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# THE JOURNAL OF AGRICULTURE AND HORTICULTURE

**VOL. 3. No. 13**

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

**JANUARY 1st, 1900**

- THE -  
**Journal of Agriculture and Horticulture**

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## THE PROVINCE OF QUEBEC AT THE PARIS EXHIBITION.

Under the inspection of the Hon. Mr. Déchéne, the Commissioner of Agriculture, the final preparations of the exhibits for the Paris Exhibition have been completed.

Wheat is represented by 14 samples: Russian white, Manitoba red as well as white, Black-Sea, red Fife from Métapédia, Lake St. Jean, Aylmer, St Roch, Cacouna, Rouville, Ste-Anne de la Pocatière, Oka, and la Baie des Chaleurs.

There are 10 samples of barley, of all the kinds that grow in the province.

Of oats, there will be 13 exhibits: Black-Tartars, Russian, Ligour and Banner.

Fine samples of rye, 7 of pease, Canadians, pigeon, monks' (des moines), Beauty of Canada, Prussian-blues; 8 of buckwheat, black, white, gray, and Japan. Two samples of common vetches (lentilles), 8 of Canadian timothy, the same of clover, i. e., common red, Dutch or white, Hybrid (*Alsike*?) Vermont, Rawdon; one sample of flaxseed, 2 of beans (probably "haricot"), and 2 of Canada corn.

The invoice contains 70 ears of corn, sans-pareil, small American, Canada-yellow, 8-rowed, and 12-rowed.

Tobacco will be represented by samples of our finest growths. Those who saw the lot are convinced that this province can produce tobaccos of quality good enough to please the most fastidious smoker. There are 185 pounds sent off: Havana Seed-leaf, Little Dutch, Connecticut, Blue Prior, Gold-leaf, Sterling Virginia.

Lastly, there are 83 sheaves of wheat, barley, oats, timothy, clover, lucerne, orchard grass, flax; the whole forming a collection extensive enough to show the visitors to the Exhibition that the Province of Quebec is not only prodigiously great in superficies, but that she contains plenty of land fitted to produce every kind of crop.

# Competition of Agricultural Merit, 1899

## CLASSIFICATION OF COMPETITORS

ORDER OF MERIT	NAMES OF COMPETITORS	PARISH	COUNTY	MARKS ASSIGNED
For the Gold Medal.				
1	Jean et Louis Maltais.....	Jonquières.....	Chicoutimi.....	92 00
2	Louis Durand.....	St-Ambroise.....	Québec.....	91 90
3	François Couture.....	St-Augustin.....	Portneuf.....	91 45
4	Jos. P. Gagnon.....	St-Jérôme.....	Lac St-Jean.....	90 35
5	David Fortin.....	St-Joachim.....	Montmorency.....	89 60
6	Célestin Fortin.....	St-Joachim.....	Montmorency.....	89 45
7	Thomas Boivin.....	St-Alphonse.....	Chicoutimi.....	88 25
8	Alex. Couture.....	St-Augustin.....	Portneuf.....	88 50
For the Silver Medal.				
1	Louis Jobin.....	St-Augustin.....	Portneuf.....	91 55
2	Honoré Lortie.....	St-Charles de Limoilou.....	Québec.....	91 20
3	Pierre Lortie.....	Beauport.....	Québec.....	90 45
4	Alex. Lefrançois.....	Chateau Richer.....	Montmorency.....	88 15
5	Octave Laberge.....	L'Ange Gardien.....	Montmorency.....	86 50
6	Donat Fortin.....	St-Alexis.....	Chicoutimi.....	85 55
7	Wilfrid Simard.....	St-Gédéon.....	Lac St-Jean.....	85 45
8	Antoine Hébert.....	St-Félicien.....	Lac St-Jean.....	85 30
9	Joseph Prémont.....	Chateau Richer.....	Montmorency.....	85 25
10	J. D. Guay.....	Chicoutimi.....	Chicoutimi.....	85 20
11	Pierre Boily.....	St-Gédéon.....	Lac St-Jean.....	85 10
12	Georges Hudon.....	Ste-Anne.....	Chicoutimi.....	85 10
13	Henry McNicoll.....	St-Alexis.....	Chicoutimi.....	85 10
14	Louis Richard.....	L'Ange Gardien.....	Montmorency.....	85 10
15	Amédée Lefrançois.....	Chateau Richer.....	Montmorency.....	85 00
16	Louis Bouliane.....	Malbaie.....	Charlevoix.....	85 00
For the Bronze Medal.				
1	Pierre Gosselin.....	St Prime.....	Lac St-Jean.....	82 45
2	Alcide Hébert.....	St-Méthode.....	Lac St-Jean.....	80 70
3	Joseph Cimon.....	Baie St-Paul.....	Charlevoix.....	80 05
4	Alphonse Delisle.....	Pointe-aux-Trembles.....	Portneuf.....	79 75
5	Magloire Pagé.....	Les Ecoreuils.....	Portneuf.....	79 70
6	Thomas Côté.....	St-Gédéon.....	Lac St-Jean.....	78 80
7	Joseph Letarte.....	L'Ange Gardien.....	Montmorency.....	78 70
8	Paschal Bergeron.....	Jonquières.....	Chicoutimi.....	78 45
9	Augustin Constantin.....	St-Augustin.....	Portneuf.....	78 45
10	Joseph Mathieu.....	L'Ange Gardien.....	Montmorency.....	78 05
11	Paul Marcoux.....	St-Prime.....	Lac St-Jean.....	77 65
12	Edmond Valin.....	St-Augustin.....	Portneuf.....	77 40
13	Joseph Girard.....	St-Gédéon.....	Lac St-Jean.....	77 30
14	France Bertrand.....	Cap Sauté.....	Portneuf.....	77 30
15	F. X. Vallée.....	Charlesbourg.....	Québec.....	76 85
16	Frs Mercier.....	Ste-Anne de Beaupré.....	Montmorency.....	76 45
17	Joseph Gagnon.....	St-Jérôme.....	Lac St-Jean.....	76 45
18	Damase Laprise.....	St-Félicien.....	Lac St-Jean.....	76 45
19	Charles Juneau.....	St-Prime.....	Lac St-Jean.....	76 15
20	Ephraïm Potvin.....	St-Jérôme.....	Lac St-Jean.....	76 15
21	J. B. Carboneau.....	Normandin.....	Lac St-Jean.....	75 70
22	Odina Mounier.....	St-Augustin.....	Portneuf.....	75 20
23	Charles Cauchon.....	Chateau Richer.....	Montmorency.....	75 20
24	J. H. Cloutier.....	Chateau Richer.....	Montmorency.....	75 20
25	Ephrem Brassard.....	Roberval.....	Lac St-Jean.....	75 10
26	F. X. Laplante.....	Chateau Richer.....	Montmorency.....	75 10
27	André Plourde.....	St-Jérôme.....	Lac St-Jean.....	75 10
28	J. B. Chartré.....	St-Félicien.....	Lac St-Jean.....	75 05
29	Frs Gagnon.....	Chateau Richer.....	Montmorency.....	75 05
30	Joseph Vézina.....	L'Ange Gardien.....	Montmorency.....	75 00

LIST OF COMPETITORS (*Continued*).

ORDER OF MERIT	NAMES OF COMPETITORS	PARISH	COUNTY	MARKS ASSIGNED
31	Maurice Lemoine.....	Malbaie.....	Charlevoix.....	75 00
32	Alfred Couturier.....	Malbaie.....	Charlevoix.....	75 00
33	Pierre Cauchon.....	Chateau Richer.....	Montmorency.....	75 00
34	Frs Lessard.....	St-Gédéon.....	Lac St-Jean.....	75 00
In the diploma of merit.				
1	Théodule Villeneuve.....	Roberval.....	Lac St-Jean.....	72 80
2	Louis Trudel.....	Albanel.....	Lac St-Jean.....	71 70
3	Hilaire Laberge.....	L'Ange Gardien.....	Montmorency.....	71 30
4	Joseph Bolduc.....	St-Joachim.....	Montmorency.....	70 40
5	Chs. Gagnon.....	St-Jérôme.....	Lac St-Jean.....	70 05
6	Edouard Caron.....	Ste-Anne de Beaupré.....	Montmorency.....	69 55
7	Lazare Vaillancourt.....	St-Cyriac.....	Chicoutimi.....	69 20
8	Philéas Gravel.....	Chateau Richer.....	Montmorency.....	69 00
9	Elie Lapointe.....	Malbaie.....	Charlevoix.....	68 95
10	Louis Langlais.....	St Gédéon.....	Lac St-Jean.....	68 75
11	Flavien Dufour.....	St-Jérôme.....	Lac St-Jean.....	68 60
12	Pierre Lessard.....	St-Gédéon.....	Lac St-Jean.....	68 05
13	Jean Morel.....	Ste-Anne de Beaupré.....	Montmorency.....	68 05
14	Thos. Coulombe.....	St-Jérôme.....	Lac St-Jean.....	67 95
15	Arthur Rouleau.....	St-Gédéon.....	Lac St-Jean.....	67 45
16	Louis Brassard.....	St-Cyriac.....	Chicoutimi.....	67 15
17	Isaïe Gagnon.....	Malbaie.....	Charlevoix.....	67 15
18	Louis Barette.....	St-Gédéon.....	Lac St-Jean.....	66 35
19	Joseph Doré.....	St-Jérôme.....	Lac St-Jean.....	65 90
20	F. X. Bilodeau.....	St-Joachim.....	Montmorency.....	65 65
21	Wilfrid Ratté.....	St-Jérôme.....	Lac St-Jean.....	65 25
22	Jean Turcotte.....	St-Gédéon.....	Lac St-Jean.....	65 10
23	Antoine Laprise.....	Albanel.....	Lac St-Jean.....	65 10
24	Georges Laberge.....	St-Prime.....	Lac St-Jean.....	65 10
25	Frs. Tremblay.....	Ste-Anne.....	Chicoutimi.....	65 10
26	Elzéar Dufour.....	St-Jérôme.....	Lac St-Jean.....	65 05
27	Liguori Lessard.....	St-Gédéon.....	Lac St-Jean.....	65 00
28	Onésime Tremblay.....	St-Jérôme.....	Lac St-Jean.....	65 00
Entered solely for competition.				
1	Alfred Guérin.....	St-Joachim.....	Montmorency.....	64 05
2	David Poulin.....	St-Joachim.....	Montmorency.....	61 90
3	Isaïe Caron.....	Ste-Anne de Beaupré.....	Montmorency.....	61 85
4	Frs. Oct Lessard.....	St-Joachim.....	Montmorency.....	62 50
5	Henry Savard.....	St-Félicien.....	Lac St-Jean.....	61 55
6	Frs. Giguère.....	Ste-Anne de Beaupré.....	Montmorency.....	56 30
7	Jean Gauthier.....	Ste-Anne.....	Chicoutimi.....	56 25
8	Théodule Tremblay.....	Albanel.....	Lac St-Jean.....	55 95

## The Farm.

## NOTES BY THE WAY.

## COMPETITION OF AGRICULTURAL MERIT.

In the county of Montmorency, many farmers never sow clover at all! It is almost incredible that such can be the case. Some sow a little clover; others just a trifle of timothy!

*Pastures.*—No preparation is made for pasturing (*pacages*). We (the Judges) saw a herd of 9 cows that were only giving 54 lbs. of milk a day, i. e. 6 lbs. apiece!!!

As to the Lake St. John district, the Judges state that in no part of the province, is the production of wheat, roots, dairy-goods, and bacon better carried out.

Several farmers are putting in drains, and, finding the practice answer, their neighbours will soon follow suit.

MM. Jean and Louis Maltais, who won the gold-medal this past season, are farming with great success. The land is clean, and the acts of husbandry are executed with neatness and care.

The rotation is one of 5 years: one year in grain-crops, two in meadow—lots of both clover

and timothy—and two in pasture. (No roots or any other hoed-crops? ED.)

*The Century.*—People still seem to have a difficulty in understanding when the Nineteenth Century ends and the Twentieth Century begins.

Now, if we take two other divisions of time, the *Lustrum* (5 years) of the Romans and the *Decade* (10 years) of the French people after the Great Revolution, perhaps it will throw some light upon the subject.

The *Lustrum*, or purification of the Roman people, was celebrated every five years. Let us suppose that any lustrum ended on the last of the five years of any year ending with a cipher: say in the year 500 A.U.C. (1) It is clear, then, that the first year of the new lustrum must have been 501 and the last 505.

Similarly, the first year of the decade following the year 1800 A.D., must have been the year 1801, and as the decade contained a period of ten years, it must have ended on the last day of the year 1810, at midnight.

Thus, it seems to us that no one can doubt that the 20th century after Christ begins immediately after midnight on the 31st of December 1900, and ends at midnight of December 31st, A.D. 2000.

*Drains.*—The first thing to be studied in the theory of draining is: how does the water get into the drains? The answer to the question is: from below. People start with the notion that the rain "percolates" through certain imaginary tubes, until it finds its way into the drainage-conduits; whereas, the real truth is, that no water gets into the pipes, etc., until the whole body of the earth is saturated with moisture, and then the weight of the, so to speak, column of water, pressing upon its lowest drop, divides that drop and drives it into the drains on each side. In fact, gravity does the whole thing.

Pipes are the best and the cheapest conduits, the best, as it is clear to any intelligent observer than if the earth at the bottom of the drain is left without a cover, as in the case of bush, log, and most kinds of board-drains, that the stream of water must drive the naked earth before it, and, sooner or later, dam-up the drain; the cheapest, because, if the proper tools are used, the excava-

tion-work is so much less than in using any other kind of conduit, that the saving will pay for the whole cost of the pipes. Of course, we are not talking of trifling shallow drains, but of good honest, four foot work, where with the semi-cylindrical spade and draw scoop for bottoming out, the first opening need not be more than 14 inches wide in clays; where the pick must be used, as in stony or gravelly soils, a little more width may be required.

But the great thing to remember is: the water rises into the drain-conduit from below.

The "Honey-buzzard." A most extremely rare bird is the "Honey-buzzard," and a most useful one as it plays the very mischief with the grubs of the wasp. One has been shot lately near the South coast of England with its crop, throat, and mouth all choke-full of grubs. We remember being barbarous enough to shoot one in a turnip-field in Kent, in 1849. Taking it for a pheasant "skimming," we almost let it get out of shot, (1) but luckily found out our mistake in time. The wings spread out measured 4 ft. 2 in. from tip to tip. Cato, the great bird-stuffer preserved it for us, and it is now in the manor-house at Middle-Wallop, Hampshire.

*Canadian cheese vs. English cheese.*—M. Castel, Secretary of the Dairymen's Association, quoting from an English newspaper, mentions, in last month's French edition of the JOURNAL, that a lot of cheese made at Pyll, Somerset, was sold at 74 shillings the 112 lbs., or 15½ cts. a pound, after ten weeks ripening.

The July cheese of this province, continues Mr. Castel, after from ten to fifteen days drying, only fetched, in spite of the very high prices of this season, 10 cts. and a fraction: one-third less than the English cheese.

By the last *English Agricultural Gazette* received we see that the price of the "finest new Cheddar" runs from 76s. to 80s. the cwt. of 112 lbs., the higher of the two quotations being equal to 17½ cts. a pound.

M. Castel asks if it would not be worth while to send some of our most skilful makers over to England to attend the Dairy-school of the County-Council of Somerset, in order to learn the causes of the superiority of English cheese.

(1) It was in September, too early for pheasant-shooting. ED.

(1) From the building of the city of Rome. ED.

We, of course, persist in our opinion that this superiority is chiefly, if not entirely, owing to the old permanent pasture on which the cheese-cows of the Cheddar Valley graze, and we are not alone in our opinion. What says Mr. A. W. Grant? He clearly holds that the goodness of cheese depends in great measure upon the food the cows eat :

Travelling a few years ago through the Cheddar Valley, in the County of Somerset, England, I was forcibly struck with the care and attention paid by the farmers to their pastures. I asked one of my friends what it was that a man we saw in the meadows was gathering, for I could see nothing in the field but green grass: a genuine lawn it was. "The man," replied my friend, "is pulling up weeds." "There is no wonder that you can get 15 cents a pound for your cheese, wholesale, with such careful work as that," said I. "True," replied my friend, "for if the cows were to eat these weeds it would injure the quality of the cheese and affect its price." It is in that district that the famous English Cheddar is made, that sells so high, and it will be easily understood that the land there lets for a good rent.—*Speech at Valleyfield, Dec. 1898.*

*Butter and cheese.*—London Central Market, Monday :

English Fresh Butter—Finest Factory, 11s. 6d. to 14s. 6d. per dozen.

English Dairy Butter—As per value.

London, Friday.—Butter market has displayed a general tone of firmness, prices to-day closing generally higher as compared with those current on Friday last. Supplies coming forward have been on an average scale, the demand being adequate. Irish factories, 90s. to 98s.; creameries, 96s. to 102s. The market for American cheese has improved 1s. per cwt. on the week, and holders still exercise reserve. Business, although not very brisk, makes steady headway. Canadian, finest, August makes, quoted 56s. to 57s.; and September, 57s. to 58s. (1) United States, finest, 55s. to 57s. Dutch firmly held, arrivals being on a small scale. Choice red Edam, 58s. to 60s.; seconds, 50s. to 54s.; Gouda, 52s. to 56s.; Derby, 54s. to 56s. English cheese remains full up, with a moderate inquiry. New Cheddar, finest, 76s. to 80s.; fine, 68s. to 74s.; good, 60s. to 66s.;

double Gloucesters, 68s. to 72s.; North Wiltshire loaf, 66s. to 68s.; Cheddar loaf, 73s. to 74s.; and Cheshire, 76s. to 80s. per cwt.

Nothing will make us believe that the pasture of the province of Quebec, consisting, in nine cases out of ten, of nothing but red-clover and timothy, can reasonably be expected to turn out such cheese as is produced on the centuries old pasture of the Midland and Western counties of England.

*In Memoriam.*—We regret to see, in the *Montreal Witness*, an announcement of the death of Mr. Wm. Alexander Reburn, formerly of Ste Anne de Bellevue, but latterly of Massawippi, both in the Province of Quebec. Many years ago, Mr. Reburn had the good judgment to make, as the inauguration of a herd of dairy-cows a careful selection of some of the best specimens of the St. Lambert's Jerseys, and continued in the same judicious route until he had got together one of the finest collections of cattle of that breed to be found on this continent.

We believe that Mr. Reburn's son, George, will carry on the business so well begun by his late father, and we sincerely trust he will be successful in his pursuit. By the bye, do any of our readers remember the gallant feat of this gentleman, when quite a lad, at the Provincial show, held at Quebec, in 1887? At any rate, it will do him no harm to reprint the note, from our pen, that appeared in the JOURNAL OF AGRICULTURE for October, 1887 :

"Bravo, Mr. George Reburn! your brave behaviour"—saved an attendant from the attack of a ferocious bull, at the most imminent risk to himself—"with the savage Ste Foy bull is another proof that quickness of manner and courage oftener go together than pluck and braggadocio. No more thoroughly gallant action has fallen under our notice since Lord Feversham's great red Shorthorn bull was held by Booth's herdsman at the show of the Royal Agricultural Society at Nottingham."

At the provincial exhibition above mentioned, Mr. Reburn won every first prize—there were 13 of them—with his Jerseys; as well as the first for "the herd of dairy-cows," beating the herds of Messrs. T. Brown, James Drummond, and E. Marcotte, of Portneuf.

*Lean hogs for bacon.*—If packers are really desirous of getting supplied with lean hogs for England,

(1) Up to 60s. now; Dec. 28th. Ed.

they will have to be careful about the prices they offer. Farmers are not likely to go on losing money by attempting to turn out "bacon-hogs" in the shape of Tamworths and other reluctantly fattening breeds, when more profit can be made by making "barrel-pork."

*Malt.*—"Malt," we are now told, means, in Western parlance, *brewer's grains*!

### DRAINING TOOLS.

(BY THE EDITOR.)

*Stone drains* are so expensive, on account of their necessary width, and the quantity of material required, cartage, &c., that we do not suppose many people will make them. Pipes are, after all, the cheapest in the long run. The only awkward part of the matter is, that they have to be paid for with cash. The price here has always seemed to me extravagantly high, considering that the principal makers were in the enjoyment of an annual "grant in aid" from the Quebec government. We allow that the pipes were well made; but they were twice as heavy as they need be; and that is a matter for consideration when the carriage by rail and road has to be paid for 40 or 50 miles. In Kent, England, within 15 miles of London, the price we used to pay for 1½ inch, of good quality, was \$4 per thousand; and a horse drew, in a cart, a thousand with ease; and good one-inch pipes, in Essex, were only \$3 a thousand.

A very costly job, and one that I should be sorry to recommend any one to undertake are those ducts of built up stones that I have seen in one or two places in the Province. They take an immense time to make, and, unless they are four square, i. e. with a bottom as well as sides and top, the earth soon rises into them from pressure at the sides, and they are closed for ever.

The drains for pipes are to be opened out as far as the fourth spit, about 36 inches, but here advantage can be taken of the *semi-cylindrical and tool*, which, being fifteen inches long, enables us to take out a very deep draw for the last one. Generally speaking, the foot need not touch the tool; a side thrust by the hands will be sufficient, unless the ground be very hard and dry, in which case the *tramp-pick* should precede it. The bottom

must be cleared of crumbs by the *semi-cylindrical draw-scoop*, the drainer standing on the fourth spit, and clearing the bottom, as far as he can reach, of the remains of dirt, &c., left by the long spade; so that he never sets his foot on the cleared drain at all, but works backwards with his face towards the mouth of the drain, yard by yard, and leaves himself only the pipes to lay and the earth to return. Should any small pebbles be found at the bottom, they must be got out of the way, that the pipes may be well and truly laid; for the slightest crookedness in the conduit forms a dam in no time, and will very likely cause an accumulation of silt fatal to the continuity of the duct. Never allow a drain to be diverted from its straight course. If a rock or large boulder intervene, blow it up—get rid of it some how or other, and pay particular attention to laying the duct in its former site, as the earth is sure to be more tender there, and the pipes will very likely sink and become useless.

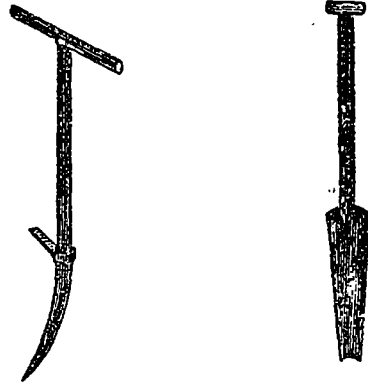


Fig. 1—Tramp-pick. Fig. 2—Semi-cylindrical spade.

We now proceed to lay the pipes. If the draw-scoop has been properly handled, the bottom of the drain will form a semi-cylinder, and the job will be easy enough; the layer, who should be the honestest workman to be found; one who will refuse to place a single pipe in an unfit bottom, should have all the pipes laid ready for him along the side of the drain: straddling across it, with his face to the outfall, he threadles a pipe on his *pipe-layer*, places it gently in its site, and adjusts it with care as closely as possible to its neighbour; and so on, as far as the drain is bottomed out.

All this, difficult as it is to describe in words, is easy to understand when once it has been seen in operation; and with four men, the whole affair

goes on like clock work, after the first few rods have been opened. It will answer no one's purpose to set a single hand at this work. The



Fig. 3—Draw-scoop.

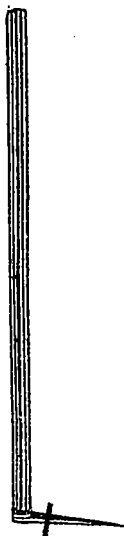


Fig. 4—Pipe-layer.

supervision must be constant, and the more rapidly the business is carried on the less likely is the superintendent to go sleep over it. The small boss on the pipe-layer is in case of collars being used.

#### REPORT ON DESTROYING CHARLOCK IN CORN CROPS 1899

I have the pleasure to submit a very wide inquiry on spraying charlock in corn crops in 1899, the first year that the process has been adopted in this country.

For the purposes of this inquiry, schedules to be filled in were issued to practically all the principal workers on this subject in the United Kingdom, and many in Scotland, Ireland, and Wales.

The replies may be conveniently considered under two heads—one referring to the operations, the other to the results obtained.

They are full of valuable information, and are conclusive on the more important points.

The averages from all the returns have been carefully worked out as follows :—

##### OPERATIONS

The operation of spraying was carried out from the last week in April to the end of June, the

proportion being as follows :—5 per cent. in April, 47 per cent. in May, and 48 per cent. in June.

The busiest time was the last two weeks in May and the first two weeks in June. The date of the best time for spraying cannot be fixed, it necessarily varies with the locality and season, but the best guide apparently is the age of the charlock ; for it is clearly shown that the 2 to 6 in. high.

The weather at the time of spraying was generally fine. In some cases, where rain fell immediately after, it lessened the effect. Rain falling the first or even the second day after spraying appears to make some difference in the results, whilst windy weather is objectionable, as it makes it impossible to spray evenly.

The relative proportions of the different crops sprayed were :—Oats, 55 per cent. ; barley, 39 per cent. ; wheat, 6 per cent.

Of the age of the charlock referred to in this report, the following is an approximate estimate :—50 per cent. may be described as young, 40 per cent. as advanced, and 10 per cent. as old.

On the 40 per cent. described as advanced, the effect was not so good as on the 50 per cent. described as young, whilst on the 10 per cent. described as old, probably not more than one-half was destroyed.

The materials employed were copper sulphate and iron sulphate. Copper sulphate was much more largely employed, and by comparison with the iron sulphate gave better and safer results.

Solutions of copper sulphate from 1½ per cent. to 4 per cent were used, and iron sulphate solutions 5 per cent. to 15 per cent. The quantities applied per acre varied with size of the crops and ranged from 15 gallons to over 100 gallons per acre.

In the great majority of successful cases, 40 to 55 gallons of 2 per cent. solution of pure copper sulphate were used per acre. The best results were obtained with 50 gallons 2 per cent. copper solution.

The weaker and higher strengths of solution were proportionately less successful than the medium strengths.

It must be understood that pure copper sulphate is necessary. Some very disappointing cases of failure are reported from using impure sulphate.

##### RESULTS.

The results of the above operations are very conclusive.



To the question, "Do you consider that any permanent injury was done to the crops?" the answer was "No" in every case, and it was remarked in many instances that the crops were much improved.

In reply to the question, "Do you consider the spraying successful, or any partially so?" the replies were "Successful" in 68 per cent. of the cases; "Partially so" in 26 per cent.; and "No" in 6 per cent.

In the 26 per cent. partially successful cases, the estimated destruction of charlock varied from 40 per cent. to 90 per cent. A fair average would be about 66 per cent.

Out of 6 per cent. non-successful cases, distinct causes of failure could be traced in 4 per cent., but the reports disclosed no reason for failure of the remaining 2 per cent. Possibly the plant was wild radish or other similar plant less susceptible to the dressing.

The question as to the effect of spraying upon young seeds and clover in corn, and upon beans and tares, was not asked in this inquiry, but many of my correspondents have been good enough to confirm by their experience what is now generally admitted, that the spraying is not injurious to these plants.

There are plants in some districts very much like charlock known locally as "Wild radish," "Smooth charlock," &c., that are less affected by the spraying and fuller information as to the distribution of such plants is very desirable.

#### CONCLUSIONS

This report has been impartially compiled from the returns sent in, and from which I draw the following conclusions:—

- (a) That charlock can be destroyed in growing corn crops without injury to the latter, by spraying with 50 gallons 2 per cent. solution of pure sulphate of copper per acre.
- (b) That the best time to apply this is when the charlock is young and from two to six inches in height.
- (c) That when the charlock is destroyed the corn crops are improved.

That the principal causes of failure are:—

- (d) Spraying too late.
- (e) Using insufficient solution.
- (f) Using impure copper sulphate.

To those who intend to spray their crops in the future I may be permitted to point out that it is

most desirable to decide early upon the acreage to be sprayed, and make every preparation in good time in order to secure the greatest advantage from what has proved to be a beneficial discovery.

Finally I have to gratefully acknowledge the kindness of some hundreds of cultivators who have furnished me with the results on which this report is based, to whom I trust it may be found interesting. (1) G. F. STRAWSON.

71a, Queen Victoria Street, London, E. C.,

November 20th.

#### INTENSIVE FARMING.

Mr. G. T. Powell, of Ghent, N. Y., delivered an able address on this subject. One of the greatest subjects of modern times was the question of preventing the constant and increasing flow of population from the country to the city. Modern tendencies were all towards centring the population in the large cities. Commerce and manufactures are two forces which draw men from the farm to the city, while the existence of railroads makes it easier to drift towards the city, by bringing city influences quickly to bear on all parts of the country. The depletion of the fertility of farm lands, and the increasing difficulties in the way of making agriculture profitable, were also responsible for this movement, to a great extent. The extensive system of farming where large areas of land were handled with comparatively a slight demand for laborers, thereby lessening the number of men required on the farms, had also a great effect in driving men to seek more profitable employment in the cities.

The cities of to-day are overcrowded, and the extra population above that number for which there is profitable employment is a source of weakness to the country at large, for the surplus population of the cities become non-producing and dependent, and are of no value to themselves or their country. What is the solution? The speaker believed that the solution lay in the new fields presented by agriculture, one of which was the adoption of a system of intensive farming.

The recent hard times for farmers had been caused by two things, the decline of prices of

(1) We trust some one, whose farm lies along the G.T.R. between Montreal and Ste-Anne de Bellevue, will try this plan of spraying and thereby destroy that brilliant yellow carpet we saw last summer. Ed.

farm produce, and the constantly decreasing yield of farm crops. The remedy for this state of things lay in a system of intensive farming, which would secure maximum yields from the land, and thereby decrease the cost of production and leave a greater profit for the agriculturist. In this system, he believed, lay the solution of the whole problem of retaining the population on the farms.

—*Farming.*

## Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

At the beginning of a new year many people lay down for themselves the most rigid rules of the wonderful changes they are going to work out for their benefit during the coming year.

Rules, if faithfully carried out, will require a strength of mind possessed by few people.

Even the change after a long holiday to every day life, is at least most trying, work smoothly enough till the novelty is worn off, then comes the real test which will bring out the firm or weak part of human nature.

Take, for instance, a girl who has just finished her education at school and has come home to realise for the first time the practical working of a house; a work, if she can take it up and carry it out faithfully, which will speak volumes for her future happiness.

She will not only learn the workings of a household, but will the better realise the great sacrifice the kind mother has made to secure for her a good education.

If she keeps this in her mind there is little fear but that she will carry out her duties faithfully and also find plenty of time to continue her education; for this kind of girl will know that her education was not finished on leaving school.

In fact, the life before her will be one long school of learning. Her great pleasure will be to feel that she is now repaying by practice a part of what has been done for her. In many and various ways she can do this; she will be able to relieve the monotony of life by planning and carrying out many pleasant little surprises for the relaxation of a dull country life.

Hers will be the pleasure to freshen up the old home by many little devices of her own planning,

things which cost little but time and the knack of doing. She will be a blessing to any house, and in course of time, some sensible fellow comes along and can fully appreciate what she is, what a fortunate man he will be, if he has the good fortune to secure her as a life-partner.

There are men who, if they could find help-mates of this sort, need not fear to face the future with all its ups and downs, feeling secure of a helping hand in any emergency. Could there be a few thousands of such girls scattered about the country, which sadly needs them, what a blessing they would be to their own households and to the country at large.

### CARE OF THE FEET.

Much has been written concerning the care necessary to be bestowed on the hands, so that they may look soft, white and shapely, but little, or nothing, as to the care and comfort of those useful members, the feet. If, however, the feet were given but a tithe of the attention bestowed on the hands we would be able to walk in comfort, and to know little or nothing of the misery of corn and bunions. It seems hardly necessary to state that the feet should be bathed every day, for one's love of cleanliness will remind one of this fact. But few persons are careful as to how the feet are bathed. They, like the hands, demand warm, soft water, and a drying of each crease and wrinkle. Every particle of moisture should be wiped from between the toes, as these interstices will otherwise be the lurking places of the insidious soft corns that come before one suspects their presence, and often linger in spite of all efforts to banish them. The skin around the toe nails should be pushed carefully back with the towel, and hard bits of cuticle or incipient hang-nails cut off close to the flesh with sharp-curved manicure scissors. Of course the nails must be cleaned each day. If the feet are tender it is well to sponge them frequently with cold water in which a handful of salt has been dissolved. To remove hard corns or callous spots the feet must be soaked in water as hot as can comfortably be borne until these objectionable places become softened. Then much of the tough skin can be scraped (never cut) away with a nail knife.

Never neglect washing the face before retiring to rest, then the skin is freed from dust, and the

pores are able to breathe freely during the hours of sleep. Use warm water and plenty of soap, which lather well over the skin, and rinse off thoroughly, then thoroughly dry. In the morning merely bathe the skin with cold or tepid water, and gently, but thoroughly friction with a soft towel.

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#### WHILE YOU ARE YET GROWING.

Growing girls and boys do not always appreciate that it is while they are growing that they are forming their figures for after life. Drooping the shoulders a little more every day, drooping the head as one walks, standing unevenly, so that one hip sinks more than the other—all these defects, easily corrected now, will be five times as hard in five years, and twenty-five times as hard in ten years. A graceful, easy carriage and an erect, straight figure, are a pleasure to beholder and possessor, and are worth striving for.

An easy way to practise walking well is to start out right. Just before you leave the house walk up to the wall and see that your toes, chest, and nose touch it at once; then in that attitude walk away. Keep your head up and your chest out, and your shoulders and back will take care of themselves.

A Southern school teacher used to instruct her pupils to walk always as if trying to look over the top of an imaginary carriage just in front of them. It was good advice, for it kept the head raised. Don't think these things are of no value. They add to your health and your attractiveness, two things to which everybody should pay heed.—*N. Y. 'Times.'*

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#### THE TREATMENT OF CORNS.

First of all, remove the cause of the trouble, otherwise any other attention is quite useless; then every night steep the feet for some twenty minutes in hot water, after each immersion carefully scraping the softened head of the corn with a sharp penknife; be very careful that the knife does not slip and cause a wound that may prove very dangerous and difficult to cure. When the corn has been well scraped, a small piece of soap plaster should be laid over it. When these excrescences appear under the sole of the foot, and are not amenable to the above treatment, they should, after soaking in hot water, be saturated

with a solution of salicylic acid in collodion, which can be got at any chemist's. Soft corns may be rendered less painful by the insertion of small tufts of cotton wool between those toes upon which the corns appear. Bunions usually take up their position at the root of the big toe, and they are more serious than corns, for when once the joint is affected it is difficult to cure. A dressing, consisting of a piece of lint soaked in cold water, should be bound round the toe, and covered with a strip of oiled silk. When there is a suspicion of inflammation, a linseed poultice must be applied, and as soon as the gathering has come to a head, it should be lanced. This is very important, as neglect may end in erysipelas. Sufferers from bunions should always rest as much as possible, and the bunion should be frequently soaked in hot water.

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#### HOUSEHOLD HINTS.

A basin of clean water in the room at night will, by morning, absorb tobacco smoke from curtains, cushions, furniture, etc. Some float a wisp of hay on the top of the water.

To keep cabbages perfectly fresh for three or four weeks act as follows:—Take the pith out of the stalk without injuring the rind. Hang the cabbage up by the stalk, fill the hollow in the latter with cold water, and renew the water every morning. The cabbage should be hung in a cool cellar.

If fat begins to foam when cooking fish or croquettes, the temperature is too low. Finish cooking what is already in the pan, and heat till a blue smoke rises before putting in more.

To prevent fruit juice from running out of tarts in the oven, make a little opening in the upper crust and insert a straw or little roll of white paper perpendicularly. The steam will escape through it as through a chimney, and all the juice will be retained in the pie.

A hundred years hence what difference will it make whether you were rich or poor, a peer or a peasant? But what difference may it not make whether you did what was right or what was wrong.

## The Grazier and Breeder.

### ON CROSSING.

There is now no doubt that an immense good has been produced by the well-managed system of crossing which has so long obtained in England. At first, the principle upon which the practice was based was little understood; but of late the more violent attempts of the earlier breeders have been avoided, and the more natural, and therefore the more sensible course has been pursued. However it has always been, and still is the rule to, in the country phrase, "put the best atop," i. e. to employ nothing but thorough-bred males.

It would be clearly absurd, in attempting to improve our flocks and herds by crossing, to lose sight of the fact, that the progeny must find ready for them food suited to their wants. There are many situations where a high-bred stock cannot be maintained as a *breeding* stock; continued crossing cannot in these cases be followed out, for eventually the whole herd, or flock, would become like the thorough-bred parent, and utterly unfit for their locality. Thus to keep on breeding from Shorthorn bulls and Canadian cows, on the poorer clay soils of this province, would be most injudicious. The first cross, or perhaps the second, is all that should be attempted, the breeding heifers being still kept true to the parent stock, until the improvement, which we all so earnestly long for, takes place, and the land becomes fit to support a superior class of animals. As for the notion that exists that, if a large sire be put to a small dam the fœtus will be so large that the mother will be unable to bring it to the birth, we attach no weight to it, the fœtus being always in proportion to the matrix which contains it. There may be perhaps a little extra trouble in its production on account of the increased size of the brain of the improved offspring. We have bred, in cattle, sheep, and horses, from all sorts of males, and never found any difficulties on this score, but we have found that the progeny was infinitely superior to the dam in all outward parts, and that the rough healthiness of the dam, with her abundant flow of milk, gave her plenty of strength to bring forth, and to sustain afterwards her better bred offspring. Look at the modern "Exmoor Ponies!" Seventy years ago they were little creatures, from ten to twelve

hands high, with nothing but their constitution and hardness to recommend them. Now, crossed as they have been with full sized, thorough-bred stallions, a more perfect type of pony for a lady's phaeton cannot be found, their height varying from fourteen to fourteen and a half hands.

Again, we have used Shorthorn bulls of such size and weight that our small Kentish cows staggered under them, and the calving never once was attended with any evil consequence more than is usual in an ordinary herd.

Once more; we have coupled the heavy Hampshire-Down ram with the small, refined type of Sussex-South-Downs, and, although the head of the Hampshire-Down is certainly disproportionately large, the lambing was got through with much as usual.

And here we must mention, as an instance of the effect of crossing, the creation of the Babraham flock of South-Downs. The original progenitors of this most beautiful breed of sheep were bought, somewhere about sixty-five years ago, from Ellman, of Glynde, Sussex. They were elegant, deerlike creatures, with narrow chests and light forequarters, (thousands of them went to fold every night on the breezy downs looking over the sea) but with good loins, and full, though of course, small "legs of mutton." Seldom killed before three years old, their weight varied from fourteen pounds to sixteen pounds the quarter—what the flavour of the meat was those who have been fortunate enough to have eaten a three or four year old Southdown wether will willingly recall to mind. Rams and ewes selected from this stock were taken, by Mr. Jonas Webb, to a small farm he had hired of Mr. Adeane, whose gamekeeper he was, and bred from. What the subsequent cross was nobody, we believe ever found out; but it was a most successful one, as the wethers at twenty months old, often weighed from twenty-two pounds to twenty-six pounds per quarter, and yet retained all the quality of the parent stock as regards meat and wool, while the bosom was enlarged, the loin broadened, and the quantity of the wool greatly increased. No doubt, the small size of the Sussex-Down in its native county is, in great measure, owing to the absurd practice of sending the ewe lambs out into the poor soils of the Weald to pass their first winter, at so much per score—to *harden them* it was said! And truly it ought to harden them, for they returned, just before shearing time, mere bags of bones;

but that there was a cross of the long wool in the Babraham flock no judge of the animal could doubt. Size, according to the old saying, goes in at the mouth, but the change of the whole animal was so great that food could not have produced it. We may as well mention here, that we saw, on one day in July, 1852, rams, to the value of £3252, let for the season. So carefully had the flock been that bred, that the following year, we saw 150 shearling rams, in one lot, that so closely resembled one another, that it was intensely difficult to distinguish them.

The now, well known Oxford-Downs are another instance of successful crossing. It was only after a 20 years endeavour to form a permanent type of sheep, by uniting the Hampshire-Down and the longwool Cotswold, that Samuel Druce, jr., of Eynsham, Oxfordshire, succeeded. At first the legs were, some dark, some light, the faces of some were white, of others brown, of others again, mottled; there was no uniformity. Now however the type, or character, has been long fixed, and the flock is as uniform as a flock of Leicesters, or Cheviots.

In crossing we should aim at combining utility with beauty. This union is almost a necessary sequel of judicious selection, for,—

“Beauty never deigns to dwell  
Where use and aptitude are strangers.”

It would be foolish to hope for any successful issue in breeding from a Peacock and a Guinea-fowl, or from an alliance between a Mastiff and a Toy-terrier. All attempts at crossing should be kept within certain bounds and a clear idea formed, before beginning, of the object in view, and when this idea is once formed it should be firmly adhered to.

For instance; the cross of the Cotswold ram and Hampshire-Down ewe, as we have seen, turned out most successfully; but the cross between the Cheviot ram and the Leicester ewe, as well as that between the Black-faced ram and the Leicester ewe, was a perfect failure; the progeny, in both cases, possessing a worse and more uncertain organisation than either of the parents.

As to Mr. Mousseau's failure to raise good stock from a cross between the Shorthorn and the Canadian cow, may we be permitted to say, that many of the so called Shorthorns of the Eastern Townships are, to use a breeder's phrase, “only just out of the woods,” particularly those of the “Lady Barrington” line, and therefore it would

be hopeless to expect any great impressive powers from bulls of that class? An animal must have been bred from a family which has been related in blood, for many years, by manifold relationships, before we can look for this wonderful gift. What says Mr. Wood, of Castle Grove, a great Shorthorn authority, on this subject?

“It must frequently have been observed that animals seen at shows and at Shorthorn sales, though good in themselves, and, it may be, descended by several crosses from purely bred and perhaps well-formed Shorthorns, rarely in their progeny meet the expectations of their purchasers. What is the reason of this, and why are the hopes of those persons so often disappointed? If you look into the Herd Book and examine the pedigree of these animals, I think you will almost invariably find in them recent *new* crosses—that is, recent crosses of animals of different families not related in blood. The progeny of such crosses, when good, I can never consider otherwise than as *good only by accident*; for however excellent the parents themselves may have been, I believe that the chance of their producing good animals was in proportion, not so much to their own apparent excellence, nor even to the number and qualities of their ancestors of different families, as to the number of recent good crosses they may have had of the *same* blood or family.

If it be true that breeding from a good sire and dam does not necessarily ensure a good progeny, can it be true that “like begets like?” I answer, that I believe that maxim to be true in a certain sense, but it undoubtedly is not true in the popular sense in which it is used, and I believe it has led many a young breeder astray, by inducing him to believe that when he had purchased a good-looking sire he had secured all the necessary conditions for a good progeny. There is no more prevalent error among young breeders, and there can scarcely be a more fatal one. An animal has certain qualities apparent to the hand and eye; it also has hidden qualities that neither the hand nor eye can detect, which hidden or latent qualities descend to the offspring, and, when the animal has been crossed with another animal of different blood, will produce new combinations palpable and unexpected. The above maxim is true then in this sense, that, though the offspring may appear unlike either parent, yet the peculiar properties of the parents are not lost in the offspring—they are inherited, but in combination

may have produced effects that probably had not, and could not with any degree of certainty, have been foreseen. That these qualities are not lost would appear evident, as it is found that peculiarities of even remote ancestors will from time to time, more or less frequently, according to the skill and perseverance of the breeder, show themselves, or crop out, to use a geological expression."

"The law of crossing is, that when each parent is of a different breed, and when both are of equal age and vigour, the male gives the back head and locomotive organs, the female gives the face and nutritive organs. This law, in its effects on the domesticated animals, is very similar to the law of selection; but, in crossing, the parents *always* maintain this relative position, while in ordinary breeding, the parents change positions in proportion to the comparative greater vigour of the characteristics of each, and when one imprints the prevailing characteristics the other stamps the opposite. The cause that, in the crosses, the male gives the cerebellum and locomotive system, is both striking and beautiful. If no being can desire that of which he is already in possession—if, on the contrary, it must desire what it most wants, (if not incompatible) it cannot be wondered at that, in crosses, when the desired difference is greatest, the male, whose desire is most ardent, should stamp the system by which he exercises that desire, namely the voluntary locomotive, upon the progeny. If, then, of the two great series of organs described, each belongs entirely to a distinct parent, we can neither derive, in the progeny, both series from one parent, nor portions of both from each parent; and every attempt to do so must be a failure. It, moreover, shows that, in a feeble or imperfect cross, bad as well as good combinations may be produced; but that such a progeny as presents the desired qualities must be alone preserved for future breeding, while the inferior must be cast aside. The intermediate character of the qualities produced in crossing is owing, not to each parent imperfectly giving its shares in the progeny's organization, but to circumstances that, in their new combination, each series of organs acts with, and therefore modifies the others." (1)

(By the Editor).

(1) Walker on Intermarriage.

### WHY BREED UNPROFITABLE LIVE STOCK?

In making a short review of this subject, which is so important to the pecuniary success of all farmers who breed live stock, we willingly concede that, after every endeavor has been made, there will be misfits in breeding; but, because that is so, it is none the less a mistake to keep these misfits to propagate other misfits, and so to lower the standard of the animals of the country. The argument is applicable to all descriptions of live stock, but in the present article we confine it principally to Shorthorn cattle. In most farmers' stocks in the northern counties of the United Kingdom you find some half-dozen cows of more than ordinary excellence—good in shape, flesh and milk, and which would do no discredit if brought in contact with the best pedigree herds. But the others, it may be from thirty up to fifty milch cattle on each farm, fall by gradation, and you have the feeling that some of them are not paying for their keep. They have been bred in a happy go-lucky way, from lack of thought mainly, but with the intention strongly underlying, although not openly confessed, of saving a shilling in the service fees. Unsound horses on the road at low fees are not the only sinners. For some years past a system has grown up amongst northern farmers of using a pedigree bull and rearing all their male calves for sale. These latter are mainly sold in the auction marts as pedigree stock, although they are mostly bred from unregistered dams, and much disappointment frequently results, following the use of such bulls. The trade, too, has been so overdone that it is not unusual to see yearling bulls sold at from 6 to 10 gs., a price that cannot pay the breeder and rearer. These are the mongrels that keep farmers' stocks mongrel and unprofitable. At a sale of pedigree stock the purchaser has the opportunity of seeing both sire and dam of the young bull he decides to buy, and can thus assure himself that they are good alike in both milk and flesh. After taking stock of the best of the dams in his own herd from which he purposes to breed his future produce, he can then satisfy himself if they are lacking in any salient feature, and then select the bull most likely to supply the defect in his dam. It was precisely in thus selecting male animals to supply shortcomings in the females that the Holker and Inglewood herds



attained to such excellence. But, even when this has been done, there will in all probability come misfits, and these must be cleared out, the males steered and the females fattened for slaughter. There can be no doubt but that if nine tenths of the male calves now reared for service in the northern counties (possibly the same will apply to other counties) were sold as fat calves, or steered and sold fat as bullocks, the breeders (tenant farmers) would benefit pecuniarily, and a manifest improvement would result in the general cattle of the country. At present such breeding and rearing for use is a lottery. The yearling may bring 6*g*s or 20*g*s. in the sale, so each take their chance of the higher figures. Such sires are simply a national loss, a deterrent to the improvement of the national breeds of cattle, and a pecuniary loss to each farmer who breeds them or from them. In the United Kingdom at the present time trade is good, wages are good, and the masses would prefer to eat British home meat; but when much of that meat offered to them is no better than the foreign meat sold at 2*d*. to 3*d*. per lb. cheaper, need we wonder that the foreign meat comes to us in ever-increasing quantities? And the future offers to intensify the competition, for the foreigners are taking the steps so many British farmers ignore, and are yearly improving their live-stock from British foundations. The lesson is before our eyes, yet British farmers—at all events, too many of them—remain apathetic, passive, looking on with folded hands, whilst their principal trade is slowly but too surely departing from them, and asking Jove to lift the wheel out of the rut—the landowners to reduce their rents. It is certainly a strange picture of “rest and be thankful,” and the pity of the situation is that it is true. We remember the case of a farmer, a man of capital, who took what he admitted to be the worst of a dozen rams, because it was 5*s*. cheaper. Yet he selected that ram for use in his own flock, to the probable deterioration of hundreds of its produce. Where practice such as this prevails, need we wonder that British agriculture remains under a cloud? How can we hope to see the silver lining?—*London Live Stock Journal*.

### LIABILITY TO AND IMMUNITY FROM CONTAGIOUS DISEASES IN ANIMALS.

It is well known to stockowners that certain diseases are confined to particular classes of animals while other affections may attack all the animals of the farm without distinction.

When pleuro-pneumonia appears in a herd of cattle, the farmer does not feel the least concerned about his horses, sheep or pigs as he knows that these animals are refractory (as pathologists say) to the infection of this disease. Glanders among horses is a terrible disorder, and every stockowner, would be seriously alarmed at its appearance in his stables, and with good reason. But no apprehension would arise as to the risk incurred by the rest of the stock on the farm. Swine fever is a special malady of the pig, and does not threaten horses, cattle or sheep; while an outbreak of anthrax excites alarm in respect of all the live stock as nether horses, cattle, sheep, nor swine are exempt from liability to suffer from the affection, and even dogs are killed quickly by eating the flesh or lapping the blood of an animal dead of the disease. On the other hand, rats enjoy a remarkable immunity from the malady.

Natural immunity from disease appears to be related in some way to the acquired immunity which follows an attack of a contagious malady. It has been long known as a fact that persons or animals which had recovered from smallpox, for example, were generally protected from another attack during their lives; and so well established was this fact, that people who were marked with smallpox were looked upon as so secure that no hesitation was felt in employing them to attend patients suffering from the disease, and the persons themselves did not object to be so employed. Exceptions to the rule occurred from time to time, but not to a sufficient extent to disturb public confidence in the protective efficacy of a prior attack of the affection. Dr. Hamilton, of Aberdeen University, gave a lecture, a few years since, mainly devoted to immunity, and the attempts which had been made to secure it at remote periods. Doubtless, the idea of rendering a person refractory to the contagion of any specific disease arose out of the common observation that persons who had recovered from an attack were so protected. It will only be necessary then to produce



the disease in a mild form by artificial means to obtain the required safety.

Inoculation from a mild case of smallpox was probably the earliest experiment in the direction of securing the condition of system which should enable an individual to resist contagion for the rest of his life.

A very large proportion of cases were successful, and the system of inoculation of children became customary, and flourished until it transpired that some malignant and fatal cases did occur as the result of inoculation, and that the disease spread from inoculated persons and assumed a serious form.

The operation gradually ceased to be used, and was altogether abandoned in favor of Jenner's discovery of vaccination.

It is not well known what relationship exists between the cow pox of the udder of the cow and human smallpox. It may be affirmed that all attempts to infect the cow with smallpox of man have failed, and that cowpox is not smallpox modified by passing through the system of the cow. Nevertheless it is admitted that it has the power of producing immunity in the vaccinated person.

Numerous attempts have been made of late years to obtain protective "vaccines" for the protections of the lower animals, and the first important step in this direction was taken by Pasteur, when he produced a modified virus of fowl cholera by exposing his cultivation of the microbe to the influence of the atmosphere for certain periods.

Cultivated virus has long been used in France to inoculate sheep to protect them from natural disease.

A new departure in securing immunity was made when it was discovered that the serum of blood, or fresh blood, has power to destroy various microbes. One authority has succeeded in separating from the blood a substance, which he describes as a "defensive proteid," in the presence of which the refractory power of the rat to anthrax virus presumably depends.

It would be satisfactory to know that the animals from which we draw our supplies of meat can be protected from attacks of disease by inoculating with the products of healthy structure, instead of morbid materials, which however carefully they may be modified by ingenious processes

of cultivation, as a matter of fact, do not always succeed in destroying the virulence of the poison.

W. R. GILBERT.

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### CATTLE FOODS.\*

By H. Smith, Hay, Ont.

There are two very different opinions held as to what constitutes cattle food. One of these is that only such feed as there can be no other use made of, such as straw and hay too badly damaged to sell, can be profitably used as cattle food. I suppose that a small return can generally be got from passing these feeds through cattle. But a majority of farmers believe that they can profitably devote a considerable part of their farms to the growth of crops especially for stock food. It is to introduce this subject for discussion that this short paper was prepared.

Before taking up the different crops that I think are most suitable for cattle food in this section, it might be well to consider for a short time the qualities that foods should possess to make them valuable for stock feed.

First of all, they must contain the elements that the animal's digestion can convert into the different parts of its own body.

At first thought this would seem to be all that was required, and a good many writers on the science of stock-feeding seem to think it is all that is necessary. Another quality that I think of almost equal importance is palatability. A cattle beast to thrive requires a full stomach; but unless the feed is appetizing it will not fill itself to the required extent. This virtue can generally be much improved by good management. Try to get the hay well saved. What oat-straw you expect to feed cut on the green side. Have the grain feed sound and free from mustiness. Cutting and mixing make quite an improvement in this respect. In England, molasses are often used to make the food more appetizing. Keep the food mangers perfectly clean. An animal will no more take a good fill from a foul manger than you can eat a good dinner amid dirty and disagreeable surroundings. Then, healthfulness is another important quality. Something green, such as

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\* A synopsis of an address prepared for Farmers' Institutes in Ontario, condensed for publication by the Superintendent.



roots or silage, help to keep an animal in good health and the digestive apparatus in good working order.

Then, no doubt, you have all been to'd before this that you must feed a given amount of protein and carbo-hydrates and have them in exactly the right proportion, one of the former to  $5\frac{1}{2}$  of the latter, to have what scientific men call a balanced ration. The protein is used largely to form the muscles, flesh or red meat of an animal's carcass, and the carbo-hydrates are used to furnish heat and energy, and what is not used for this purpose goes to form fat. There are other elements necessary in the feed besides these, but they are generally in almost all feed in sufficient quantity to supply the needs of the animal. Now, I think it is just as necessary to supply these elements in a reasonably exact proportion as it is to get the proper quantities of brick, stone, lumber, sand, lime, etc., if you are going to build a house, and it is no more difficult to do with a little study.

It is a well known fact that if any one element necessary to the animal is seriously lacking in the food, then the other elements are not fully taken in by the animal, but pass through it undigested.

It may be said we have been able to feed cattle so far without bothering with the chemical analysis of the food, and why do so now? My answer is, that we are not feeding the same foods as we did a few years ago. At that time we generally fed a fairly-well balanced ration, without knowing it, perhaps. But peas are being largely dropped (1) as cattle food, and corn is as largely taking its place. Peas are very rich in protein, while corn has a very small quantity, but is very rich in the heat and fat-forming elements, so that we are drifting away from a well-balanced ration.

A good many of us are also substituting corn-silage for roots, which is also getting farther away from a proper proportion, unless we guard against it by feeding along with these feeds something that is rich in protein. As far as I know the cheapest and best feed for this purpose is well-cured clover hay, either from common red alsike, or lucerne clover, which is the richest of all in protein, and will produce immense crops on suitable land, but is pretty difficult to cure properly, as it has to be cut very green or it becomes woody. Bran is also useful for balancing a ration, but at present prices clover is much the cheaper. In

the Western States, where corn is king, feeders find from practical experience that it pays them to pay more per ton for bran than for corn rather than feed all corn. Now, I am not trying to discourage the growth of corn. I think that it is, perhaps, the cheapest and best cattle food we can grow; but don't depend wholly on the corn. The clovers and roots, either turnips, mangels, or sugar beets, are almost, if not quite, as profitable crops, and with an abundant supply of these feeds the cattle feeder should have little difficulty in carrying a herd of cattle through the winter, with the addition of a small quantity of grain for the stock that are being finished for market, and also cows that are milking heavily. (We have yet to see a sample of lucerne-hay *with the leaf on*. Ed).

#### BIRMINGHAM FAT-STOCK SHOW.

The class for Hampshire and Other Downs was better supported in numbers in the Lamb class than in the other sheep, only four entries of the latter being catalogued. These included a superb pen of Lord Rothschild's, placed first, and scaling 7 cwt. 0 qrs. 28 lb. Second and reserve went to Sir T. F. Buxton for a couple of pens well bred and well finished. Of the seven entries of Lambs the Tring Park flock claimed first and third prizes, the two pens being divided by a very well-matched pen of Sir T. F. Buxton's. The best pen of these scaled 5 cwt. 1 qr. 10 lb. The Earl of Carnarvon also exhibited a very nice pen, reserved.

The three pens of Cross-bred Wethers in this section are all of the Hampshire and Oxford cross, Mr. Robinson coming first with a pen showing considerable Oxford blood, and very neat, weighing 7 cwt. 2 qrs. 24 lb. Mr. Rush had second and reserve with very good handling sheep. Mr. Rush had matters all to himself in the Lamb classes, taking first and reserve with two very fine pens scaling 5 cwt. 3 qrs. 2 lb. and 5 cwt. 1 qr. 20 lb. also very ripe and good in quality.

A Butchers' class had seven entries, consisting of Shropshires, Cross-breds, Hampshires, Suffolks, and Ryelands. After the bench of butcher judges had bestowed every care they gave in their awards first to a pen of Shropshires shown by Captain Townshend, full of flesh, and pulling up the beam at 7 cwt. 2 qrs. 1 lb.; second to Mr. Rush's Cross-breds; and reserve to a pen of Shropshires of Mr.

(1) More's the pity. Ed.

Poole's, Mr. McCalmont's excellent pen of Suffolks only bring *hc*, and a very neat pen of Ryelands, shown by Mr. Barneby, were left out altogether.

## The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

### HOUSE PLANTS IN WINTER.

In the dreary season of Winter, when all Nature is locked in an icy embrace, flowers and foliage are the most appreciated. Nothing adds more to the cheery appearance of the sitting room than a stand of well selected and well cared for house plants; but if they are neglected, they have the reverse effect. A sickly plant reminds one of death and decay, and it would be better to be without any than not to give them careful attention. The healthy, well cared for plant, be it ever so common, brings to the thoughtful mind sweet memories of departed Summers and glad anticipations of returning Spring.



*Kentia Balmoreana.*

The character of the lady who has house plants in her care is, in some degree, reflected in them; if they are clean and thrifty, we may conclude that she is kind and methodical, and the care she bestows on them extends to all the loved ones of the household; but, if the plants are neglected, suffer for want of water, and are covered with dust and insects, the inference is that this negligence is not confined to the plants.

The selection of varieties to be grown in the house is an important consideration, such as have ornamental foliage, from which the dust can be easily washed, and such flowering ones as have a

tendency to bloom throughout the winter, are to be preferred.

The palms are the best foliage plants for house decoration. Of these, *Arica lutescens* is one of the most majestic, but grows too large for small rooms; it however can be kept in spare chamber during the winter and is an elegant ornament for the porch, lawn, or piazza during summer. *Kentia Balmoreana* is the best palm for all purposes, and will stand more hardship than any other; it is commonly called the "Curly Palm" on account of the graceful curl in some of its fronds.

*Lantania Borbonica* is more largely in demand than any other, being of strong, healthy habit, and specially suitable for a window plant, *Pandanus wilis* is another desirable variety which is easily grown. The Dracenas, too, make elegant plants for table decoration, *D. indivisa* with its fountain of pale green foliage, and *D. terminalis* with its variety of deep crimson green and pink leaves, are beautiful.

The Rubber plant, *Ficus elastica*, is one of the most popular house plants, as is also the Fern, *Nephrolepis exaltata*. A Boston florist some years ago raised a variety of this elegant fern with fronds a little more wavy than common. He propagated it and sent it out to the public as the Boston fern; as such it has become popular to such a degree that whole plant-houses are devoted to its culture, it is really one of the most elegant plants wherewith to decorate the dinner table or drawing room.

The Begonias, of which there is now a very large number of varieties, are remarkable for the beauty of their foliage, and many of them for the elegance of their flowers. In many respects they are the most satisfactory class of plants for growing in the house, they are free from insects, rust, mildew and easily respond to the care given them. A comparatively new variety, *President Carnot*, is perhaps the finest of all, having the finely marked foliage of the "Rex" section; it also produces charming wax-like flowers of a pale pink and white, which remain on all the winter. Begonias require but little attention; potted in good garden and leaf soil in the fall and taken into the house before the cold weather sets in, they will be objects of great interest, and will give more pleasure for the trouble bestowed on them than any other house plants. It will be necessary to give them a shower-bath occasionally, to remove the dust which will accumulate in a dwelling; a little

fertilizer may be added to the water given them, and if used in small quantities will increase the rich color of the leaves or the size and beauty of the flowers; beside this a moderate supply of water will be all they need.

A few words as to watering plants will not be out of place in this connexion. First, when ever a plant is watered, the watering should be thorough; to put a little water on the surface daily is not right, it never soaks into the soil as it should, and, although the top may look moist, the bottom earth will be dry as dust, it is better to water plants once a week and do it thoroughly than to give them only a little dribblet each day.

A good way to test whether the plant has been receiving too much or too little water is to take it in the hand and estimate its weight, if it feels heavy you may rest assured that the roots are too fully saturated with water, and a more moderate supply must be given. If the plant feels light, give the pot a sharp blow with the knuckle and listen to the sound produced; if it is dull and low the plant has had enough water, if the sound is hollow, as from a drum, more water is needed.

Saucers are a necessary evil in a house to prevent surplus water from spoiling the carpet, but it would pay, after the overplus water has drained into the saucer to remove it, for if not, it will be re-absorbed by the soil and the lower part will never be dry, the plant therefore cannot thrive, its roots will decay and may suddenly die, because it will be just under the same disadvantage as a crop planted on undrained land.

I am frequently asked by novices, how often I water my plants? and my answer is: When they are thirsty. This can be ascertained by the means above stated, it is by study and observation that we learn and by putting our knowledge into practice that we succeed, and this is what makes the culture of house plants interesting and delightful.

The flowering plants recommended are the *Abutilons*, or flowering Maples, *Chrysanthemums* flower in the early winter only, *Geraniums* *Gloxinias*. These are beautiful plants with blooms the same shape as a foxglove, they require a good deal of heat and moisture and careful attention as to watering; nevertheless, some persons succeed well with them as house plants. *Fuchsias*, as a rule, are not very good as, with the exception of one or two varieties it is difficult to induce them to bloom in the winter.

The Chinese Primroses are admirable house plants. Roses are difficult to manage, they are liable to the attacks of insects and mildew, and require a more moist and equal temperature than a dwelling house affords it is true that some have succeeded in growing Chinese roses in the window, but most who attempt to do so are disappointed.

Bulbs are well suited for cultivation in the house. The *Narcissi*, *tulips*, *crocuses*, *hyacinths*, *lilies*, etc., can be potted early in the Autumn and buried in some sawdust or coal ashes in a cool dry place, where they will make roots, and when brought out and exposed to the light will give beautiful flowers during the winter months. A succession of these may be kept up by bringing out a small batch at intervals.

Plants require all the light and air they can get, and windows where the sun can shine on them the longest are the most suitable, a few pans of water set among them will be useful by evaporating and adding moisture to the atmosphere; it is by the dryness of the air that plants suffer the most. The leaves should be frequently sponged to remove dust and keep the pores open, so that they can perform the functions essential to keep the plant in a healthy condition.

We must remember that plants in a house are in a place not congenial to their growth, and we must endeavour to supply artificially what is lacking in light, moisture, and purity of the air.

Where there are young people, the cultivation of plants should be encouraged; they will contribute their share to make the home attractive, train the expanding intellect to the beauties of Nature, and turn the thoughts away from debasing pursuits and amusements. And when the home is left and the battle of life begun, many an anxious and lonely hour may be cheered by the memory of that sweet home, beautified and enlivened by the presence of "Mother's house-plants."  
GEO. MOORE.

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### WEEDS.

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The word weed is derived from the Anglo-Saxon (weod), and means, not merely a noxious or poisonous plant, but any which grows spontaneously on cultivated ground, owing its proper character of a weed, not to anything in itself but entirely to its intrusion among other plants holding possession of the soil in the capacity of a crop.

Even cultivated plants are weeds when they intrude upon one another, or rise anywhere where they are not wanted. A weed may be either useless or useful; suitable for cultivation or unsuitable, occupy the richest or the poorest soils, a greedy consumer of manurial values, or a feeder principally upon air, indig'nous to the region it infects, or an imported hardy exotic.

Very few weeds are exotics; not many, even, are imported from very different soils or from considerably distant localities; the great majority are simple, natural, but usually stubborn and persistent inhabitants of the ground where they appear, having probably been occupants of the spot before cultivation began, and still continuing to maintain the occupancy in spite of the cultivator's efforts to banish them.

Many of the most common weeds may be classified into groups according to the soils and situations they severally prefer, and are indicators of the constitution or condition of the land on which they are found, some of them supplanting one another according to the changes brought about by cultivation.

It is quite possible for the careful observer to determine, in some measure, the nature and quality of the land by the growth of the weeds. Various groups and families of plants affect peculiar conditions of land or water, or elevation, and thus intimate the presence of these conditions wherever they exist. The grand principle of vegetation is simple in its design, but viewed in detail its complication are bewildering. To become the abode of animals, it was necessary that the earth should be covered with vegetation. As these animals were found, some to inhabit the regions of tropical America, and others the more barren plains of the north; to suit their requirements vegetation varies with the region in which it grows, and the magnificent growths of the tropics are replaced in the temperate climates by plants quite as useful in their places, but of smaller growth. The same sun calls forth, and gives vigor to vegetation; the same earth supports it; the same moisture swells its vessels; it lives in the same air, and yet how various are its forms and uses; and how adapted to the purposes for which they were created.

An observer of Nature could be led blindfolded to a spot, and when he could open his eyes he would know, not only in what part of the world he could form a tolerable correct idea of the

nature of the soil and the quality of the climate by the weeds he would notice.

What we call weeds can thus be made useful as guides as to what crops will be most likely to succeed, and what the tillage should be. On sandy soil will be found tufts of *Arundo arenaria* a coarse, innutritious grass, with mille-foil and other useless herbs which indicate dryness, and others, as, for instance rushes, sorrel etc., which indicate the presence of water, and which no longer infest the land after it has been drained and cultivated. Peat soils are known by the presence of heaths intermixed with lichens. As a rule, the land poorest for crops exhibits the least valuable natural plants for forage.

Weeds may be classified in various ways, but the most practically useful is that which has reference to their extermination, and this purpose can be best served by dividing them into annuals, biennals, and perennials, according to the duration of their roots or prevailing mode of self propagation.

They can then be subdivided into the degrees in which they are most dreaded, and the vigor with which they must be kept down. To do this a list should be made according to the amount of injury which they do on a farm, or the trouble they give to a farmer.

This list will vary in different districts and in different situations and circumstances, even in the same district, and on differently managed farms. On good soil, the thistles may be placed at the head of this list, but on light sandy and alluvial soil, the common couch grass will come first, for if neglected it will soon run riot, and not only destroy the crop which it infests but render the land unfit to receive another until it has been thoroughly eradicated. The sorrels are also bad weeds to destroy and, if left alone, would soon cause a pasture to be unproductive. Ox-eye-daisy is among the most troublesome, and with this may be placed the charlock or wild mustard, chiefly a nuisance on account of the rapidity with which it propagates itself from its numerous seeds. Wild vetch would also do much mischief if not checked, but does not propagate so rapidly, and is therefore not so troublesome as the above.

Weeds abound most on light soils and in dry localities, and while such soils are easier to work, mechanically, than more retentive ones, they require greater diligence as to the destruction of weeds, which can only be kept under by care-

ful and good management, assiduous tillage, and strict supervision of rising crops. Careless, negligent and unskilful farming is clearly indicated by an abundance of weeds.

It has been said that nothing was created in vain, and there is something to be said even in favor of weeds. Many have valuable medicinal qualities; some are very ornamental, and most may be applied to some useful purpose and made to yield a little compensation for the injury they have done and the trouble they have caused.

Young thistles, particularly, when dry, are readily eaten by horses. Wild mustard, if cut before the seed is formed, can be made into hay which is quite acceptable to cattle, and all other coarse weeds may be collected, and added to the compost heap. In all cases when weeds are reserved to contribute to the farm resources, great care must be exercised to destroy all the seeds and living roots.

How strange it is that many cultivators are so lax about the removal of weeds. If they knew that a robber was on their premises they would at once take prompt measures to eject him and would be ill at ease until assured of his absence; and yet, they will allow weeds to invade their lands, and rob their crops, looking on with complacency until the mischief is done.

Weeds, as before intimated, are weeds only when they are robbers. There are no weeds in prairies, pampas or natural forests in one sense, but in another all may be weeds, when one intrudes upon the free development of the other.

Crops and weeds are the same things in antagonistic positions. Crops are plants selected or improved, and planted on prepared ground with a view to a maximum produce. Weeds are such wild plants as many intrude, or they may be individuals of the same crop crowding upon each other.

The destruction of all plants which may injure the crop is one of the most important branches of agricultural practice; for if that is neglected or slovenly performed the value of the crop will be reduced however good the soil may be, and the advantage to be gained by manuring and tillage will be nullified. And further: the existence of weeds in the soil will prevent the crops from receiving the beneficial effects of the atmosphere, and suck up the moisture so essential for vigorous growth. A weedy crop lodges in heavy storms more readily than a clean one. The harvesting

of grain is retarded by the presence of weeds, and if they have been allowed to run to seed, their seeds deteriorate the sample of grain.

Experiments have been tried to prove the advantage to be derived for careful weeding. In one case, seven acres of light land were fallowed, and sown broadcast; one acre was measured off, and not a weed pulled out of it; the other six acres were carefully weeded. The unweeded acre produced 18 bushels, the other six weeded acres, an average of 22½ bushels per acre; one-fourth more than the unweeded. A second experiment was the following: a six acre field was sown with barley; the soil was badly infested with wild mustard; five acres were weeded and yielded 15 bushels to the acre more than the one acre which was purposely neglected, and the land was left clean for succeeding crops. A third experience will suffice: six acres sown with oats, one acre plowed but once, and not manured or weeded, produced only 17 bushels; another six acres well plowed, manured, and weeded produced 37 bushels per acre. This proves that oats will respond to good treatment as well as any crop, and will pay for good manuring and careful weeding.

GEO. MOORE.

(To be continued)

#### PRUNING COB AND FILBERT NUT TREES

I should be much obliged if you would me give in an early number of the *Agricultural Gazette* a few hints on the pruning of cob and filbert nut trees. I had a nice crop this year on my young trees, but they show signs of want of pruning now to keep them within bounds.—A. L. Y. M. [The fact that the catkins have appeared on your nut trees should not deter you from doing what pruning is necessary any time during the autumn and winter. Many crops are lost and the bushes ruined by allowing them to grow wild for years, instead of keeping growth within bounds by a regular and careful system of pruning. The pruned bushes may and do produce nuts, but these are few and situated at the extremity of the branches, where light and air can act upon the wood, encouraging the formation of female bloom, which can be impregnated with the pollen from the catkins. The thing to aim at with nut culture, the same as apples and pears, is to have no part of the trees or bushes overcrowded, as this leads to

unfruitful wood. We presume that yours are the ordinary bushes, but whether they consist of several main stems, or only one to form standards, it is the centre that should first claim attention, it being decidedly wrong to commence hacking the outside branches away. This only makes matters worse, causing a thicket of stout shoots to form next spring. Use a sharp pruning saw to thin out the centres, removing whole branches if need be where they cross or interlace each other. The actual size of the bushes need only be reduced where space will not permit of their extension, or when they become too close to each other. A free-spreading habit, with plenty of room between the branches, should be observed, when cultivated as ordinary bushes, taking care that they are not robbed by sucker growth, which naturally springs from the ground, but which cannot produce fruit owing to its shaded and crowded position. To shorten back all the shoots would mean the pruning away of the female flowers, and then the crop is sacrificed. Some successful growers follow a system of training and pruning where by each shoot forms a cordon of fruiting-spurs from base to summit. To do this young plants must be treated properly from the first. A given number of shoots are brought up from near the ground, and for the first few years hazel hoops are used to train them in the form of a basin. The side growths are kept pruned back, so that each leader forms a cordon. Light and air can then act freely on all parts, and heavy crops of fine nuts are obtained.—R. P.]

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## The Flock

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### DIFFICULTIES IN JUDGING SHEEP.

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In judging sheep considerable latitude has to be allowed because the hand has to aid the eye and impressions made by handling are not interpreted in the same way by all judges. This difference in reading the results of handling combined with difference in ideas of what constitutes the correct type of a breed, leads to some very interesting decisions being given at exhibitions, where only one judge is employed. It was most strikingly illustrated at the last Illinois State Fair, where Professor Curtis, of the Iowa Agricultural College,

was the judge. He, as a teacher of ideals in sheep husbandry, and as a man who has seen the best flocks of sheep on the continent and in Europe, should be a capable judge, but, when we read the following report of his judging at this fair, we wonder whether he has a hobby, or whether the breeders of Shropshires, as they are bred and judged in their native home, are not up to their business. An agricultural exchange, in speaking of the Shropshires at this fair, says :

“Probably the most noticeable feature of Prof. Curtis’ work was the way the imported sheep, Royal winners, most of them, fell back before home-bred sheep. Selecting as his type the medium sized sheep, with especial regard to breed type and quality, and discounting those that seemed to encroach upon the Oxford, Prof. Curtis worked steadily to this ideal and succeeded in overturning some of the decisions previously made. Indeed, the difference in standpoint is clearly indicated by the fact that the exhibit from Folly Farm, strong in Royal winners, that won the flock prize at the three leading Canadian exhibitions this fall, was not in the first flight on this occasion, and that, too, without having suffered in condition to any appreciable degree from their extended journeying.”

Such difference of opinion must always occur in the one judge system. Prof. Curtis is a man of no mean ability and in his work at Ames has steadily kept in view the utility or dollars and cents aspect in his experiments with live stock. Has he come to the conclusion that the English and Canadian breeders of Shropshires are striving to attain too much size in their sheep, and has he taken this striking and forcible way of teaching breeders of this continent that the somewhat smaller and more compact animal is the more profitable one to handle? Mere size should not count unless accompanied by quality, no matter what the breed. Such decisions as given by Prof. Curtis are always disquieting, however, as they tend to unsettle the minds of many breeders as to the true type of their sheep. A single judge with a hobby will work harm, but a man with a strong conviction of what is the right thing will do untold good to the interests of any breed in moulding a correct ideal.—N. W. Farmer.



## The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

### POULTRY HINTS.

Although hens are called *egg-machines*, do not forget that a machine will not work properly if neglected.

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It is easier to prevent disease than to cure it.

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There is no poultry flesh equal to that of a young, fat duckling.

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Among the laws of contraries we find: When lice thrive, chickens die.

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Road dust is a good disinfectant, and is a powerful poison to all kinds of vermin.

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As you value a bath so does a fowl, but she prefers dust to water.

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If there is one thing more than another that fowls enjoy, it is ground green bones.

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Variety of food is as necessary to poultry as to man.

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Clean white eggs are always attractive.

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When hens sit, they sometimes add an egg to the lot after beginning to sit, and yet this belated egg will hatch out with the others.

Eggs that have never lost their original warmth will hatch a day or two sooner than the rest.

It is usually best to purchase early hatched fowls for breeding, as late hatched birds are not so fully developed as is best for breeders. If a pair or trio is purchased, at a sale, it will be best to have either the rooster or hens some what the oldest. Get good fowls in every case.

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Between 40° and 50° is the best proper temperature to keep eggs for hatching during the winter.

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The pure bred hen will lay more eggs in winter than the mongrel, but neither will pay for their food if not given good care.

A veteran poultry raiser says that egg formation goes on chiefly at night, when the hens is asleep, and the hen that sleeps comfortably is the one that will lay early next morning.

S. J. ANDRES.

### HOW TO MAKE POULTRY PROFITABLE ON THE FARM.

There are a few rules, which, carefully followed, will invariably add to the farmers' income with very little outlay or expenses.

Have a good, permanent home for your poultry apart from all other buildings.

Keep this poultry-home so clean and sweet that you can visit it at any time, and if necessary, for half an hour without wishing you could get out to get a breath of fresh, fine air, or feel like taking a dive to get rid of the lice hurriedly running over your body trying to escape.

Feed the fowls regularly good sound food, and be sure they have a balanced ration, as the egg is a complete food and cannot be made unless the fowl has the right ingredients.

Let the fowls have access to pure water at all times.

Never overcrowd them in their homes. That is sure death to all profits and to the fowls themselves.

Don't try to fence out the fowls from the garden, lawn, truck patch, berry and fruit garden, etc., but once for all fence them in and keep them at home, where they belong.

An old hen, running at large on the farm, often

ruins more in a day than she earns in a year. (Too true, Ed.)

Don't fool your time away with scrubs, but secure good thoroughbreds of whatever breed suits you best.

Don't mix the breeds. A mixed flock for a farmer is a delusion and a snare.

Manage the flock in such a way that a good per cent. of them shall lay during the winter, when eggs bring a good price.

The best way to do this is to hatch the pullets for laying early in the spring, say March or April.

And keep them growing rapidly all summer, so that by the fall, about October, you can expect them to begin to lay. With proper care and food they will continue all the winter.

It don't pay to keep late moulting old hens, as they will not lay until spring, and their winter board will overbalance their summer profits. The worst thing you can do is to keep a lot of useless cockerels or roosters running over the premises to worry the hens and eat up all the profits.

Keep a strict account with your fowls, and at the end of the year that will tell you if your management was correct.

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### FALL CARE OF THE FLOCK

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Fall is the easiest of all times of the year to care for the flock—the pleasantest, too, being nearly devoid of the cares that attend lambing time or winter feeding. This very condition of freedom from anxiety is all too apt to lead one to neglect the flock, which must not now suffer on any account. Ewes that weaned their lambs some time ago should now be in good condition if they have had half a chance. If there are any thin ones or any with evidences of disease in ever so slight degree I suggest culling them out and giving them a short course of good feeding and placing them on the mutton market. There ought to be some sign placed upon your ewes at lambing time that will indicate to you which ones are undesirable as breeders; to clip off half of an ear is a good way. These ewes should be sent away now for mutton.

Ewes will thrive on fairly short pasture so long as it is upland and not too extremely short. At the time of coupling if the ewes are gaining in flesh it seems to result in their conceiving in the

plural more frequently, and that is generally an advantage on a mutton farm if the shepherd is a generous feeder.—*Farming.*

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### WINTER LAMBS

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Mr. J. S. Woodward, of New York State, who is to address Farmers' Institute meetings in Ontario this winter, has the following to say in regard to winter lambs in a recent issue of the *Stockman and Farmer*:

"I have found no better food for ewes in raising winter (I don't like the name "hothouse") lambs than silage. We allow our ewes all they will eat, about four pounds 100 pounds live weight, each day. If I could have but one I would rather have silage than roots, though I like to feed both at same time for the ewes. I have never had the lambs to eat silage to any extent.

"But I never should think of "supplanting" clover hay with silage. Neither could take the place of the other, for the reason that they are not at all alike in composition or effect upon the animal. While clover hay is a well balanced food, and store sheep will do very well upon it alone, it lacks the element of succulence, but is very deficient in the nitrogenous or muscle-making elements. These two feeds nicely supplement each other, and should be fed conjointly whenever practical to do so.

"I have had no experience in the use of silage as a summer food for sheep, not have I had any observation on that line, and so I can say nothing. I have not even an opinion on the subject, but would like to see the trial made.

"December lambs at fifty to sixty days (seven to nine weeks) old, if good, would reach market at about the best time, February 1st, and would bring anywhere from seven to ten dollars each, according to quality and market. If good enough, might bring a little more occasionally."

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### THE HORSE IN BATTLE

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Veteran cavalry horse partake of the hopes and fears of battle just the same as his rider. As the column swings into line and waits, the horse grows nervous over the waiting. If the wait is spun out he will tremble and sweat, and grow ap-



prehensive. If he has been six months in service he knows every bugle call. As the call comes to advance the river can feel him working at the bit with his tongue to get it between his teeth. As he moves out he will either seek to get on faster than he should or bolt. He cannot bolt, however. The lines will carry him forward, and after a minute he will grip, lay back his ears, and one can feel his sudden resolve to brave the worst, and have done with it as soon as possible. A man seldom cries out when hit in the turmoil of battle. It is the same with the horse. Five troopers out of six, when struck with a bullet, are out of their saddles within a minute. If hit in the breast or shoulder, up go their hands, and they get a heavy fall; if in the leg or foot or arm, they fall forward and roll off. Even with a foot cut off by a jagged piece of shell, a horse will not drop. It is only when shot through the head or heart that he comes down. He may be fatally wounded, but hobbles out of the fight to right or left, and stands with drooping head until the loss of blood brings him down. The horse that loses his rider and is unwounded himself will continue to run with his set of fours until some movement throws him out. Then he goes galloping here and there, neighing with fear and alarm, but he will not leave the field. In his racing about he may get among the dead and wounded but he will dodge them, if possible, and, in any case, leap over them. When he has come upon three or four riderless steeds, they fall in and keep together, as if for mutual protection, and the "rally" of the bugle may bring the whole of them into ranks in a body.—*N. W. Farmer.*

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### LICE ON ANIMALS.

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These wingless insects are found parasitic on all animals. Cattle are unfortunate in being the most common victims of lousiness. Sheep are rarely affected. We meet with this disease most frequently during the winter months, in neglected, half starved, dirty animals. Young animals are especially liable to be infected. Sometimes, however, even well-kept cattle suffer severely.

So-called lice are either true lice (*Hæmatopinus*) or bird lice (*Trichodectes*). The former have a slender, often spindle-shaped body, a pointed head, grayish blue color, and suck blood. The *Trichodectes* are broader, have a squareish head,

brown color, and have biting mouth parts, living on hair and epidermal scales. *Trichodectes* are usually found on neglected, unthrifty animals with long shaggy hair and a dirty scaly skin. They usually disappear as soon as the animal's condition improves. True lice, on the other hand, occur also on thrifty animals.

Every species of domestic animal has its own specific louse, or lice (horse louse, ox lice two kinds, pig louse, goat louse, dog louse, etc., and *Trichodectes* of the horse, ox, sheep and dog). The louse of one species of animal can not exist permanently on another species.

The remedy which has given the most satisfactory result to the writer is kerosene emulsion, made as follows: Kerosene, two gallons; common or whale oil soap, one quarter pound; water, one gallon. Heat the solution of soap and add it boiling hot\* to the kerosene; then churn the mixture for ten minutes. Dilute the emulsion with twenty gallons of water and apply with a spray pump. If no spray pump is at hand, drive the animals, if many are to be treated into a narrow chute and apply the emulsion with a common watering can, being careful to treat all parts of the body.

Select a mild, sunshiny day for the operation. In the course of four days or a week repeat the application in order to destroy those lice that have, in the meantime, emerged from the nit. Where the animals have been kept in stables or pens, do not neglect to give these places the same treatment; they are just as lousy as the animals, and if not treated they will soon reinfest the animals. Finally, avoid conditions favorable to future infection, by giving animals proper care and keeping them in a vigorous, thrifty condition. For long-haired animals (calves), shearing might be recommended. Weak, run-down animals may require special nursing to recover completely from an attack of lousiness.—*Press Bulletin, Kansas Experiment Station.*

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\*NOTE—Be sure to have the water boiling hot when you add it to the kerosene, and churn it thoroughly, otherwise you will have trouble in making a good emulsion; which, when made right, should have a creamy appearance.

