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THE ILLUSTRATED JOURNAL OF AGRICULTURE

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No. 7.

The so-called Dominion Exhibition at Ottawa.

Within the last few weeks, several very large and thoroughly successful independent exhibitions were held in Toronto, Guelph, London, and in other districts of Ontario, which, in most cases, were as considerable and even more attractive than what was given as *The Dominion Exhibition* at Ottawa. We are indeed very sorry to say anything disparaging; the more so that, for many years, we have strenuously advocated a Dominion organization for the purpose of perfecting our various Provincial Exhibitions, and giving the necessary development to such departments,—agricultural machinery, for instance,—as are of deep interest to every Canadian farmer, whether he comes from Manitoba or from Cape Breton. We had hoped for a strong, active, and patriotic association, representing our various provinces, whose main duty would have been the working out of all generally interesting agricultural problems. Nothing of the sort seemed even to have been thought of at Ottawa, and except the Manitoba exhibits, under the direct supervision and maintenance of the Federal Department of Agriculture, there was really nothing in this exhibition to entitle it to be called a Dominion Exhibition. In fact, in most particulars, it was greatly inferior to that which had just been held, very successfully, by a thoroughly independent organization, at Toronto.

Although a formal invitation was extended to exhibitors from the Province of Quebec, no effort seems to have been made, by any one, to our knowledge, to secure exhibits. We applied for a copy of the prize list to the agricultural secretary of the so-styled "Provincial Committee," but could not get one before the latter end of August, just about ten days before the entries were closed! On inquiry, we were told that this committee was purely honorary, and had nothing to do with the management of the exhibition. We shall not stop to question the advisability—we might say honesty—of appointing committees to do nothing. It is not surprising that so few exhibitors, comparatively, went to Ottawa, from the Province of Quebec.

We notice however, with great pleasure, that quite a number of prizes have fallen to our lot, and amongst others, several of the most important, for which competition was greatest. For instance, the gold medal and 1st prize for the best creamery butter was taken by Mr. F. Wilson, Montreal. The 1st prize and silver medal, for the best firkin of private dairy butter went to Mr. J. Martin, St. Andrews. The only two first prizes for the best milk cows, Ayrshire and Jerseys respectively, were secured by Mr. James Drummond, of Petite Côte, and Mr. Romeo Stephens, of St. Lambert. We are sorry not to have seen at Ottawa, a representation from the Messrs. Cochrane, and from Judge Dunkin's herds. The reason being, it appears, that they consider their short-horn stock too valuable to be exhibited at such shows.

Amongst the successful exhibitors we noticed the following prizes to residents in our Province:—

For Thoroughbred Horses.—Best stallion, 4 years old, 3rd

prize: Joseph Hickson, Montreal; also, the 2nd prize for the best yearling colt; 1st prize for the best 2 years old filly; 2nd prize for the best brood mare with foal by her side.

Roadsters and Saddle-horses.—Best yearling filly, 2nd prize: Geo. Rainboth, Aylmer.

Carriages horses, over 15½ hands.—Best stallion, 4 years old, 3rd prize: M. Brousseau, Laprairie; best stallion, 3 years old, 2nd prize: R. H. et J. Klock, Aylmer; best yearling colt, Geo. Rainboth, Aylmer; best brood mare with foal by her side, Robert Kerr, Hull township; 3rd prize, R. H. & J. Klock; best foal of 1878, 1st prize: R. H. & J. Klock; best pair of matched carriage horses, 2nd prize: David Moore, Hull; best hunter in saddle, over hurdles, 3rd prize: Joseph Hickson.

Horses for agricultural purposes, exclusive of Clydesdales and Suffolks.—Best stallion, 4 years old, 3rd prize: Louis Trudeau, Napierville; best stallion, 3 years old, 1st prize, bronze medal: Alarie Lafleur, St. Rémi; 3rd prize: Robt. Kerr, Hull; best filly, 2 years old, 3rd prize: Thomas Irving, Montreal; best yearling filly, 3rd prize: W. R. McLatchie, Templeton; best brood mare with foal by her side, 1st prize with bronze medal: W. R. McLatchie; best foal of 1878, 3rd prize: Geo. Rainboth.

Pure Clydesdale Stallion, 3 years old, 1st prize and bronze medal: Neil J. McGillivray, Montreal.

Durhams.—Best bull, 4 years old, 3rd prize: David Moore, Hull.

Herefords.—Best Heifer, 2 years old, 1st prize and bronze medal: J. Hickson.

Ayrshires.—Best bull, 4 years old, 3rd prize: G. H. Muir, St. Laurent; best bull, 3 years old, 2nd prize: Jos. Henderson, Hochelaga; best bull, 2 years old, 1st prize, and bronze medal: Andrew Scott, St. Laurent; best bull, 1 year old, 1st prize: Thos. Irving, Montreal; best cow, 2nd prize: Thos. Irving; best Heifer, 1 year old, 2nd prize: Thos. Irving; best heifer calf, 3rd prize: John Hay, Lachute; best three milk cows, 1st prize and silver medal: James Drummond, Hochelaga.

Galloways.—Best heifer, 2 years old, 1st prize and bronze medal: Jos. Hickson, who also takes 2nd prize for 1 year old heifer.

Jersey and Alderney.—Best bull, 2 years old, 1st prize: Jos. Hickson, also 2nd prize for best yearling bulls; also 1st prize and bronze medal for best bull of any age; best cow, 3 years old, 1st prize: Romeo H. Stephens, who also takes 1st prize and bronze medal for best female of any age.

Grade cattle.—Best heifer calf, 3rd prize: Jas. Mulligan, Aylmer.

Sheep, Leicesters.—Best 2 ewes, aged, 3rd prize: Chs. Demnais, Terrebonne.

Pigs, large breeds.—Best boar over 2 years, 3rd prize: Jas. Mulligan; also for best sow over 2 years, 3rd prize.

Poultry.—For poultry, Mr. Hickson takes 1st prize for best pair of silver gray Dorkings, of light Brahmas, Brahmas,

ducks, and other fowls; 2nd prize for Plymouth Rocks, Cochins, Wild turkey, &c.

Jas. Black, of Montreal, 1st prize golden Polands, Game fowls, silver Hamburgs, Bantams, Polands, (white crested, black); 2nd prize, red Bantams.

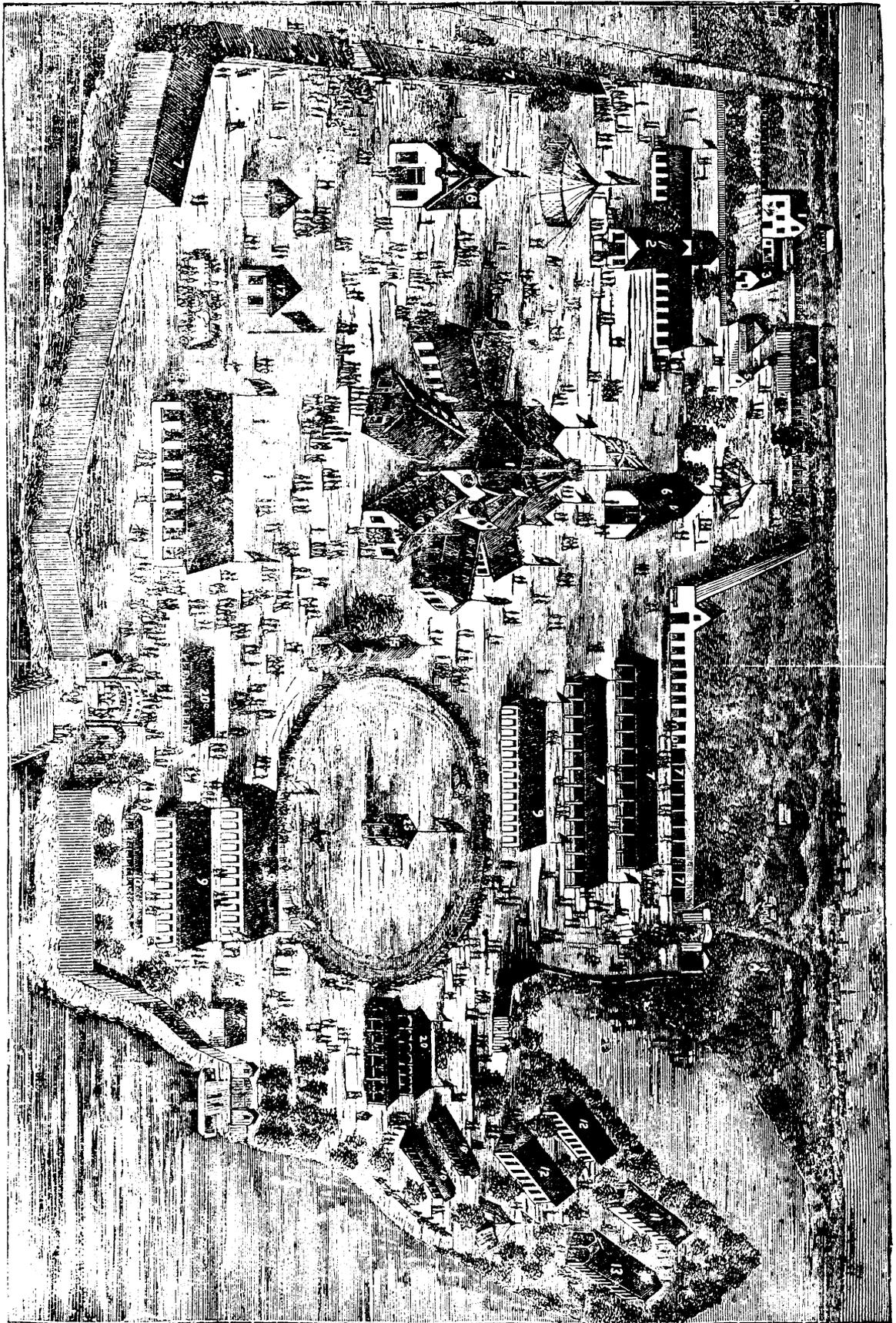
Joseph Gadbois, Terrebonne, 1st prize silver Polands.

Agricultural Implements.—Mr. Jos. Jeffrey, Montreal, takes 1st prize for best double mould plough and best pair of work harness; also, 2nd prizes for horse hoes, iron ploughs, and for a potato digger.

Agricultural Produce:—

- 2nd prize Red winter wheat, Ovide Marion, St. Jacques l'Achigan.
- 3rd " Fyfe wheat, Thomas Irvine.
- 1st " Best winter rye, Henry Papin, l'Assomption.
- 1st " " spring rye, D. M. Bernabé, Grand St. Esprit.
- 3rd " " " Ed. Ferand, Lanoraie.
- 3rd " " white oats, Henry Papin.
- 2nd " " black oats, D. M. Bernabé.
- 3rd " " " Thomas Irvine.
- 2nd " " marrowfat peas, D. M. Bernabé.
- 1st " and bronze medal for best field peas, D. M. Bernabé.
- 3rd " Best small white field beans, Anselme Dubois.
- 4th " " " Ed. Ferand, Lanoraie.
- 3rd " " Timothy seed, Ant. Parent, dit Lamon-tague, St. Esprit.
- 4th " " clover seed, Joseph Marion, St. Jacques.
- 2nd " " Alsike seed, J. Lambert (2), St. Alexis.
- 2nd " " flax seed, Olivier Beaudry, St. Alexis (2)
- 3rd " " swedish turnip seed, D. M. Bernabé.
- 1st " " grey stone turnip seed, O. Beaudry.
- 2nd " " " Joseph Lemaire.
- 3rd " " Belgian carrot seed, A. P. Lamarche.
- 1st " " 12 lbs. long red mangel wurtzel seed, O. Beaudry.
- 3rd " " " " D. M. Bernabé.
- 1st " " bushel tarcs, D. M. Bernabé.
- 3rd " " bushel of millet, A. P. Lamarche.
- 1st " and bronze medal for best 10 lbs. cured tobacco leaf, growth of Canada, E. Langlois.
- 2nd " " " E. Ferland.
- 3rd " " " J. Marion.
- 1st " Best 112 lbs. flax scutched, J. B. Gadbois.
- 2nd " " " Ars. Lamarche.
- 1st " and bronze medal for 112 lbs. hemp, dressed, F. Perreault, l'Assomption.
- 2nd " " " H. Pepin.
- 2nd " Best climax potatoes, E. Ferland.
- 2nd " " Compton Surprise potatoes, James Mulli-gan, Aylmer.
- 1st " " peachblow potatoes, G. C. Rainboth, Aylmer.
- 3rd " " eight roots Marshall's Improved Swedish turnips, W. P. Davidson, Côte St. Paul.
- 2nd " " " Carter's swede turnips, W. B. Davidson.
- 2nd " " " Shamrock swede turnips, W. B. Davidson.
- 2nd " " " Sutton's champion turnips, W. B. Davidson.
- 1st " " " White Globe turnips, W. B. Davidson.
- 2nd " " " Aberdeen Yellow turnips, A. Dubois.
- 1st " " 12 roots Red Carrots, Henry Pepin.
- 1st " " " Belgian carrots, T. R. Hughes, Côte des Neiges.

- 1st Prize best 12 roots Mangel Wurtzel, T. R. Hughes.
- 2nd " " " " Thomas Irvine.
- 2nd " " " " Globa " Thomas Irvine.
- 1st " " " " Long Yellow " T. R. Hughes.
- 2nd " " " " " " Thos. Irvine.
- 3rd " " " " white Sugar beets, Thos. Irvine.
- 3rd " " " " parsnips, W. B. Davidson.
- 1st " " " " chicory, F. Mulligan.
- 1st " " " 2 mammoth field pumpkins, F. Mulligan.
- 1st " " " 4 common " "
- 2nd " " " 12 roots salsify, J. Mulligan.
- 2nd " " " 3 heads cauliflowers, W. R. Davidson.
- 1st " " " 3 " early York cabbage, J. Mulligan.
- 2nd " " " 3 " Winningsted " "
- 1st " " " 3 " Oxheart cabbage, W. B. Davidson
- 2nd " " " 3 " " J. Mulligan.
- 2nd " " " 3 " St. Denis " W. B. Davidson
- 1st " " " 3 " Quintal " J. Mulligan.
- 2nd " " " 3 " red cabbage, J. Mulligan.
- 3rd " " " 12 long red table carrots, W. B. Davidson
- 1st " " " 12 table parsnips, J. Mulligan.
- 2nd " " " 6 roots red celery, W. D. Davidson.
- 3rd " " " " " J. Mulligan.
- 2nd " " " 3 egg-plant-fruit, purple, J. Mulligan.
- 2nd " " " 6 blood beets, W. B. Davidson.
- 3rd " " " " " E. Ferland, Lanoraie.
- 2nd " " " peck white onions, J. Mulligan.
- 2nd " " " " yellow onions, " "
- 1st " " " 2 quarts pickling onions, " "
- 2nd " " " " " E. Ferland.
- 2nd " " " collection of varieties, W. B. Davidson.
- 1st " " " 12 varieties standard dahlias, " "
- 1st " " " 12 bouquet dahlias, " "
- 1st " " " largest collection dahlias, " "
- 2nd " " " 2 large vase bouquets, " "
- 1st " " " hand bouquet, " "
- 1st " " " 12 pansies, John Archibald, Hull.
- 2nd " " " collection annuals in bloom, W. B. Da-vidson.
- 3rd " " " 6 cockscombs, W. B. Davidson.
- 2nd " " " 6 varieties balsams, " "
- 1st " " " 12 german asters, " "
- 3rd " " " collection of asters, " "
- 1st " " " floral design for supper table, W. B. Davidson.
- 3rd " " " 12 verbenas, W. B. Davidson.
- 2nd " " " collection verbenas, " "
- 1st " " " 6 petunias, single, " "
- 1st " " " " double, " "
- 1st " " " collection Holly hocks, " "
- 3rd " " " collection of gladiolus, " "
- 3rd " " " 6 geraniums, " "
- 3rd " " " display of plants in flower, W. B. Davidson
- 1st " " " rustic stand not less than 3 feet high, W. B. Davidson.
- 1st " and gold medal for best three firkins of creamery butter for exportation, F. Wilson, Montreal
- 1st " and silver medal for best firkin of private dairy butter for exportation, J. Martin, St. Andrews.
- 3rd " " " " J. Hay, Lachute.
- 2nd " " and bronze medal for best five factory cheeses, J. Ellison, East Farnham.
- 5th " " three cheeses, R. Wood, Rivière-du-Loup, (en haut).
- 1st " " honey in the comb, D., A. Kerry, Hudson
- 3rd " " " J. A. Poland, Napierville.



Ottawa Exhibition grounds.

1st prize and silver medal for best maple sugar, 30 lbs. cakes, O. Beaudry.
2nd " " " Ovide Marion.
3rd " " " J. Lemaire.
3rd " " " stirred, A. A. Laporte, St. Germain.
1st " Best maple syrup, 5 galls., O. Marion.
2nd " " " Jos. Lemaire.
2d " " 12 varieties fall apples, W. B. Davidson.
2d " " 12 Pond's seedling plums, " "
1st " " 6 seedling plums, " "
2nd " " Hartford Prolific Grapes, H. Parker, Aylmer.
2nd " " champion grapes, H. Parker.
1st " " 3 bunches any other variety, H. Parker.
1st " " green flesh melon, W. B. Davidson.
2nd " " citron, W. B. Davidson.

Official Exhibitions and Independent Organization.

As will be seen by the following article, taken from one of our Ontario exchanges, and also from the general tone of *The Press*, the results arrived at in the Province of Ontario clearly demonstrate the superiority of independent organizations for Exhibition purposes, over those officially organized by the Board of Agriculture and Arts.

We must sincerely confess that, in our opinion, the same results would soon be reached in our Province were the interested parties, in and around Montreal, to take up with a will the organization of the on-coming so-called Provincial Exhibition:—

The broader question of Provincial Exhibitions opens up another field for discussion. The growth of the system of voluntary fairs, first introduced by the promoters of the Western Fair, has demonstrated that the plan upon which the subsidized Provincial Fair has been run is rotten at the core. London first proved by actual results that public subsidies were not necessary to the existence of a first class central exhibition. Guelph and Hamilton followed suit, and corroborated the soundness of what London had taught them. Toronto, slow to admit that she could be taught anything by her smaller sisters, finally essayed the experiment, and its success, as shown in the Industrial Exhibition, extending over three weeks, more than exceeded the most sanguine expectations of its promoters. While Toronto and London were holding successful self sustaining exhibitions, the Provincial Fair, backed by heavy donations from the Provincial and Dominion treasuries, was languishing and losing money at Ottawa. There must be something radically wrong in the organization of the Provincial Association when it fails to pay its way, even with large Government contributions to its prize list fund. The perambulating principle must be excessively expensive, or the executive must absorb a larger share of the funds than is advisable in traveling backwards and forwards attending advisory meetings and making necessary arrangements. But whatever the cause, the fact stands out conspicuously clear that the Provincial Exhibition in its present shape is an expensive failure. Several schemes have been mooted for its improvement. One is to locate it permanently at a central point, say Toronto, another is to abolish the Provincial and apportion the subsidy between three places—one to serve the Eastern counties of the Province, one the Central, and the other the Western, and a third is to cut off the Government subsidy entirely and leave the holding of great fairs to the enterprise of the several cities. Probably the suggestion to divide the subsidy into three portions would meet with the most favor, and the only drawback to its adoption would be the difficulty of deciding between the

claims of rival cities as to the proper place for holding the respective fairs. For the west, London has no rival at present; in the east, Ottawa, Kingston, and Brockville would be apt to contend for position; and Guelph, Hamilton, and Toronto, would have a lively war over the central selection, though there is no doubt Toronto offers superior advantages for holding the exhibition. The jealousies of the cities have a great deal to do with the fact that the Provincial Fair alone is recognized by the Government. If they would only settle their differences amicably we believe the plan of apportioning the grant into three parts would not be long in coming into operation, as all are agreed that the grant to the Provincial is little better than thrown away in its present shape. Sooner than see the public funds frittered away upon the Provincial Association any longer, through the petty jealousies of rival cities blocking a more useful distribution, we would favor withdrawing the grant altogether from the estimates and leaving the cities to settle between themselves, by their annual competitions, which is best entitled to recognition as a centre for holding fairs. A little discussion of the question at the next meeting of the Legislature might bring matters to a focus.

Poultry manure.

As I have lately seen in many Agricultural Journals of the United States a statement to the effect that the excrements of Pigeons, Fowls, Ducks, etc., are equal to Guano in manurial value, I think it will not be useless to the readers of this publication to give a concise description of what guano is, and how it comes to be what it is; together with analyses of the Peruvian article, and of the different sorts of manure voided by our domestic poultry.

Guano is the dung and urine of sea fowls feeding on fish alone. It is found in cavernous holes in a tropical climate where no rain ever falls. It is, except the upper layers, of great, of unknown age, and pressure and heat have combined to condense and solidify it.

Poultry, on the other hand, feed on grain, and seeds of different sorts, almost entirely. Their droppings, as we use them, are recent and raw, and instead of containing only 7 0/10 to 8 0/10 of water, like guano, they rarely contain less than 50 0/10. The two chief manurial substances in both poultry manure, and guano, are Ammonia and Phosphate of Lime (bone earth) — the potash is of course valuable, but, with the Carbonate of Lime, can be left out of consideration, as they are present in very small quantities.

The following is Dr. Ure's analysis of Peruvian guano in its best days, the guano of to day contains about 12 0/10 of ammonia instead of 16 0/10 as was the case with the best samples at the time this analysis was made.

Water	7.83
Organic matter containing Ammoniacal salts.....	59.85
Chloride of sodium, sulph. of soda, phosph. of potash	12.24
Phosphates of lime and magnesia.....	15.15
Carbonate of lime97
Sand.....	3.39
	99.43

Guano, in England, is now worth about £14 (\$70) a ton (2240 lbs.)—of course a sample equal to the above would be worth considerably more, probably £17.—

Now contrast this with Anderson's analysis of pigeon's dung, which is thoroughly to be depended on.

Water.....	58.32
Organic matter containing ammoniacal salts	23.25
Phosphates.....	2.69
Sulphate of lime (plaster).....	1.75

Alkaline salts (soda, &c.).....	1.99
Sand.....	7.00
	100.00
Ammonia.....	1.75
Phosphoric and Alkaline salts equal to 0.20 phosphate of lime.....	0.10
Hen manure :	
Water.....	60.88
Organic matter containing ammoniacal salts	19.22
Phosphates.....	4.42
Carbonate of lime.....	7.65
Alkaline salts.....	1.09
Sand.....	6.69
	100.00
Ammonia.....	0.74
Phosphoric acid in the alkaline salts equal to 0.15 phosphate of lime.....	0.07
Duck manure :	
Water.....	46.65
Organic matters with ammonia.....	36.12
Phosphates.....	3.15
Carbonate of lime.....	7.65
Alkaline salts.....	0.32
Sand.....	10.75
	100.00
Ammonia.....	0.85
Phosphoric acid in alkaline salts.....	a trace.
Goose dung :	
Water.....	77.08
Organic matter and ammoniacal salts.....	13.44
Phosphates.....	0.89
Alkaline salts.....	2.94
Sand.....	5.65
	100.00
Ammonia.....	0.67
Phosphoric acid in alkaline salts equal to 0.26 phosphate of lime.....	0.12

In considering the enormous quantity of water in this last sample we must not forget that geese feed all the summer principally on grass. Thus $\frac{2}{3}$ of this dung consist of water, there is in it less than 1 $\frac{1}{10}$ of phosphates, and $\frac{3}{8}$ $\frac{1}{10}$ of ammonia. The proportion of alkaline salts is large.

Taking these analyses, and comparing them with Sprengel's analysis of farm yard dung (which, by the bye, does not mean dung from straw-eating milch-cows) we find that pigeon's dung is worth about 3 times as much as farm yard manure; that the droppings of the ducks, geese, and hens are hardly worth any more than farm yard manure; if then 3 cwt. of Peruvian guano is equal in effect to 12 tons of farm-yard manure, a fortiori is poultry manure not equal to Peruvian guano, q. e. d. In fact this is another instance of what sanguine experimenters do, when they sit down to "write to the papers," without having made a sufficient number of trials to found their generalisations upon. It is clear that, even in the case of pigeon dung, it would take 26 parts to equal one part of guano; for, if 12 tons or 240 cwt. of farmyard dung equal 3 cwt. of guano, then 20 parts of farm yard dung must be taken as equal to one part of guano; and 3 parts of farm yard dung equalling one part of pigeon's dung, it follows that $\frac{20}{3} = 6.33$ will be the number required.

Now if any practical man will have the goodness to put 6 cwt. per acre of guano on his young wheat next spring, he will have the pleasure of reaping a crop of small, shrivelled, black, grain, like *ad-rice*; but I should not fear to put ten

times that quantity of poultry manure to the acre. I need hardly say that it is the ammonia which burns up the crop when too copiously administered.

After all said and done, nobody denies that poultry manure is very powerful in its effects, but people forget that there is no straw with it, that both solid and liquid dejections are in it, and that it is not generally exposed to the rain and sun, like the ordinary manure of the farm, with the effects of which they are accustomed to compare it. But let it be fairly compared with genuine guano, and the experimenter will soon see how childish it is to say that their values are equal.

In calculating the value of manures like guano we need only take the three substances above mentioned: Ammonia, Phosphate of lime, and Potash; as thus: at present prices the value of a ton of guano containing 13 $\frac{1}{10}$ of ammonia, 30 $\frac{1}{10}$ of phosphate of lime, and 4 $\frac{1}{10}$ of potash would stand as follows:

Ammonia,	12 $\frac{1}{10}$ = 269 lb @ 20 cts.	\$53.80
Phosphate of lime,	30 $\frac{1}{10}$ = 672 lb @ 2 cts.	13.44
Potash	4 $\frac{1}{10}$ = 90 lb @ 4 cts.	3.60

\$70.84.

Or as nearly as possible £14 a ton, which is about its value in the English market to-day.

The reason why manufactured guanos have never given satisfaction is the same as the reason why no crafty substances added to skim milk will produce so good a calf as the full milk itself, viz., that the "Great Goddess Nature" works in her laboratory with a skill, as yet, unknown to human art.

I conclude by recommending any one who uses guano, not to put it in contact with the seeds, or potato sets; in that case they will probably never come up. The damper the weather, the better it will be for ammoniacal manures of all kinds. It would be wise always to mix them with, say 10 times their bulk of ashes, road scrapings, black earth, &c., to secure their more equal distribution. Is it not strange that our bones, which contain in one ton as much value in nitrogen, phosphate of lime, &c., as 30 tons of dung, should be sent to England, instead of being used, as they ought to be, on our land. The process of reducing them is not troublesome—take 40 bushels of unboiled bones, large and small; mix them in a flat-topped heap, with 8 loads of earth, or ashes, turn it over in a fortnight, sprinkle it with water, and again in another fortnight, and at the end of six weeks, or two months, the bones will be, almost all of them, rotted down into a rich compost which will help every grain, grass, and root crop amazingly. The 40 bushels would manure 8 acres of turnips far better than 20 loads of the ordinary manure of the yards.

ARTHUR R. JENNER FOSTER.

VETERINARY DEPARTMENT.

Under the direction of D. McEachran, F. R. C. V. S., Principal of the Montreal Veterinary College, and Inspector of Stock for the Canadian Government.

The Diseases of the Digestive organs in Horses.

Indigestion.—In a former number we explained that owing to the structural arrangements of the digestive system in the horse, he ought to be fed in small quantities and often, except when left entirely free, when he would naturally spend the larger portion of his time in feeding.

Farm horses are especially liable to be exposed to the causes which, induce derangements of the stomach; such for instance as long fasts, and sudden changes of food, a scanty supply of food of an inferior quality, such as being kept on short dry pasture, and, by jumping or otherwise getting into a field of green crop, which they eat greedily, over-loading

the stomach, causing fermentation, evolution of gas, and violent indigestion, which frequently runs on to a fatal termination.

Farmers' horses are often exposed to long fasts, more especially during the ploughing season, when, after a hard and exhaustive days work, they return to the stable hungry and fatigued, where they speedily devour their food, without subjecting it to the necessary mastication and insalivation, and, consequently, this unprepared food causes derangement of digestion in the stomach.

No uncommon cause of indigestion in horses is, what has already been pointed out, allowing them to drink large quantities of water immediately after being fed, which washes the semidigested contents of the stomach into the bowels before they have undergone the necessary solvent processes by the gastric fluids. This undigested food acts as an irritant on the bowels, and causes indigestion.

In young horses derangements of the stomach are frequently caused by the mastication organs, the teeth, not being capable of properly grinding the food, especially from two years old to four and a half. The shedding of the first set, and the growth of the permanent teeth keep the mouth tender, and in many cases, if fed on hard dry food, they acquire the habit of bolting it, that is swallowing it un-masticated, and, in them, this is a fertile source of derangement of the organs of digestion.

In older horses the teeth frequently become irregular and present sharp points which prick or cut the cheek rendering mastication difficult and painful; hence they are apt to swallow un-masticated food. A broken, or diseased tooth is another common cause of imperfect mastication. Food of an inferior quality, such as musty hay or oats, readily deranges the digestion, and gives rise to disease of the stomach and bowels, and frequently of the urinary organs as well.

The presence in the stomach of parasites, more especially of worms and bots, are frequently the immediate causes of indigestion in a chronic form, and their presence is often favoured by the defects of the teeth; eggs, which under proper mastication and active digestion would be destroyed, escape, and, finding their proper nidus in the coats of the stomach, settle there and become developed, to the no small injury of the animal.

In old horses we frequently meet with large tumours in the stomach caused by enormous numbers of very small worms (*ascarides*) which will be found in their centre in thousands, often in thick masses forming the bulk of the tumour, with merely a small opening on to the floor of the stomach. These keep up a constant source of irritation, and cause imperfect digestion, which keeps the animal poor. Bots, which are present in the stomachs of nearly every horse during the winter and spring, are the larvæ of the horse fly, (*Oestrus Equi*). Differences of opinion exist as to the effect these have on the animal; some assert that they are harmless, others that they aid digestion, and others, that they are injurious. As this is the cause of all others to which farmers ascribe most cases of colic, and other forms of derangement of the digestive organs, we will trace the history of these curious and interesting creatures.

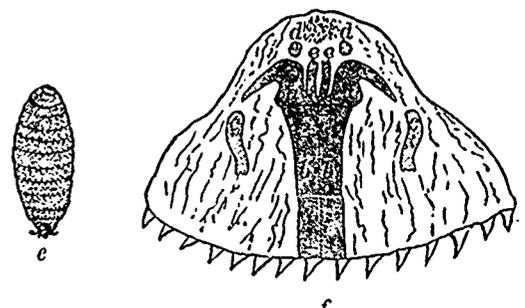
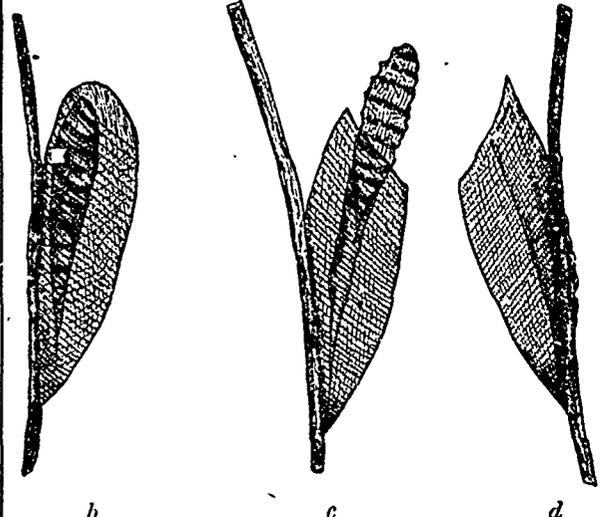
Every one is familiar with the gaddy, the p which we see so often tormenting the horse during the summer, both in the field and on the road, following him persistently, hovering over him, and occasionally darting down, to his no small terror. This is the female fly which is provided with a long telescope-like depositor, from which she deposits the nit on such places as are within reach of the horse's mouth, such as the fore legs, the sides of the body &c. As will be seen from the illustrations, this nit consists of a glutinous case of a conical form attached by an adhesive material to the hair by

its apex and side, while the base is free, and is furnished with a lid or cover, the case is hollow, and contains the larva within it. On the animal rubbing the newly deposited nit with his lips or tongue, the heat and moisture cause the lid to fall off, and the larva to escape into the mouth and thence to the stomach.

Our illustration, which is taken from a microscopic preparation in the collection of the Veterinary College, shows a,

The hairs with the nit attached a little larger than natural size. b the nit enlarged showing its markings and its cover or lid, having been rendered transparent the larva contained within it can be distinguished. c is another nit enlarged, showing the larva in process of escaping, which it does by the falling off of the lid by the heat and moisture of the tongue or lips. d shows the empty case or nit with the lid off. e shows the fully developed

boot about natural size. f shows the head of the bot enlarged: a a the hooks by which it is attached, b b the tracheal tubes, c c lateral spiracles, d d anterior spiracles; e e tentacles.



The larvæ on reaching the stomach adhere to its coats by the hooks which will be seen on each side of the head, d, and here they remain for nearly a year, when they let go their hold, and, passing with the food into the bowels, are moved along that canal, and finally expelled with the faeces. Their subsequent history is attended with many dangers to their existence, especially in stabled horses; they usually however are for a time covered up in the manure heap, where, swarmlly embedded, they speedily burst the chrysalis envelope in which they have so far been encased, assume the parent form, and their career in life, as a fly, begins.

Not only during the period of development in the stomach, but more especially during their transit through the bowels, these pests cause uneasiness and interfere with digestion, in many cases keeping the animal poor and unthrifty, and rendering him subject to indigestion and colic. It is a remarkable fact however that, in the majority of cases, they would seem to be harmless guests, which is very fortunate as they are the most common *entozoa* we meet with in this country, and, unquestionably, the most difficult to destroy by any remedy which can be safely administered.

SYMPTOMS OF INDIGESTION.—In the acute form, where fermentation and evolution of gas take place, as when an animal eats a large quantity of any food, especially green food or damp succulent grass, the symptoms are sudden and violent. Distention of the belly with gas, acute pain which is more or less intermittent, and profuse perspiration; the animal rolls violently, the breathing is quickened; increase of the flatulence and the violence with which the animal throws himself about threaten rupture of the stomach or bowels.

In the subacute and chronic forms the danger to life is not so great and the symptoms are less violent. Arising, as it does, from a variety of causes, we find a corresponding difference in the symptoms. In all cases there is loathing of food, an irregular appetite; loss of flesh; a dry, harsh, unthrifty coat; the condition known as hidebound. In some cases we have a morbid appetite, the animal licking the walls, especially lime or plaster, or any cold surface; preferring soiled litter, which he picks out of his bedding, to good, sound food. Thirst is a common accompaniment of this condition, and profuse urination, which induces weakness and renders him totally unfit for work. The breath is sour and foetid. He is subject to colic, the attacks of which may be slight but frequent.

PREVENTION.—Some horses, like some men, are constitutionally subject to indigestion; in most, however, like man also, it is the result of errors in diet, and can be prevented by a close observance of physiological laws, especially by avoiding long fasts, over eating, sudden changes of food, and food of a bad quality. When it arises from parasitic irritation it must be got rid of by medical treatment.

SIR,—I should be glad to know what I had better do with a sucking colt of mine which was born ruptured? The swelling was not large at first, but now, it is as big as a goose's egg.

Your obedient Servant.

Our correspondent does not state in what part the rupture is situated, but we presume it is an "umbilical hernia." There are two ways of treating it; either by the application of a compress held in its place by bandages, or by an operation, which consists in replacing the intestines and fastening them by a ligature of the skin.

You had, however, better apply to Mr. Levesque, Veterinary Surgeon, Berthier en haut, who, being experienced in such cases, would be more likely to succeed than yourself.—D. McE.

Watering cows in stables.

We have never seen a plan that altogether suited us for watering cows in the stable. We have no doubt it may be done, but there are many troubles to overcome. The water must be constantly running, for if allowed to stand any time the amount of dirt and bad odors it will absorb is something amazing. Water changes its temperature slowly, and for that reason is frequently in every twenty-four hours colder than the surrounding atmosphere, which causes the moisture of the air to condense on the surface of the water, thus actually pouring all the impurities of the air into the water. To note a striking instance of this, let a pitcher of water stand for a few days in a bed-chamber, when it is certain to

become offensive. We know of no practice more reprehensible than that of allowing cows to drink out of puddles in the barnyard where everything is more or less tainted with manure. It is astonishing what filthy water cows will drink when they are hot and thirsty. The only way to prevent their doing it is to have pure water always at hand. Do not flatter yourself that she will walk very far to get it, either, if anything particularly filthy is at hand.

There is no way that water can be more profitably fed to a cow than to mix it with her food. What is called "slopping" a cow is of prime value in milk production. Nothing about the dairy pays better than the labor required for mixing up a cow's food for her, and the more water you get into her this way the better.—*American Dairyman.*

Agricultural Exhibitions.

HUNTINGDON.

The Exhibition of Farm Stock, Agricultural and Horticultural products, machinery, and domestic manufactures, held during the 8th and 9th September at Huntingdon, was in every way a most successful one.

Few, even of our public men, know what a rich agricultural country we possess in the counties of Huntingdon and Beauchampois. Accompanied by J. M. Browning Esq., Ex-President, and Geo. Leclerc, Sec. of the Council of Agriculture, A. Sommerville Esq., James A. Cochran Esq. of Compton, and others of our leading Agriculturists, we accepted the invitation of the directors of the Society to be present at the Exhibition, and certainly we had no reason to regret having done so, as the evidences of the agricultural prosperity of our country illustrated by the excellence of everything on exhibition, was gratifying in the extreme.

We have been long familiar with the excellent draught horses of this district the product of imported Clydesdale sires, consequently we expected and found the show in this class strong, but we must confess to a little disappointment. On inquiry we found that after a series of successes in breeding draught horses some of the farmers desired a change; and a most unfortunate one they made; instead of observing the golden rule in breeding, to *breed from pedigree*, they selected a sire, a Cleveland bay, from his appearance, and the consequence has been a deterioration of their horses to an almost incredible extent.

Fortunately however for the county, private enterprise has in a measure saved her reputation. Mr. Bell and others deserve great credit for keeping first class stallions of pure Clyde blood. There were several very fine horses in the aged stallion class, and a few young ones which were promising; but several were shown as coming sires which would only make fair geldings.

In the Cattle department, we found several very good short-horn cows and two very good bulls. The Ayrshire class was well represented, Mr. David Beany exhibiting some nearly perfect specimens of this milking family. One mistake however which we took occasion to point out was giving prizes to *grade* bulls, several mongrel specimens were on exhibition, and, unfortunately, were encouraged by the award of prizes.

The exhibition of sheep was excellent, in fact a few of the pens could scarcely be beaten at any of the larger shows which we subsequently visited. The pigs were only fair and the numbers were not large.

The show of implements, and labour saving machines, carriages, waggons, stoves etc., was very creditable indeed. The Industrial hall was well filled by the products of the dairy, the garden, and the orchard, on the ground floor, while above, were numerous evidences of the home and fireside industries in the form of quilts, mats, carpets, slippers, and many productions of the fair fingers of the young ladies of the county, which did them credit; while the staple comforts, such as bread, jellies, jams, cordials, and such like, were exhibited by the matrons, altogether evidencing a frugal, thrifty, condition of our farmer's homes, combined with those little comforts without which home is not home like.

The floral department was particularly worthy of notice, and elicited encomiums of praise from the city visitors, who were delighted to find so much taste displayed in this department, many of the plants being rare, and all showing care and skill in cultivation.

On the whole the arrangements were admirable, and reflect great credit on the directors. We must not however forget to

refer to the most sumptuous provision at the refreshment room. Everything was abundant, nicely cooked, and served in the most agreeable manner by the ladies who had undertaken this important duty. We would recommend the plan here adopted to other societies, and one trial will serve to make it a permanent custom at their exhibitions. The refreshment room is let, by contract, to the ladies of the churches of all denominations, the highest bidder getting the contract. In this way the society receives a profit, and the church is also benefited, as the ladies do all the work gratuitously, and, as the materials are bought at first cost, a handsome profit is usually made.

In the evening we had the privilege of addressing a large audience of farmers, in the Academy, on the cattle trade and its influence on Agriculture in Canada; on the points to be observed in the selection of breeding stock; and on the hereditary diseases of animals; Mr. Browning followed with a few well considered suggestions relative to the exhibitions, and the agricultural questions generally of the province. After the close of the addresses those present were invited to ask for information on any point of interest to them. Among other questions was that of taxing stallions, with a view to allow none but good horses to be bred from, and this seemed to meet with universal favour by the whole meeting.

We cannot close this notice without referring to the unfortunate want of communication between this rich agricultural country and our market centres. On driving from Huntingdon to Caughnawaga we came through some of the finest farming land which can be seen in Canada, a rich loamy soil capable of growing any crop, well watered everywhere. The well filled barns the comfortable buildings, the neat gardens, and trim fences, all speak for the fertility of the country. Surely some one can propose and carry out a scheme which will make this fine country independent of the roads which, spring and fall, must be very bad indeed.

THE EXHIBITION AT TORONTO.

We were fortunate enough to have an opportunity of visiting the exhibition held at this city during September. Being most interested in stock, we chose the second day of the last week, which was the stock week. The spaciousness of the grounds, the admirable arrangement of all the buildings, and the general convenience for exhibitors were pleasing objects of notice to the visitor. It is not saying too much when we affirm that the Queen City possesses the finest grounds and buildings for exhibition purposes in the Dominion. Having paid our respects to the obliging Secretary, Mr. Hill, we found ourselves free to inspect the different departments at our pleasure. As was to be expected there were many very excellent representatives of the different breeds of cattle, prominent among which may be mentioned the exhibit of the Bow Park Short-horns, headed by that noble type of his race the Duke of Clarence.

We cannot say too much in favour of the animals shown by this firm, both cows and heifers; but, we cannot approve of the practice of running the risk of ruining such valuable animals by the unnatural condition of fatness which was too apparent in all their animals. The Angus, the Devon, the Hereford, the Ayrshire, and the Alderney breeds were well represented. The total numbers were not great, but the quality of the animals left little to be desired, and augurs well for the resources of Canada for producing the different breeds there represented.

The horses formed an important feature in the exhibition, and the erection of a large amphitheatre on one side of the ring afforded the spectators an excellent opportunity of seeing the different classes as they were led round. The Draught Stallions formed a prominent feature in this section. We expected to have seen a better show of driving, and riding horses. The deficiency in these classes however may be in some measure accounted for by the large numbers which have been exported during the summer. Our time did not permit of our visiting the poultry house, but we were informed that it was a success both in point of numbers and in quality.

A hurried run through the machinery hall, and the Industrial department, convinced us that Ontario was making rapid strides in the development of her manufacturing interests. An interesting exhibit was that of the "Glass Hen" or Incubator: under this glass cover eggs were seen in all stages of the hatching process by means of artificial heat, and chickens, from a few hours, to a

few weeks old were offered for sale, hatched by this process. Whether the new hen-mother will meet with the approval of poultry fanciers or not, we cannot tell; but certain it is that by this means we can hatch and produce young chickens for market at all seasons of the years; a convenience which will in time be very much appreciated.

POULTRY DEPARTMENT.

Under the direction of Dr. Andres, Beaver Hall, Montreal.

BROWN LEGHORNS.

DISQUALIFICATIONS.

Comb: twisted or falling over to either side, in cocks, or pricked or duplicate in hens; red ear-lobes; crooked backs; wry tails; legs other than yellow; white, or partially white, feathers in cockerels; black, white, or partially white, feathers in hen.

THE COCK.

Head: Short and deep, and, in color a dark, reddish bay, shading into a lighter hue on the neck:—Beak, yellow with a dark stripe down the upper mandible:—Eyes, red, full, and bright: Face, bright red, free from wrinkles or folds.

Comb: Bright red, of medium size, firmly fixed on the head, single, straight, deeply serrated (having but five or six points) extending well over the back of the head, and free from twists, side sprigs, or excrescences.

Earlobes and Wattles: Earlobes white, or creamy white, fitting close to the head and rather pendant, smooth and thin, and free from folds or wrinkles:

Wattles, bright red, long, thin, and pendulous.

Neck: Long, well arched, and well hackled, the hackles being a rich golden bay, striped with black.

Back: of medium length and width, very dark red, approaching black on the lower part, each feather striped with golden bay.

Breast and Body: Breast, black, full, round, and carried well forward. Body, rather broad, but heaviest forward; the underpart black.

Wings: Large and well folded: bows, dark red, each feather striped with golden bay; primaries, black, each feather edged with golden brown: secondaries black, the outside web broadly edged with brown: covers, a metallic' or greenish black, forming a well defined bar across the wings

Tail: Upright, large and full: sickle feathers, large and well curved; color metallic' or greenish-black: covers, rich black, with a greenish reflection.

Legs: Thighs, of medium length, and black in color:—Shanks, long, and, in color, bright yellow:—Feet, yellow, with a delicate dark stripe down each toe, the smaller the better.

Carriage: Upright and proud.

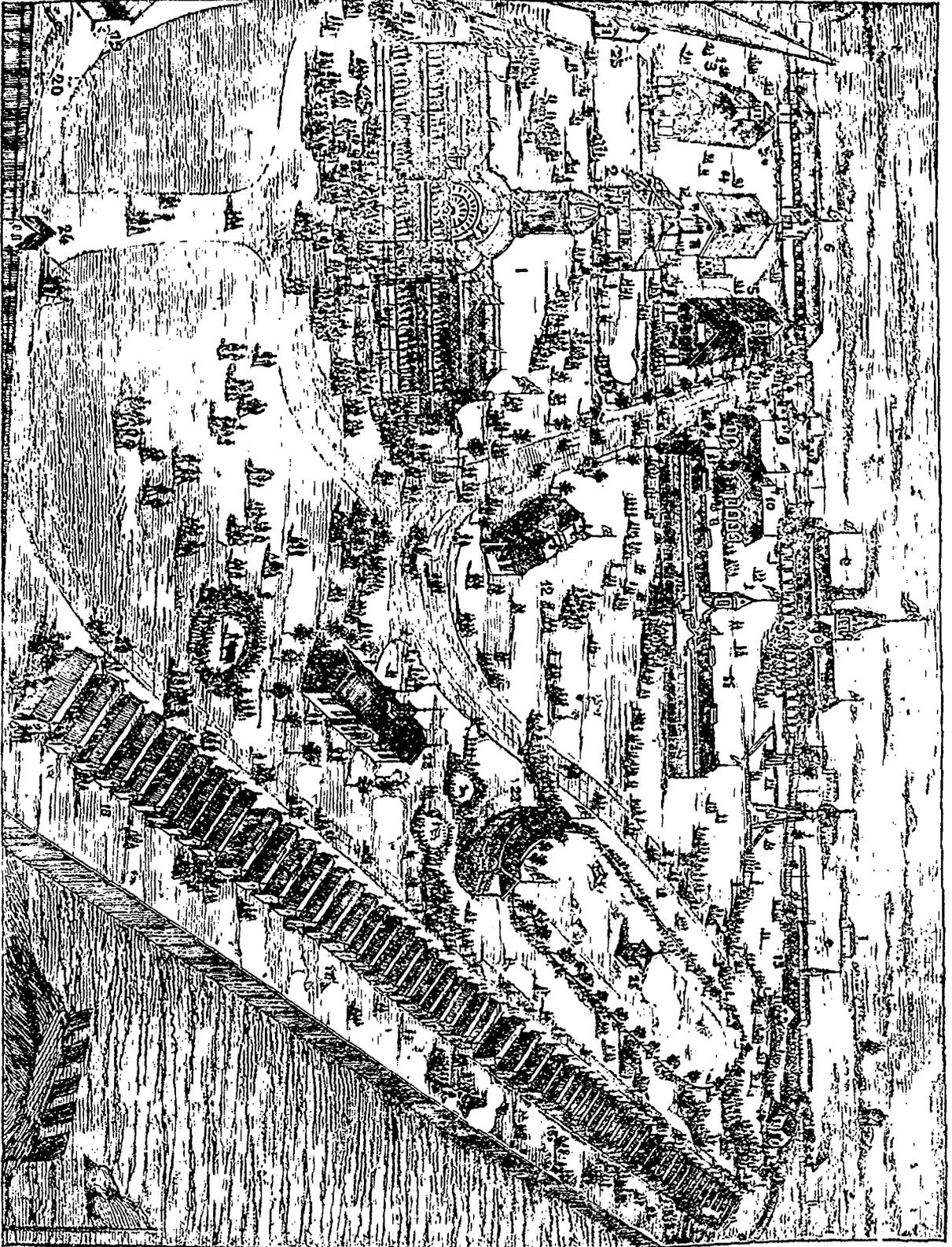
THE HEN.

Head: of medium size, dark brown approaching bay, the feathers shading off to yellow behind the comb, striped with black:—Beak, rather long and stout, in color, yellow, with a dark stripe down the centre:—Eyes, red, full and bright:—Face, red, and free from wrinkles or folds.

Comb: Red, of medium size, single, drooping to one side, evenly serrated, and free from side-sprigs.

Earlobes and Wattles: Earlobes, white or creamy white, fitting close to the head, and rather pendant, smooth and thin, and free from folds or wrinkles. Wattles, bright red, thin, and well rounded.

Neck: Long and graceful; color yellowish brown, each feather striped with black.



Recent Exhibition Grounds

Back: Dark-brown, each feather pencilled with a lighter brown.

Breast and Body: Breast full and round: in color a dark salmon-brown shading off light under the body:—Body, deep and plump, and broader in front than in the rear; color brown.

Wings: Large and well folded: primaries, a dull black, the outer edge slightly pencilled with light brown; secondaries a dull black, the outer web finely pencilled with light brown: covers, dark brown, finely pencilled with light brown.

Tail: Upright, long and full, color a dull black, unevenly pencilled with light brown outside: inside a dull black.

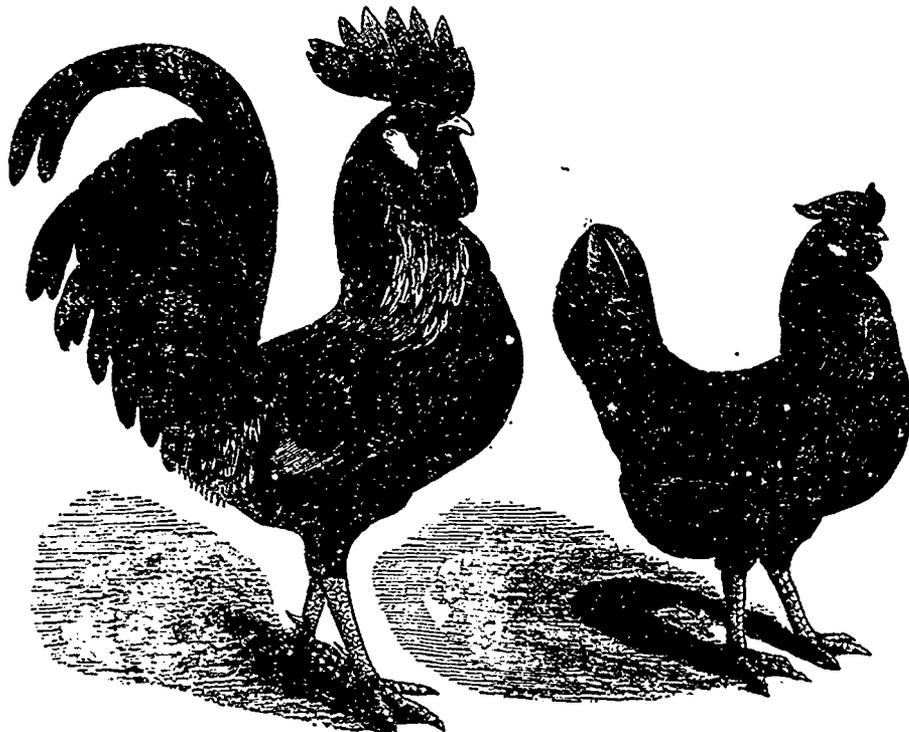
Legs: Thighs, slender, and of medium length: in color ashy-brown:—Shanks, long, and bright yellow in color:—Feet, yellow, with a delicate dark stripe down each toe, the smaller the better.

Carriage: Not so upright as that of the cock.

POINTS IN BROWN LEGHORNS.

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Tail.....	5
Legs.....	5

100



Brown Leghoras.

The Turkey.

This bird is one of the largest of the inhabitants of the poultry yard, and, though it requires more care and attention than most others, it is by no means the least profitable.

There are several varieties of the Turkey species among which the Bronze Turkey is considered valuable for size and flavour.

Turkeys are fond of roving about, and will wander away long distances and support themselves for weeks away from home. They should be allowed as much room as possible when kept in a poultry yard. They will eat all sorts of grain, such as barley, oats, Indian-corn. The impatience of restraint and restlessness of the turkey render it unfit company for fowls in their roosting-places; in fact, the fowlhouse is altogether an improper place for these large birds, they should have open sheds, and high perches, and as much freedom as is consistent with their safety.

Although turkeys will roost, even during the winter months, on trees, they should not be allowed to do so, as their feet are apt to be frozen, from such exposure. We must

remember that the domestic turkey, hardy as it is when adult, is not equal in point of endurance to its wild relative bred in the woods, and accustomed and inured to such a mode of living. Turkeys are fond of wandering about hedgerows and the borders of the fields; they like to frequent turnip-fields, where, besides the leaves of turnips which they relish, they greedily devour the insects and grubs which they find. They should be given a good supply of grain in the morning and, after their daily ramble, another good feed; by doing this, the flock will not only be sure to return home, but will be kept in good condition, and ready at any time to be put on fattening diet.

In the choice of birds for stock, care is requisite. The cock should be vigorous, broad in the breast, clean in the legs, with ample wings and a well developed tail plumage: his eyes should be bright, and the carunculated skin of the neck full and rapid in its changes of color. The hen should be like the cock in plumage: those with white feathers appearing amidst the black should be rejected, her figure should be plump, and her actions lively and animated. The

hen breeds when a year old, or rather in the spring succeeding that in which she herself left the egg, but she is not in her prime until the age of two or three years, and will continue for two or three years more in full constitutional vigor.

The hen turkey is more shy at the times of laying and setting than almost any other kinds of fowl; she should now be watched, and some management is required to induce her to lay in the nest fitted up for her. It should be made of straw and dried leaves, in a retired place, and a nest egg placed in it, to excite her to adopt it.

The cock must not be allowed near her at this time, as he would drive her from the nest and destroy the eggs.

She should be well watched when broody, for, if she is not confined to a yard or pen, she will make a nest for herself in the woods or fields.

The turkey-hen is a steady sitter; nothing will induce her to leave her nest, it is often necessary to remove her to her food, so overpowering is her instinctive affection; she should on no account be rashly disturbed; no one except the person to whom she is accustomed, and from whom she receives her food, should be allowed to go near her, and the eggs should not be meddled with.



On about the twenty-sixth day, the chicks leave the egg and these, like young fowls, do not require food for several hours. It is useless to cram them, as some do, fearing lest they should starve.

When the chicks feel an inclination for food nature directs them how to pick it up. There is no occasion for alarm if for many hours they content themselves with the warmth of their parent, and enjoy her care only.

Yet some food must be provided for them, and this should be of course suited to their nature and appetite, here too let the simplicity of nature be a guide.

Feed them first with boiled eggs, mashed and finely mixed; or curd, with bread crumbs, and the tops of onions, parsley etc. chopped very small, and mixed together, so as to form a loose crumbly paste: oatmeal with a little water, may also be

given. They will require water, but this should be put into a very shallow vessel, so as to insure against the danger of the chicks getting wet. Both the turkey-hen and her chickens should be housed for a few days; they may then, if the weather be fine, be allowed a few hours liberty during the day, but, should a shower threaten, they must be put immediately under shelter. This must be followed up for several weeks until the red appears. By this time they will have grown strong and will know how to care for themselves.

As they grow older meal and grain may be given more freely. They now begin to look for insects, and dust their growing plumage in the sand. At the age of eight or ten weeks the males and females begin to develop their distinctive characteristics. In the young males, the carunculated skin of the neck and throat, and the contractile, horn-like comb on the forehead, assume a marked character. This is a critical period. The system requires a full supply of nutriment, and good housing at night is essential. Some recommend mixing with their food a few grains of Cayenne Pepper or a little hempseed. The distinctive marks which show the sexes being fully established, the young birds, no longer are called "chicks", or "chickens", but are termed "turkey-poults." The time of danger is over, and they become independent, and every day stronger and more hardy.

They should now be fed, as the rest of the flock, with plenty of good food.

With respect to diseases of the turkey, one ounce of prevention is better than a pound of cure. (1)

The best rules are to keep the chicks dry, feed well, encourage their appetites by giving a good variety of food, do not cram or pamper. Having a pride in your stock is the great secret of success in raising domestic poultry.

Pedigree Breeding.

We saw last month that it was one of the most easy and simple things possible to develop and fix in any strain or family of animals, any one single feature or point which might be desired; it was only necessary to go on steadily selecting parents which showed that feature in the greatest perfection possible, and the object was attained. But, unfortunately, breeding valuable stock is by no means such a simple matter. There are not one only, but many points it is desired to produce and to preserve; and the inexperienced breeder usually finds that as he attempts to deal with any one point, he is very apt to deteriorate in some other previously attained.

The chief reason of this is, that the faults as well as the good points of any parent tend to be perpetuated. When, therefore, it is considered that it is almost impossible to tell when all tendency to revert to the features of any particular animal in a pedigree shall for practical purposes be lost—and we say "for practical purposes," because a stray tendency to such reversion may, and has been known to occur after twenty generations—the complication of the problem becomes apparent. At each step in the process of breeding towards some given point, the parents have to be chosen in reference to it; and in each such case those parents introduce tendencies to produce other points which are not wanted. Nay, not only do they introduce tendencies which can be known or surmised, but it will be evident at once that unless their own

(1) I always had great luck (?) with my turkeys; I fed them with nothing but hard boiled eggs for the first three weeks, and never let them out in the morning till the dew was off. The greatest breeder of turkeys in England, at Daxford, Cambridgeshire, (I forget his name) told me that, every year, some of his 18 months old birds weighed over 40 lbs. and were sold to the great London companies, for their Founders-feasts, at £10 a head. A. R. J. F.

pedigree and course of breeding is known for generations back, they must introduce tendencies which, not appearing in themselves, are *not* known. When, therefore, we consider the changeful and capricious manner in which most amateurs—in the first instance at all events—conduct their breeding, we shall cease to wonder at the anomalous nature of the results they often obtain.

Now what is remarkable about these unwished for results is, that they occur in certain points and not in others. When an amateur breeds poultry, there are certain points he *expects* to vary and have trouble with; while with regard to others he expects no such thing. A certain class of faults he anticipates, and puts down chiefly to his own inexperience and want of knowledge; but if his stock was to produce certain other faults, he would consider he had been *swindled* in the stock he commenced with. Going again to our poultry-yard for an illustration, and adopting, merely because we are most familiar with the “crinks and cranks” in that breed, the Dark Brahma as an instance, we will quote a few sentences written a year ago for the *American Poultry Bulletin* on this point:—

“Our young fancier probably fails in breeding his pullets with any satisfactory uniformity of pencilling, for instance, though he has bought expensive birds—perhaps the very best that are to be had. So very far from uniformity are they, that very likely he at length ceases even to expect it, and makes up his mind that his only plan is to go on for ever as he has done, breeding some hundreds in order to select a few good matched pairs. But if anyone were to ask him whether he expects to find among his chickens any with *single combs*, he would at once say, No! With other than yellow legs? No, again, decidedly. Now why is this?

“The answer is as simple and evident as can possibly be. The yellow leg and the pea comb have been regarded each as an absolute *sine qua non* in the Brahma breed, and hence for many generations birds which did not possess them have never been bred from. It was not formerly so even with the comb, for I can remember myself seeing very fine single-combed Brahmas even of the Dark variety, years ago. But for many years now the rule has been imperative, and *not one single link* in the chain of succession has been lost, in breeding from pea-combs only. Hence every generation has added to the stability of this point, till it is now so fixed that hardly a single comb could be found amid hundreds of chickens. That point is sure; and any amateur who bred from any given stock single-combed chickens (more than a stray one, very rarely; for a breed may occasionally ‘sport,’ as it is called, almost anything) would at once infer that he had been imposed upon with impure blood.

“But if our fancier considers carefully his own proceedings, he will find that as regards his general breeding he has not gone upon a similar invariable system. The first year he breeds, while various faults can be easily enough found amongst his various chickens, he finds probably some one fault peculiarly general; it may be want of leg-feather, or streakiness, or light breasts in his pullets—let us suppose that it is want of leg-feather. To correct this, he next season buys, or selects from his own stock, a hooked bird. This time he gets plenty of feather, but if his pencilling was good before, it is very likely worse now. So far next season he selects a bird with beautiful dark but speckled breast, and splendid hackles, and he finds his pencilling somewhat improved (though not so much as he hoped), but very likely his cockerels are now very light on the breast, and ten to one the old fault of want of feather reappears. He thinks now that what he wants is a fine jet-black-breasted cock, and he gets one just to suit, when some of his cockerels are splendid in colour; but perhaps the father was coarse in the comb,

and so all the chickens are, and very probably the pencilling of nearly all his pullets is quite dull and cloudy, those which are not, being nearly white-breasted. I think this is a pretty fair picture of average breeding. Such a plan necessarily fails in producing uniformity, simply because *no* point is bred for long and persistently enough to fix it at all. Each time a fault is attempted to be corrected, some influence upon that fault really is exerted, and, if followed up, the ground might be secured; but very little really is gained for the first year or two, and, by *dropping the next link in the succession*, all or nearly all is lost again.”

We believe many of our readers could testify to the faithfulness of this picture, which was drawn from our own personal experience. Some never get beyond it, but retire from breeding in despair before they have learnt that better things are possible, and how they are to be achieved; but year by year the number of those who attain to some intelligent knowledge of the subject increases, as is proved by the steady improvement in the *average* quality of the specimens at our shows. This uncertainty, then, is not a necessity. It can be overcome; and if, the mere attempt to overcome it gives interest and recreation to so many thousands of our readers, we need not point out the gratification which success is calculated to afford. Hence it is that we have thought well to present, from week to week, a few remarks upon the subject; and having so far considered it chiefly in its negative aspect, though approaching steadily, we hope, towards the point we set before us, we will next endeavour to set forth some of the principles which should, according, to our experience, govern the actual procedure of a breeder.

Fanciers Gazette.

Farming in Germany and England.

Our friend Mr. Zincke, whose holiday, spent among the peasant proprietors of the Limagne, I commented on in a former number of this journal, has been, lately investigating the condition of the farmers in the district around Dresden, extending on the west as far as Leipsic, and on the north as far as Berlin. The following are the facts he has observed, and the conclusions he has arrived at.

The prosperity of the whole country received a sudden expansion by the institution of free-trade in England, about 30 years ago. The effect of the corn laws had been to make English prices higher than those of her near neighbours, and the abolition of those laws, acting on their limited means of supply, raised the price of all agricultural produce.

This led to an increased value of land, and a great appreciation in the rate of wages. Manufactures and trade felt the impulse, as the greater part of the population, being more or less connected with the land, had much more money to spend than they ever had before. New houses, of a superior style of architecture, sprang up in every town, and in Dresden, Leipsic, and Hanover, the rising of continental prices to the English level produced effects that could not be mistaken.

It must be borne in mind that, though Germany was the earliest to take up the profit which arose from this change, the United States, Canada, India, and Australia, were preparing to take a part in the lucrative business of supplying the English market. Time was wanting to enable them to do this. Land had to be cleared; implements had to be invented; and means of transport to be created. All this has been done, and now American wheat can be sold, with a fair profit, on the London market at 5s. a bushel.

Now we all know that at the present time, agriculture in England is in a most depressed condition. Individually, I do not believe it is in so hopeless a state as people generally

suppose, as I have seen too many crises to be easily terrified, and I remember well that in 1852 I bought my seed wheat at 36s. a quarter and sold the produce for 84s. in 1853: cheese too fell as low as 38 s. per owt, about what it has been this summer. No, two or three good harvests and a moderate rise in prices will set the English farmer on his legs again; but it is worth our while, here in Canada, to see how the German agriculturist is enabled to contend with the present low prices of his produce, particularly as the conditions of his employment and the tenure of his farm resemble, in many points, those which obtain in our own land.

Most of these German farms are cultivated by their owners, and contain about 50 acres. There are about one million land-owners in Prussia, and they and their families do the greater part of the work; so very little hired labour is employed—just like ourselves.

The land is kept perfectly clean, there are no rough borders round the fields acting as nurseries of weeds, and harbour for vermin. The heart of the owner is in his land, and every weed that appears upon the land is felt to be growing at the expense of the owner and his family—not at all like us. The farmer has no rent to pay. This saves him from the entanglement and anxiety of having to borrow money in times of depression; a thing he would find it difficult to do, as advances are not easily come by in Germany. But the main point upon which Mr. Zincke insists as the cause of the prosperity of the German agriculturist is, that he, as well as his like all over Europe, compels his land to produce an infinite variety of marketable commodities. Enormous crops of potatoes, fruit of all kinds, (the very hedgerows along the roads are planted with fruit-trees), vegetables, poultry, sugar-beets, besides milk and its products, with flax, hemp, &c, go to make up the source whence the industrious Prussian fills his purse. Here, absolutely no space is wasted. "In places where the surface is pure sand and no agricultural plant could live, I have everywhere found plantations of Scotch fir and of birch, the only trees that could maintain themselves in such starving barrenness. It was necessary at first to set the young trees in deep trenches that they might not be blown out of the ground, and that the rain might be conducted to their roots. In all the plantations of this kind I saw, I noticed that every individual tree was carefully looked after, and that no briars or nettles or under growths of any kind were allowed to spring up and so rob the plantation" I would that this could be imitated here, were it only for the shelter these belts of wood afford against our cutting winds.

So far Mr. Zincke on the small German farms; now let us turn to quite another thing, a pure grain farm in the eastern part of England.

During the last five years, including four deficient harvests, Mr. Prout, of Blount's farm, has continued a system of cultivation which, although tried on a small scale, i.e. in half acre plots, at Rothamsted, has never been practised on so large an extent of land before. At Rothamsted it is all experiment, here it is pure business. At Blount's farm there is no dungused, no fallows or green crops, grain succeeds grain fed solely on artificial manure, and this on an estate of 450 acres.

Four years, 1862 to 1865, were occupied in making permanent improvements; drains and roads had to be formed, hedgerows and ditches cleared away, or filled up, so that the land could be adapted to steam-ploughing, each of the nine fields into which the farm is now divided, being about 50 acres. It was very foul and poor; geologically speaking it lies on the *London Clay*, above the *Chalk*, and stiff, dirty soil it is, for I know the country well, and have farmed lots of it. The rent of the neighbourhood used to be 12s an acre, chief crops, oats, clover, wheat and beans, with long

summer fallow every five years. The discovery of the *Chevalier barley* sent the rent up to 20s an acre, as it was as easy to grow a fine malting sample of that barley, often 56 to 60 bushels an acre, as a like quantity of oats, the farming of the neighbourhood being very good, and the expenditure on seeding stuffs liberal.

From 1866 to 1879, 14 years, six-sevenths of the farm have been under grain, and the remaining one-seventh in clover or saintfoin hay; the crops, *grain, straw, and hay*, being sold by auction, and carried off the land. Mr. Prout gave, £16,000 for the farm, so allowing 3½ per cent on that sum to represent rent, it will amount annually to £565, landlord's improvements £4,500 or at 5 0/10 £250 a year, and tenant's improvements, or (as Mr. Prout is his own landlord) improvements a tenant would be expected to make, £2,700 a 5 0/10 £135. Tithe, rates, taxes, &c., £225.

To these yearly charges must be added for artificial manures £1,031, wear and tear of horses, steam-plough &c., auction expenses and labour, what makes a total outlay of £3,703, or about £8.4 an acre per annum. The gross returns for produce sold during these 14 years were, on an average £4,308, equal to about £9.11 an acre, being a net profit of £605 a year, or 16 per cent upon the annual outlay.

And it is pleasant to find that there is no diminution in the yield; e. g. the sales for 66-67 were £3,350 and £2,423 respectively; while those of 76-77, 78, were £4,548, £4,468, £4,450, and £4,526; almost incredibly equal! And it must be remembered that these last years represent seasons of bad yield all over England.

So well has the whole farm been worked and cleaned that only one heavy ploughing is now necessary for each crop; the labour bill has, therefore, been lessened, and in spite of the bad harvests, and one year of very low prices, the tenant's profit for the years 74 to 78 has averaged £914, or 25 0/10 on the outlay.

This is positively marvellous, for, as I well know, he is a lucky man who, as a general rule, even in prosperous times, can get a return of 10 0/10 on his capital invested in farming.

From the evidence of an eye-witness it would seem that this year's (1879) crops are by no means inferior to their predecessors. "Homefield" says a writer in the *Times*, is 60 acres in extent, and carries the heaviest crop of wheat I have seen anywhere this year. Were this an ordinary year I should put it at 48 bushels an acre; but practical farmers from Kent, who were viewing the piece at the same time as myself, put it at 44 bushels. The oats are heavy, and the barley, though thin here and there, must go over 40 bushels; quality, fair, malting barley. Considering that Mr. Prout, like other farmers, was prevented (by the rain) from horse-hoeing, and accomplished hand-hoeing and weeding with great difficulty and partial success, it is remarkable that weeds only show themselves in a few places, a result due to many years practice of clean farming. The saintfoin gave a heavy cut of well-got hay, which is now in stack."

We must now look into the causes that have produced these results; and first we see that perfect drainage and subsoiling have entirely changed the mechanical texture of the land.

The mean temperature is heightened by the quantity of water which has to be got rid of by evaporation being less, and the manurial constituents floating in the air find easier access to the soil. The poaching of the clay by the horses' feet is avoided by the use of the steam-plough, and the land is preserved in that friable state so conducive to the facile germination of the seed, and to the admixture and incorporation of the manures with it. The engine and implements have been in use on the farm for 18 years.—Fowler's make—a new fire-box and tubes have been put in, and the engine will probably last a dozen years longer.

Depending, as Mr. Prout does, on artificial manures for his crops, he is very particular in his purchases. He buys his guano, nitrate of soda, and bones, of eminent manufacturers or merchants, and always subject to analysis by Dr. Voelker.

His favourite mixture, which he prepares himself and drills in with the seed, consists of ground bones wetted and then turned up with half their weight of mineral superphosphate. The heap heats, and, in three months time, the free acid of the superphosphate is found to have softened the bones.

How long will this last? A question not to be answered; but one thing is certain, there are no signs of impoverishment to be seen on this calcareous clay. Take the *Hornfield*, mentioned above: the magnificent wheat crop now standing on it has had no manure; coming after clover (mown twice for hay) which was highly manured, it could do without, as the mass of clover roots afforded the wheat plant sufficient food. This field, in the 9 years, 70-79 has grown five wheat crops, one barley crop, 3 oat crops, and two cuts of clover (£14 5 per acre) and the average money value, not computed, recollect, but actually received from sale by auction of the produce, was £10.7.

"Brook Field" again, 16 acres, has been pretty well scoured, c. g.

		£	s.
— 73	Wheat	value	9 . 14
— 74	Wheat	"	10
— 75	Barley	"	8 . 17
— 76	Barley	"	8 . 13
— 77	Barley	"	8 . 6
— 78	Wheat	"	8 . 12
— 79	Wheat	"	not yet known, but

laid at 44 bushels by competent judges, must, at present prices, equal at least £16, including the straw at £2 a ton; making the average of the seven years just £10 an acre!

There has been no fallow on the farm for the last 10 years; if the land should seem foul after harvest, from the great rainfall of this summer, the system will not be altered, as an autumn cleaning of the stubble will do all that is necessary for the destruction of weeds.

From a general view of this statement I think the following deduction may be safely made; wherever a tract of heavy clay land is to be found suited to the growth of grain and at a distance from town manure, the most desirable plan to follow would be, first to drain and subsoil the land thoroughly, to clean it by summer fallows, or root crops and Indian-corn, and to keep it in good condition for the growth of grain by the annual expenditure of a moderate sum in artificial manures. For, observe, Mr. Prout's favourite top-dressing can be, if that is any object, entirely procured in this country. Bones, by the hundreds of tons, are exported, which might be utilised by ourselves, and we, already, are in trouble how to get rid of our abundant mineral phosphates. Of course the high duty on foreign sulphuric acid will render the manufacture of superphosphate more expensive, but there is a plentiful supply of *pyrites* to be had to convert into acid.

The deep ploughing again will be a difficulty; but, where the farms lie side by side on a level, there the steam-plough, sooner or later, must be employed, and, in the mean time, there is no reason why the teams of two or more farmers should not work together in the *Tweeddale* plough, a cut of which we gave in our last number; and, by mutual accommodation, a great number of acres may be deeply broken up, the "hard-pan" smashed, and the hitherto impervious subsoil rendered permeable to the fertilising matters of the super-ambient air.

ARTHUR R. JENNER FUST.

FALLOWS.

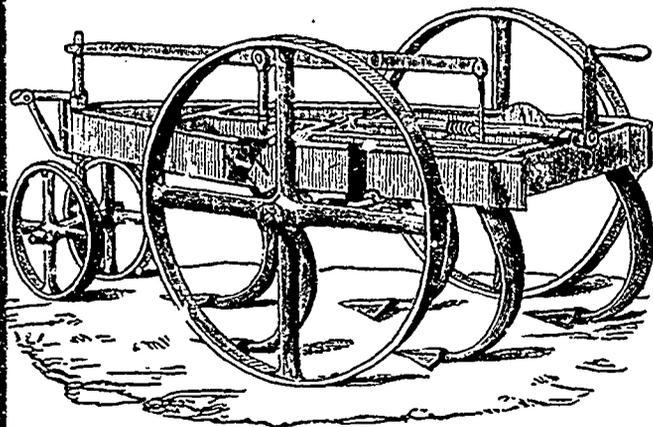
We left off last month, (see p. 84 of Journal for October) with the field which we intended to treat nicely laid up, the open furrows free from bits of earth, and the cross furrows both numerous and thoughtfully made. The frosts, snows, and rains of winter have worked their will with it, they have penetrated into its very heart, and now the time of the singing birds (would we had more of them) is come, and the voice of the turtle (if there were any) would be heard in our land.

The first virtue that the farmer has an opportunity of exercising at this season of the year is—patience. Let nothing tempt him to set a foot on the land till it is thoroughly dry; no time will be saved by being in a hurry, but, on the contrary more than one additional act of tillage may be rendered necessary by meddling with the fallow before it is in a state to deal with. The repetition of this advice will seem to many an old farmer a twice told tale; but every year I see the same mistake repeated, and horses poaching about the furrows when they had far better be at rest in their stables.

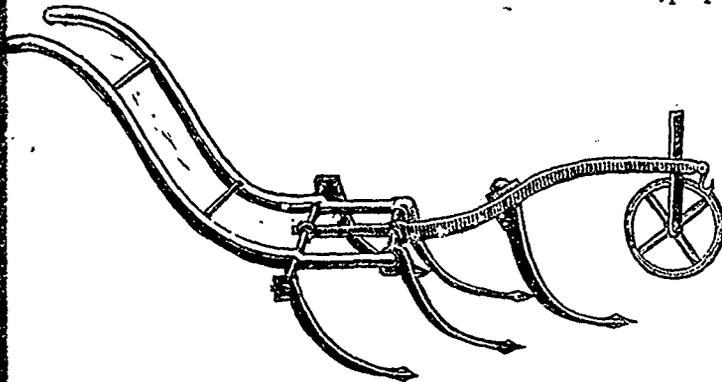
The first work, on the opening of spring, that should be done to the fallow, depends upon the way in which it was ploughed in the fall. If the ordinary furrow of 7 inches is all that the land has received, the ploughing now should be across the former lay of the ridges. To do this well, that is to plough the furrow steadily through all its depth, it will be found necessary to hold rather wide, and to let the plough in at least an inch below the autumn furrow. On heavy clays, and it is only on these that summer fallowing will be found necessary, I cannot recommend that the ridges should be made of the great width which is often observable. A sudden rain-storm would make quagmires of many a spot were this system of ploughing followed on our flat lands. I should prefer making the ridges not more than 12 feet wide, and, as soon as sufficient space is cleared, I should draw the water-furrows out as carefully as after a seed furrow—you cannot farm clay lands without trouble. The cross-ploughing has two objects in view—first, to bury the seed-sprung weeds; second, to subdivide the land into small pieces, thereby rendering the subsequent operations easier of execution. I fear that too many of our French-Canadian farms have never known the benefit of a cross furrow, as I see the old ridges turned back one spring, and forward the next, the open furrows never being mixed with the better land of the *crowns*, but merely covered and uncovered as their turn comes. Cross ploughing has one defect; where root weeds abound, it cuts them into smaller pieces, and as each piece of couch grass (*chicendeut*), thistle, or dock, has a tendency to grow, I confess I prefer extracting them by means of the *scarifier* or *grubber*. Coleman's *drag-harrow* I hold to be, from its simplicity and effectiveness the best of its class; and I regret I cannot present my readers with an engraving of it. Tennant's *grubber*, however, of which I subjoin a sketch, is a useful implement, but fails in as much as it does not offer so easy a mode of raising the tines as Coleman's does. The *swan-neck* tine is very useful where the land is foul with grass, as in the ordinary grubbers in use in this country the driver is everlastingly at work cleaning the weeds from the tines, the horses being at a standstill, while, with the swan-neck tine, the grass &c., rides, or is pushed, gradually up over the supporting bar and no time is lost by man or horse.

If the autumn furrow was the deep one I proposed in my last, with the *Tweeddale*, or any other deep going plough, the cross-furrow may be omitted, and the *scarifier*, or *grubber*, at once employed across the autumn ploughed ridges; and for this reason—the deep, *shattering* work of the ploughing will have sufficiently mixed and comminuted the soil, enabling the farmer to proceed at once to one of the chief objects of

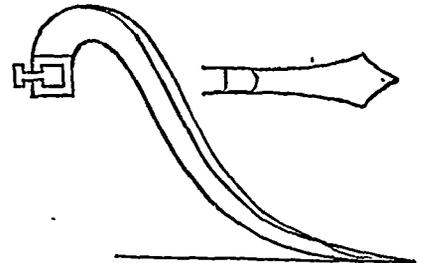
the summer fallow, viz., the extirpation of weeds. And thus, although the deep furrow took more time and horse-power in the fall, still this extra expense will be fully repaid in the spring by saving one operation in the busiest time of the year. After this no further ploughing should be required. The grubber and harrow ought to be kept at work, and, if the land



Ducie Drag.



Tennant's grubber.



Goose-Neck Tine and chisel point of Tennant's grubber.

is cloddy, the roller may be occasionally used to break the lumps, but only when the soil is perfectly dry; for I find that rolling heavy land, when cloddy, has generally a tendency to embed the clods in the ground, rather than to break them into smaller pieces.

Nothing is gained by pulverising the land into a state of meal—on the contrary, land in that condition is very difficult to clean, as it runs together like mortar after a heavy shower. The great objects of summer fallowing, as I remarked before, are to expose fresh and fresh surfaces to the air, that its mineral constituents may be, so to speak, cooked into plant-food, while easy modes of entrance are afforded to the ever present ammonia, to expose the root-weeds to the full desiccating power of the sun, and to allow newly disinterred seeds to sprout to be subsequently destroyed by the alternate action of the different implements employed for the purpose.

If the land abound in grass, I should think twice before I undertook to cart it off the field for the formation of a compost. I believe nothing is more thoroughly unremunerative to the farmer than compost making. The amount of manual and horse labour (if computed, as they might easily be if farm accounts were carefully kept), expended on even a small compost-heap, would, if laid out on bones at present prices, go far to redeem many an acre from sterility. The best plan to adopt for the purpose of getting rid of grass, root weeds, &c., is, when they

are as dry as they can be made, to collect them in rows with the horse-rake (I speak of what is a common operation in my part of the world), throw them up in heaps, and burn them with as much of the earth as can be managed. The mechanical effects of burnt clay are yet to be proved in this country on a large scale. I have tried it on a small scale, and prefer it infinitely to the usual stable manure. In Gloucestershire, immediately after harvest, the whole country is filled with smoke from what is called *stiffe-burning*. The wheat stubble is left longish on purpose, and with it the clay is charred, not burned, at the rate of fifty cartloads an acre, which are carefully spread. Barley is sown in spring, and the effects of the ashes are quite equal to a dressing of dung. The paring is done with a pair of horses and a *broad-share* at the rate of three acres a day—about 1½ inches deep. The clay round St. Hyacinthe burus well, and it would be worth any one's while to give the plan a fair trial. And trials of this sort must be made, unless we are going to sit down satisfied with our present average crop of 8½ bushels of wheat to the acre. Nothing is easier than for a prejudiced bystander to say of one who perseveringly brings forwards what he has seen of the improved practice of other lands, that he is not a *practical man*, not, observe, that the speaker has ever seen the man spoken of, or even read his writings, but he does not happen to be one of the objector's countrymen, or some other clanish reason acts on his mind and prevents him from seeing, that to

condemn on supposition without hearing is, particularly if the judge hold an influential position, rather unfair towards those who might otherwise be inclined to learn. I really thought, until lately, that the old proverb: "He who by the plough would thrive himself must either hold or drive," had vanished into the limbo of defunct sayings. One thing I know—in the whole of England you will not find one farmer who cultivates even so small an occupation as 250 acres who either *holds* or *drives*, or does any other sort of manual work on his land; but they would think it rather curious if they were told that they were not practical men, conceiving, as they do, that the wiser proverb is that "One head is worth two pairs of hands."

But to return: when the land has been thoroughly cleaned, which, in this scorching climate, it should be by the middle of July, it would be well to sow on the fallow some green crop for the purpose of ploughing it in. *Mustard* does well, but the seed is absurdly dear in Canada, and amounts to a good sum per acre, as 20 lbs. are required. *Rape*, on the other hand is cheap—8 lbs. an acre is enough, price, 12 cts. a pond—but it is more difficult to cover; still, with a chain and weight attached to the bridle of the plough, the difficulty may be overcome, but it must not be allowed to grow too old before it is interred. The field should, previous to sowing either of these green crops, be ploughed into ridges of the regular width, so that on reversing them, when ploughing the rape

on mustard in, they may retain the proper shape for their winter's repose. It should be observed that *white* mustard alone should be sown. The *black* sort can hardly ever be exterminated, for which reason most landlords in England forbid its growth. I have known a vicious tenant anxious to spite the proprietor of his farm, where no such covenant existed, sow the whole of his out going shift with this troublesome crop—profitable enough to him, but the farm lay without a tenant for some years afterwards. In my next I hope to notice the different root crops that are grown here on the fallow shift, and to say a few words on the *bastard*, or *ray* fallow.

ARTHUR R. JENNER FUST.

Feeding the hay crop.

The following advice taken from the *American Cultivator*, applies to Quebec as well as to the New England states.

Then, better than this is the feeding of the hay crop, or a large portion of it at least, on the home farms of New England. Not perhaps the making of beef, but the manufacture of dairy products of the first class, and the keeping of large numbers of sheep for mutton as the prime, and wool as the secondary object. Taking Maine as a representative State of eastern New England, for it has special advantages for sheep husbandry, if it had today as many sheep per acre of improved land as France it would have more than four millions instead of 434,000; if as many as England, it would have very nearly ten millions. And though New England may not compete with the West in the matter of beef production, it should be supreme in that of mutton growing, for the home market first, and then for the foreign market. And there are possibilities in butter and cheese making, the production of apples for exportation (for our apples are better flavored and bear shipment better than the

apples of the West) and in sheep husbandry, for the redemption of New England agriculture.

Once more, is it too much to expect for the beet-sugar industry that it will be the salvation of the agriculture of old New England? We think not. We have no purpose now to give statistics on this matter. It has been stated over and over again—the enormous quantities of sugar imported into our country, for which gold has to be paid. In New England are found the same general conditions for growing the sugar beets as are found in North Germany; the beets grown here yield richly of sugar, and there can be no question of the success of this industry, provided beets are grown. A new factory for the manufacture of beet sugar has been built at Portland this season, provided with the most approved machinery from Germany, and it is to be started in the present week, under the most encouraging prospects. From every part of Maine the reports from the beet fields indicate that the yield will be an average of fully twenty tons to the acre. In no feature can this enterprise prove a failure, provided sufficient beets are grown; and the growing cannot prove a failure, provided farmers make a point of consuming the pulp by feeding it to farm animals. Men have been found with sufficient faith in this business to build the factory, if farmers will now grow the beets this industry is sure to extend and embrace other sections of New England and the East, until our agriculture is once more put upon a solid basis, and our own country becomes independent of foreign made sugar. And just as the West is coming to the front as the producer of wheat and beef for the world, leaving New England agriculture sadly at a disadvantage in comparison, the beet sugar industry appears as the size of a man's hand in the eastern horizon, and it is to increase (whatever temporary defeats await it) until it reaches gigantic proportions, and saves New England agriculture to our country.

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