hens may be moulting (so may the males) and the pullets may be immature. Chicks are like babies — not two alike — and some live, while others die, depending on the condition of the parents, etc.

In summer the most of the eggs are from fat hens and that is the cause of nearly all the poor hatches. Pullets May 1st and later will commence laying about the beginning of the next breeding season, say February or March. They will lay fair sized eggs for pullets and the first or second clutch of eggs will produce chicks possessing sufficient stamina of vigor to carry them through, but as the warm weather of the spring sets in, they become reduced and enfeebled by reproduction, their chicks are small, effeminate and weakly, or they die in the shells. Still younger pullets of the June hatches, under any ordinary care, will commence laying about the next April, and one clutch of their eggs is all that is safe to use for breeding purposes, as one of the causes of so many young chicks dying in the shells, or dying very young. Their eggs were small, their chicks were small and there was hardly sufficient strength and vitality in them to start them in life. The wings of such chicks are weak and stand out from the body. They "peep" constantly, eat in differently, on the least exposure diarrhoea, or canker ensues and they die, seemingly without a cause. This is particularly applicable to chicks of large breeds. It has been as prominently noticeable in other varieties for which a large demand may have existed, and if they mature earlier than the large breeds, the results was the same. The breeding season was extended further into the summer and may be traceable to breeding too immature pullets. It is well known that under common or ordinary care, a pullet's advancement in size and maturity, in a majority of cases, stops when overtaken by winter and she makes but slight headway until spring begins to influence the weather, and then a development takes place. Increase of strength and structure is started, and there is nothing in a

pullet, just as she entered the winter some three or four months before, to furnish eggs for breeding purposes.

INCUBATORS IN WARM WEATHER.

There is a profit in incubators in summer if they are properly managed. Great care must be used to prevent overheating. An incubator with several hundred live eggs in it on a warm day contains much heat, and one could readily overheat and kill half the chicks even if there was no lamp near the incubator. There should be enough ventilation to carry off all the surplus heat made by the chicks, and at this time the incubator may require more moisture than at any other season of the year, or at any time during the hatch.

A good guide for the correct amount when hatching during warm weather is to have all that the machine will bear and still not have so much that the chicks will not dry off when they come out. Chicks should be dry in one hour after they are hatched. One could so saturate the machine with moisture that the chicks would remain wet, but that is too much. It will not only prevent some from hatching that would otherwise get out, but it will cause the machine to get foul. During the last few days to have all the machine can have and not enough to prevent the chicks from drying off nicely after they get out is the proper point. Some use no moisture at all until just about hatching time. This will bring out more chicks than the other way, and experiments show that in some cases no moisture at all is necessary. After the chicks are out be careful not to crowd them. It is best to put about twenty-five or thirty in a lot and let them lie quiet until they get old enough to eat. That will not be until the end of twenty-four or thirty-six hours; then feed them. Feed but little for the first day or two; they do not need much at first. Give fresh water from the start in warm weather, but not in cold weather. The chicks are liable to get out and do themselves injury if proper precaution are not taken to protect them.

On a warm day during hatching-time the incubator should be attended to quite frequently, as there is danger of overheating the eggs, and by observing often it saves all that would be likely to perish.

WHEN TO LEARN HOW TO USE THE INCUBATOR?

Is a question I have been often asked and I answer, summer is the proper time to begin with the incubator. Practise first, and then get ready for winter. To wait until late fall and then try to hatch for market is unwise, owing to the losses that may occur should a failure result. The first hatch is everything, if the work begins late, but if done sooner, that is while eggs are cheap, any failure resulting will not injure the market chances. Then again it is easier to raise the chicks in the summer, hence practice with a brooder will be beneficial. The mistake made by beginners heretofore is that they begin hatching with incubators too late in the season and do not give themselves time to learn anything about the business. They purchase their incubators when ready to hatch and then take the risk of good and bad results, most often the latter. There is another point which is that to fail with the first hatch after the time arrives to bring out chicks or market is to get behind the prices; that is, if prices are high the chicks must reach the market in time to secure them; but if three weeks are lost because the first hatch failed, that lost time cannot be regained and the prices will be going down as the later chicks come on. Instead of getting ahead of the prices one is following behind and cannot overtake them. For that reason all who are interested should begin as soon as possible; now, for should failure occur with the experimental hatch the operator will not only be more experienced but will also be in a position to be up with the markets. Learn while eggs are cheap and plentiful.

S. J. ANDRES.

POULTRY.

Demand for the superior quality.—High prices paid in London, Eng., for Canadian poultry of first quality—Farmers who have done well—Essentials to success.

(By A. G. Gilbert, Experimental Farm, Ottawa).

Poultry development is taking place at a rapid pace. The demand for the superior quality for shipment to the almost unlimited British market, or, for home consumption is assuming extensive proportions.

Not long ago, I had a letter from Mr. J. M. Wilson, of the Toronto Poultry and Garden Produce Co., of Toronto, asking if I knew where he could purchase in the fall ten, or twenty thousand birds to fatten and ship to the English market. "I am afraid" he adds to his letter "that I cannot procure them in the neighborhood of Toronto." So much for home demand.

A few days ago, the Agent of the Department of Agriculture in London, Eng., Mr. A. W. Grindley, kindly send me some extracts from English Trade journals. One paragraph makes the following important announcement. It is from the *Fish Trades Gazette* of December last, and reads:

"This week a parcel of Canadian chickens of superb quality has been on the markets (London). The prices obtained were quite equal to, if not higher than those ruling for any English chickens of the same weights, which were from $3\frac{1}{2}$ lb. to $5\frac{1}{2}$ lb. average."

Every farmer, reader of your paper, who has any knowledge of Canadian breeds of poultry, knows that we can send any number of $3\frac{1}{2}$ lbs. and $5\frac{1}{2}$ lbs. birds, provided our farmers keep the Plymouth Rock, and Wyandotte breeds, which make the weights mentioned in 4 and 5 months.

In my evidence before the Committee of Agriculture of the House of Commons of last year, I stated "that the demand for the superior quality of poultry was upon our farmers before they were prepared to meet it." And such was really the case. I also contended that the superior quality was required for our own city markets. It certainly remains with our farmers to furnish the quality required. And what are they going to do about it? It is gratifying to know that many farmers have given their attention to poultry raising and successfully so. But this important revenue making department of the farm has yet to receive the attention of the great majority of our farmers.

Farmers who have successfully raised the superior quality.

As a proof that many of our farmers have successfully gone into the raising of poultry of superior quality, I may quote the following from letters written to me within recent dates. The first is as follows:

Engleside Farm, Brockville, May, 1900.

Dear Sir,—I have fifty February chicks now about two pounds weight, or over, and seven

hundred closely following. Where can I get a leading purchaser in Montreal or Ottawa? Kindly inform me if you know of any such.

J. W. NEWMAN.

Chicks of such age and number were likely hatched out in incubators and reared in brooders. I give the letter because it shows remarkable development in poultry raising by a farmer. I trust he will have many imitators.

An instance where the superior quality was raised and sold at satisfactory prices is that of Mr. A. McPhadden, of Dominionville, Ont., who last October, raised, fattened and sent to Ottawa, 16 Barred Plymouth Rock, Cockerels, which averaged $5\frac{1}{2}$ lbs. weight, each. They were sold at 10 cents per lb. to private parties.

Another instance is that of Mr. Geo. Laidlaw jr, a well known farmer of Guelph, Ont., who wrote at end of last fall to say that he had raised a large number of Buff and Barred Plymouth Rocks and Silver Laced Wyandottes, which without any special fattening, but care and proper feeding, weighed $5\frac{1}{2}$ lbs each. Mr. Laidlaw said he sold them alive to a dealer in the West, at much better price than he could get on local market.

Other instances may be given, but the foregoing will suffice to show what can be successfully accomplished. I may be asked why I mention the foregoing cases. I reply as an incentive to those who have not yet begun to care for their poultry and as encouragement to those who have made a beginning.

Requisites to success.

The first essentials to success is to have the proper breeders which as chickens grow rapidly. The next is to properly care for and feed the young chicks, so as to have their flesh tender and juicy. How to have both requisites has been shown time and again in the columns of your widely read journal, by both my confrere Mr. S. J. Andres and myself. No fowls will do better than Plymouth Rocks and White Wyandottes. Other breeds may be as good, but none can be more easily and cheaply procured, and certainly none will make better winter layers, or, more rapid flesh formers.

It remains for our farmers to take advantage of the different markets open to them, or, which are rapidly opening up. The demand for the superior quality of Canadian poultry in London, Eng.

land, is very great. Are our farmers equal to the opportunity? I certainly think they are. Let them be up and doing.

The Horse.

ARMY HORSE BREEDING.

In last issue of *The Farmer* attention was drawn to the purchase by agents of the British government of a considerable number of Canadian horses, which have since been shipped direct to South Africa. One consignment of western horses that of the Strathcona Horse, on the S. S. Monterey, made a rather unfortunate record on the voyage, and a large number of them were lost through pneumonia and other diseases. But later advices from the seat of war show that what did get into active service have proved tough and serviceable to a very gratifying extent.

Lieut. Morrison, who left the editorial chair of the Ottawa Citizen to go to the front with the second contingent, thus writes of the pluck and endurance of these animals: "The vitality of the Canadian horse is wonderful. The Australian and English beats do not stand the service nearly so well. Yesterday six dead horses marked the line of march from Elaau Spruit to Carnavon. Only one Canadian horse, in D battery, dropped, and it was the most awful looking skeleton you ever saw in draught. It was left for dead some distance back, but half an hour after the old chap walked into camp, and the boys gave him a cheer."

The battery horses we are familiar with are not usually regarded as A1 specimens of horse flesh, but it may confidently be asserted that a Canadian horse for any such purpose, when toughened by regular work and proper feeding, will compare favorably with anything else of the same sort to be found. The very soil beneath its feet, made as it is from the Laurentian rock underlying it, is a guarantee for the quality of the food that soil produces as well as the native vigor of the horse so raised. And when we come to the climate and soil of our western ranches we find highly favorable conditions for the production at very moderate cost of all classes of horses except the very heaviest. The ride of a troop horse of a messenger of the Mounted Police in the time of the Riel rebellion from Calgary to Macleod and back will long remain as evidence of what a western horse can do when an emergency arises. For such work as light cavalry and mounted infantry are called

on to do. Alberta is able to turn out a horse second to none in the world. Several years ago General Strange, recognizing this fact, started a ranch for the breeding of superior cavalry horses, but it did not suit the views of the home government to patronize anything Canadian at that time and the company went down.

The Ottawa correspondent of the Toronto Star calls attention to a scheme by which Robert Beith, M.P., Bowmanville, proposes to develop western horse breeding on higher class lines than are now worked on. He proposes that the Dominion Government shall establish a ranch practically on the very same lines as that which broke down in General Strange's hands a dozen years ago, and show those already in the business the way to produce saleable horses from selected mares and well bred sires. The idea, though not original, is an excellent one and there is sound business in that line of breeding enterprise. But there is no real need of investing public money in any such enterprise. There are not a few men already engaged in western ranching who only need the guarantee that good prices may confidently be relied on for the right sort of horses to induce them to work in the desired direction.

STAR BRONCHO BUSTERS.

A few days back a very exciting entertainment was furnished to the people of Calgary in their exhibition grounds. Some crack Montana cow punchers had come across the line and there made a bet with the Calgary men in the same line of business on their respective merits as broncho busters. The Montana men boasted they had a broncho on hand that nobody in Alberta could ride, and backed their opinion with \$100, which was promptly covered. Six notorious buckers were selected for the show and two of the Montana men. Lee Marshall, of Robinson's ranche, Calgary, did the first part of the show to the admiration of the spectators. Then a man-killer from the Montana bunch was brought in for the crowning event. Marshall tackled him and "fought to a finish," making a splendid display of western-horseman-ship. The horse in one of his most vicious efforts threw himself badly, but did not hurt his rider. Later on another "terror" was put in Marshall's hands, and when it was thought the brute was fairly beaten he suddenly threw up his head, cutting Marshall's face badly. The Montana men owned themselves fairly beaten, and admitted that the Canucks understood their business. The gate money, \$80, was divided among the competitors and the onlookers felt they had got good value for their money.

—N. W. Farmer.