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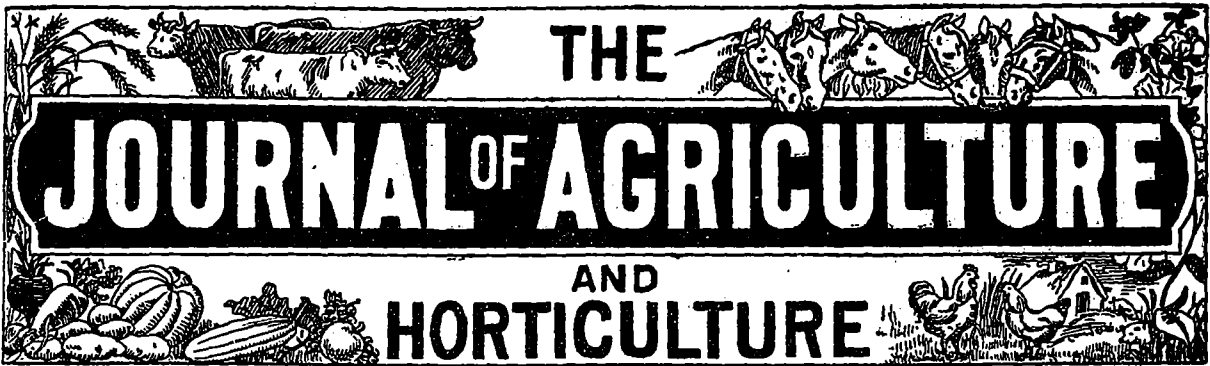
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JUNE 1st, 1899

Journal of Agriculture and Horticulture

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Notes by the Way.

Honey.—We hear that the exports of honey from Canada to England have been successful; selling, in one-pound bottles, at 17 cents a pound. It seems that, owing to this, the first experiment, turning out so well, a firm in Ontario has sent over a shipment of several car-loads.

Peels.—That very well-edited paper, *Farming*, says, very sensibly, that "the best part of the potato lies in the peel, and many who eat roast potato find the skin much the best part of it." Not only with the potato is this true, but with all fruits. Try the difference between the flavour of an apple peeled thin and one with the usual thick, coarse skin stripped off! But the truth is, the best way to eat an apple is as the school-boy eats it: peel and all. The pear must be peeled, on account of a rough principle in the skin, and so with the peach; on account of the roughness of the peel, or "blanket," as it is sometimes called; but neither the apricot nor the nectarine should be pared; and, after all, the skin of a ripe peach; a state of that fruit never, or hardly ever, seen here; is so entirely distinct from the flesh of the fruit, that hardly any of the fine flavour is taken away with the paring.

Tuberculosis.—The following are the recommendations of the last Royal Commission in England on tuberculosis:

1. That no one but a veterinary surgeon's test be admitted as sound;
2. That tuberculin be supplied to only such owners as will undertake to isolate re-acting animals from healthy ones;

3. That the stock to be tested be kept under satisfactory sanitary conditions, especially as regards space, light, and ventilation.

Sheep.—We see, to our great delight, that many of our exchanges, both of Canadian and United States origin, are doing their best to induce farmers to “keep more sheep.” It is a pity that such communications as that from Mr. McKerrow, in “Farm, Field, and Fireside,” sensibly enough conceived in many parts, should be depreciated in value by quotations such as the following :

A small or moderate sized flock will glean a good living most of the year from foods that would, on many farms, go to waste without them. I recently met a German farmer in Northern Wisconsin who told of his little flock of ten ewes that had brought in a sixty-dollar income in 1895, when sheep products were low. When I asked him what it cost to keep them that year, he replied : “Dat cost nothing.” When pressed for an explanation, he shrugged his shoulders and said : “Dey run in der brush in der summer, und dey run in der brush in der winter. Come to der haystack, eat a little hay, dat’s all.” This was practically true ; they only cost him what hay they ate in the winter.

That is, emphatically, *not* the way to keep sheep, and Mr. McKerrow knows it is not, for in a preceding paragraph he says :

Why will the farm be benefited by sheep-keeping? Sheep will clean it up ; but you will say, can good sheep be reared on weeds and brush alone? To which I must answer, no ; but good sheep can be grown on clovers, grasses, corn, oats, corn stover, lucerne, rape, cabbage and roots, and this rotation of crops will make clean land and produce good mutton and wool, and you will find that sheep, being well fed on such rations as the above mentioned, will also surprise you by the amount of weeds and tender browse they will take as dessert.

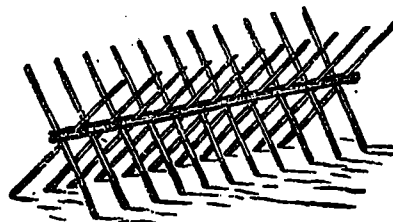
Nothing irritates us more than to hear sheep spoken of as “scavengers.” If the farmers of the United States would only treat their sheep as the farmers of Britain treat theirs, they would soon see that the monstrous disparity between the grain-yield of their land and the grain-yield of Britain would vanish. How the Americans can go on, year after year, boasting of the productive power of their soil with such facts as the following staring them in the face we cannot understand :

				Bushels
1898:	Yield of wheat, per acre, in the U. S.....			11½
	“ “ “ “	Scotland.....		34½
	“ “ “ “	England.....		33
	“ “ potatoes, “	in the U. S.....		80
	“ “ “ “	Scotland.....		280
	“ “ “ “	England.....		220

and so on of our crops ; and, particularly in the southern counties of England, it may be said without any exaggeration, that without the aid of their large flocks of sheep, the farmers could never turn out such voluminous crops. From the time the fall-sown rye, barley, and oats are ready, till the last turnip, or mangel is eaten, that is from May 1st to, say, April 30th, the sheep are constantly within the fold, under the eye of the shepherd, who knows, personally, every individual in the flock, its sire and its dam.

Here, of course, this long out-of-door grazing cannot be practised ; but there is no reason why sheep should not be fed, between hurdles, from July 1st to December 1st. We have done it—at Sorel—and it is not an expensive or troublesome operation.

Our rolling hurdle ; of which an engraving is given, is easily made ; any rough stuff will do.



Sheep Hurdle.

In our narrow farms, the best and simplest plan is to have enough hurdles made to go twice across the land from fence to fence. An engraving of the fold, with the sheep feeding off rape—the last bite, on the 7th December, 1884—may be seen in the JOURNAL for December 1884, p. 185.

Seed-grain.—A propos of several notices that have appeared in this, as well as in several other agricultural papers, we may remark that, in our experience, a great deal more depends upon the quality of the soil than upon the weight, etc., of the seed-grain committed to it. For instance : any Saturday in February, Cambridge (England) grain-market may be seen thronged with farmers from the fine chalk-soils of Essex, Hertfordshire, etc., who have sold their fine malting barley to

the great maltsters of Saffron Walden, Ware, etc., and have come to the Cambridge market to buy their seed-barley from the farmers of the fen-districts. Why? do you ask; because they sell the one for from 40s. to 45s. the eight bushels, and buy the other for from 25s. to 30s. No maltster would even look at the fen grown barley; but when sown on the uplands of the chalk, this poor, thin, "chicken-victuals," produces the finest malting barley in the world!

Our own farm, in Kent, grew fine, plump barley; yet it was utterly unfit for malting; Kent is divided from Essex by the Thames, and in the latter county, the finest malting barley is produced, the seed-grain, the well-known "Chevalier" barley, being of the same strain in both cases. So, we think we are justified in saying that the quality of the soil influences the quality of the grain more than does the seed.

Clover-hay—By the 20th (1) of this month, clover, on the Island of Montreal, will be quite fit to cut. Down with it at once, and let it make itself, if the weather is fine. The chief reasons for the inferiority of clover-hay in this country, reasons that we have repeated over and over again, are that the crop is too ripe when cut, and is moved about so often, and so violently, that the leaf is on the ground instead of clinging tightly to the stem. Once turning quietly over, should be enough; except the crop is enormous, as it was last year, when twice turning may be required; and then get it into cock.

Grass Experiments in Staffordshire—In some experiments carried out for the Technical Education Committee of the County Council last season the greatest yield, 60½ cwt., (6776 lbs.) of hay per acre, was obtained on one farm from a plot dressed with ten tons of farmyard manure, the yield being 22½ cwt. more than that of the unmanured plot. But valuing the manure at 5s. a ton, the increased cost 4s. 2d. per cwt., was not remunerative. The second-best crop was 56½ cwt. per acre, obtained on a plot dressed with 4 cwt. of superphosphate, 1 cwt. of nitrate of soda, and 2 cwt. of kainit per acre, and in this case the increase cost only 1s. 2d. per cwt. As this was the largest crop at a remunerative price, the dressing in question was the most successful of all. Besides, on the average

(1) We fear that is too early a date for this backward season.—Ed.

for six seasons, this plot has given the greatest yield, 37½ cwt. Apparently the yearly application of the manures has greatly increased the yield, that of 1898 having been very much above the average—even more so, probably, than a good hay season would account for. On another farm the highest average for five years was 60 cwt. per acre, obtained with the help of 5 cwt. each of basic slag and kainit, and 2 cwt. of nitrate of soda. The average for the unmanured plot was 29 cwt., and the increase on the other cost only 1s. 4d. per cwt. A better proportioned dressing, 5 cwt. of slag, 3 cwt. of kainit, and 1 cwt. of nitrate of soda, gave the greatest crop—47 cwt.—on a third farm, last season, the first of the trial; and only ½ cwt. less than the highest yield, or 52½ cwt., on a fourth farm, 6 tons of farmyard manure gave 52½ cwt.

Experiments on Swedes.—Passing over some potato experiments, as having been rendered abortive by drought and some mistakes, we come to the experiments on swedes on light land. The greatest crop, 20½ tons per acre, was grown on a plot dressed with 12 tons of farmyard manure, 4 cwt. of superphosphate, 2 cwt. of kainit, and 1 cwt. of nitrate of soda, but the increase over the produce of the unmanured plot cost 24s. per ton. The artificials without the dung gave only 17 cwt. less, and the increase cost only 9s. 8d. a ton.

COMPETITION OF AGRICULTURAL MERIT: 1898.

Report of the Judges.

No. 3.—M. LOUIS DESCHAMPS.

Our visit to the farm of M. Louis Deschamps, of St. Paul l'Ermite, took place on the 9th of August; it contains 140 arpents, 110 of which are under the plough, and the remaining 30 are in rough pasture. M. Deschamps has 28 head of cattle, 5 arpents to each beast, besides a well-stocked poultry-yard.

Most of the stock are thoroughbreds; we awarded him 14 out of 15 marks for this item.

The division of the farm into fields is perfect, as are the fences; very few weeds.

Barring the piggery, which is not well built, the house and other buildings are of the best.

With a good silo, M. Deschamps might, if he chose, largely increase his stock of cattle.

Plenty of implements ; the manure is well cared for.

Accounts only passable. Still, we must observe that M. Deschamps is, in some points, a model of economy. He makes money. We fancy bad seasons do not often affect his operations, although, doubtless, he has had many a struggle.

Permanent improvements are extensive, and some 1,000 yards of drainage, or so, seem to be acting well.

Round the steading and in the fields are many forest-trees, planted by M. Deschamps.

Crops : wheat, 2 arpents ; barley, 4 arpents ; pease, 3 arpents ; *gabourage*, i. e., pease and oats, 20 arpents ; seed-timothy ; beans, $\frac{1}{2}$ arpent ; mangels, $\frac{1}{2}$ arpent ; potatoes, 3 arpents ; corn for seed, $3\frac{1}{2}$ arpents ; and $\frac{1}{2}$ an arpent for green-fodder ; 40 arpents in meadow and 25 in pasture, besides the rough pasture mentioned above, and $1\frac{1}{2}$ arpent of green-fodder crops.

A nice orchard, plenty of small fruits, a very fine garden, with an abundance of lovely flowers.

We found a large stock of wool and flax, and several kinds of domestic industries were in full swing.

In fact, M. Deschamps does honour to the farmer-class, by his orderly procedure, his ability, and his unfailing industry.

(But, surely, his grain and pulse crops are out of all proportion to his hoed-crops. Ed.)

No. 4.—M. MÉDARD RIVET.

The 6th of August found us at M. Médard Rivet's farm, at St Paul de Joliette.

We assigned to M. Rivet full marks for his system of rotation, as well as for the division of his farm into fields.

The fences are well made, and in very good order.

Practically speaking, there are no weeds.

The house and buildings are capital.

We gladly allowed 1.50 marks for a well-planned silo.

For accounts we allowed 2 out of the 3 marks ; general management, good.

Permanent improvements, especially ditching, carefully done.

For cattle, 11 out of 15 marks allowed.

The state of the crops was excellent ; wheat, 3 arpents ; barley, 3 arpents ; oats, 10 arpents ;

vetches, 1 arpent ; 10 of *gabourage* ; seed-timothy for home-use ; potatoes, $1\frac{1}{2}$ arpent ; seed-corn, $\frac{1}{2}$; silage-corn, $1\frac{1}{2}$ arpent ; tobacco, 2 arpents ; 24 arpents in meadow ; 18 in pasture ; and 1 arpent in green-fodder crops.

Lastly, we awarded 1 mark for home manufacture.

A good example, indeed, has M. Rivet set to his neighbours for many a long day. He is a man of progressive views, and a true friend of agriculture.

No. 5.—M. DELPHIS TURENNE.

On July 22nd, we visited the establishment of M. Delphis Turenne, at St. Paul l'Ermite.

This farm contains 150 arpents, only two of which are unploughable.

M. Turenne sows grain two years running, mows hay 2 years, and then pastures 2 years. (No hoed-crops or fallows, apparently ! Ed.)

Though this might have been a good rotation once upon a time (which we take the liberty of doubting. Ed.), we do not believe it can maintain the fertility of the soil, or keep down the weeds ; for the latter item, we only awarded 2 out of the 3 marks.

There were on the farm 33 head of cattle, that is, 1 head to $4\frac{1}{2}$ arpents. We allowed 13.90 marks for the herd.

M. Turenne has done a good deal of work in levelling and ditching ; in both of which points, his farm will, before long, be in consummate order.

The whole homestead is very well arranged.

Care of dung well attended to ; plenty of implements.

The accounts are, relatively, well kept.

A great deal of permanent improvement has been carried out ; the number of loads of stone carted off and utilised in divers fashions, M. Turenne calculates as at least 10,000.

Thirty-five arpents of drains are working pretty well. (1)

The crops are : 3 arpents of wheat ; 7 of barley ; 35 of oats ; 8 of pease ; of potatoes, 4 ; 2 of maize for seed ; 3 of tobacco ; 34 in meadow, and 52 in pasture ; besides 27 apple-trees, a lot of small fruit bushes, and a garden. (No hoed-crops ; no green-fodder crops ! Ed.)

(1) It would be as well to state, in future, how many arpents in superficies are drained by the given number (here, 35 arpts. equal 2,100 yards) of arpents in length. Ed.

Several kinds of domestic manufactures.

M. Turenne values his estate at \$15,000, and we are happy to recall to mind that all he now possesses has been acquired by his own industry, perseverance, and indomitable pluck. (2)

He works indefatigably, almost without proper regard to his health. However, his reward is, that he sees himself surrounded by a numerous and loving family, to the members of which he has all along set an excellent example, and we cannot but congratulate him on his most successful career.

The Farm.

FARMING IN THE EASTERN TOWNSHIPS.

When I first came to Canada, in 1836, intending to make farming my occupation, I travelled over a great part of the Province of Quebec, principally on horse-back. In my travels I was greatly impressed with the agricultural capabilities of the Eastern Townships, and after many years of experience, and putting my experience into practical test, I find now that my first impressions have been more than realised. I am satisfied that a young man well educated, with good health, perseverance and energy, can do well for himself by making the best of such advantages as are offered among the hills and valleys of our lovely country. The climate, the fertile soil, the water, etc., are everything that is needed to make cattle-, and horse-raising, and dairying in particular, a great success. The same amount of energy as he would have to put into gold digging, would give him a much more certain return, and a home-life, so different to the camp life of the gold digger. If he has capital and the taste and knowledge, and does not wish to engage in general farming, let him turn his attention to the breeding of a special class of horses, high class cattle, sheep, poultry, etc., and last, not least, a diligent knowledge of the capabilities of the soil, and the best method of applying that knowledge. A farmer, just as much as any one, needs a liberal education. He need it for his work, and it would provide him with his recreation, of which it is at present thought by many that he gets none.

(1) The word "pluck" is, we confess, rather a slangy term; but no other word in the English language so fully expresses our meaning. Ed.

Thanks to a government, which has been liberal in its expenditure—so different to what it was in my younger days,—the farmers are in a position they never were before. They are offered now a good and an enduring market for all they can produce in butter, cheese, and poultry, with cold storage, and facilities for shipping the same; in fact, this business is well provided for.

What is wanted now is, for the farmer to take hold seriously, and do his share of the work. More can be done in the increase of farm products than most of our farmers are aware of, both in the increase of feeding crops and winter dairying. In this neighbourhood, a young farmer made during seven months of winter \$215.80 with eight cows, from butter alone, besides pork and other products. Most of our farmers lose this amount, by feeding nothing but hay and straw. I will try and shew the difference between these and other fodder-crops, which any farmer can grow.

All my statements I have verified in days gone by, when young men had no government encouragements to back them up in successful experiments and no large markets clamoring for all and more than they can produce. The majority of our farmers, more particularly our small farmers, are satisfied if they can grow hay and straw sufficient to keep stock during the winter. I think that I can shew that timothy hay which is the hay generally grown, is the least profitable of any food grown. Say, 20 acres of this hay, 20 tons, a good average crop. This will give 195 lbs of food per day for 7 months of winter: Now, let us divide this 20 acres into a variety of crops, which any farmer can grow with a little expense in labour and artificial manure: 6 acres of oats, pease and vetches, sown together at three different times, 2 weeks between each sowing, dried when in bloom the same as clover, 15 tons; 2 acres of Hungarian grass, millet, or other fodder, 6 tons; 2 acres beets or mangels, 30 tons; 1 acre turnips, 15 tons; 1 acre cabbages, 20 tons; 6 acres clover-hay, 18 tons; 2 acres timothy hay, 2 tons. Altogether, 109 tons of superior feed. This will give 419 lbs of dried fodder per day, and 619 lbs of roots per day, for the 7 months of winter. On this feed, the cows will milk throughout the winter, giving a good profit over and above any extra expense. You must see in this that there are only 4 acres of hoed crops, which any farmer can surely manage; besides, under this

cultivation, the soil will increase yearly in fertility.

The value of the dairy products for one year in the State of Massachusetts was \$9,092,312; animal products other than dairy, \$3,934,748. Total value of all agricultural products, \$37,596,865. The reader may form some idea from this what the E. T. might be made to produce, under a good system of rotation of crops.

AYLMER.

VARIATIONS OF MANGEL CULTURE

Most English farmers are busy putting in their mangel crops just now, and there are two primary reasons why this detail of farm management should receive more special consideration than usual. The spring has proved peculiarly favourable for early barley sowing and potato planting, leaving more time than in the average of seasons for getting fallows into fitting condition for roots. From frequent conversations with farmers on the subject, I am led to form the conclusion that at least nine out of ten do not usually crop as many acres to mangels as they would like to do. In seeking to fathom the cause remark has frequently been made that barley sowing usually drives the preparation of fallows for mangel culture very late, especially when the lands are very foul, or in clay districts where the soil turns up tenacious and leathery to bake into stubborn clods difficult to pulverise.

FREQUENT FAILURE OF THE SWEDE CROP.

Mangels in the southern half of the kingdom have, to some considerable extent, in recent years, proved more certain and remunerative to grow than swedes, and a second reason for the culture of the "root of scarcity" receiving very special attention just now, arises out of the frequent failures of the swede crop in recent years, and especially the ill-success which attended the attempted growth of swedes last year.

EXTENSION OF MANGEL CROP DESIRABLE.

Does it not seem rational that in all those districts of England where and turnips are most difficult to raise mangels should be made to take their place to a greater extent than has ever yet been attempted? No doubt this question will be met with another query: "How can such a revolution possibly be effected when it is admitted that farmers at present find it extremely difficult to

put in their small acreages of the crop, the time being so brief after barley sowing and potato planting have been effected, until it is too late to attempt the culture?" But it was stated above that the generality of farmers plead this inability owing to the foulness of their fallows intended for roots, while the clay land occupiers in addition are handicapped by the bad mechanical condition of their lands. These are, however, preventible evils, the fact being that it is purely the fault of farmers themselves if they devote their stubble lands to the growth of weeds in winter. Those intended for mangels should either be subjected to the orthodox course of autumn surface cleaning or have their unclean surfaces deeply buried before winter by the digging p'ough. In either case there would be no foulness in spring, requiring any material loss of time, or any tillage operations. A March scarifying across the furrows would bring the lands into an excellent state to receive atmospheric influences, so that nice seed-beds might be made, weather permitting, as soon as farmers had completed other operations and could attend to the matter. That clay lands intended for mangels should invariably be deep ploughed before winter, only to receive surface workings in spring, has been proved and admitted by all the most intelligent and skilful occupiers.

PREPARATION FOR THE CROP.

Thus it becomes manifest that the inability to put in large breadths to mangels may arise out of a radically bad system of pre-preparation of the soil itself. There are variations, in fact, in the systems farmers adhere to or adopt, and by exchanging a bad for a good method of pre-culture, the result possible would be very different. Instead of growing a crop of weeds before mangels, requiring great sacrifice of time and tillage operations to clean the land in spring, some farmers grow a crop of rye, which can be fed off by sheep in time for a rather late crop of mangels to be raised. This course would be easy enough on warm, rich lands of good mechanical texture, but on going over the farm of Mr. Robert Coles, the well-known Hampshire sheep breeder, near Warminster, I found that he carried it out on rather stiff land. When I asked him if his roots were not rendered small by the late cropping, he admitted such to be the fact, but said that on the other hand they were of far higher quality than roots of large size usually are. Mr. Coles was accustomed to drill mangel seed as late as the closing days of

May, and appeared to be partial to the system of consuming a green crop in spring and subsequently devoting the land to a late crop of mangels.

ADVANTAGES OF EARLY CROPPING.

On the advantages of early cropping for mangels much has been written, and no doubt it is reasonable to conclude that when the seed is deposited in April, it has a much better chance of germinating than when this can only be effected a month later. When dry seed beds are in most seasons very common, and there are great risks of the seed maling in its bed, especially when a few showers fall at long intervals, causing moisture in the surface soil to be very inadequate. The greatest chance of a full plant comes from early culture, and the longer growth gives more time for the growth and swelling out of bulbs. The experience of almost every season, however, proves that there must be large proportions, of the mangel crop seeded late in May. Whenever mild, growing weather is experienced in November, the farming reports of most districts are tolerably sure to state that a large number of farmers delay lifting their mangels, not liking to do so while they find them in active growth. When the crop is put in April, it is found to be ripe in October, shown not only by the bulbs having got to large size, but by the dying off of the under leaves. Such crops are fit to lift and are in no ways benefited by atmospheric influences afterwards. There are farmers who declare that this only is natural mangel growing, and that all mangel crops ought to be fit to lift at the latter part of October.

IMPORTANCE OF GOOD SEED BEDS AND GOOD SEED.

There are other variations in mangel culture, but the chief point of paramount importance to farmers in general, is the preparation of good seed beds on areas as extensive as possible. The selection of seed and the employment of adequate manures, are matters of highest importance likewise. Whatever variety be intended to be grown, the seed should be procured from one of our leading firms, that bulbs of high quality with taper roots and light stems may be grown. The manuring difficulty in these days of cheap chemical fertilisers seed cause no delay. Formerly, when the dung cart was so intimately associated with putting in the crop, there was immense team labour and great procrastination ere seeding could take place. A great many farmers still think it best

to partly manure with farmyard dung, but if so, it is generally applied and deeply ploughed in before winter. Many others, however, depend on chemical fertilisers entirely, and grow quite as good crops as the other class, without going to any extraordinary expenditure.—J. D.

LARGER CROPS

Two great principles by which an increase of from twenty to thirty percent is obtainable in a few years.

Professor Robertson, Commissioner of Agriculture, was before the House of Commons Committee on Agriculture and Colonization, this, to give an address on the fundamental principles governing the successful growing of crops in Canada.

He pointed out that the obtaining of large crops of good quality is governed chiefly by the climatic conditions of the season; and by the intelligence and ability of the farmers as applied to the growing of crops. Farmers have made much more progress in understanding the principles of cattle breeding, cattle feeding, dairying and fruit growing, than in those which underlie the successful growing of field crops. What the farmers need is a clear understanding of principles, and not a dose of prescriptions to guide their practice.

He pointed out that cultivation was an effective means of controlling the moisture in the soil and the temperature of the soil at a depth at which ordinary farm crops seeds are planted. Examination made of eight farms in the spring, on lands sown to grains, showed that in clear weather the temperature was three degrees higher to a depth of three inches when the land was rolled than when the land was left unrolled.

PRINCIPLES EXPLAINED.

After explaining the uses and functions of various fertilizing elements and substances, such as nitrogen, potash, phosphoric acid, gypsum, lime and salt, he gave a statement of two great underlying principles which govern the increase of plants during their growing period. The conditions which make for the increase in the size of the roots, stems and leaves, do not make for an increase in the grains, fruits or seeds. An excess of easily available plant food promotes a great growth and enlargement of the vegetative parts of the plants, namely the roots, stems and leaves. A bareness

of available plant food when the plant is near the ripening period, makes for an increase in the quantities of seeds.

Barnyard manure should be applied to crops in which the roots, stems and leaves are the valuable portion, such as turnips, carrots, mangels, Indian corn fodder, hay, grasses. Manure should not be applied directly to land for the growth of cereals. The manure should be applied to the crop which precedes the cereal crop. It is a good plan to apply manure as a top dressing of hay field or pasture field. That gives its immediate benefit in a larger crop and increases the quantity of roots which are left to enrich the soil by their decay.

He analyzed the reports of the growing of cereals at the Dominion Experimental farms for four years, and said that in his opinion, the comparison of varieties without a continued selection of the best seeds from year to year, was of no service to the farmers, and was apt to mislead them into expecting service from named varieties as such, instead of obtaining the seeds by continued selection from year to year on their own or similar farms.

He instanced a case in the growing of peas where the sowing of large peas by themselves, and the large peas out of that crop again for three years, resulted in a crop of peas in which the individual peas were twice as heavy as the peas of a crop grown from small seeds of the same variety, under the same conditions for an equal length of time.

Professor Robertson stated that the only valuable or useful selection of farm seeds, was a selection of the seeds from the individual plants which give evidence of power, by succeeding and yielding largely under soil and climatic conditions where the crop is to be grown the following years. In every field of grain some plants are more vigorous, larger, earlier and more productive than the others. That is evidence that these plants have varied in the right direction for profit-making to the farmer.

He recommended every farmer to select enough heads from the largest, most vigorous and early plants in his fields to give him two bushels of seed grain, then to select the large seeds from that by the vigorous use of the fanning mill and sieves. Such seed grain would doubtless prove better adapted to the soil and climate of his place than any outside seed he could obtain. Selection in that way from year to year would develop seeds with the greatest vigor for productiveness and also with the quality of the grain improved.

He instanced that such a course had resulted in an increase of crops varying from twenty percent to over thirty percent. Such an increase applied to farm crops of Canada would mean an increase in the production of wealth of from twenty to thirty percent on the two hundred and eighty million dollars, the present annual value of farm crops. Dissemination of a knowledge of those fundamental principles which the farmers could readily understand and apply for themselves would bring about that desirable end. If the farmers once got a good hold of those principles, the principles would take hold of their farm practice, and lift them into the most prosperous condition of agriculture. — *Witness*.

DO NOT NEGLECT TO CULTIVATE THE SOIL

There may be a tendency on the part of the farmer, because of the lateness of the opening of spring this year, not to give the land as much cultivation as usual, with the view of getting the seeding done as soon as possible. This would be a very unwise plan to follow. In fact, better and more thorough preparation of the soil is needed if the season is inclined to be late and the period for growth shortened. But it is surprising what scant cultivation and preparation many farmers give the land before the seed is put in. We have frequently seen in several sections where it has been our privilege to be, farmers, who, with the desire to get through seeding before their neighbors, would put the seed into the ground when only half prepared for it, and then boast of his ability to rush things along. But a day of reckoning always comes and when threshing day arrives the farmer who has taken the necessary time to prepare his land properly has his chance for boasting, other things being equal, in the increased yield, the extra time and work he put upon his land have given him. In the older sections of this country, at least, thorough cultivation and preparation of the soil is necessary to ensure a good crop.

In this country, when at all possible, all plowing should be done in the fall. The action of the frost and snow during the winter put the soil in such a condition that with a cultivator or disc harrow and followed, if necessary, by a light harrow it can easily be made into a good seed bed

for the future crop. In this days of keen competition the farmer must leave nothing undone that will ensure a good crop. The fertility of the soil must be kept up by an intelligent and systematic plan of manuring and in addition the soil must be put in proper shape for receiving the seed. When this is done the farmer may rely upon nature doing the rest, and if by chance there should be an unfavorable season he will be better off by having cultivated his land properly before sowing than if he had not done so. (Farming).

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

SPRING-DIET.

Winter has passed, and with it the necessity of preparing hot stimulating foods, so necessary to keep the system in natural good working order.

Any amount of good solid dishes will be readily consumed by those whose duties call for much out of door exercise during cold weather; but as soon as spring comes, the craving by everybody is for change of food.

Anything in the shape of green food is most welcome, and less meat is eaten in consequence. Indeed, some people almost object to meat at all during the heat of summer.

Where there is a good supply of garden-stuff prepared, and served in many tempting ways, the great desire for meat almost vanishes.

The hot weather calls for nice light dishes, such as eggs served up in endless tempting ways; fish also gives scope to the cook's ingenuity in most alluring ways; fried, broiled, stewed, baked, curried, boiled, and many other ways too numerous to mention.

Fish should be well prepared by scaling and wiping very dry. (Not washed if possible to avoid it. Ed.) If too large to cook whole, split the fish down the back and take out the bone; cut it into 4 parts, and dip each into egg and bread crumbs; then fry a nice brown.

Spinach must be washed in many waters, to be certain there is no trace of sand left in it.

It needs only the water that clings to it to boil in, but in this case will need watching; or put in a very little water, drain well and serve with poached eggs, on the top of it, and you will have about as tempting looking a dish as the heart can desire.

Poached eggs should be broken separately into a cup and never dropped into bubbling water as this is apt to break them and make an ugly dish; dropped slowly into the calm water, they will harden into shape and by the time the yolk is dropped into the centre, the egg will be cooked. This, with a nice salad, with bread, cheese, and butter, followed by tea, or coffee, surely will make a nice summer meal.

I have not mentioned potatoes or any other vegetable, as they are always in season in some shape or other; but if old potatoes are served, they are nicer mashed to go with this kind of meal.

AN IMPROMPTU FILTER.

During the hot summer weather, when the water supply is apt to run short, and what is supplied is not over pure, an impromptu filter will often be found not only convenient but very necessary. Buy three pennyworth of powdered charcoal, put it in a piece of flannel, together with some small stones—fine pebbles are best—and tie it to the spigot. The water running through this will be quite clear. Be sure to have coarse flannel, as the charcoal sifts through muslin. If it runs too slowly, put something under the spigot and let it run while you are doing something else, and dip out afterwards. The increased clearness of the water will repay you.

A dainty omelette soufflée may be quickly made from the whites of six eggs beaten separately from the yolks. Beat the whites to a froth, add the yolks, also well beaten, and half a cupful of powdered sugar. Season with lemon juice, mix as quickly as possible, and heap in a well buttered pudding dish. Sift powdered sugar over the top and bake only in a hot oven. When a light brown serve without delay.

EGG LEMONADE.

Separate four eggs. Beat the whites and yolks separately until light. Dissolve one cup of sugar into one pint of boiling water, add to it the juice of four good-sized lemons. Now, turn into this say one quart of grated ice, enough to chill it quickly. Stir the yolks of the eggs into the whites, turn them into a pitcher and pour in at a good height, the lemonade. Pour the mixture from one pitcher to another for a moment and serve.

If people only would learn to eat simple dishes ! If mothers would early cultivate a liking for plain bread and butter and milk in their children ! If healthful, carefully prepared, palatable, home-cooked food were offered for sale in our woman's exchanges and special stores at a price within the reach of the poorer classes ! If and if, and if ! If we—you and I—had the planning, and none of the work to do, what a fine world we would make !

LINEN.

When buying linen you may generally test its goodness by drawing one or two of the threads. If the thread breaks immediately, the linen is not good ; but if you can draw each way a thread of a quarter of a yard in length, you may consider the linen worth buying. When linen is very good, a thread a yard long may be drawn it without breaking.

GLOSSING LINEN.

The bright china-like gloss which we have for a time looked upon as the perfection of shirt and collar dressing is not now considered in good taste, but a certain amount of polish is yet permitted, and as it is so easily accomplished, perhaps some of my readers may be glad of a few hints on linen polishing. Having ironed the shirts and collars till the linen to be polished is perfectly dry, lay the collar on cuff on a clean bare piece of board, called the polishing board, with a soft clean piece of rag wring out of cold water slightly and evenly damp the article. On no account must it be made wet, or blisters will be the result. Have a clean, hot polishing iron, which pass gently up and down the linen ; then with a quick heavier pressure pass the iron lengthways of the linen, till it looks evenly glazed all over. At first the linen will look a little streaky, but the polishing process must continue till the polish is evenly distributed, place the article in front of the fire to set and harden. Many different sort of glazes are advertised, but none looks so natural as the polish produced by the damp cloth, the clean, hot iron, and plenty of elbow gease.

TO WASH SILK.

In washing white silk, if the colour be bad, it should be steep in borax water in proportion one tablespoonful of dissolved borax to a gallon of water for a few hours. When this has been done,

rinse well, and wash in luke-warm soap-lather, stiffen slightly in gum water, partly dry the silk, roll up in a clean cloth for an hour, then iron the silk on the right side with a cloth between the silk and the iron. Gum water for stiffening is made by adding a teaspoonful of liquid gum to half a pint of cold water. Coloured silks may be washed in the same manner as above, only in the rinsing water put a little salt to set the colour, if two colours a little vinegar should be used in addition to the salt. The effect of vinegar is to brighten most colors. Tussore silk is washed the same way as the white silk, the only difference being in the rinsing water. For this mix a tablespoonful of methylated spirited in one quart of water, dip the silk in this, hang it out wet and let it drip. Whilst still very damp roll it up, and set aside for an hour or so. In ironing this silk use a rather hot iron and cover the silk with a clean smooth cloth. If these rules are carefully carried out the washed silks will look nearly equal to new.

TO CLEAN LINOLEUM.

Never allow your servant to touch linoleum with either scrubbing brush or soft soap, or it will soon become ruined. Rather have it well wiped over with a soft flannel cloth and moderately warm water. Dry it carefully with another clean dry cloth. Skim milk is a very good think to use, as it gives a nice gloss to the linoleum. Every now and again a good polishing with furniture polish makes it look almost like new. Very little of the polish is needed on the flannel. It is the rubbing, not the polish, which brightens up the floorcloth. Too much polish renders the surface slippery and dangerous. Kept in this manner a linoleum will wear years longer than the one which is always being scrubbed and washed—scrubbing wears it out and too much wet rots it.

PAINT CLEANING.

Paint cleaning forms the most important part of spring cleaning, and yet very few people know how to accomplish it without removing paint as well as the dirt. Anyone knows how to scrub paint with soda and soft soap, which is the favourite mode of the British charwoman, but what is really wanted is a method which will do away with the dirt and leave the paint in its original place on the woodwork. The following method

is an excellent one for clearing unvarnished paint : Get a square of old flannel of convenient size for handling, and a bucket of warm water. Then place a little finely crushed whiting in a basin. Dip the flannel into the warm water, then into the whiting, and with it rub off all soiled or greasy marks. Rinse the whiting off with plain warm water, and dry with a soft cloth. In this manner you can clean the most delicate paint, and make it look new again. All you have to do is to rinse off well, or the paint will look smeary. I find, too that monkey soap used in the same manner makes an admirable cleaning agent for very dirty paint. Use it exactly as you would the whiting, and there will be no need for the scrubbing brush at all.

TO CLEAN PLATED ARTICLES.

Plated articles, whether silver or gold, are best cleaned with a flannel and warm soap-suds, and wiped dry with a clean, soft-towel or silk handkerchief ; then mixed some finely sifted whiting with spirits of wine, dry it on with a sponge, rub it with a soft cloth which has previously been boiled in water mixed with prepared chalk, and polish with a wash leather.

A CURLING FLUID.

The girl whose hair does not curl naturally is often sorely tried by the fact that damp weather removes all wave or crimp from her well-kept locks. She can, if she wishes, lessen her troubles by preparing a curling fluid with which she may damp her hair before putting it up overnight on curlers or crimping pins. To make the curling fluid, mix together a half-ounce each of gum-arabic and granulated sugar, pour over them a cup and a half of scalding water, and let them stand until thoroughly dissolved. When cold, add one fluid ounce of alcohol in which have been dissolved three grains of salt-amoniac and three grains of bichloride of mercury. Stir well together, and add to the preparation enough water to make half a pint of fluid.

AN OLD FASHIONED HAIR WASH.

For making the hair soft, silky, and clean, no nostrum comes up to the old-fashioned method of washing the head with the yolk of an egg and afterwards thoroughly rinsing it in hot water, to which the juice of a lemon has been added. If

you well brush and comb your hair night and morning, it is quite often enough to wash it once in four or six weeks.

A HELP IN WASHING.

Do you know that a little liquid ammonia added to the water in which linen is to be washed saves a deal of labour for it helps to remove dirt easily ? Ammonia is most excellent, likewise, for washing flannels, blankets, etc., it makes them beautifully white and soft to the touch. Make a warm lather of melted soap and water, adding a tablespoonful of ammonia to each gallon of suds. Soak the flannels or blankets in this, allowing them to steep in it for a short time. After this, wash in the usual manner, rinsing out in warm water. You will find it will take but little rubbing to make them soft, white, and clean.

The Grazier and Breeder.

FOALING TIME

Much of the success that should attend horse-breeding depends upon the care and attention bestowed upon the mare towards and at foaling time, as then not only are her own health and safety at stake, but the welfare of her progeny is also a matter for serious consideration. It is therefore necessary that extra precautions be adopted, and intelligent observation maintained, in order that mare and foal may pass through this critical period in the most satisfactory manner. Certainly it is true that in very many instances pregnant mares receive but little notice beyond usual, and are worked and exposed to all kinds of unfavourable treatment. This is especially the case with animals belonging to poor people, and especially farmers in a small way of business, who exact labour from their mares almost up to the day of foaling, and set them to work again a few days after that event has taken place. But this treatment is not always unaccompanied by accidents of a grave description, in which sometimes the foal, sometimes the mare, and not unfrequently both suffer disaster. And it is not less true that common-bred animals are less predisposed to accidents at this time than those which are better bred ; high breeding bringing in its train more liability to the accidents incidental to pregnancy

and parturition, and therefore demanding more careful supervision on the part of the breeder.

SIGNS OF PREGNANCY

Of course, it is taken for granted that before any trouble is expended in the adoption of unusual precautionary measures it is ascertained that the mare is really in foal; for I have known instances in which animals have exhibited one or two signs which their owners or attendants have accepted as evidence of pregnancy, and consequently, have nursed the mares for months in the expectation of eventually seeing an addition to the enquire family, but at last had to confess to having made a mistake. This is not pleasant, and an endeavour should therefore be made to make certain of the existence of pregnancy. In the great majority of cases this cannot be satisfactorily ascertained before the sixth or seventh month, by the ordinary observer, though there are certain indications before that period which might lead to the supposition that such is the condition of the mare. It is usually the practice to present mares to the horse in about nine days after they have foaled, this being the period when such presentation is likely to have the desired result; at the end of a fortnight they are again presented, and generally in another fortnight a last trial is made, when, if they refuse, it is considered as conclusive that conception has taken place, especially if no unfavourable signs have been manifested in the interval. Soon after this time many mares show a change in their manner, and become more tranquil and rather torpid, though in somewhat rare instances they appear to be "in heat," and otherwise act as if they were not pregnant. But about the period I have mentioned, the movements of the foetus can nearly always be observed towards the right flank, especially when the mare has just drunk a quantity of cold water. An expert can tell earlier if a foetus be present by manual examination through the rectum or vagina, auscultation, and a kind of percussion (*ballotement*, as the French term it); but the amateur is not sufficiently skilled to practise these.

CARE OF MARES DURING PREGNANCY

If the mare is worked when pregnant, the labour should not be so fast, and it should be gentler and more uniform; violent paces, or irregular and severe efforts are dangerous, especially towards the end of pregnancy, and within a week or two

of foaling all work should be suspended. With careful handling, farm mares may be subjected to light, steady labour until within a few days of parturition. Exercise is good, and indeed necessary for all breeds of mares in this condition. If allowed to run out of doors this should be on a thoroughly dry soil, as a strong, wet soil is not without danger. The paddock, or run, should also be free from open drains or ditches, and as level as possible. Mares in foal, and particularly when near foaling, like to indulge themselves more than usual in lying down and rolling, and if there are hollow places or ditches they may roll over on their back into one of these, when, in their struggles to get up they may sustain serious injury which will probably lead to abortion, or premature birth. Smooth, level ground, however, is not good for foals and young stock, as it makes them caseless and clumsy in their action. Broken, undulating ground is much to be preferred. All the fences enclosing the run of the mare in foal ought to be free from gaps and stakes projecting inwards, and all doors and gates through which she may have to pass should be amply wide to prevent her getting jammed; and she must not be pastured with young horses or cattle, nor exposed to great excitement. The same care should be exercised if the mare is stabled; she must be guarded from annoyance or injury by other horses, and if kept in a stall this ought to be sufficiently wide to allow her to turn round easily in it; the floor should be nearly horizontal, so that the weight of the abdominal contents may not be thrown too much backwards, while she must be secured in such a manner that there will be no risk of her being "cast."

But it is always judicious to place the mare about to foal in a convenient loose box or temporary shed, where there is plenty of room for her to move about, with security against bad weather, freedom from draught or cold air, and good ventilation. For litter there is, perhaps, nothing better than straw, but when parturition is near this should not be new, as some mares have a semi-morbid appetite at this time, and would consume it greedily, thereby producing distention and dangerous pressure on the uterus and its contents. It is therefore advisable to use slightly soiled but dry litter that has been under other horses; this should be soft and short, so that the mare's feet may not get entrangled in it, though it may be a good depth.

FOOD

With regard to food, the kind and quantity of this will depend upon the stage of gestation which the mare has reached. If she is working the quantity and quality should be sufficient to keep her in good health and condition; if anything, the food should be better in quality and a little more in quantity than that given to similar sized horses not in foal, and it ought to be presented more frequently. Whether the mare is or is not working, it is well not to allow her to become fat; indeed, it is better to have her in what might be termed moderate condition. There is nothing better than good hay and oats for pregnant mares; for farm in-foal mares at work mashes or bruised oats or barley mixed with pulped roots, and chopped hay and straw damped with linseed cake water, have been recommended. Maize is not good grain for pregnant animals. Many mares, especially those as pasture, receive nothing but grass; but I am of opinion that an allowance of hay and oats is most advantageous, even if in small quantity, and it is best given in the morning. All food should not only be of good quality, but be also capable of easy digestion. When very near parturition, the mare may have mashes of boiled linseed mixed with bran, and made more enticing and sanative by the addition of an ounce or two of salt in each mash. If possible, a piece of rock-salt should always be accessible. Medicine should not be administered except under skilled advice.

With regard to drink, the water should be clean and pure and given frequently. If the mare is stabled, water ought to be always beside her, as then they will be no danger in her drinking too much at a time.

ABORTION

Under favourable circumstances, gestation runs its normal course until parturition takes place; the chief danger to be apprehended and guarded against is abortion and premature birth of the foal. This risk is greatly obviated by observing the precaution alluded to in this article. But when the accident does occur, the mare is to be carefully treated, and this treatment should be similar to that followed when she foals in the usual way. Many causes may operate in bringing about this accident, and the majority of these have been mentioned. When, however, several cases follow each other quickly in a breeding stud, and when no sufficient cause can be assigned for their occur-

ence, then the question of affection arises, and there can be no doubt now that to this are due the serious outbreaks of abortion among mares in recent years, and especially those reported from the United States of America, where very heavy losses have been sustained. If it could possibly be arranged to have every mare advanced in pregnancy kept by herself in a loose box and paddock, then it is very probable that this serious risk might be obviated; at any rate, isolation could be more readily and effectively applied. As a preventive of this mishap, the surroundings of the pregnant mare should be as clean as possible, and all decaying or putrid vegetable or animal matter ought to be kept away from her. Cleanliness, good food, and pure air and water are the only efficient protectives that can be recommended beyond those already mentioned.—F.

CATTLE FEEDING EXPERIMENTS

An interesting feeding experiment has been conducted during the past winter at the Royal Agricultural College, Cirencester, with two Aberdeen-Angus bullocks upon the following daily rations:—No. 1.—4 lb. decorticated cotton seed cake, 10 lb. maize meal, 18 lb. hay and chaff, 15 lb. roots. No. 2.—7 lb. linseed cake, 3 lb. oatmeal, 18 lb. hay and chaff, 15 lb. roots. The ration for No. 1 is estimated as worth 6s. 2d. per week, and that for No. 2, 7s. 10½d. per week. No. 1 gained in a period of seventeen weeks, from November 1st to March 1st, 2 cwt. 2 qr. 7 lb., equal 17 lb. per week; and No. 2, 2 cwt. 1 qr. 7 lb., equal to 15 lb. per week. The costs of live weight gained by No. 1 was about 5d. per lb., and that of No. 2 about 7d. per lb. The results are stated in the "Student Agricultural Gazette," and it is added that the feeding value of the two rations by analysis is practically equal, but the result of the experiment is decidedly in favour of the decorticated cotton cake and maize meal, as they can be purchased at much less cost than linseed cake and oatmeal.

Some experiments in cattle feeding have been carried out by the East Lothian County Technical Education Committee. At a meeting last week, Dr. Paterson dealt at considerable length with the results of the experiments. The cattle were ordinary Irish cattle. Turnips were fed three times a day; oats, &c., two times; and concentrated food two times. The cattle were weighed at the end of

each fourth week, and lastly at the end of closing fortnight. The aggregate increases of weight at the close of the experiment were as under :—

Lot	Feeding	Live Weight Increase. Cwt. qrs. lb.
No. 1.—Swedes, decorticated cotton cake, maize meal, hay and straw. . . .		10 3 9
No. 2.—Swedes, linseed cake, hay and straw		8 3 26
No. 3.—Swedes, decorticated cotton cake, bruised oats, hay and straw. . .		11 2 21
No. 4.—Swedes, cotton cake, hay and straw		8 3 9

The average increase per head per day for the fourteen weeks was as under :—Lot 1, 2·39 lb. ; Lot 2, 2·34 lb. ; Lot 3, 2·49 lb. ; Lot 4, 2·03 lb. Dr. Paterson commented upon the return of Lot 1, in which cotton cake and maize meal were used, as against Lot 2, in which the linseed cake, an expensive feeding stuff, was employed. This was against preconceived notions, but there was the result, a striking result when it was remembered that the food used in Lot 1 not only gave the higher increase, but cost about £2 less per ton to the fender. Taking turnips at 10s. per ton, hay at 50s., straw at 30s., and concentrated foods at current prices, the costs of feeding in Lot 1 was £3 9s. 6d. per head. Taking them at 27s. per cwt. live weight, and allowing 6d. per week per head for attendance, the average cost per animal was £13 8s. Taking now the gross weight at 33s. per cwt., the average value would be £15 1s. 9d.. a profit of £2 on each animal in Lot 1. Lot 2 gave a considerably less profit ; Lot 3 an intermediate profit ; Lot 4 he had not yet calculated. Then there was the great question of manurial value. What was the manurial value from the different feedings? He could not yet give details, but he could say the feeding mixture of maize-meal and cotton-cake left a richer manure than the linseed feeding. This cotton-cake and maize-meal gave the second best weight return, the best manurial residue, and was the cheapest food.

FEEDING OF CALVES

The most care to avoid the over-feeding of calves is necessary for the first few days, when the danger of scour and of fatal results from that disorder are greatest. Afterwards, although the danger of scour diminishes, it is not wholly past, and, escaping that, the calf over-fed with milk at long intervals is apt to become what is expressively termed "pot-bellied" in common English "paunchy." New milk, alone, as already said, is the

best food for young calves. But how long should it be continued in its purity? Rather than fit any precise age, one would say until they have learned to eat dry food, such as a little sweet hay and crushed oats, or linseed cake, either ground or nutted very small. Sometimes they will learn to chew a small nut of cake, before they will eat it in a more finely-ground form. The age at which the calf learns to eat very much depends upon its teacher. If no care be exercised to induce it to eat until it takes to the manger out of curiosity, or when, by reason of age, it begins to crave for something more substantial than milk, the milk may be required for a considerable length of time. But if daily the manager cultivates acquaintance with the calf in its box, and occasionally sweetening his fingers with a tasty little dusting of meal allows it to suck them, which it will do readily (a bad habit, to be avoided unless there is a special reason for allowing it to a limited extent), the calf will soon acquire a taste for dry food, and may be taught to seek it in the manger by guiding it thither, and sprinkling a little of the meal on the edge of it first, by way of enticement to seek further.

A dusting of condiment gives to crushed oats a relish which the merest infant calf can appreciate, before it acquires the taste for crushed oats or linseed meal, as a child likes sugared before un-sweetened food, and takes kindly to toffy. Rearing on skim milk, or on a mixture consisting of a large proportion of skim to new, robs the calf of more or less of the material absolutely required for the proper growth of the tissue and the natural proportion of fat. The small, hard, lean, light-fleshed sorts of ordinary cattle, are the results of cheating calves of a fair development. Wherever skim milk is used as the whole, or a large proportion of the calves' liquid food, care should be taken to supply, in other food, equivalents to the materials for growth of the calf will be stunted in one direction or another, if not as regards size of frame, at least in some parts of the whole process of increase which goes to make a thoroughly well-developed animal. There are several moderately priced substitutes in the market

ARTIFICIAL FEEDING

In feeding artificially, the properties (constipating, relaxing, &c.) as well as the nourishing power of foods must be considered. The mother's milk (normally) has a perfect a balance of all things needed, that the calf getting it pure and from the

mother directly (so escaping the risks of low temperature and sour vessels), is much less liable to the opposite evils of purging and constipation than the hand-reared calf. Low value, we must always bear in mind, is not necessarily cheapness; but when of two kinds of food, equally desirable from a feeder's point of view, one from local circumstances happens to be dear, the other cheap, the sparing of the purse is not in such a case bad economy. For a calf not thriving quite so well as it should, a raw egg occasionally, will often help to give it a start. It may be broken into its mouth without the trouble of using the horn, and its much relished. Some successful managers crush up the shell also in the calf's mouth, and allow it to be swallowep with the contents.

When the calf has got the habit of going eagerly to the manger and the rack, and can consume enough dry food to compensate for the bulk of the milk, the latter may be gradually discontinued. Yet if there is plenty of new milk to spare, a gallon a day for some time makes a capital safeguard against deficiency of necessary materials in the dry food. But in the choice of foods for stock, as much, perhaps, as in any branch of agriculture, the value of science as the chart of practice, may be realised.

L. S.

(*Ag. Gazette.*)

THE PARIS UNIVERSAL EXHIBITION OF A. D. 1900

(Continued).

23. *Fencing of Machinery.*—All machinery in motion must be railed off in such a way as to protect the public and the workpeople from injury, and to the satisfaction of the Commission.

CASES.

24. *Labels.*—All cases containing goods for exhibition must bear special labels, inside as well as outside, which will be supplied to Exhibitors in due course.

25. *Unpacking of Cases.*—All cases must be unpacked on arrival. Any cases remaining unpacked fifteen days prior to the opening of the Exhibition will be liable to be removed to the Custom-house, but neither the French Executive nor the Commission will be responsible for any damage which may arise, or any expense which may be incurred in consequence of such removal.

26. *Storage of Empties.*—The Commission will make arrangements for the collection, storage, and re-delivery of cases. Cases must be distinctly marked by the exhibitor for the purposes of identification.

GENERAL.

27. *Freight and Duties.*—Information regarding any reduction of freight charges, duties, etc., will be issued by the Commission from time to time.

28. *Customs' Duties. Forwarding of Goods.*—The buildings of the Exhibition will be treated as bonded warehouses. Exhibitors not taking advantage of the Commission's shipment may transmit their goods through any forwarding agent, or direct to the Exhibition, at their own expense. Goods will be dealt with according to the ordinary regulations in force in bonded warehouses by a special customs service connected with the Exhibition. Goods for exhibition only will not be liable to duty, but on goods removed from bond the usual rates will have to be paid by the purchaser.

29. *Copyright.*—No work of art or object exhibited in the buildings or grounds may be drawn, copied, or reproduced in any form whatsoever without the exhibitor's written permission, countersigned by the French Executive.

The French Executive may, however, allow general views to be taken and reproduced.

30. *Protection of Patents.*—With regard to inventions, designs, and trade marks, exhibitors will enjoy the rights and protection afforded by the French Law of 23rd May, 1868, within the periods and under the conditions specified in said law.

31. *Nature of Awards.*—Awards to exhibitors will take the form of Diplomas signed by the Minister of Commerce, and by the Commissaire-Général.

Thee diplomas will consist of—

Grand Prize Diplomas.

Gold Medal Diplomas.

Silver Medal Diplomas.

Bronze Medal Diplomas.

Honourable Mention Diplomas.

32. *Compliance with Instructions.*—Exhibitors, their representatives and workmen, must comply with all instructions issued by the Commission.

33. *Protection of Exhibits.*—The French Executive will take all precautions for the protection of exhibits, but neither that Executive nor the Commission are to be held responsible for loss or damage however caused. It is left to exhibitors to insure their own goods should they desire to do so.

34. *Liability of Exhibitors.*—Every exhibitor shows at his own risk as respects wear and tear, damage from exposure, breakage, accident in packing, transportation, or from any other cause, and it is a condition that he hold the Commission harmless, and indemnify it against any legal proceedings, whether in the French or the Canadian Courts, arising from any injury or accident caused or occasioned by his machinery or other article exhibited by him, or from any action which it may be necessary to take in enforcing compliance with the Regulations. The above rule applies to companies and firms as well as to individual exhibitors.

35. *Co operation of Exhibitors regarding Regulations.*—As the above regulations are laid down solely in the interest of the general body of exhibitors, and to ensure the satisfactory working of the Canadian section, the Commission trust that the exhibitors generally will co-operate in carrying them into effect.

36. *Alteration of Regulations.*—These regulations are subject to alteration and amplification from time to time.

37. *Infringement of Regulations.*—The infringement of any of the above regulations, or any of the regulations of the French Executive, will subject the exhibitor to the forfeiture of his space, and to the removal of his goods from the building, without any liability attaching to the French Executive, or to the Commission or their representative, in any way whatsoever, in consequence of such removal. The question whether any such regulations have been infringed, and whether the exhibitor's space has been forfeited, and whether his goods shall be removed, is to be determined according to the sole discretion of the Commission.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

POPPIES.

The common corn-poppy, which is such a beautiful, yet troublesome weed, infesting the corn-fields of Great Britain, is not known as a weed in America. Of these native British species there are five: *Papaver rhæas*, corn poppy, *P. dubium*, *P. hybridum*, *P. argemone*, and *P. somniferum*. No one

can conceive of a more dazzlingly beautiful sight than the fields, in some parts of England, literally covered with the brilliant scarlet blaze of the corn-poppy; but to the farmer who owns the crop, their beauty has no charm, for it only speaks of loss. Although only annuals, they are very difficult to eradicate, as their seeds, after having been buried 25 years, have been known to germinate, (1) and coming up as they do among the wheat, in the Spring, it is next to impossible to get rid of them. *Papaver rhæas* has a great many subvarieties varying in color, from white to rose, pink and scarlet, some spotted and striped like a carnation, with flowers single, semidouble, and double.

They are beautiful objects in the flower-garden, by reason of their graceful and feathery habit of growth, and if a patch is set apart for them, and a group grown on it, they will be most effective, and will re-seed themselves annually, after the first sowing. *Papaver somniferum*, although often classed with the British species is really a native of Asia and grows wild in Southern Europe. Its flowers are not so bright as the other, and its habit of growth is less elegant. There are also, of this species, several subvarieties which are interesting chiefly because they are cultivated largely, some for the production of oil, and others for opium.

It is curious that a strong narcotic juice exists in all parts of the somniferous poppy, except the seeds, and these are in no way poisonous but, on the contrary, very nutritious. And from them a fixed oil of agreeable flavour is obtained, and is used for domestic purposes, but more especially for making the oil cake for cattle. The most important use made of the poppy is the extraction of opium, which may be characterised as at once the greatest bane and blessing to the human race.

As a drug, properly used in the hands of the physician, opium soothes and allays pain and checks inflammation. But when used as a narcotic, for the purpose of inducing intoxication and temporary cessation of mental action, it is most enervating to the physical system and depraving to the moral and spiritual condition.

The cultivation of poppies is really important in some parts of Europe, and employs a large number of people, as the seeds have to be carefully prevented from escaping from the capsules

(1) As all oil producing seeds, such as linseed, charlock, etc., do. Ed.

which contain them. The oil expressed from the poppy-seed is supposed to be as good as that of linseed for the feeding of cattle.

All these species above mentioned have annual roots, and grow from seed every year.

The Oriental poppies are perennials, and are the most easily cultivated of any of the herbaceous plants planted in clumps, their handsomely cut foliage, surmounted by delicate or gorgeous colored flowers, is very effective. *Papaver nudicaule*, with its varieties of bright yellow, white, orange, single and double in all the shades, is a beautiful embellishment of the garden or for cut flowers. Mr. J. W. Manning, of the Reading Nursery, Mass., has raised some magnificent seedlings of the *Papaver Orientale* which are grand acquisitions. The cut given herewith faithfully represents their habit and style of growth. Their colors are as follows :

Blush Queen : pale pink tinged with purple.

Bracteatum : large deep crimson.

Brilliant : vivid vermilion.

Certificate of merit : deep blood red, with overlapping petals and black blotch at the base of each.

Immaculatum : orange scarlet.

Little Prince : fiery scarlet, small.

Parkmanii : scarlet with dark blotch.

Plenum : scarlet semidouble.

Prince of Orange : clear orange color.

Royal Scarlet : glowing scarlet, largest of all.

Salmon Queen : soft salmon color.

Semi-plenum : rich glowing crimson.

The perennial poppies bloom chiefly in the months of June and July, but in August and September, new foliage appears and is almost as ornamental as the blossoms, contrasting beautifully with the more solid and erect forms of that of surrounding trees and shrubs.

ANOTHER LARGE FLOWER.

A flower grows on one of the Philippine Islands (Mindanao) that weighs 22 lbs.; it has five petals, each nearly a yard across. A friend wants to know "if it will be large enough for a buttonhole for the U. S. if its Imperialistic policy keeps on growing?"

It grows on a mountain summit, 2000 feet above sea level, so it will take some climbing to get it!"

WYKIN-PIPPIN APPLE.

A correspondent asks if it is correct to state that the Wykin pippin is the same as the Golden Reinette. I see by reference to one of the latest authorities, Thomas, that he calls, what I suppose he means for this, *Wyker pippin* and then refers it to Golden Reinette for description. My experience is that the former is altogether different from the latter, which is properly described as roundish, yellow, streaked and keeping up to in the Fall; while Wykin is green, changing to pale yellow. When ripe, it is very round, flattened, small, will keep February, and is very delicious and spicy in flavour.

THE INDIA-RUBBER-TREE.

Scarcely a window now without a "rubber-tree" and very ornamental they are to say nothing of the interest attaching to them as being curious as regards their natural habits, and the part they occupy in commerce.

Caoutchouc, or the elastic substance we call "India-rubber," is obtained from the milk of certain Tropical trees and climbers, Dogbanes, Spurges, Euphorbias, and Nettles. But the most interesting, in many particulars, is the *Ficus elastica* which has become so popular a house-plant. In the first place, no one would ever think of its being a nettle, and yet it is a prominent member of that very "impressive" family of plants; much less would they dream of such a noble, robust looking fellow being a parasite, and sucking at the vitals of some other tree, in the earlier stages of its existence, but so it is; the seed being deposited in the crotch of a large tree germinates there, and the seedling, for some time, derives its nourishment from this foster parent, but finally its branches descend to the ground, in which they take root, and spread in every direction. Although the young plants grow so erect, when they get older they assume a spreading habit, and their roots ramify in all directions. This makes it a difficult tree to cultivate on a large scale, and yet it appears that it would pay to do so, as the demand for caoutchouc is greatly on the increase. The *Baniam*, *Ficus Indica*, another of the *rubber-trees*, grows in a similar manner, sending out the lateral branches in every direction, and roots, which descending to the ground, grow



Oriental Poppies.

out of them, form props or pillars to hold up these long branches until the tree growing from one central trunk will cover many acres of land.

ABSORPTION IN PLANTS.

Absorption, or the process by which plants take in their nourishment, is not so well understood, as it might be, and as this is the season when it is more particularly progressing, I will offer a few remarks on the subject which may have a good effect upon practice. To the superficial observer, the plant has no mouth, like an animal, and is incapable of receiving nourishment.

The total want of any organ of the nature of a mouth simply shows that all vegetable nourishment must be supplied in a gaseous or liquid

form, and read by means of minutes orifices, called *stomata* or spores, or by means of the roots.

All roots terminate in a number of minute spongioles or congelets, situated at the ends of the small fibs they are called spongioles because they draw up moisture like little sponges; and from their moisture passes to the plant through the *ts*, which are pulpy, and capable of imbibing *l*, and conveying it, by means of the radicle the trunk, branches, foliage, flowers and *f*. The gardener, then, is very careful to see that these delicate parts receive as little injury possible during transplanting, to cut away all seed ends to prevent decay and to induce new *ts* to form, to see that the soil is

(1) *Stomata* is Greek for *mouths*. Ed.

well prepared to receive them, and to give them a soft, wide bed, in which new roots will easily strike. To every reflective mind a crowd of valuable hints, as to the best methods of culture, hoeing, transplanting, and all operations which affects the roots, will be suggested by a knowledge of these facts. The power which the spongioles possess of extracting liquid from the earth and pumping it into the interior tissues of the tree, cannot be calculated or explained any more than the circulation of the blood, or any other natural phenomenon neither is it based on any mechanical thing, but must be considered as one of the mysterious and inexplicable principles of life. The absorbing power of plants is not confined to the roots, but extended to any part of the plant, and the moisture which it requires for its nourishment enters through the pores, which are found on the outer skin of the hard parts of the roots, stem, branches and leaves. The quantity of liquid absorbed is much greater in the full light, it is much greater in the spring, and when the plant is in the full vigour of growth, than in its stages of maturity and decay.

A process called imbibition is some what similar to absorption, but its effects are merely temporary, and while it may maintain life for a short time, it cannot contribute to growth or further development. If we sever a small branch from a tree and place it in a tumbler of water, it will imbibe sufficient of the element to keep it fresh for some days, but it will not grow enough to such an extent as the latent principle of life it contains may affect it. But if the branch is sufficiently succulent, and the temperature is suitable, the cutting will form roots, and then growth will commence, and a new tree or plant, with all its organs, will, in due time, be formed. The same thing occurs if a cutting is placed in sand or soil; the moisture they contain sustains it until roots are formed, and then imbibition ceases and absorption begins. Timber, after it has been cut for a long time, has the power to imbibe and retain moisture. A piece of oak which was known to have been in a building 150 years was found to contain ten per cent of its weight of water.

The imbibing power of wood is rapid and retentive, and seems to co-exist with the vegetable tissues as long as they endure, although not with the same strength as in the growing plant.

Another power closely resembling absorption, but more properly termed inhalation, exists in

vegetation, and is that by which plants take in gaseous fluids. The atmosphere has doubtless as much to do with the nourishment as the soil, and it is not only by means of liquids that they are fed, and their growth stimulated, but also by ammoniacal, or nitrogenous, and carbonic acid gases, that are taken into their systems by means of similar pores or stomata as the absorbents.

Thus, the wonderful structure of the plant is a complete living thing; each organ, however minute, has its allotted work, and is necessary to form a complete specimen, neither can it suffer without others being disarranged, and hindered in the performance of their natural functions. Knowing this, it is the part of the good cultivator to see that all have a fair chance of development and action, and are supplied with the ingredients requisite for the growth of the plant, and which they are waiting to convey to it and help it to assimilate.

Science.

ANÆSTHETICS IN OPERATIONS ON ANIMALS.

In these days, when we hear so much said in regard to the welfare of the brute creation, and see so much good work done by Societies for the prevention of cruelty to animals, is it not wonderful how we all stand by, and allow our pets to suffer unnecessary pain whilst under the hands of the veterinary surgeon, undergoing some necessary operation? There is hardly an operation performed on the human body, but what anæsthetics in some form are used, so that the patient shall not suffer pain; and yet we who wax so virtuously indignant over the kicking of an animal by some human brute, just for the sake of a slight extra-charge, or simple carelessness may be, allow a well tried friend, to undergo agonies whilst under the surgeon's hands.

This pain can be easily done away with, or greatly reduced, and it is incumbent on everyone interested in the welfare of live stock to do all in his power to so reduce it; which in these enlightened days is so easy to do.

In order to bring forward the importance of the subject, we would just refer to a few of the frequent operations which veterinary surgeons are called upon to perform, operations which common

sense tells us must cause intense pain to the patients.

First the "firing of horses' legs." This as all horse owners know is a most frequent operation, and consists of passing hot irons many times over the skin of the part affected: in fact, till the skin is nearly burnt through. Now, when one comes to think of the effect of only a slight burn inflicted on one's own person, and compares the pain of the latter to the former, it is impossible not to feel the barbarity of the operation, and, knowing the thousands of horses that are fired annually, it is astounding to think of the pain inflicted so heedlessly. Then, take castration (a necessary evil); what a wretchedly painful operation it is, and only too often performed by unqualified men in the most crude manner possible. Even when performed by a skilled vet., the pain must be intense. These two operations are mentioned because every owner of stock is familiar with them; but there are many others equally as painful, that veterinary surgeons are constantly performing.

It is to be feared that veterinary surgeons as a rule, are much to blame in not impressing, on their clients, the pains animals suffer during operations. It is not that they are callous to the sufferings inflicted, but in the majority of cases it is simply due to following the old lines and not venturing on new ones. One cannot help believing that any owner will eagerly grasp at any method, even though it does entail extra cost, by which the pain to their dumb friend may be relieved or reduced.

These means are in our power to employ, by the use of anæsthetics, either general or local, which ever meets with the greater success. Under these conditions the operation must be performed with greater care and comfort both to practitioner and patient, and the former can certainly employ greater skill on a perfectly quiet patient, besides saving his time.

As agents to produce anæsthesia, good authorities unreservedly place chloroform first, being quick in action, safe and reliable; and by the aid of a special apparatus (of which they are several very good ones now on sale), the risk is reduced to a minimum, and the aid of assistants is quite unnecessary.

Until within the last 10 years, the majority of veterinary surgeons knew little about the action and administration of chloroform, and were afraid to make a start on its use. Why; it is not many

years ago a veterinary surgeon asserted that he had used a pint of chloroform to produce anæsthesia in a horse. Poor horse!

It was formerly the practice to administer the drug with a large proportion of air, but experiments have proved that it is better given pure without the ad-mixture of air. It acts quicker and better in this manner, and in this way a horse can be put completely under its influence in three minutes, quite a sufficient dose being 2 oz.

No particular care is required beyond watching the respiration. The muzzle containing the chloroform is simply put over the nostrils of the patient, and kept on tight for a space of two or three minutes, varying with different patients. Then, when the animal is well under its influence, the muzzle is taken off, and the operation proceeded with. The 2 oz. will generally last for an ordinary operation, but if necessary, the muzzle may be refixed when required.

After the operation is over, the patient may be allowed to gradually recover; care being exercised not to allow him to get up too soon. If consciousness is slow in returning, a little water dashed over the head and face, and the nostrils and mouth sponged out, will soon effect a recovery. In addition to chloroform, there are several drugs which may be employed. Each operator has his own fancy; some prefer ether, nitrous oxide, or a mixture of alcohol, chloroform, and ether—but the highest authorities stand by chloroform solely.

Of course, there are small operations, for which the use of general anæsthesia is unnecessary, and in such cases the employment of a drug to cause local insensibility is indicated, and the very best one is a solution of cocaine. It certainly is a marvellous drug, for when injected under the skin, it produces a total insensibility of the surrounding structures. By its means large tumours can be taken from horses and cattle, without their evincing the slightest sign of pain.

It is to be hoped that these lines may be the means of inducing all owners of animals to insist on the use of anæsthetics more frequently if they have to submit their animals to operations; and it is to be hoped that the day is not far distant when "anæsthesia" will be the rule and not the exception; in fact in some of the more painful operations it would be advisable for anæsthesia to be made compulsory.

W. R. GILBERT.

The Poultry-Yard.

DEAD IN THE SHELL.

Why do chicks die in the shell; what is the cause of it?

This question is asked again and again in all the poultry papers. It is asked not only in regard to those that die in the mechanical or artificial incubator, but those also that die in the shell while under sitting hens, ducks, turkeys, geese, etc. But the person who has just commenced running a artificial incubator loses sight of this fact, and thinks, that if some eggs hatch, every egg in the machine should hatch, or that certainly all eggs which start to incubate should bring out chicks.

While in a great many times the majority of cases of "dead in the shell" may be justly charged to the incubator or sitting hen, it is not always so.

Again, though there are first class incubators which do hatch well, it must not be taken for granted that all incubators are good. There are good and bad incubators as there are good and bad hens and good and bad eggs.

The fact, that some hens steal their nest and bring out a chick from every egg, or do nearly as well, is no proof that it was on account of having had their own way. Other hens steal their nests and only hatch one or two chicks; some times they fail to hatch any.

A hen that steals her nest generally sits on eggs laid by herself. If her eggs are strongly fertilized, and she is a good sitter and has a good place to sit, she will bring off a good hatch. If the eggs are not well fertilized she does not make a good hatch, but brings out perhaps six, two, or no chicks. The unhatched eggs may prove all infertile, or most of the chicks may be dead in the shell.

What is the cause?

On the first event no impregnation; in the second, imperfect or weak fertilization. A bad sitter or poor incubator might cause the same result with good eggs.

When a good quiet hen sits steadily on fifteen fertile eggs and hatches seven of them, is it not reasonable to suppose that the other eight must have differed some how, in quality, at the beginning, or they, too, would have hatched? All having been subjected to the same conditions and treatment, why did not all hatch, or else all fail to hatch, all being fertile or containing germs of life?

The answers to this question are legion; but most writers agree that it was lack of vigor in the germ, traceable to the parent stock, or to a mal-condition of the laying stock, which produced the eggs. Had all the eggs failed to hatch, we may reasonably suspect that the sitting hen had neglected her nest. But as seven of them hatched, the sitting hen is clear of blame, for the seven chicks could not have been produced without the favorable condition for incubation to which they were subjected together with those which failed to hatch. Is it not plain that something was wrong with eggs which contained chicks, in all stages of development, but failed to hatch? If the incubator (hen) was wrong, none would have hatched. Now, the cause of infertile and imperfectly fertilized or weak eggs are numerous, but easily removed or guarded against, provided we know what they are.

Too close inbreeding will make weak offspring. Inbreeding is excellent to a limited degree, but must not be carried beyond a few generations, if stamina and vigor are to be retained.

Over-fat hens do not produce eggs that will hatch well. No matter how good the male may be, the germs do not seem to receive the proper nourishment to develop strength to break out of prison even if they grow to full size.

Stale eggs, however vigorous they may have been, do not hatch well. Eggs may be both fertile and fresh, yet lack the vigor required to developed a chick.

Hens over two years old take on fat too easily, besides losing qualities requisite to good breeders. This is the rule. Of course there are exceptions, but you had better go by the rule than by the exception. Some cocks retain a fair amount of vigor and procreative power after the second year, but nine out of ten do not. If you want eggs to hatch well and to get the maximum profit from your poultry business, kill all the males and females at two years of age. Don't keep a fowl simply because it is fine looking. You cannot afford to keep simply ornamental birds in your flock. Fowls in too close confinement lose their vigor, and that, together with the practice of keeping fowls that are too old, is what causes nine-tenths of the "death in the shell" cases which owe their origin to the breeding stock.

Some people think a yard ten by twelve feet is large enough for accommodation of a dozen fowls. They must have a reasonable amount of exercise. As there are two classes of poultry raisers, there are two ways to effect a remedy.

The man who must raise his poultry on a limited area of ground, should keep fewer fowls. Is it not better to keep one hundred fowls from which you can produce eggs that will hatch from (75 to 95 per cent of all fertile ones) than to house, feed, and care for two hundred fowls to produce eggs of which fifty per cent are infertile, and only from thirty to forty-five per cent of the fertile eggs hatch.

Wriggle around it as you please, you cannot disregard this advice and succeed.

Those who have large tracts or land, but, because of keeping several breeds or varieties of fowls, are obliged to keep them in yards, should either enlarge their yards beyond (apparently) all reason, or at least beyond any size you ever saw before, and allow plenty of range for exercise and cleanliness, or reduce the number of varieties and give each yard of fowls an extra grassy yard to pasture in for two hours each day; or, better still, keep but one variety and make kindling wood of your fences. Colonize your flocks on the Stoddard "no fence" plan, and you will have eggs that with proper assignment and division of males and females (fowls) will show up ninety per cent of fertility, and in good incubators, produce from eighty to ninety-eight per cent of strong healthy chicks.

How do we know?

We have done it. The proof of the pudding is in eating it. Now let us look at a few other causes of chickens dying in the shell; for you know it is quite possible to kill a vigorous germ, or even a full grown chick, by improper treatment. A poorly contrived incubator or a bad hen can easily destroy the life in the shell at any stage of incubation; or a careless or headstrong operator of a good incubator can spoil the hatch by what may seem to him a very insignificant deviation from the instructions of the maker of the machine. Too much or too little moisture, heat or ventilation may ruin a hatch. Lack of moisture, at the time it is needed, or excess of moisture, when none is needed, will injure or destroy life in the hatcher. If the machine is deficient in any of these particulars, do not use it, but get one that you can depend upon.

You will also remember that eggs of various breeds vary considerably in shell, some shells being thin and porous, some thick, yet porous, while others are thick and dense, or hard, and still others are hard and thin. Chilling the eggs,

especially during the last part of the hatch, or while chicks are breaking the shell, causes many to die in the shell.

S J. ANDRES.

The Dairy.

A FEW SUGGESTIONS TO BEGINNERS.

Usually at this season of the year, great activity is noticeable amongst the dairying community, cows coming in, milk increasing and consequent preparations and changes in the daily routine made to most advantageously dispose of the product of the cow.

This activity is perhaps more general with the cheese factory and creamery proprietors, than with the producers of the raw material, which latter do not as a rule bestir themselves without the former taking the initiative.

Now is the time that creameries are changing buttermakers or assistants, and new creameries starting up and young and, I hope, ambitious buttermakers starting out.

I say young and ambitious buttermakers, not necessarily young, but essentially ambitious; who but the ambitious can hope to overcome the difficulties which are sure to be encountered not only in their first year's experience but throughout their subsequent career as buttermakers. Ambition is the foundation of perseverance, which is required every second of the day, which must in fact become, if not already so, habitual.

These difficulties, assuming during the first year gigantic proportions, confronting the novice suddenly without any warning, gradually diminish with experience, being in themselves experience, and if intelligently overcome, soon have no other effect than to stimulate that care and watchfulness which alone make buttermaking no haphazard occupation.

If I imagined, that by enumerating these many difficulties with specific remedies, I should be aiding the beginner more than by advocating the prevention of these difficulties, I would certainly now follow the former line of thought. But this is not my intention, for as I have already said, these difficulties are one's experience, and nothing but experience will bring success. Let the novice be at his post a week before the commencement of operations, the boiler perhaps needs cleaning, it certainly needs to be steamed up in order to detect

leaks in the fittings or elsewhere, don't start up with things out of order, for your first month will be a very busy one, and you will have little time to spend in fixing up things out of order, and which are always growing worse, until fixed. Perhaps the make of Separator is new to you, run it until you are thoroughly acquainted with its motion and manipulation, take it apart and get well acquainted with its various parts. Doesn't your engine need tightening up? take up the slack and get it running smoothly and silently. As likely as not, your water pipes need attention, and drains may be out of order, such things do happen you know, yes, and without anybody touching them. in the winter. Belting, appliances, tinware, flooring, all need an inspection and putting in order as well as a getting acquainted with.

Your creamery and surroundings may not be ideal, but you must make the most of them. During a long career a buttermaker will make butter under all sorts of circumstances. Because you have seen cream run right from separator to cream vat or from vat to churn, is no reason why you should not put the cream into the vat and churn with a pail if so situated. If improvements and greater facilities are needed, prove yourself to be efficient under the adverse circumstances, and the proprietor will be more likely to recognise and carry out your just demands. Try not to be discouraged, you will be sometimes I am sure, but pull yourself together when in a fix, and use your intelligence. If one way won't succeed, try another, there are many roads to Rome.

With care and proper usage, your machinery should be very little the worse for the season's operations. Don't be afraid of using oil, until you have learned just how much is needed; after that, be saving.

Learn to understand your patrons, be civil but firm, refuse all bad milk, for your own as well as the patron's protection, but do it inoffensively, and try and point out the mistake made.

Handle your separator as you would a baby, and if you have not had experience of this sort, then handle it as delicately as you would an egg, there's not much difference. Yes, you may be in a hurry some September morning to go to the Exhibition, and feel inclined to bang things round, and abuse delicate machinery, then bear in mind the egg idea, I'm a Father myself, and I say don't!

Oh! dear (this is mild) I've been churning for

nearly five hours, and no sign of butter, the churn's full up with froth.

To-morrow, you must either put less cream in the churn, or have it at a lower temperature, or both; at present you must take half of your whipped cream out of the churn and make a second churning, I hope you'll be through before dark.

Soft butter, hard butter, streaky butter, mottled butter, all have their turn without a moment's notice perhaps, all due to a little carelessness, a moment's listlessness, the lack of one more cake of ice, a few pounds of steam, or a few more turns of the butter worker.

Don't forget for one moment that a little slackness in buttermaking, may have far reaching results to the disadvantage of all concerned. Is there need to preach cleanliness? Ah! is there not? To be clean is to be always clean, clean one day and dirty the next, is dirty.

Get into regular habits, get up steam and churn at the same time every morning, commence separating as early as possible, so that the patrons need not waste all the morning at the creamery. Remember that any quantity of washings with lukewarm water, won't do what one washing with boiling water with washing soda in it will.

A clean personal appearance betokens a clean creamery, in this connection, have a place for everything; such things as pails, brushes, scrubs, salt barrels, etc., are not as a rule ornamental and are best out of sight, but may easily present a pleasing appearance if placed neatly in a methodical manner, on the shelf or table.

The yard around a creamery is what first impresses a visitor, have it clean and sweet, no spilled milk, no litter from wood-piles or other sources.

This then should be the ambition of all, to produce the best article under the circumstances at the lowest cost, to set an irreproachable example of cleanliness to the patrons and others, and to encourage the milk producers to increase their supply so that, year after year, may witness increased profits, which although meaning increased work, must always mean increased salary.

I hope any beginners reading my remarks will accept my suggestions in the spirit which inspires them, a realisation of how great a perseverance, steadiness and cleanliness is necessary to make a success of buttermaking.

H. WESTON PARRY.

May 5th, 1899.

CURING-ROOMS IN QUEBEC.

Means adopted for their improvement by the Local Government.

In our issue of March 7th last we pointed out that the Quebec Government had made arrangements to make a grant of \$50 to every cheese factory that would put in a sub-earth duct to regulate the temperature in the curing-room. In a bulletin recently issued by the Quebec Department of Agriculture, a copy of which came to hand last week, the same Government is offering premiums, ranging from \$100 to \$200, according to the size of the curing-room, to cheese factories making certain improvements and complying with the conditions laid down by the Department. In order to induce the building of larger curing-rooms and better ventilated buildings no premium will be granted to any new factory to be erected that has a less curing-room floor space than 700 square feet. In old buildings the premium will be \$100 where there is a floor space of from 400 to 700 square feet. For new and old buildings of from 700 to 1,000 square feet of space the premium is \$150, and for curing-room space over 1,000 square feet it is \$200.

The conditions laid down for obtaining these premiums provide for a great improvement in the construction, ventilation and regulation of the temperature in the curing-rooms now existing and the ones to be built, and if by this plan a large proportion of the factories comply with these conditions there must result a marked advance in the quality of these cheese made in Quebec from improved curing facilities. The conditions are summarized under four headings, as follows: Those relating to the construction of the factory and to that of the curing-room in particular; those relating to the ventilation of these rooms, to their cooling in summer and their warming in the spring and fall; those which concern the general laying out of the factory; and those relating to the manufacturing and to other questions.

The principal point emphasized in the first of these conditions is the location and size of the curing-room, which should be on the ground floor. The outside walls should have a double lining of boards and two layers of felt or building paper. Over the double inner lining of rough boards, one layer of felt paper should be first applied, and on the paper, strips two inches wide and one inch thick should be nailed. On this is

nailed another thickness of lumber, then two layers of paper breaking joints, and last, a double thickness of planed, tongued and grooved boards. This mode of construction will be required as well in the case of the inner walls separating the curing from the working and other rooms in the factory as well as in that of the outer walls. Special instructions are given regarding the ceiling and floor, the latter of which must be waterproof. In the construction of the curing-room no strong-smelling should be used.

In regard to ventilation, cooling, heating, etc every curing-room must have a special ventilator, a description of which is given. Each room must be provided with a cooling apparatus. The plans advised are the placing at one or several points of the room, cylinders of galvanized iron which are filled with ice or a mixture of ice and salt, or the placing of these cylinders at the bottom of the ventilator shaft. Detailed description of these plans are given. In heating, if a stove is used a screen should be provided around it for distributing the heat. Where practicable it is recommended to heat the room by steam pipes fed from the boiler. For increasing the degree of humidity there should be a steam pipe in the curing-room, the end of which should be flush with the inside surface of the wall and have a small valve. In dry weather the valve should be slightly opened so as to diffuse the necessary humidity.

The conditions imposed in the construction of the factory necessitate building on high land where the drainage is good and the drainage of the factory perfect, so that all drainage waters can be carried off in an underground drain with a sufficient slope to prevent their stagnation, and altogether the plant should be sufficiently good to permit of the manufacture of first-class cheese.

In regard to the manufacture and other points to obtain a subsidy it is necessary: (1) That the factory should, if possible, belong to a syndicate if there be one in the region where it is situated. If there be none, the person in charge of the factory shall submit to its being inspected whenever the Government requires; (2) It shall bind itself not to ship any cheese which has been less than a fortnight in the curing-room; (3) The manufacturer shall bind himself to wash out the whey vat every day; (4) He shall keep a record of the temperature on blank forms to be supplied him by the Department of Agriculture; (5) The water used shall be as pure as possible.