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THE ILLUSTRATED JOURNAL OF AGRICULTURE

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The Dominion Exhibition of 1880.

Whether the ludicrous caricature of the four towns, Montreal, Toronto, Hamilton and London, as depicted in *The Critic*, approaches the truth or not, I cannot say. Probably our exposition was not very much in advance of the others, but every body agrees in saying that it was a credit to the Province; and, barring the usual squabbling at some of the decisions of the judges, it passed over in a pleasant and satisfactory fashion. There seems to be a good deal of trouble in securing fit persons to act as judges of the live stock classes: for example; take the Kerrys—how many of the judges had ever seen a Kerry? Jerseys, too, are not common animals, and there are many peculiar little points about them which, trifling as they may seem, would become important in a close contest. A gentleman was expected from Vermont whose knowledge of the Channel Island breeds would have been of great service to the other two judges; but he never made his appearance, considering, probably, that the allowance, \$5, would hardly pay his expenses, and, in consequence, the whole of Tuesday was wasted. On Wednesday, the Committee decided to entrust the double set of groups, Devons, Galloways, Jerseys, Grades, Fat Cattle, Working Oxen and Kerrys, to the judgment of one set of men, two of whom had travelled 120 miles, and, owing to Tuesday's muddle, had to spend two days in Montreal instead of one. The third, living in Montreal, received *nothing* for his two days' attendance: \$5, a piece, would hardly pay the other two for their time and trouble.

Some means, too, ought to be devised to prevent the respective ownership of the cattle from being so very patent

before the decisions are arrived at. All bias ought to be as much as possible eliminated, as a correct judgment in a full ring is not, in any point of view, easy, and it is rendered still more difficult by the observations of the proprietors of the animals under inspection. Could not the Committee find the halters? the patterns serve, at present, to point out the owners.

The judges, or the steward of the ring, should be furnished with prize cards, to be delivered to the leaders of the successful cattle immediately after the decision.

I regret to say that in many cases the prize-cards were carried off by the visitors before the end of the Exhibition; in fact, very few were left by Friday morning.

Durhams.—In the *Old Bull* class the first prize went, *nem. con.*, to *Royal Lind*, an Irish-bred bull with plenty of style, but a little flat-sided, and the back not quite so level as might be wished; he is by *Duke of Clarence 3rd*, and, though lighter in colour than is approved of here, is well worthy of his Bates ancestry. There was strange to say very little competition in the Shorthorn group.—Mr. Cochrane carried off 7 first prizes, a second and a third, in the ten classes, and, had it not been for his lot, the show would have been but a poor one.

For the two year old bull class there was a long contest—the judges, at last, decided in favour of Mr. Brims of Athelstane, Mr. Browning, Longueuil, having second honours. It is only fair to say that I heard two of the most skilled Shorthorn men in the Province say that the Longueuil animal was the handsomest beast in the yard! My own opinion of him may be seen in the August number of the Journal, and he is much improved since I saw him in June. His colour (rich roan) is perfect, his walk majestic, and his general appearance taking in the extreme. None of the beasts, in this group were too fat, and this should have made the judges' work easy. I hope this fashion of presenting these cattle will be continued, and extend to the other breeds, some of which were extravagantly trained.

Herefords.—No competition.—Mr. Hickson took all the four prizes. His 4 year old bull was a fair exponent of the breed, but grossly fat.

Galloways.—Here again Mr. Hickson swept the board. We shall see next year, I hope, specimens of the other polled Scotch breed, the Angus, as Mr. Whitfield has a small herd in quarantine. They are both of them emphatically beef cattle, and more fit for extensive pastures than for our enclosed country. The old Galloway bull was a picture of beef. He brought back to my mind reminiscences of many a cold Monday morning at old Smithfield market, where steers and heifers of this breed were to be seen in ring-droves of 30 and 40. There is no waste about them, and all the meat is atop. Though Scotch-bred, they are not generally Scotch-fed, but walk down from their home in the Southern counties through Yorkshire, where many pass their third winter, to be finished in Norfolk and the other Eastern counties on turnips, cake, and corn. I did not see M. Lépro-

hon's entries, and I do not think they were present. Any how, the *official list* of entries is full of errors, and utterly useless as a book of reference to compare with the prize list: for instance—in the Authorized Official list, under the head, *Durhams, 4 year old bulls*, there is no entry of Mr. Cochran's 2nd prize animal, in the Galloways, Mr. Hickson's 1st prize 4 year old bull is not mentioned at all, et sic de ceteris; all of which makes a correct report very difficult, and I hope will account for any blunders I may commit in giving an account of those groups of which I was not one of the judges.

Devons.—Is it generally known that there are three distinct kinds of red horned cattle in England, the Sussex, the South Devon, and the North Devon? The difference between the two Devon tribes was, curiously enough, perfectly exemplified in the entries of Messrs. Whitfield and Wotherspoon, the one small and bloodlike, and the other of a much stronger and coarser type. On the almost barren moors of N. Devon and Cornwall, these thorough bred looking beasts hold their own against the storms from the Bristol Channel and the Atlantic gales; while those are more at home in the sunny combs (Cwm in Welsh) of S. Devon and Somersetshire.

Of the bulls of this breed, Mr. Whitfield's 2 year old is a perfect model, in form, style, and colour. His shoulder is quite worthy of study, and the head and horn, loin and quarters, are rarely equalled. He comes from the stock of Mr. Farthing, Nether Stowey, Devonshire, whose cattle have been prominent winners at the English Royal shows ever since they were established. Mr. Whitfield's bull calf is, to all appearance, likely to be as good as his sire when he arrives at maturity. The whole class deserved commendation. Mr. Wotherspoon would find it answer his purpose to cross his stock with Mr. Whitfield's—it would add style to his, and produce a more compact animal. Mr. Farthing's herd had been for a number of years bred strictly in line, so, no doubt, the bulls have as great pre-potency as the Booth or Bates Shorthorns.

A very fine collection of *Jerseys*. The first prize for old bulls went to Rougemont for an immense beast, good all over in colour, quality and form. This and the first prize 2 year old Devon would do credit to any show-yard. Mr. Whitfield's 2 year old will in time make a good bull. It was curious to see how like a Devon he was; in the distance, as he was coming up to the ring, I really fancied his leader has made a mistake, and was bringing out a yearling of the latter breed. There is no doubt that the origin of both races is the same.

The Jersey cows gave us more trouble than all the rest of the groups put together. They were very good, and the whole class ought to have been *highly commended*, but this practice, universal in England, seems unknown here. All three of us fixed at once on Mr. Browning's cow as worthy of the first prize, a beautifully shaped udder, the skin of it soft and velvety, and the teats full and squarely placed; head placid in expression, with a sad and gentle eye, the horns creamy, and the tail fine and not set on too high. Altogether a very sweet animal indeed. I need not advise her owner to secure at the earliest opportunity an alliance with the Rougemont aged bull. The two together ought to produce something marvellous. (1)

Mr. Stephens, St. Lambert, had several good cows and heifers; good, useful cattle, and a credit to their breeder. It is a pity the list for Jersey herds did not fill, for, as a whole, M. Stephens' lot was better than individually, and the matching of colour would have been very taking to the judges' eyes—the first prize

(1) Mr. Browning's cow, comes from Mr. Stephens' herd, and does the buyer's judgment great honour.

yearling heifer is very promising, and ought to be in a forward position next year; young ones of this breed are not generally handsome in their first year, but they improve wonderfully afterwards. Most of the cows that came under our notice showed the effects of the dry summer and of the large quantities of milk they had been giving. They were all in their natural condition, and, as I said before, were very hard to classify, so I was delighted to find that no one of the men in charge with whom I compared notes on Friday had a word to say against the decisions.

In the two year old heifer class, the three prize animals were exceptionally good, but we had no difficulty in giving the two first to Mr. Whitfield and Mr. Stephens; Mr. Browning's heifer, a marvellously strong, well developed animal, being rather coarse in the tail. I cannot agree with the gentleman in question in his practice of not letting his heifers calve till 3 years old, they are not to be beef producers but butter-furnishers, and one year's loss is of importance. This class, again, ought to have been *commended*.

In the class of yearlings, I rather disagreed with my brother judges as to giving a prize to the third.

One or two of the group had *white tongues*! All *Jerseys'* tongues ought to be *black*; this defect would have been fatal in a close contest. I may as well mention that my friend Mr. John McClary, Compton, who is known as one of the best judges of cattle in the Townships, holds that the *Escutcheon* test is of value as indicating persistence in milking; Mr. James Drummond, on the other hand, holds that persistence in milking is produced by education, that is, if a heifer, after the first calving, is milked for a long time, she will get into the habit of giving milk for a long time.

Kerry.—Some years ago a friend of mine was looking on at a group of these cattle in an English show-yard. Happening to speculate audibly on the quality and quantity of grass the little creatures were in the habit of finding in their pastures, a bystander observed: "grass, Sir, they never taste such a thing, they eat heather."

The statement was nearly literally true. The Kerry mountains are singularly barren, and nothing but the native race of cattle, goats, and black-faced sheep, could pick up a living there. *En revanche*, the climate is wonderfully mild, the Arbutus thrives there better than on the sunny shores of Calabria, and the myrtle loves the soil. The hills are all aglow with the rich purple of the heather, and attract every summer crowds of wanderers sated with the business and pleasures of great cities. Two hundred years ago, the country was a desert. The inhabitants, long reputed the fiercest and most ungovernable of the aboriginal population, had been driven to the wildest recesses of the glens and mountains, taking with them the hardy cattle which formed their only riches. But not long after the Restoration, Sir William Petty, an ancestor of the present Marquis of Lansdowne, determined to form an English settlement in this rough district. There was plenty of fish; seals supplied oil for the lamp during the long winter nights; but the most important product of the country were the forests of Oak and Arbutus, which Petty used to smelt the iron ores sent there from Kent and Sussex, where the woods were nearly exhausted. *Kenmare*, as the new settlement was called, soon became the seat of a thriving trade, the wolves, which hitherto had freely roamed the country, were destroyed, and Celtic rapine and improvidence gave way to Saxon industry and thrift. The English loved beef, even then. No doubt, they availed themselves freely of the native herds, as they produced, like all semi-wild cattle, highly flavoured meat; and, in process of time, the race underwent that improvement which superior intelligence invariably impresses on everything which comes under its influence.

The amelioration of this native race has evidently been brought about by selection, and not by crossing. It is something marvellous to one who saw these cattle in their homes 30 or 40 years ago, to look at such an animal as Mr. Whitfield's bull—1st. prize 4 year old. Measuring not more than 38 inches high at the shoulder, as well as I could judge without a standard, he shows many of the points of a good Devon. His shoulder is a little upright, and the loin rather slopes off towards the *hooks* or hips; but the bone is fine. The touch (handling or quality) good, and the carriage ludicrously grand for so small a beast. In fact he looked as if were giving himself airs, and imitating the solemn march of a Shorthorn. The cows were not nearly so full of style, though gentle, familiar looking-creatures. Their teats seemed to me to be placed too near together. The udders, however, were well shaped, the whole form that of a true milch cow, and, judging from the colour of the skin, I should say that the milk was rich in butter.

At the Royal Show at Kilburn one of the prize goats was as high as the 1st prize Kerry bull! I should judge that at three years old the steers and heifers, well fed, would weigh from 400 to 450 pounds, and the quality of meat is superior to any other, except, perhaps, the Scotch Shetlanders, and they are smaller still, having never been improved.

We recommended the Rougemont breed of Kerrys for an extra prize, there being no class, as yet, established for them. On the poorer soils of the French country they would pick up a road-side living better than any *well bred* stock I have yet seen, and when slaughtered they would bring the highest price in the market at Montreal, or in any of the towns where people are judges enough to pay for quality. I should not like to play tricks with the bulls, for they seem ferocious little creatures, and roar threateningly; but, that, perhaps is only from the audacity always inherent in diminutive animals, human as well as bovine, and means nothing.

Grades, or cross-bred cattle. Here arose our only real trouble. We had no guide to tell us whether the group was to be judged as to the milk producing qualities, as to the suitability for beef, or for general appearance.

Referring to the Committee, through the Steward of the ring, we were told that we must act on our own responsibility; which was decisive, if not pleasant. As it was, we gave the 1st prize to a wonderful cow, bred by Mr. Cochrane, by his Royal Commander out of a Highland, or Kyloe, cow, and resembling her dam in head, hide, hair, and horns, as much as she resembled her sire in touch and build. I should like to see the, say, fifth descendant of this cow by pure Shorthorns—it would, I take it, be very like a *Duke* or *Duchess*.

The other cows were useful farmer's stock, but small and with no style or quality. One fair cow we rejected altogether, as being a pure Ayrshire, and consequently having no business in the group. I can understand a class of *milch* cows, but a class of *grades* seems to me to be an absurdity, unless the points for guidance are distinctly set before the judges. In the 2 year old class, Mr. Nesbitt's 1st prize heifer was a pretty little thing, but too small to be of much use. It narrowly escaped dis-qualification on account of age, the first ring on the horn being developed. However, on inspecting its mouth I found the teeth pretty right, so it was allowed to compete; but I think it a doubtful case after all, and should have liked a Vet.'s opinion. We had too much on our hands to spare time to fetch one.

I don't know much about *Ayrshires*—I wish I did; so I suppose I am hardly justified in saying that some of the decisions surprised me. One herd, that I in my ignorance supposed to be the best in the Island of Montreal, received scarcely any notice, and the general run of the breed seemed hardly as good as I have seen elsewhere. I fancy, from what

I heard, that they are going out of favour—Mr. Cochrane told me that he bought a *first rate* cow at Mr. Gibb's sale, at Compton, for \$32, and that they were no longer popular.

As for the *fat cattle*, Mr. Tozer's ox and heifer were in luck, there being no competition, for they were as coarse as well could be. Mr. Cochrane's prize cow (Shorthorn) was a miracle of fatness, and the meat was all on the top; but I, fond of fat as I am, should not much care to eat it.

The *working oxen* prize fell, deservedly, to Mr. Cochrane's yoke: fine upstanding animals, with first rate bone and sinew. Are these classes likely to be continued? I don't think, considering there were only two exhibitors and eight animals for 5 prizes, they will do much good.

Nothing in the sheep classes generally calls for much remark, until we come to the short woolled breeds. The Southdowns were villainous little things: bad in wool, in form, and in head. They looked more like the *tegs* on their return from the heavy lands of the Weald of Sussex just before shearing, and suffered from contrast with the two magnificent pens of Shropshire-downs exhibited by Mr. Cochrane. Hampshire-downs were not represented (I don't know of any in Canada), but the Shropshires were a host in themselves. One pen, bred by the Duke of Portland, took the first prize at Nottingham, and the second at the Yorkshire Agricultural show. I was (maliciously) pleased to see several white hairs in the faces of one or two of the ewes, as my Hampshire friends would be ashamed to show any thing of the sort until old age changed their natural colour. Joking apart, these sheep were superb specimens. Their necks, loins, and legs of mutton, were splendid, and oh! the shearing was much more artistic than the work of most Montreal hair dressers: whoever judged the two pens of ewes must have made good use of his hand, for, notably, every point in the form was brought out to the greatest advantage, and all weak places concealed, by the infinite dexterity of the Duke's shepherd; and it was not till one handled them that their enormously good backs could be believed in.

I have seen better *Berkshire pigs*: still, Mr. Dawes' lot are good enough for anything. There was a very mongrel look about some of the others, almost amounting to a dis-qualification.

As for the *large and small white breeds* and *Essex pigs*, Mr. Featherston, of Credit, Ont., on whose name I won't make a pun, carried off 31 prizes, of which all but a few were for a whole class. If all the Ontario stock are as good as the Credit pigs, we Quebecois may rejoice they were not more largely represented at Mile End, as very few prizes would have remained in the Province. Too many prizes for pigs—What on earth can be gained by giving three to boars over two years old, or to sows and boars under six months.

It seems there were 96 prizes offered, and only 92 awarded, for want of competition. Forty prizes of double the value would be, *me judice*, quite enough, and more attractive to a really enterprising set of men.

The *implements* were much the same as in 1876: some improvements in mowers and reapers, and no two-furrow ploughs, which are not much in vogue anywhere just now, as far as I hear. A really effective weapon for scarifying stubbles is still wanted—weight, as well as strength, is needed to keep it steady in its work, and no two-horse affair can be efficient. The ordinary grubber used here is quite unfit for the purpose. I rather like a gang-plough in Mr. Evans' collection, but the harrows in general are no better than those used before Howard, Ransome, and the others brought out their wonderful improvements in the tines and bulls. None of the modern ploughs with the two-wheeled arrangement, rendering the farmer, on land without stones; perfectly independent of skilled ploughmen. Horseshoes good, for rough land, but imperfect for old, well-tilled soils.

In the group of *Agricultural productions*, the wheat was very creditable as a whole, and some of it really first rate, especially the white winter wheat. In the red spring-wheat class, I think numbers 2 and 3 should change places, but my sight is not what it was.

Only one bale of *hops*, and not a very good one; consequently only 2nd prize awarded, and, if this example had been followed, many a first prize would have been withheld, Pease were capital, as they always are. By the by, Mr. Claxton, England, is bringing out a field pea of great precocity and short bine, a cross between the white and the old maple, which promises to supply a great want here as well as in Europe. I shall import a few for a trial next spring; and this reminds me that my friend Dr. Girdwood, at St. Anne's, Bout do l'Isle, informs me that, whereas the American potatoes, such as Early Rose, Early Vermont, &c. only gave him 10 to 12 for one, the Champion and Magnum Bonum are turning out 32 and 34 for one; a vast difference, but I need not enter more deeply into the matter, as I am promised a full account of the whole crop grown by the gentleman in question. The *potatoes* shown were, as they all are this year, perfect in size and quality. The Shefford Indian Corn, shown by Mr. Blackwood, was superb. Swedes poor, but long red Mangolds magnificent: if the roots were anything like a fair sample of the crop, there must have been at least 50 tons an acre.

The *butter* was fair to look at, but I did not taste it. The *cheese*, however, I did taste, and the 1st prize cheese of Messrs. Boden and Wilson was as fine a specimen as I wish to see. Perfectly homogeneous, with no harshness or over-salted flavour, it might have passed anywhere for a first class Cheddar. Whether it was intended to imitate that sort or not, I do not know, as the Steward in charge, though very amiable, was not at all versed in dairy matters. The *tobacco* was not much to boast of, but last year's dull summer was not likely to produce a fine leaf. No. 3 prize was the thinnest specimen I ever saw, and looked as if it would have made the smoker's tongue one large blister. If the growers would only sow a little earlier, thin out in the seed-bed a little more, and not let the plants heat in the heap before hanging, they have no idea how very much the flavour would be improved.

It is remarkable, that I, preferring, as I do, the pure Canadian leaf in roll to any other tobacco, except that grown in Greece, on the Gulf of Salonica, should not be able to buy any fit to smoke. The proper sort to plant for the best flavour is the small pointed leaf, which, as Dr. Laroque says with truth, has a peculiar aroma of its own—it is very small, but the leaf is thick and consequently heavy, and it does not take up more than one third of the room which the usual kinds require; consequently the weight per acre is not so much less as might be supposed, and it invariably ripens in August, if sown in decent time. Good ordinary leaf is selling in Montreal at 20c. a pound, the duty is 4c. and as when the duty was 10c. the rolls could be bought at 10c. a pound, and even less, the profits now must be very great, and the cultivation worth entering upon on a large scale (1).

My notes are exhausted.

ARTHUR R. JENNER FUST.

HORSES.

DEAR JENNER FUST,

In answer to your Post-card I now send you a few of my ideas about the horse show at the late Exhibition. I am afraid you will not find them very flattering! Hoping they may, nevertheless, be of some use, I remain,
Yours truly,

E. A. C. CAMPBELL.

(1) Of course no duty was ever paid; now, Canadian rolls with the excise stamp may be seen in Montreal shop windows.

St. Hilaire, 27th Sept. 1880.

The show of thoroughbred horses was about as poor a one as could possibly have been seen. At any little county show at home would have been seen not only many more horses, but many much finer: in fact, those shown here would hardly have been looked at there.

The animal to which the first prize was given, was more like a "Cleveland bay," to my idea, than a thoroughbred sire; the second prize horse had a very coarse and ugly head, and though better in some points than the first, was still not a taking animal, though some of his get, shown at this Exhibition, were not bad: one, a three year old, among the saddle horses, was a fine upstanding colt.

The third prize horse was a good looking horse some time ago, I believe, but is now nothing but a broken down racer: having been fired. There was a remarkably nice young thoroughbred-looking three year old stallion, but how he was bred, or to whom he belonged, I could not find out: his colour was bright bay with black points, an uncommonly good set of legs, clean and wiry, nice short back, tail well set on, head perhaps a little coarse about the throat, but with a bright full eye, altogether a nice horse, and, to my mind, quite the "pick of the basket."

The remainder of the thoroughbred classes are hardly worth mentioning, as there seemed to be only one in each class. There were two good brood mares, but they were both imported, and the two foals with them were the veriest weeds that could be seen, which does not say much for the sires!

The next lot are what the prize list calls "Roadsters or saddle-horses," and the animals competing in this class were all shown in "traps" of every shape, size, and colour, but none as saddle horses: so evidently the words "saddle-horses" were a mistake. In this class, there were some good horses, but with two exceptions (one in a dogcart, and the other in a phaeton) they were not shown as roadsters but as "trotters," for most of them pulled the conveyances to which they were harnessed by the reins instead of the traces!!

The pairs were good, but then there was not enough of them. The nicest and best matched, in my opinion, was a pair of bays shown by Mr. Paton. They were small, but strong, compact, and useful looking animals, and if the details of each "turn out" had only been a little better attended to, the pairs would have shown to greater advantage.

The show of saddle-horses was good as far as numbers go, but as regards quality, "c'est une autre chose." Here, again, there were only two turned out as they should be; one belonging to Mr. Cochrane, and the other ridden by a gentleman from Ottawa; every other horse was ridden in a snaffle and martingale (the latter so tight that the horse could hardly raise his head)! Why will not men in this country use the correct bridle for riding? namely bit and bridoon. Go to a meet of Foxhounds in England and you will find it the exception, and a very rare exception, too, to see a man riding in anything but a double bridle; here it is just the other way; in like manner go to a steeple chase in England or Ireland, and again the bridle used is the double bridle, while here almost every horse is ridden with snaffle and martingale. No wonder steeplechasing is dangerous in this country.

The jumping was bad, as it generally is at a show, for very few horses like the row that necessarily goes on at these occasions; but I must except the jumping of the heavy-weight carriers, which was really first rate, the winner clearing 5 feet 5 inches with over 15 stone up: this would be a good performance anywhere in a hunting-field, but when done in cold blood it is truly fine.

The show of heavy horses was very good especially the brood mares and foals. The Clyde stallions were very fine animals, but in my opinion they are too heavy for our country

farmers, who have so much work to do in winter, and I think the class of horse we want is more like the Suffolk Punch, of which kind I was sorry to see no more than two shown, and only one belonging to this province. I am convinced that the Suffolk Punch stallion, judiciously crossed with some of the Canadian mares, would breed the animal to suit the Lower-Canadian farmer exactly.

The pairs of heavy draught horses were magnificent, especially one pair shown by the Sheddon Company, which would have held their own, even in Glasgow. They were turned out in perfect order, the steel and brass on the harness being beautifully bright and clean.

There was a good show of horses from Prince Edward's Island, but they did not seem to be of any particular breed. One, a gray, was a very handsome animal with good showy action. Asking the man in charge of this horse what he was, all he could tell me was that the horse was a "Roadster."

The Percheron.—None of the horses at the Exhibition of the R. A S E. at Kilburn, 1879, excited so much admiration as did the Percherons. Bred in La Perche, a district

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 Foot of the Horse and its Management.

In our last issue we pointed out in general terms the elasticity of the fore-limb and its effect in lessening the concussion of the foot. We now wish to draw the attention of our readers to the perfect arrangement of the muscular levers



Percheron Stallion.

of Normandy, these animals have been immensely improved within the last 30 years. The late Napoleon III paid great attention to the strain, and large grants were made by his government towards the support of the Haras, or breeding studs. Mounted on these quick, powerful horses, the Cuirassiers, at Waterloo, gave the English heavy cavalry quite enough to do. They draw all the omnibuses in Paris, and any one who travelled from the N. W. coast of France to Paris before the Railroads were made, must remember the fighting stallions in the old Diligences, all of whom were of this breed. The only imperfection, as a rule, is the *goose-rump*, too plainly visible in our example.

Mr. Menzies, Beaconsfield, tells he has just made a sale of 10,000 vines to a Western company!

A. R. J. F.

and their tendinous prolongations, all so disposed as to lessen the bulk, and yet furnish a powerful motive power in the progression and support of the body on the pedal extremities.

Figure I. represents the fore-limb with the muscles and tendons dissected; the direction of their fibres as shown in the cut indicates the direction in which they contract, and consequently the movements of the articulations. It will be seen that the levators of the limb are principally attached to the *Scapula* and *humerus*, and the *flexors* and *extensors* of the knee and lower joints are situated respectively behind and in front of the fore-arm.

The most important are Fig. I, *a* the *Extensor metacarpi magnus*, and *b*, the *Extensor pedis*.

The former is attached to the head of the cannon bone just below the knee in front, and the latter is continued as a strong flat tendon to the prominence in front *os pedis*, and Figure II, *na*. The *Flexor pedis perforans* and *perforatus*,

the former passing through a groove at the back of the knee in the form of a strong, round tendon (Fig. I, c) playing through the smooth groove formed by the sossamoid bones behind the fetlock (Figure III, f); it also plays over the pulley surface of the navicular bone c, and is inserted into and, strongly attached to, the under surface of the *os pedis*.



Fig. 1.

THE FOOT.

The foot consists of the bony parts already described, covered by sensitive structures which not only form the bond of union between bones and the hoof, but are also the sources of growth and nourishment of the horny covering.

Figure V, represents a vertical section of the fore foot, showing the relative positions of the bones, joints, and soft textures, a the *os pedis*, b navicular bone, c *os coronæ*, d Fatty-frog, e *tendo-perforatus*, 1 wall of the hoof, 2 sole of hoof, 3 horny frog.

The *Perforatus* (Figure I) d, is accessory to the other—a flat tendon forming a ring for it as the fetlock pad, bifurcating below for its passage, and is inserted into the sides of the first phalanx. To these the others are all accessory, and are so disposed as to aid them in the elevation, flexion, and extension of the limb and foot. To render the structure stronger and more elastic, we find these tendons braced and supplemented by ligaments on, especially, the flexor side of the limb. Immediately below the knee we have the metacarpal ligament attached to the head of the cannon bone, and becoming continuous with the *perforans* tendon.

We have also the great *suspensory ligament*, (Figure IV) a attached above to the head of the cannon bone, and below dividing to be attached to each side of the fetlock pad. We have also inferior suspensory and sossamoidan ligaments, all aiding in the formation of a springy elastic structure perfectly contrived, and thoroughly carried out, for the support, of weight and lessening of concussion to the pedestal extremity, the foot, which comes in contact with the ground.

Denuded of its horny covering the foot presents on its wall a beautifully laminated surface, the leaves running in the longitudinal direction following the obliquity of the wall.

The upper border is surrounded by the coronary substance, which is implanted in a groove on the upper margin of the wall; this substance is not only an elastic cushion, but it is also the source of the secretion of the horny covering itself.

Figure VI, represents a the *Coronary substance*, b the sensitive laminae, c the fatty frog. Immediately underneath the navicular apparatus we have the fatty or sensitive frog, and covering the sole of the bone, we have the sensitive sole, both of these presenting little *villi* by means of which the horny sole and frog are attached.

The elasticity of the foot is in no small degree assured by the prolongation of the rings of the *os pedis* by the lateral cartilages which project above the hoof at the heels, where they can easily be felt. The whole of the sensitive structures of the foot are remarkable for their vascularity. As already remarked, the bone itself is a perfect net work of bloodvessels, permeating it in all directions, emanating

from it and from the arterial trunks surrounding the coronet we find numerous plexuses of bloodvessels. The veins differ from those of other parts of the body in having no valves, so as to facilitate the circulation under the varied conditions of pressure and motion. The nerves are also numerous, and give the foot a remarkable degree of sensibility, which not only endows the tissues with necessary vital nerve functions, but imparts to the foot a sense of touch for the perception of the consistence of objects stepped upon, and thus in a marked degree adds to the protective provisions of nature for the comfort and well being of the animal.



Fig. 2.



Fig. 3.

THE HOOF.

The hoof, or horn, forming the external covering and protection to the sensitive structures described above, while really the same in general outline, divisibility by maceration into its different parts, wall and bars, sole, frog and frogband differs as much in individual peculiarities as the faces of a multitude of people. Not only so, but the form, size, quality of horn, manner of progression, peculiarity of placing the foot

on the ground, differ as much as do the differences in our own feet, and consequently any mechanical protection which is to be attached to the foot, requires equal care in fitting and adapting it to these peculiarities, as do the boots of persons to suit their corns, bunions, &c. A careful study of the anatomical description of the hoof and its divisions into

"wall", "sole", "frog", and "coronary-frog-band", or "periople," is of the utmost importance, as it is the part of the foot which is more immediately subject to the many alterations by the mechanical operations of the farrier, both in the preparation of it for, and the manner of attaching it to, the shoe.

The horny covers of the digital extremities of the different species of animals differ according to the soil and circumstances when in a state of nature. With an infinite wisdom, the Creator has furnished for each the most perfect protective covering for the locomotive extremities which it is possible to conceive; and a study of this wonderful provision in all animals, from the claws of the tiniest microscopic creature up through the whole series of insects, birds, and beasts, till we come to what is, to my mind, by far the most perfect, the foot of the horse, is one of the greatest interest. The nails of the human being, beautiful as they are, and admirably as they are adapted

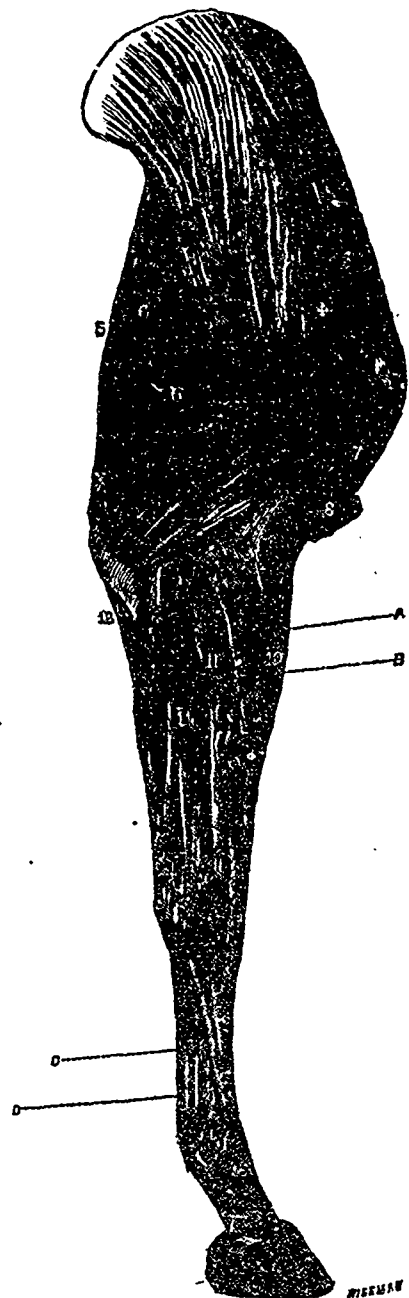


Fig. 4.

for their purpose, are simple, as compared with the horse's hoof.

The wall is the part of the hoof seen when the foot is on the ground: it covers the front and sides from the coronet to the ground. It is fibrous in structure, the fibres running in a parallel direction from above obliquely downward, their ends resting on the ground. They are held together by a glutinous matrix, composed of minute horn cells and colouring matter. It is covered on the external surface by a thin

varnish-like layer and a condensation of the fibres, that it may the better resist the action of air and moisture.

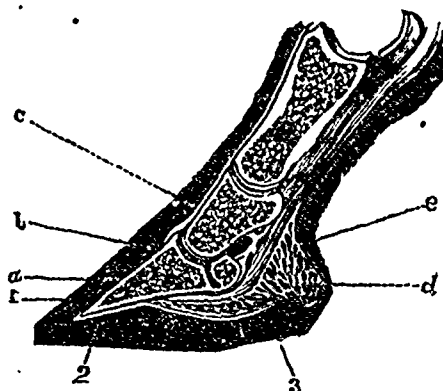


Fig. 5.

On cutting the hoof, therefore, we find it hard and dense externally, but soft and porous internally. The internal surface of the wall presents laminae corresponding to those

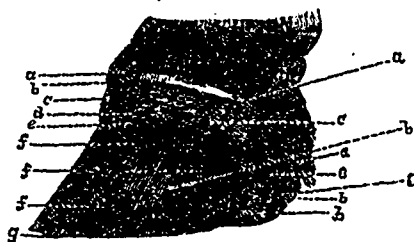


Fig. 6.

sensitive laminae covering the bone, and it is by a dovetailing of these horny and sensitive laminae that the hoof is attached.

Soluble vs. Insoluble Phosphates.

This question is still unsettled. There are skilled counsel on each side, and in spite of all their arguments, the judge, i. e. the farmer, is doubtful as to his decision.

The general opinion seems to be that, in the Aberdeen shire experiments, the poverty in lime of the experimental plots compared with the general soils of the country, and the extremely small scale on which they were carried on, prevented them from being so instructive as they might have been; and the general feeling is, that it would be wise of each individual farmer to try what the effect of the insoluble phosphate is on his own land, before he gives up the use of soluble, i. e. superphosphate.

Dr. Voelcker, in a clear and luminous paper, as indeed, all his papers are, expresses his opinion that "it would be both an irrational and a retrograde step if agriculturists were to attempt the use of raw phosphatic minerals, instead of applying them treated with acid." (v. R. A. S. Journal, for December, 1879). The Aberdeenshire association contend that they have proved the opposite of this proposition to be true. I do not think the Association have proved their case. The discrepancy of the yield in the different plots is so great and unaccountable, that they seem to me to deprive the experiments of much of their value. The calculations, too, on the effects of the various manures seem to be erroneous in the highest degree. Take, for instance, the trial of dissolved Spanish phosphorite against that mineral in powder. The increase of the crop grown with the former over the latter is only one ton per acre; small enough, but what do we learn? there is no unmanured plot to compare the two with, and the

experiment is, therefore, worthless—we don't know anything about the natural yield of the soil. The experiment, I should say, was made by Dr. Daubeny, Professor of Botany at Oxford, but Mr. Jamieson, chemist to the Aberdeenshire Association, fathers it, so Dr. Voelcker, with great fairness quotes it, and I bring it forward to show how easily mistakes made be made in calculating profits derived from the use of artificial manures.

As thus—Let us take a simple trial of two manures, we have then three experimental plots, one unmanured, one manured with A, and a third manured with B. Let the first be supposed to produce at the rate of 10 tons of turnips per acre, plot A at the rate $12\frac{1}{2}$ tons, plot B at the rate of 15 tons. What has been the rate of profit on manure B, as compared with manure A? why, 100 0/10, is it not?

The unmanured soil in the first plot with the aid of sun, air, rain, &c., gave 10 tons, this must be deducted from the produce of plots A and B, which will leave $2\frac{1}{2}$ against 5, or 100 0/10. But, according to Mr. Jamieson's calculations, there would only be a difference between the two plots A and B as between $12\frac{1}{2}$ and 15, or about 16 0/10. I cannot understand how such a mistake can have been made by so very competent an observer.

Again, in a letter from Professor Jamieson to the Agricultural Gazette for May, he makes out an average increase in favour of soluble phosphate of 7 0/10. Now, in his experiments for 1876, where he obtained an increased yield of 7 tons per acre by the use of soluble phosphate, and 6 tons with insoluble phosphate, over 10 tons on his unmanured plot, he calls this an increase of 7 0/10! Why, the merest school boy could show him by a simple sum in proportion that 6:7::100:117, nearly: that is, the real increase is 17 0/10, and not 7 0/10! I say, again, that I cannot understand it.

Let us turn to the discrepancies I mentioned above. These very small plots (112th of an acre), appear to me to be utterly unsuited as the foundation of theories. There are differences between duplicate plots, that is, plots treated in exactly the same fashion, of $4\frac{1}{2}$ tons per acre, there many of two or three tons per acre; and in one set of trials, those made at Durris, one of $5\frac{1}{2}$ tons per acre. That is to say one plot gave $5\frac{1}{2}$ tons, and the other 11 tons per acre. How can we depend on a series of experiments, the results of which give no more certainty than these? For look at them in this way: a few turnips, more or less, weighing 10 lbs, on a plot containing the 112th part of an acre, mean a difference of yield of 1120 lbs., or half a ton, per acre. I say, once more, that, as far as they go, these experiments have given us no certain information on which to found our practice: we are still in the dark.

There is another point to be considered: the trials in 1877, of the effects of the manures (soluble and insoluble phosphates) left behind by the first crop, in the second year. And here we are all abroad again. At Aboyne station the unmanured plot gave 2 tons of turnips per acre, the soluble phosphate plots from $\frac{1}{2}$ a ton to $2\frac{1}{2}$ tons, the insoluble from 7 cwt. to $2\frac{1}{2}$ tons. Astonishing discrepancies, indeed! but taking the averages into consideration, we find that coprolite powder, bone-ash and soluble phosphates had no effect in the second year after their application, the unmanured plot being as good or better than most of them. The only thing approaching to a yield is the bone plot, which gave $6\frac{1}{2}$ tons per acre. This was to be expected from the well known lasting effects of this dressing; but what data have we here for drawing comparative conclusions about soluble and insoluble phosphatic manures? none at all.

At Durris, the unmanured plot still maintains its ascendancy over both the soluble and insoluble plots, which give only in one instance so large a crop as the unmanured. The bones are better, being $2\frac{1}{2}$ tons per acre, not much, after all.

At Slains station, we have $6\frac{1}{2}$ tons on the unmanured plot, and 5 and 7 tons respectively on the insoluble plots, and 7 tons to 9 tons on the soluble plots, the bone plot giving 9 tons. At Turriff we have 2 tons on the unmanured, 3 and 4, respectively, on the insoluble plots, 3 tons each on the soluble, and 6 tons on the bone. Lastly, at Cluny, we have 2 tons on the unmanured plot, $2\frac{1}{2}$ tons and 3 tons, respectively, on the insoluble plots. $2\frac{1}{2}$ tons to $3\frac{1}{2}$ tons on the soluble, and $5\frac{1}{2}$ tons on the bone plot. We cannot generalise from these experiments, it would be childish to try it, and pure waste of time.

In 1878 a fresh set of trial plots was started. An average of results given by Mr. Jamieson shows 13 tons per acre on the insoluble and the same on the soluble plots; but on looking more closely into the figures from which this average has been compiled, we find at Aboyne a difference of three tons per acre between raw and dissolved coprolite in favour of the latter, and $2\frac{1}{2}$ tons in favour of dissolved over undissolved bone ash. Also a difference of about 3 tons in favour of dissolved over undissolved phosphates.

At Durris, on the other hand, the balance is all in favour of the insoluble plot, but at Slains, the difference is against the insoluble by from 1 to 3 tons per acre.

At Turriff, insoluble is a little ahead, and at Cluny, even our apatite seems to beat dissolved bone-ash. There, however, the unmanured plots gave $15\frac{1}{2}$ tons, precipitated phosphates (the finest form of powdered phosphates) gave less, and dissolved coprolites (mineral superphosphate) the same.

The deduction is to be made by an unbiassed observer are ludicrous in the extreme. The following conclusions may be drawn from individual experiments:—1o. soluble phosphate gives over "no manure" an advantage of 50 0/10 more than insoluble phosphate; 2o. Insoluble phosphate gives better results than soluble phosphate; 3o. no manure at all is better than either dissolved coprolite or precipitated phosphate, which latter is, as I said before, the finest description of insoluble phosphate.

What on earth can be the good of mixing up all these conclusions into an average, or selecting picked cases, if the object is to establish or dis-establish the superiority of the manures employed.

ARTHUR R. JENNER FUST.

Permanent Pasture.

Many scientific investigations, conducted at Rothamsted and elsewhere, have very much increased our knowledge of the proper means of laying down land to permanent pasture, and of its subsequent management.

During my recent tour through the Eastern Townships of the Province of Quebec, I found a general desire prevalent to retain grass lands in a productive state for longer periods than has been customary. The recent rise in wages, and the low price of grain compared with the price of dairy produce and meat, have convinced the yeomanry of those districts, that on butter, cheese, and cattle for exportation, must for the future be their main dependence.

There is no earthly reason why grass should not be as permanent a crop here as it is in the South of England, for whereas, there, 25 inches is the annual rainfall, here, we rejoice in 34 to 36 inches. No doubt part of this may be credited to melted snow, but enough remains to produce abundant pasturage in the average of seasons, if the land is fairly treated.

Of course I don't mean to say that poor sandy soil will stand long in turf. A cool bottom is desirable, and most of our farms afford that. It is of pasture I am speaking more than of hay, and I beg that my readers will bear this rule in mind: there are certain grasses that affect certain soils, and

do what you please, you cannot prevent nature from exercising her power of selection.

A curious lesson has been learnt at Rothamsted, as to the struggle for existence of the various grasses and other plants associated together in pasture. They all are on the very best of terms: grasses, clovers, crowfoots, daisies, all have perfect peace, as long as they are left alone. Season after season, the same plants appear, varying only accordingly as the character of the season may affect each sort's individual habit. But let the hand of man interfere with the simple process of nature, and all is changed. Throw a handful of nitrogenous manure over a patch of pasture, and immediately begins a fight: the grasses lay hold of it, rear up their bulky forms, and exercising the depressing influence of their lofty shadows, drive the humble clovers, comparatively speaking, out of existence.

The reverse will happen, if phosphates (alone) are used. the grasses will be no larger, but the clovers will flourish, and usurping more than their fair share of territory, will crowd out their neighbours. In fact, every art of improved cultivation occasions instant war. Whether the land be manured, drained, or otherwise interfered with, the effect is to change the conditions to which the turf has been subjected, and each plant instantly endeavours to turn the opportunity to its advantage. Thus, the general effect of improving grass land is, by exciting this emulation to drive out the inferior plants, and to increase the proportion of good grass in the pasture: good grasses with good farming drive out the bad ones.

One point of much interest, proved by Mr. Lawes in his experimental plots in Rothamsted Park to be universal in its application, is that the ultimate herbage depends on management, and not on the description of seeds sown. Every heath and down illustrate the truth, that if the soil-food is bad the weeds and inferior grasses will drive out the better description of herbage, supposing it to have existed, and if the food is good, the good grasses will drive out their rivals.

Thus, we have arrived at a general law of great importance in practical farming, viz., feed your valuable plants well, and they will fight for you against your enemies the weeds and rubbish. *Connue!* We know the law well, you will say. Perhaps so; but you don't follow it out, or the pastures would wear a very different appearance.

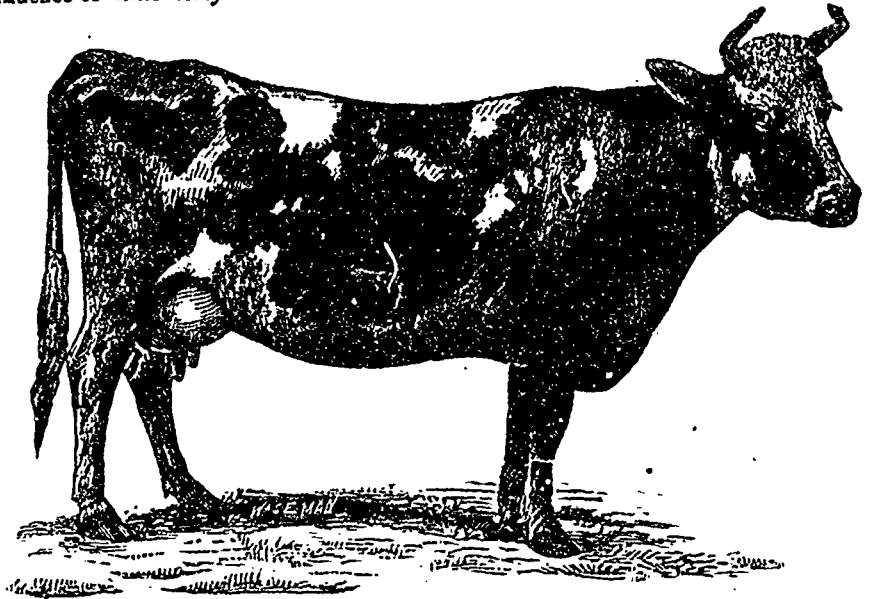
The effects of manures at Rothamsted were, in general, as follows: Farm yard dung increased the bulk of the grasses and in doing so diminished the weeds. As a general principle, all manures tended to drive out the weeds by increasing the better herbage. Mineral manures, alone, diminished the proportion of grasses by lending special aid to the growth of leguminous plants, such as clover and the meadow-vetchling, or wild tares.

On the other hand, ammonia-salts favoured the production of the grasses, increased their bulk, and by doing so destroyed almost all the leguminous plants and the weeds, and developed in a very remarkable degree the leaf of the grasses rather than the stems and seeds.

Of the mixed manures, minerals and ammonia-salts gave the greatest increase of crop, still favouring the grasses,

almost to the exclusion of the clovers and other leguminous plants. Weeds were driven off, and the development of the stem and seed of the grasses was particularly marked.

In 1868, Mr. Lawes, recognising the approaching crisis with almost a prophetic eye, laid down a great part of his paternal acres in permanent grass. He sees no reason why the young seeds should not be sown with a barley-crop, therein differing from other authorities, but he lays great stress upon the non-feeding of the grass in autumn after the removal of the barley. He, and every good farmer too, thinks it very important that the tilth should be fine, and that the seed should be lightly, but well covered, and rolled down level and smooth. The variety of grasses sown, he thinks,



Jersey Cow.

can hardly be too numerous, leaving the best and most suitable to hold their own after the inevitable battle that will ensue.

He is much opposed to mowing the second year, having found that the practice destroys the clovers and the lesser grasses, by its encouragement of the free growing and coarser species. He would, by preference, not mow at all for the first few years, and would exclude sheep, feeding with cattle entirely, and perhaps a few horses in the autumn to eat off the more rugged portions which the others may have rejected.

A pasture cannot do much above ground till after the formation of a great bulk of roots below. The roots of a good pasture will weigh from 5 tons to 10 tons an acre. New turf will not become permanently productive until after the under ground formation of stored up material, and of that extensive absorbing apparatus which exists in the large development of roots.

Cows, Mr. Lawes finds, without artificial food, would starve themselves, and would starve the grasses (1). At Rothamsted they receive 5 lbs. a day of decorticated cotton-cake. If artificial manures are to be used, nitrate of soda and superphosphate of lime will be found the most profitable.

Let us now consider the physical conditions necessary to maintain the best kind of grasses in a permanent state: they are these:—The land should be of such a texture as not to part with moisture too readily, nor to hold it too long; and we find these conditions best fulfilled, with a fair depth of mould resting upon a well drained clay subsoil. The most valuable kind of grasses can be kept in a permanent state by

(1) This refers, of course, to *new* grass.

good cultivation, which, of course, includes sufficient drainage and judicious manuring. The wetter and poorer the land is allowed to become, the more worthless will be the vegetation upon it. All this seems simple enough, and yet how often does the question appear in agricultural papers—How do you account for the ill-condition of such and such a meadow? How am I to get rid of moss? and so on; and we generally find that both troubles arise from the neglect of draining and manuring.

Preparation.—All crops, we know, require for their full development a fine tilth: much more so grass. The roots are minute, and as some of them won't travel far for their food, their paths should be made as easily penetrable as possible.

As I purpose this winter to enter fully into the principles and practice of draining, I shall go into no details now; simply stating that its beneficial effects are nowhere more manifest than in permanent pasture. It is quite a mistaken idea, held by many even in England, that drains do little or no good on grass land; on the contrary, the most valuable grasses won't thrive at all in damp pastures, being soon vanquished and routed out by sub-aquatic plants. All kinds of stock, too, will do better on well-drained soils, having a drier couch to lie upon, and sweeter, more nutritious food. Manure, too, is almost thrown away on undrained land; it won't rot: like dead bodies in a wet burial ground.

The land should be perfectly clean and in good heart. No better condition can be found for sowing the seeds than after a crop of roots.

Now, shall we sow with or without a straw crop? Much may be said on both sides. Shelter? well, if we sow in early spring, shelter may be needed; but not often is this the case here, and as to the idea that the grain crop will pay for the expense of putting in the grass seeds, I don't think that is worthy of consideration: grass, permanent grass, is our object, and to that object every other consideration ought to give way. One of the essential points in laying down land to pasture is that it should be in good heart, and though Mr. Lawes' farm may be contemptuous of the trivial draft drawn upon its resources by a barley crop, we are not to imagine that it is so everywhere; so that I cannot think it wise, having laid down land in good heart, to immediately begin to take the best qualities out of it by a grain-crop. This is against all reason, and the argument is strengthened by the fact that grain and grass belong to the same natural order, and being similar in composition, extract the same substances in the shape of plant food, so that no crop is more suited to rob the grass than a grain-crop. For the same reason, grass should not follow Indian Corn.

Choice of seeds.—As we saw, a great variety of seed should be sown. Some varieties thrive best in one season, others in another season. Some sorts extract food from the soil which would not be utilised by other varieties. Some, again, mature earlier than others, and some last later in the autumn. Stock of all kinds, too, do better on a variety of food than when confined to one alone. Lastly, the land, where plenty of sorts are sown, will have a better opportunity of selecting, as it surely will do, those best suited to its capabilities of providing subsistence for the future offspring.

At Rothamsted, Mr. Lawes found that, on the unmanured land there were fifty-four species of plants; twenty-eight of which were weeds, eighteen grasses, and four leguminous plants. Of these sixteen species made up 74 per cent. of the weight of the produce, while five species alone made up from 60 to 69 per cent. of the heaviest crops. The most prominent of the grasses are, generally, as follows:

Alopecurus pratensis..... Meadow foxtail grass.
Anthoxanthum odoratum..... Sweet vernal "

Agrostis stolonifera Creeping bent "
Avena flavescens..... Yellow oat "
Cynosurus cristatus..... Crested dog-tail "
Festuca duriusecula..... Hard fescue "
" *gigantea* Giant "
" *pratensis*..... Meadow "
" *ovina* Sheep's "
" *rubra* Reddish "
" *tenuifolia* Fine-leaved fescue "
" *loliacea* Darnel-leaved "
Dactylis glomerata..... Cocksfoot, or Orchard "
Lolium perenne..... Perennial Rye "
Phleum pratense..... Timothy, Herd's, or Catstail "
Poa pratensis..... Smooth meadow "
" *trivialis*..... Rough "
" *memoralis*..... Wood "
" *sempervirens* Evergreen "

These, sown thickly, very thickly, with a few pounds of perennial red Clover, yellow or hop Clover, Dutch or white Clover, Alsike or hybrid Clover, per acre, will, with good cultivation and care, be sufficient; they should be well covered, but not deeper than $\frac{3}{4}$ of an inch.

The lawn at Kilburn, in 1879, was considered by all visitors to the R. A. S. meeting a perfect marvel of rapidly acquired turf on poor clay land. Messrs. Carter, who laid it down, say that its beauty was solely owing to the soil being in fine tilth and good heart, and the seeding being liberal.

Renovating old grass lands.—See to the drainage, whether open or covered ditches. Harrow, with the heaviest harrows over and over again, until the moss and other rubbish is loosened; collect this with the horse-rake and remove it; give a liberal dressing of any good compost (earth and lime is excellent), sow the seed as before, and finish with the roller.

But, after all, it rarely pays to renovate old pastures. It is always better to break them up. Paring and burning, (not yet introduced here) is the best way, and the land sown down afterwards with rape and grass seeds to be pastured equally when young by young cattle.

Divide your pastures, and feed them down level.

Don't stock earlier in spring than absolutely necessary.

Keep sheep out of young grass, their feet are golden indeed—but on arable land.

Don't forget that Plaster always pays on grass lands, where there is a plant of clover.

ARTHUR R. JENNER FUST.

Lord Beotie's Shorthorn Sale took place on September 8th. The herd had grown too numerous, and in consequence had to be thinned. Duke of Underley, whose portrait we gave in a former number of the Journal (Sep. 1879), was withdrawn, as the reserve bid was not made; but the rest, all Bates cattle, viz., Oxfords, Cambridge Roses, Wild Eyes, and Waterloo's with Duke crosses, sold at higher prices than have been realised of late. Thorndale Rose 9th, calved in October 1877, fetched \$10,000. Oxford Duke of Killhow, the highest priced bull, sold for \$2250. Shorthorns will never again bring the extravagant prices they did eight years ago, but the revival of remunerative prices has evidently set in.

The Tillyfour herd of Angus cattle, bred by the late lamented Mr. McCombie, M. P., passed off satisfactorily. The prices realised were far beyond expectation, which will account for no purchases having been made by the agent of the Canadian Government. Cows varied greatly in price, from \$55 to \$1350, which last sum was paid for Pride of Aberdeen 9th. No buyers from the States were present,

strange to say, as the polled Angus bulls have done great good in the West, their calves out of native cows having turned out superior animals. Steers of this cross are much sought after in the markets, but there are not enough of them to nearly supply the demand.

Shorthorns for beef and milk.—The Agricultural Gazette, Eng., in a review of all the different breeds of cattle in Great Britain, and the Channel Islands, estimates the cows and heifers at 2,250,000. After glancing at the 20 different different breeds, the Gazette comes to the following conclusion: "It is the great merit of the Shorthorn that it holds the foremost rank in both classes. The exceptional aptitude of the cows of this breed to lay on flesh whenever, whether by accident, or by age, they have become no longer adapted for the dairy, is a very great addition in the eyes of the dairy-farmer to their merit as mere milk producers." In consequence of this, Shorthorn cattle, which early in the century only occupied a few narrow districts of England, have now spread over the whole country wherever moderately good pastures abound.

American breeders have always had the good sense to take the same view on this question as the English, but in the Western States they have hitherto paid more attention to the meat than to the dairy qualities of their Shorthorns. In this point, however, a salutary change seems to be taking place, for Mr. Allen, in his circular for the next volume (the 20th) of the American Shorthorn Herd book, has asked for accounts to be sent to him for publication, of the weekly, monthly and annual yields of milk and butter obtained from single cows, or from an entire herd.

Many thanks to Mr. Deeming for the pleasant and polite expressions in his letter. If all correspondents of the Journal would take example by him, it would be pleasanter work for the Editor.

The question involved is a difficult one to answer practically—the theory is simple enough. When hay is got together as green as it will bear the heat evolved is very great. I conceive that it will be more likely to evaporate the moisture, to the prevention of firing or extreme carbonization, in the open air than in a barn, close or otherwise, and I think if Mr. Deeming had seen, as I have seen, our South of England hay stacks steaming and sweating for days after they were put up, he would be as afraid of storing green hay in a barn as I should be. The hermetically sealed tin box illustration is hardly an apposite one, as into that no oxygen can enter; whereas that gas can penetrate equally into a barn or a stack.

I put the question, as fairly as I could, to one of the best known farmers of the Island of Montréal. He agreed with me entirely, and could not see how any one could be in doubt about the matter.

Of course, practically, there is no experience to guide us in this count—stacks are rarely made, and when they are made it is generally towards the end of the season, when the barns are full, and the hay is almost dry before mowing. Mr. Deeming seems to have lost part of a stack, it turning out quite rotten. We cannot generalise from a single instance. I have made some 40 acres of hay a year for 15 years, in England, of which the whole was stacked, and I never had any that did not cut out as sound as could be; and it was got together much, very much, greener than any I have seen in this country, and the stack generally sank from 2½ to 3 feet from its original height. Could Mr Deeming's hay have been carried before the dew was off, or after a shower? The whole question is so new, and I must be allowed to say, so contrary to my ideas of scientific reasoning, that I hope some one who has given the two plans fair and repeated trials will be good

enough to allow us to hear from him. I have never built a stack in Canada, and I have always made my hay here a good deal more than if I had intended to stack it, under the impression, which I still feel, that it would be much more likely to catch fire in a confined place than in the open air. If this is not the case, why, when hay is doubtful, do some farmers fill a sack with straw, and, as the stack is building, draw it up, thereby making a chimney for the escape of the heat? Surely the closer the barn the less escape there must be, or does Mr. Deeming mean that hay should never heat at all?

ARTHUR R. JENNER FUST.

Window Gardens.

It may be laid down as an axiom, that every thing that tends to make the home agreeable to the two functions of sight and smell, tends, also, to render it dear to its inmates, and to refine their minds, by educating them to appreciate more highly those delicate enjoyments which, like music and painting, elevate the more sensual perceptions to a loftier

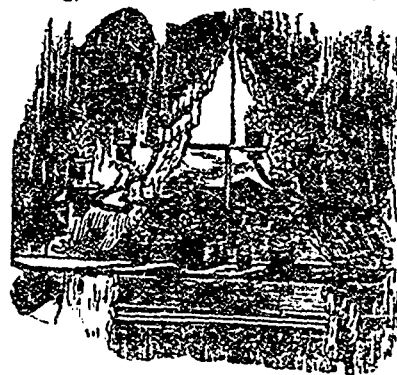


Fig. 1.

bright flower, or when the breath of some well remembered odour has been,

Like the sweet South
That breathes upon a bed of violets.

suddenly and unexpectedly wafted past his nostrils, tender, and, at first, inexplicable thoughts invade his mind? filling

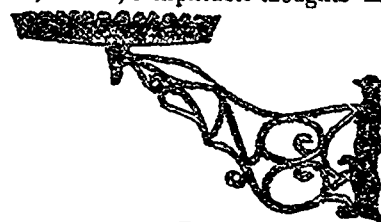


Fig. 2.

gations of a purer life.

If ever the writer happens to have a few dollars in his pocket, and any of his readers want to borrow them, they cannot choose a better time for the attack than when he has seen a *Nemophila*, or smelled an *Anna Boleyn* pink. Both of these flowers are sacred to memories which will never perish as long as life endures, and the sight and odour of them invariably reduce him to a state of unwooled tenderness.

It is by no means an easy matter to embellish our rooms during the long winter months. Few windows offer sufficient room to admit of more than a few flower-pots; while the necessity for heavy draperies, to help to exclude the piercing blasts at night, diminishes the already trifling accommodation. Several plans have, however, been invented to increase the space allotted to the window-garden. A few shelves, placed slopingly in front of, and as close to, the window as possible, will

style of taste, and add materially, in the enforced absence from the domestic hearth which so many of us have to endure, to that pleasing form of reminiscence which, many a time, has proved a safeguard against the lures of pleasure, and the temptations of sin.

Who has not felt, at the sight of some

him with purer fancies, and softening his feelings with recollections of earlier days, when the world, and the cares of the world, had not so hardened him, and his mind was less dull to the awakening insti-

receive as much light as is necessary for the plant's healthy growth, if they are constantly moved and placed in different positions, to counteract their habit of inclining towards the light.

A few illustrations of brackets for the support of flower-pots are given, in which may be placed hyacinth glasses, or tulips in ornamental vases; and above which, suspended from the ceiling, may be placed a basket, which, with its brilliant flowers, and elegantly drooping pendants, will form by no means the least pleasing ornament of the room.



Fig. 3.

To fit up one of these *corbeilles* we may take a *Heliotrope* (commonly called, in England, from its odour "Cherry pie") or any scented plant, with an *achirante*, and a variegated *Begonia*. The snaky runners of the "Wandering Jew" in green, green and white, and red, may form the outside covering which conceals the basket from view. A plant or two of ivy might be added.



Fig. 4.

Curious derivation of the real name of these "Wandering Jews!" John Tradescant was one of the first merchants (temp. James 1st, of England), who brought from the East curious plants and stuffed animals. Hence, in allusion to the travelling propensities of the plants of this genus which he imported, they are still called by botanists "Tradescantia."

A. R. J. F.

Jersey Queen of Barnet, Vermont.

The breeds of Channel Islands Cattle, like the Chaumontel pear of the same localities, have always been favourites in England. It is not worth while entering into the disputes between the Guernseyites, Jerseyites, and Alderneyites, each of whom protests that the cattle and the pears of the others are worthless. Call them by what name we please, it is certain that the original stock is the same, and if the Guernsey is the largest in frame, the Jersey, and even the Alderney, are not inferior in richness of milk.

The people in the Northern States of the Union seem, of late, to have been taking immense pains with the breeding of

Jerseys; and their trouble seems to have been well repaid, if we look to the recorded produce of some of their best cows.

In England, with all her fine grass, 300 lbs, of butter



Fig. 5.

Fig 6

would be considered a very good yield, per cow. In Quebec, many a farmer gets less than 120 lbs. What can we think then of a breed of cows that give 500 lbs. to 600 lbs., and even more than 700 lbs.?

It seems that a Mr. Kemerson, though not a farmer, has a passion for Jersey cows. He has bought and let out some 50 or 60 of them among the best dairymen of his neighbourhood, and amongst them, Jersey Queen. She was bred by the Messrs. Fairbanks, of St. Johnsbury, Vermont, and sold when a heifer to Mr. Hoyt, of Peacham. While in that gentleman's possession she, according to his sworn testimony, produced in one year, from March 1879 to March 1880, 676 pounds of butter; and as 468 quarts of new milk were used, and it took, on an average, 6.50 quarts to make a pound of butter, it follows that her entire production was 746 pounds. Moreover, during the week ending the 5th of April last, 13 months after her last calving, she gave 60 quarts of milk and made 12 pounds of butter; never having had more than 5 lbs of meal and bran mixed, when in winter quarters, and no extra food when on pasture.

In our last number, we were happy to clear up, as far as we could, an error into which we had been unintentionally led as to the position of Messrs. Chase Brothers and Bowman, Nurserymen, Toronto, in their business standing. We should mention, however, that the society referred to was the Goderich, and not the Guelph, as erroneously printed in the 27th line of the first column, page 80.

The island of Jersey is one of the most fertile spots on the earth. The farms are small—from 7 to 15 acres, and the cows are tethered instead of roaming at will. Potatoes and parsnips yield largely, and are often converted into whiskey. The export of cattle and potatoes alone, in 1879, was equal in value to \$1,750,000, averaging about sixty dollars an acre for the agricultural land of the whole island, in addition to raising nearly all the food required for a population of 60,000 souls, and the entire support of 10,000 head of cattle and horses. The rents are high: \$25 to \$30 an acre. Wheat often yields from 48 to 52 bushels, and other crops in proportion. Sea-weed is much used as manure, and if

is not uncommon to see land ploughed by 10 or 12 bullocks, in two ploughs, one following the other in the same furrow. The same description will answer for Guernsey.

CORRESPONDENCE.

Editor Journal of Agriculture.

MY DEAR SIR—I have perused with pleasure A. R. J. F.'s article on "Agriculture in the Eastern Townships," in your last issue, and differing, as I do, with him on one point, I beg space in your valuable Journal to have the matter thoroughly ventilated; and I think we shall all agree on this one point, that it is through these disagreements, that the truth is elicited.

I will quote from the short article directly following A. R. J. F.'s.—To teach in print a man whom &c. Now I am not tackling A. R. J. F. on any such grounds; but I do not hesitate to tackle him; because I consider him in error, when he says that hay can be put in the *stuck* greener, than in the barn.

The correspondent of the *Ag. Gazette*, in the article quoted from above, seems to think it wholesome exercise, "to confute, and make his ridiculousness evident"; but when I consider that I must also "tackle" the Editor, as he has made a couple of hay stacks, "and carried the hay greener, than he could have safely entrusted it to the barn"; I—I hesitate a little. Now, my dear sir, if I knew whether Mr. Barnard's barn was tight, or open, and also whether he kept his barn-doors wide open, or shut *as he should do*, (except when the team is being driven in and out,) I should be in a better position to judge which place his hay would keep the best in, with the same degree of dryness. I am ready to admit that I have labored under the same delusion, and I very well remember losing three fourths of a large rick, that was put up on the principle that it was out in the air, and consequently, could be put up greener than in the barn. *It is the air that plays the mischief*; if we could store our hay in an air tight building, and keep the air entirely from it, we might put it up directly after the mower, if free from water. "Ensilage," or the storing of green fodder in pits, is on the same principle; and the principle is a purely philosophical one. I do not hesitate to make the assertion, that I can put hay into a tight barn, keeping the doors well closed up, and it will come out when wanted, in shape to make the "cows laugh"; whereas, if the same hay had been stacked out of doors, it would *have been a mass of rotteness*.

It was certainly a pleasure to follow A. R. J. F. in his trip through the Northern and Eastern portion of the Eastern Townships; and doubtless, very many of your readers can do the same; but will he not "bend his steps this way," another season? We are very apt to be prejudiced in favor of our own country, or section of a country, but I am very sure A. R. J. F. would see it without prejudice. I would guarantee him, Providence permitting, free carriage to any portion of Missisquoi, or Brome Counties, and from any Railway station he might choose to designate.—We would fain take him into an exceeding high mountain (The Pinnacle), and show him the beauties of the land round about.—Let me assure you, that any one connected with the "Journal", would meet with a cordial reception, in this section of the Townships—Of course the "Journal" is small, but it is only in its infancy; and consequently its future may be looked forward to as *progressive*. When we realize the wide field of usefulness that lies before it, we may safely predict for it a future.

Yours truly,

C. A. DEMING.

SIR.—I would beg to call your attention to several errors in the Report of deliberation of the Council of Agriculture of 27 Augt., 1879, and 14 January 1880, as published in the September number of the Journal.

All the proceedings of the Council of Agriculture being recorded in French, the report as published in the English edition of the Journal, is of course a translation.—Would it not be well that this be stated at the head of all future reports, by placing the word "Translation" over the heading? this would partly explain away the peculiar phrassess sometimes used, which are very often literal translations, and do not convey the meaning intended.

In the deliberation of 27 Augt. "Fruit Growers Associations" are called "Fruit growing firms," implying that the sum of \$500 referred to, was voted by the Legislature for individual, or private firms, whereas it was voted for the encouragement of societies similar in organisation to our County Agricultural Societies, as provided for in the rules referred to in the above proceedings, a copy of which I enclose in case you may not have seen it.

Again, in the deliberations of 14 January, page 66 of the Journal, it is stated that Judges (on farms) in the county of Terrebonne gave points to a competitor for "well managed manures." This I presume means, manure well prepared and protected from the action of the weather.

On the same page, in referring to a complaint from the County of L'Assomption, a passage occurs which has really no meaning. Mr. Marsan is made to say that the subscription of the members "was not claimed by them"—From what I recollect of this case the clause should read something like this, the Society had not received the full amount of grant upon the subscriptions of members (consisting partly of money and partly of grain) *as claimed by them* (1).

I might point out other errors, but think these sufficient to show the necessity for some more careful translation of the deliberations of the Council of Agriculture.

Yours, &c.

J. W. B.

Elmhurst, Longueuil.

P. S.—I may state, although I do not suppose it will be much satisfaction or consolation to you, that the translations of the proceedings of the Council of Agriculture, and of the several reports of their Committees, &c., in the annual Official Reports of the Commissioner of Agriculture, are a great deal worse than yours.

J. W. B.

DEAR SIR.—I am very sorry you were not able to attend my sale, as I am sure you would have bought something to please you, as several very fine heifers went very low. I did not get your card till too late, or should have bought one or two for you. I am very much disappointed that the advertisement in your paper and other French journals did not bring one single Canadian to the sale. It only shows the apathy that still exists in this lower province. Mr. Jardyne, who owns a very fine herd in Hamilton, Ontario, takes several of my Ayrshires back with him. A number were bought by Mr. Ball, of Stanstead; also Mr. Ernest Benson, of New Liverpool, purchased five. In all, I sold four bulls and eighteen females.

I still retain a herd of four bulls, and nineteen females, all dark colors and very fine animals, from which I shall breed the very best to supply the demand. I believe I have an Ayrshire Bull, not quite two years old, that can beat anything in the Dominion, and to which all my cows are in calf. I may say that Mr. Jardyne was very anxious to buy him. I intend purchasing a few Shorthorns (Durham), and also a few Herefords, and keeping the three breeds for sale, and hope to be able to sell them very low to suit all parties.

All my Berkshire pigs were sold at satisfactory prices.

Yours very truly,

JOHN L. GIBB.

The Wealthy Apple.

This variety was fruited in my orchard at Como last year for the first time, I believe, in the Province of Quebec, and specimens were exhibited at the Montreal Exhibition. The fruit was much admired by all *connoisseurs* and samples were sent by the Horticultural Society to the Dominion Exhibition at Ottawa,

(1) The French sentence has, likewise, no meaning!

THE TRANSLATOR.

as well as to the Abbotsford Exhibition. The tree is an early bearer. It is undoubtedly very hardy both in nursery and orchard. It has proved as hardy as Duchess, than which, in respect of hardiness, no fruit-grower can desire better. I have never yet known the *Wealthy* to blight or "kill back" but regularly in spring, shoots start from its terminal buds, and this I consider the best evidence of hardiness.

In nursery and orchard it is quite as thrifty as Fameuse.

The fruit is described in the catalogues of Wisconsin and Minnesota nurserymen as only of medium size. I know not if the fruit is larger here than there, but I think it deserves to be ranked "above medium," and often "large," as large as St. Lawrence. All the specimens grown on my trees were above medium, roundish, oblate, and smooth of skin; the color whitish yellow, shaded in the sun with a deep rich red, sometimes almost altogether covered with light and deep colored streaks of crimson, dotted by many minute spots: a most beautiful fruit in appearance.

There is no prettier sight than a young tree literally bowed to the earth with the beautiful rich-looking *Wealthy* apple. The flesh is generally white but often yellowish, and frequently stained with red: very juicy, vinous, of a lively, peculiar, sub-acid flavour, quite fine enough for a dessert fruit, and is rightly classed as "very good".

The season of the *Wealthy* is said to be from December to February. Specimens that I tasted on 25th March, that had been kept in our root house at Como, were quite fresh, juicy, and perfectly sound, although, having been kept in the root cellar, lost something of their flavour, as any apple would do under like circumstance. I have no hesitation in saying that the season of the *Wealthy* when grown here, may be placed from December to April.

That the tree is hardy and an early bearer there is no doubt, and I am glad to say it is very productive. From at least two of my young trees, set out only three years, half a bushel each was gathered, and this after specimens had been sent to the Exhibition.

If the *Wealthy* proves to be a long liver, it may then safely be ranked equal with Fameuse for general cultivation for profit.

Being a later keeper than Fameuse, it will probably be a good variety to cultivate for export. It must succeed as a good market variety, its colour, size, and quality are all in its favour, and being a winter apple, it is not too much to expect that the *Wealthy* will become for this Province one of the most valuable varieties yet known.

R. W. SHEPHERD, Jr.

The "Deliberations of the Council of Agriculture," and the "Official List of Prizes," were not received until too late for their appearance this month. We will give them in our next number.

POULTRY DEPARTMENT.

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

Choosing Poultry.

In choosing poultry, never buy a bird that cannot be cleansed without washing. A washed fowl is a very inferior article. It ought to be so cleanly picked and drawn that a towel will be sufficient. Buy a chicken that has white flesh and pale yellow fat. In buying tame ducks young ones are the best, and, if you take hold of the under part of the bill, and can neither bend nor break it, the duck is young. The breast being hard and thick denotes that it is fresh and sweet. No duck, either wild or tame, is good unless fat. Tame ducks are served with apple or cranberry sauce, with currant jelly, or oranges, and frequently with olives stewed in the gravy about five minutes before the bird is served. When geese are young and in good condition, their legs are soft, yellow and rather downy; if the legs are stiff and dry, they are bad and tainted. Some kinds of tame birds require to be kept a little, others ought to be eaten as soon as possible: thus, pigeons are best when quite fresh, and lose all taste and flavor if they are kept; but turkeys require to be hung for several days before they are tender. This con-

dition, again, will vary with the age of the bird, the state of the weather, etc. But if a turkey be hung by four of its largest tail feathers, as soon as it falls upon the towel prepared to receive it, it is in prime condition and will then deteriorate. In other poultry, an excellent plan to know when they are just at their tenderest, is to judge by the ease with which the feathers come out. Therefore, when you clean and hang a bird, leave a few feathers, and when these can readily be pulled out, the bird is as tender as it will ever be.—*Harper's Bazar*.

How to Pluck Poultry.

I have known persons on market-day to go out and kill twelve or fifteen fowls, and to bring them into a room where there would be half a dozen women and boys pulling a few feathers at a time, between their thumb and forefinger, to prevent tearing them. Now, for the benefit of such, I will give our plan: Hang the fowl by the feet by a small cord; then, with a small knife, give one cut across the upper jaw, opposite the corners of the mouth; after the blood has stopped running a stream, place the point of the knife in the groove in the upper part of the mouth, run the blade up into the back part of the head, which will cause a twitching of the muscles. Now is your time for every feather yields as if by magic, and there is no danger of tearing the most tender chick. Before he attempts to flap you can have him as bare as the day he came out of the egg.—*Journal of Horticulture*.

Poultry Diseases.

The first year that I kept poultry, I believe that my chickens were afflicted with nearly every disease that chicken flesh is heir to. Of course I doctored them. I believed in doctoring them; but the results were not satisfactory enough to induce me to repeat the experiment. My conscience troubles me now when I think of the awful "messes" I crammed down the throats of those unlucky chickens. I hadn't the courage to look them in the face afterwards. But they had their revenge; nearly one-half of those luckless fowls died—whether from disease or the effects of my doctoring, I am unable to say. A hen is an obstinate "critter," and when she makes up her mind to die she generally dies. Truth compels me to acknowledge that the half of my flock that survived were the wild ones that I couldn't catch.

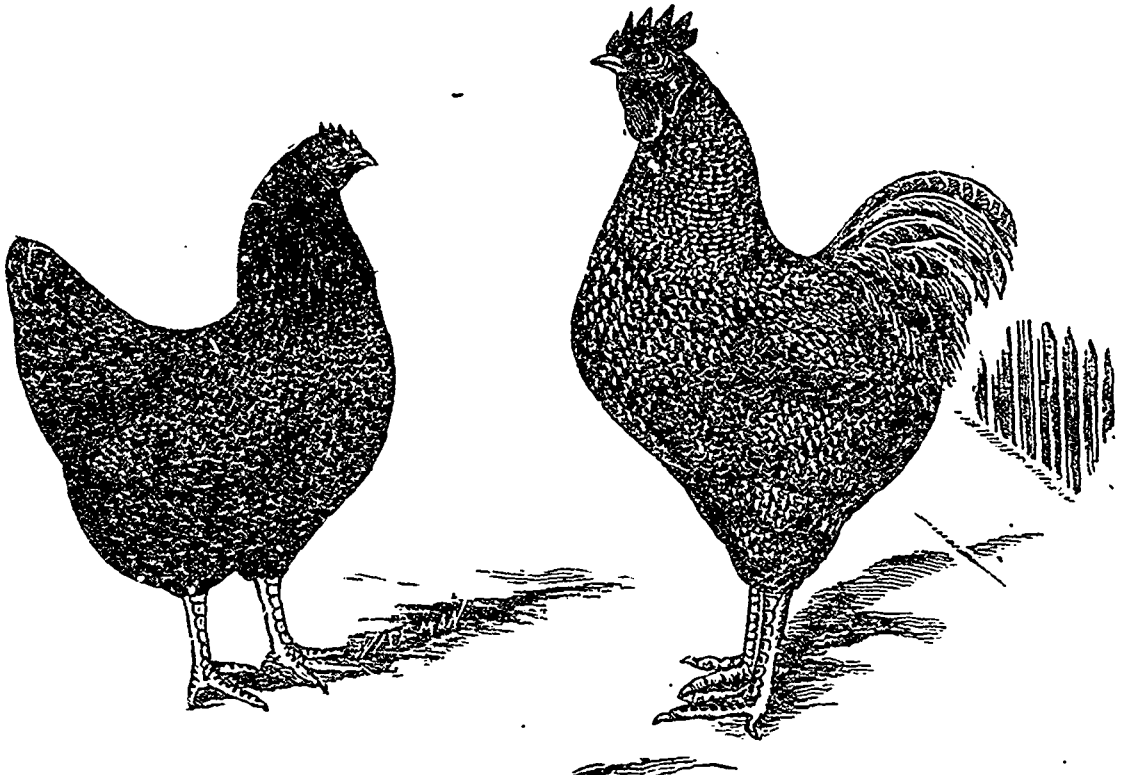
My early experience as a chicken doctor may possibly account for the fact that now-a-days I give but very little advice concerning sick fowls; experience has taught me that it is a great deal better to care for fowls so that they will keep in good health than to doctor them after they are sick. Sometimes, a little timely knowledge will enable one to save the life of a really valuable fowl, but in the majority of cases the best remedy for sick chickens is the hatchet. I have kept poultry for several years; have made a business of raising fowls and eggs for market, and of breeding fancy poultry; and every year I am more firmly convinced of the truth of my theory, that cleanliness and proper food and care will banish disease from the poultry yard.

Now I might give you a column of remedies for the cure of one of the commonest diseases to which young chickens are subject, and which carries off thousands every year, the gapes; but wouldn't it be better if I were to tell you how to prevent it? The gapes is caused by the presence of minute worms in the windpipe. Some "chicken man" says that he has destroyed it by greasing the heads of the chicks. Exactly how that was to affect the parasites in the windpipe he does not say. Another recommends covering the bottom of the coop with quicklime, which is a little more sensible. Another

says that he feeds tallow mixed with oatmeal. Another: Pluck the web from both sides of a feather, leaving a little at the tip; dip this in a solution of carbolic acid and one ounce of glycerine; run the feather down the windpipe; give it three or four turns and withdraw it quickly; the worms will stick to the feather and be drawn out. That remedy is all right, but just imagine going through a flock of 300 chicks! I have never had a case of gapes in my yards since I commenced giving the chicks cayenne pepper.—*Fanny Field in Prairie Farmer.*

Remedy for Lice.

If your fowls are troubled with lice, we would ask, why do you not get some tarred paper and line your poultry-house with it? It is not expensive; and if put on from the floor three feet high all around, and in the nest-boxes, we will guarantee that you will be relieved of all lice, that now make your fowls droop and die. Many persons think that cholera is among their flocks, when the lice are making all the trouble. In order to decide the cause, pick up one of your sick fowls, raise the feathers just under the tail, and if you find



PLYMOUTH ROCKS.

We give an engraving of a pair of Plymouth Rocks taken from a photograph made by E. R. Turner of Montreal, and engraved by Wiseman, from birds owned by ourselves and purchased last spring from J. F. Watson Esq., of Nashua N. H. from which we have raised some good stock, in fact the largest in size and best in markings, of any P. R. fowls we have ever raised. We heartily recommend Mr. Watson to any one desirous of obtaining good birds as a honest man to deal with in every respect. The cut shows for itself the style and carriage, as well as the beauty of plumage, in color and distinct markings.

Our experience with the P. R. Fowl has been that their quick growth and early maturity makes them the most profitable fowl for the farmer. It is that which has made them so popular in New England, and the principal reason that so many have been raised in the Middle States. The Plymouth Rock has proved itself to be profitable to the mechanic, the farmer, and to parties who raise a few in a quiet way for their own use. Profitable, because it can be brought into market early, either as a broiler or roaster. A bird that grows to its full size in six or seven months is worth more than one that takes nine months or more. It consumes less food, needs less care, will sell for better price, and is less liable to disease. In our next number we will give fuller information in regard to them. We have no axe to grind in the matter, as we have sold out old birds and chicks, and have nothing to sell, and shall endeavor to give information that will be reliable because we are satisfied that they are the most profitable for flesh and size combined of any fowl bred by our farmers.

“millions of 'em” don't doctor for cholera, but dust the fowl thoroughly with powdered sulphur, rubbing it into the skin, clean out your houses, and put in the paper above mentioned.

If you cannot obtain the paper, there are other things which can be done to help matters. Whitewash the buildings, pour kerosene oil on the roosts, use carbolic acid freely about the houses, and you may keep the lice quiet for a while; but they will come back, and make you “wish you were dead,” or out of the chicken business. Many persons think their chickens have no lice upon them; and we think there will be little trouble, if the fowl-houses are cleaned often, and good dust is furnished for the chickens to roll in; but if the lice get ahead of you, there will be very little profit in the business.—*Cor. Indiana Farmer.*

An Experience with several Breeds of Poultry.

Barn-door fowls were the first with which I had any experience; for, when I first settled upon the farm, there was no other breed in the neighborhood I bought my stock from several farmers, and am willing to acknowledge that the birds were excellent layers and affectionate mothers. I wanted no better for several years. They began to fail, however, and I resolved to try another variety.

White Leghorns were my next choice. These I found excellent layers of large white eggs. Indeed, they were all

y n a h e i t s s k y l e a t i l l k e e s r e o f y b e r e r e n s j e t o i t e h e l y e s h e r

I desired as layers, but they had other traits that did not altogether please my fancy. I found it almost impossible to keep them in any inclosure, be it ever so high, and, owing to their naturally wild nature, they were unsuited to my fancy. As brooders, too, they were very poor—many a setting of eggs was spoiled by the hens leaving their nests after sitting for a week or two. Then again the chicks that were hatched and reared were about two thirds cockerels, so that it was difficult to rear enough pullets to supply all the eggs I wanted, and for table the birds are of very poor quality and of small body. Moreover, they are not extra hardy, so that, on the whole, they are not an A, No. 1 breed, and I have altogether discontinued raising and keeping them.

Black Spanish was my next venture. I found them to excel the White Leghorns in laying qualities, their eggs being equal in size and color, but more numerous. The hens, however, were almost non-sitters, and of the same wild, restless disposition as the White Leghorns, all whose other objectionable traits they also had.

The Plymouth Rock and Light Brahmas are the breeds to which I now confine myself exclusively, having discarded the Houdans for various objections. I find either of these varieties best suited to my fancy. Both kinds are of large size, docile, good layers, good mothers, and of excellent

quality for table use. They can be kept in an enclosure of ordinary height. I was dilatory in getting the Brahmas, on account of rumors of their being inveterate sitters, but such a report is not well founded. I have had no trouble in breaking their disposition to brood by two of three days' confinement. For winter layers they cannot be excelled, and the chickens are very hardy.

The Plymouth Rock excels all other breeds for general use. Fowls of this variety have all the good qualities of the Brahmas, are most excellent layers, very pretty, and among the best fowls for table use—pullets weighing, when full grown, from seven to eight pounds, and cockerels from nine to ten pounds. Moreover, they are very hardy, and great foragers when running at large. I am of opinion that this is the breed above all others to answer the general requirements of farmer and fancier. They are not slow to feather, mature early, and should I keep only one variety, the Plymouth Rock would be my only choice.

There is a disposition, especially among fanciers breeding for feather, to in-breeding too closely. The practice is detrimental to the health, and destructive to the constitution of the flock. I would say to all: get new blood in your flock every year, and select the best quality of birds.—C. S. Cooper, in *Rural New Yorker*.

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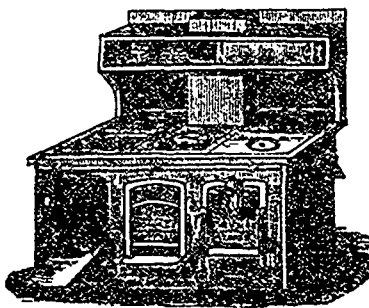
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