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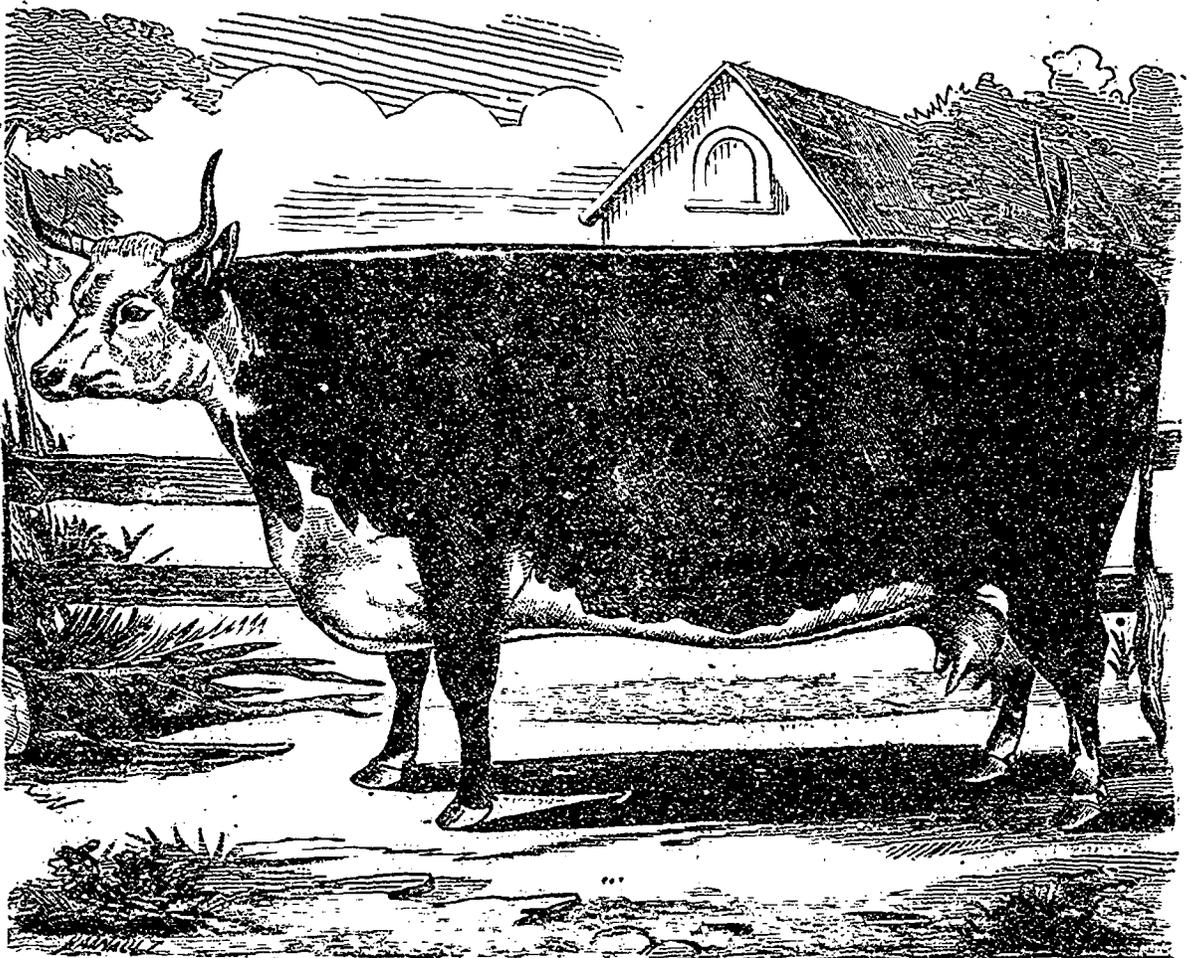
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A GREAT HEREFORD COW.

R. A. S. Kilburn Meeting, 1879.

Some of our readers may regard it as a waste of time, to consider what other nations are doing in the agricultural line. The idea is purely provincial. The two great faults to be observed in all colonies, ancient and modern, Latin and Teutonic, are credulity and incredulity in the wrong places. I propose in this article to give some idea of the animals, British and Foreign, exhibited at the R. A. S. meeting at Kilburn, last year, that my readers may see how earnest the managers, stewards, and judges, of the Society are; and how desirable it is that our expositions should be conducted in a fair, unprejudiced, and disinterested manner: satisfied, as I am that, in nine cases out of twelve, it would be more conducive to the interests of the province that shows should not be held at all, than that prizes should be assigned, as they too often are, to bulls of mixed blood, rams with protuberant horns, cows with one, sometimes with two, quarters defective, and pigs with every fault possible to the race.

Those who arrange the list of prizes, too, are amenable to the rod. Of what permanent use can it be to give six or seven premiums to six or seven animals of an utterly inferior type, to please the crowd? I would rather not please the crowd. I conceive that it is a sign of the very weakest judgment to conceive, that present popularity is likely to lead to future usefulness. Are our farmers for ever to be treated like little babies in a nursery, or like children at a convent school, whose mothers will go home discontented, unless their pets receive, merited or not, some decoration? Throughout the whole of the competitions of our great English societies, there will never be found more than three prizes in a class. A reserve number, it is true, is assigned to a fourth animal, in case the first, second, or third prize should be forfeited on account of some defect. Look again at the honesty of purpose in the disqualification of sheep for unfair shearing, of pigs for being over age. What did Lord Chesham tell his head shepherd, when, on his return from his first exhibition, he found that his best ram had been turned out of the pen on account of the impossible length of his wool? "If this happens again, you go!" How different from the whisper I have often heard going round among the judges—Oh! we must give *this* a prize; it is the best cow, or bull, of Mr.—as the case might have been. Judges, at our county shows, as a rule, are men of the neighbourhood, intimately acquainted with all the stock of the country, and not too well skilled, by travel and experience, in the points of excellence distinctive of each separate breed of cattle, sheep, or pigs.

The most interesting section of the Kilburn show was, doubtless, the Dairyshed, equally divided between the English and foreign exhibitors; and not without reason was its working watched by numerous observers. Dairy farming is in an peculiar state, just at present, in Britain. Upon the working of this industry depends, in great measure, the future prosperity of the richest portion of the soil, and the entire welfare of Ireland. If Normandy and Denmark are to continue to drive out the butters of Derbyshire and Cork from the great London markets, farewell to the quiet happiness of ten thousand homes of the quietest and most contented race of farmers in Europe. Already the landlord of the principal hotel in Derby is obliged to send to Normandy for the two hundred pounds of butter consumed per week in his establishment, not being able to find in the market of his home-town any quantity fit to be put on the table of his guests. What said a tradesman, only the other day, in opening a firkin of Irish butter and a box of French butter to show to a customer? "Look, Sir, the first has to be scraped, and trimmed all round, before it is fit to send out, whereas the French rolls can be despatched to your house at once, without any trouble!" It is not the superiority

of the grass, that gives our neighbours the advantage. Derbyshire can show as good, if not better, pastures than the best grazings of the Val d'Aube.

It is simply the perfect manipulation, the exquisite cleanliness, the good taste in packing, that characterizes the French dairymen, which gives them the preference, all other things being equal. The greater part of the French butter that is exported is not finished in the producer's house. The churning being completed, it is sent off, at once, to the wholesale dealer, he knows his market, and arranges the article accordingly. The different lots are not thrown, higgledy-piggledy, into any convenient half-washed tub, but each quality is carefully separated, compared with the others, and mixed only with those that, from taste, colour, and odour, seem to suit it. Heavy mechanical power is employed to extract the last drop of buttermilk from the mass; the proper proportion of carefully selected salt is added, and the most fascinating packages are arranged, to allow the eye to enjoy its own satisfaction, as well as its brethren, the nose, and the tongue.

The Germans, of whose section Herr Ahlborn was the chief, do not wash their butter. It is removed from the churn by the aid of a wooden scoop, placed in a wooden tray or trough to allow the butter-milk to drain from it, and is then worked on the butter worker for the purpose of abstracting the remainder of the butter-milk. Herr Ahlborn explains the theory to be that the butter suffers in quality through being washed in water. Here, I beg to differ from him. The Danes and the Normans always wash their butter, and better cannot be made. I proceed to describe the method in use on the best farms in the N. W. of France, whence the finest specimens of dairy produce find their way to the fastidious tables of Paris and London.

Those of my readers who have seen my account of the mode pursued in arranging the "Devonshire butter" will, perhaps, remember that, when the butter comes it is in grains. Well, the Normandy butter is worked on the same principle. The churn is filled up with cream to a certain point. At that point is a hole, stopped by a spigot: the moment the churner hears the change of sound which indicates that the butter is beginning to come, he draws out the spigot, having previously allowed the churn (a barrel shaped one) to rest at a proper level; if, on the spigot, can be found a grain of butter, though it be no bigger than a pin's head, he immediately drains off the butter-milk through a sieve, as carefully as may be, pours a quantity of cold water into the churn, and turning it two or three times, he again drains off the water; and this is repeated six or seven times, until the water runs off perfectly clear: the butter is never allowed to gather in the butter-milk, but in cold water alone.

Unfortunately, the dread of the various cattle-diseases, and the bother of the quarantine, kept most of the foreign cattle at home. But the display of horses from the Continent was large and good. M. Edmond de Ville, alone, entered twenty-eight animals of various sorts. M. Paul Tiberghien, of Belgium, sent a grey cart mare, "Sultana," which was undoubtedly a wonderful acquisition to the show. Her trot was so good, that many a Norfolk cob might have been proud of it, and the judges say that, "her lightness and activity recalled the performance of a former wonder of the prize-ring, Mr. Briery's "Sensation," a magnificent cart-mare, which, measuring nearly 17 hands, trotted with the neatness and agility of a pony.

The most striking of the French exhibits were the Percherons and the Boulonnais. The former, once so well known in the good old diligence times, when the pleasing titles of *Voleur*, *Brigand*, *Tête de cochon*, were so lavishly applied to the quarrelsome stallions by the postillions, are no

unworthy descendants of their forefathers. Wherever a combination of pace and power is required, these ready and willing beasts of draught will always be valued. Not so powerful as the great English "Drayhorse," the "Suffolk," or the "Clydesdale," the Percheron is a much quicker stopper than either, and is largely used in London, and other towns, for railroad vans, coal waggons, and other heavy carriages. Though fast enough for the dawdling omnibuses of Paris, the terrible hurry of the London man of business demands a quicker transit than he is capable of affording; but an Englishman must remember that these horses are not to be despised, since it was to Cuirassiers mounted on their great grandsires, that Lord Uxbridge and our light cavalry had to give ground on the fatal plateau of Mount St. Jean. By the bye, talking of Suffolks, it is utterly out of rule to call them "Punches" now a days. As well speak of "Durhams" or "New-Leicesters:" the "Drayhorse" also has been transmogrified of late into the "Shire-horse." Mr. Modezse-Berquet and the Duke of Westminster took first and second prizes for Percherons.

In the "Class for Norman and Anglo Norman Stallions," M. Edmond de la Ville had it all to himself. The judges specially commended the whole of his sixteen horses. Unfortunately, the best of the lot was taken ill before the decision was arrived at. Normandy has long been in the habit of importing good stallions from England, and they have improved the native race, that "M. de la Ville may now claim the right of meeting the English coaching and roadster horses upon terms of equality, if not something more." The late Emperor Napoleon was never tired of encouraging the farmers of L'Eure and Calvados to make the most of their advantages of climate and soil in breeding horses for the French army. "It would have been as well," says one of the Stewards of the Show, "if M. de la Ville had left some of his Anglo-Norman stallions behind him in England, to take the place of the expiring race of Clevelands." "The revival of coaching in England, and the very large prices which have been recently given by noblemen and gentlemen for horses of the right stamp, render it important that the coaching stallion, no longer of the Cleveland type, should be better selected. Those (of English birth) exhibited at Kilburn were a motley group; and if one of M. de la Ville's Anglo-Norman stallions had been entered for this class, he would probably have carried away the first prize." Steward's report—The Hon. Francis Lawley.

I think, as we are going to try, at all events, to supply foreign markets with horses, it would be a wise plan to secure a few of these Anglo-Normans. We do not seem to consider that the goods that suited the chapman, twenty years ago, are out of fashion now. The Cleveland is entirely gone into disrepute, he was always a leggy useless brute, suited to nothing but the London coach, and a lighter, but more compact horse is taking his place. A good Anglo-Norman put to some of our larger French-Canadians mares, would breed, probably, just the right stamp for the "pair horse Brougham," or the 4 wheeled dog-cart. I say, I think so, and perhaps few people in this country know the requisites of the London horse better than I do.

Prussia was represented by 8 entries from the Central Agricultural Society of Littauen in East Prussia. And observe again, if you please, the perfectly unbiassed judgment of the Englishman; Mr. Lawley says, "Frieda, the five-year-old brown mare to which the first prize was given, was as well worthy of critical examination as any animal in any of the horse classes in the yard." The stud of East Prussia, with the Crown Prince at its head, is represented by about 30,000 brood mares, distributed over a large number of farms. It is a remarkable fact, and one that I cannot too

strongly press upon my readers, that the greatest stress was laid by the English and foreign judges at Kilburn on those faults that distinguish the showy race of Hambletonians sometimes to be seen in the Townships; the long, delicate, slack "waist" badly ribbed up, never did any good yet. The best hunter I ever possessed had that fault, and what was the consequence? Though invincible in the field, whether big jumping or fast pace was required, he could never come out more than once a week, sometimes only once in ten days.

There were no fewer than 252 entries of Jerseys and Guernseys at Kilburn. Guernseys have, as a rule, the preference, as they have a larger frame on which to build something for the butcher after their milking days are over. It may fairly be said that three fourths of the animals in the ten classes were either prize-winners, or commended; and the judges conclude their report in these words: "They form one of the most interesting features of this great international gathering."

The bright little Kerries appear to have attracted great attention. The first prize bull is spoken of, with all honour and dignity, as being "a bull of great depth in front, with well sprung ribs;" had he been a shorthorn he could not have been more respectfully treated. The "depth in front" must have been indeed enormous, as this stupendous beast measured just 37 inches high at the shoulder!

In the "Dairy Cattle" class, the first prize was won by a pair of "Pure bred Shorthorns," (to my great delight) with grand bags, and carrying a good deal of flesh. "These," say the judges, "are the sort that pedigree, and non-pedigree, breeders alike ought to aim at; when they have fulfilled their missions, as breeders and milkers, they will fatten quickly and economically, and, above all, when slaughtered, they will give satisfaction in the scale."

The Breton cattle, very much resembling the Kerries, had eight representatives. Nice beasts enough, but the characteristic of the breed, viz. the too high setting on of the tail, spoiled their appearance to an English eye. One of these little pets had the reputation of giving 10 quarts (imperial) of rich milk a day.

The rest of the foreign dairy stock seem not to have been "great shakes," but some of the larger goats gave, upon trial, as much as 3 quarts of milk daily; not that the yield is so wonderful after all, when we remember that the first prize female goat measured within an inch of the height of the first prize Kerry bull.

The Rambouillet Merinos were, as at Paris, a superb lot of sheep, very different indeed in form and mutton to the miserable creatures we have seen sold, in winter, for 50s. a quarter, near the lines.

The judges of butter observe that, Irish, Welsh and Scotch butters were generally improved. Canadian butters were, in quality, not up to the average; much of it had heated in the voyage.

The Champion prize of £10 and a large silver medal for the best specimen of *keeping* butter were awarded to Frau Casperino de Lichtenberg, of Hessel, Sreana, Jutland. It is said to have been admirably prepared for the market, and towards the end of the show, its superior keeping properties, as compared with the English and Irish specimens, became more and more manifest. Like much of the Scandinavian butter exhibited, it was solid and uniform in texture, and well flavoured. It is this sort of butter which is beating the English, Irish, and Scotch, in their own markets.

The French butter is not, as many people suppose, made from the milk of cows fed on old pastures. These "herbages," as they are called, are chiefly reserved for fattening cattle, and the cows are tethered on *Lucerne*. I do really hope to see many acres of this invaluable fodder crop sown this

spring. As I explained in my article in last June's number of the Journal, the cultivation is the simplest thing possible. 20 lbs. per acre sown broadcast on well prepared land, well manured; barley, wheat, or oats, may be sown with it. Harrow the ground lightly in the autumn after the grain crop is carried, to destroy the weeds, and again in the spring. The next autumn it will bear any amount of dragging, as the roots will then be so deeply fixed that they will defy eradication. Mr. Brown says, in the "Report of the Ontario School of Agriculture," that "Lucerne broadcast gave one third more than the drilled. Five cuttings were made, but, owing to the too great tenacity of the soil, the yield was small." Why then sow on land too stiff? Every body ought to know that Lucerne prefers a light sandy loam.

Cheese.—There seems to have been a general failure in the specimens of this article. "English, very inferior, unless the tenant farmers who make cheese at home pay more attention to its manufacture, so as to secure fine quality, they will be forced out of the market by the Americans."—*Judge's Report.*

Of the celebrated *Roquefort* cheese, the first prize was awarded to Mr. Etienne Coupiau, of Roquefort, Aveyron, for a really good cheese. The manufacture of this highly flavoured cheese affects beneficially upwards of 50,000 people of all classes. About 700,000 sheep are kept to furnish milk and their produce realises annually 20,000,000 francs, or \$4,000,000. The average value of the milk has risen from 21 francs in 1867 to 30 francs in 1877, and the production of cheese from 320 tons in 1830 to 1000 tons in 1840, and 6,500 tons in 1878!

Much of this wonderful increase is due to the unwearied energy of M. Coupiau, who is president of the Society of the *United Caves* of Roquefort. I think I have proved my case.

ARTHUR R. JENNER FUST.

Education of the Farmer.

There is no class in the community so much interested in education as the farmer. They are the most numerous part of the population; the farmer has more at stake in the country than any other class in the community. In fact, the farmer is the foundation upon which the prosperity of this country will depend.

Professional men, merchants, and others among the non-productive classes, may change their business, pursuits or residence at pleasure, readily become naturalised to any situation, in which they happen to be placed, carry their goods, talents and capital with them, and soon take root wherever they chance to fall. Not so the farmer. His farm is immovable, he is a fixture to the soil, he cannot if he would, separate himself from his country, and all his interests are involved in its welfare and condition. Real property, the farm, the capital of the farmer; that remains fixed and exposed, without the possibility of withdrawal, or concealment, or shelter, to all the changes of the political sky. All that he calls his own is fastened by an invisible chain, for weal or for woe, to the destinies of his country. To what class in the community is it so important that they should understand their rights, that they should have a just perception of the true interests of their country, and that they should be well qualified for the intelligent discharge of their duty as citizens of this rising country, who must always have the deepest interest in its destinies and fortunes, and who, so long as our free constitution is sustained, must have its government and condition within their control? Nothing can effect this much for them but education. This only can secure to them that respectable standing in the political community, to which they have a just claim, and enable them to exert properly and successfully the important influence which belongs to them.

Education is most important to the farmer as a matter of interest. I mean as a matter of interest and profit in their own art. I am not unaware of the great importance of practical knowledge and personal experience in an art so practical as agriculture. Yet I have no hesitation in saying, that there is no art which, for its improvements and success, owes more to science than this. I admit that some of our most successful farmers, and merchants, have been men of very imperfect advantages, and limited information. But although they have been men of few of the public and ordinary advantages of education, yet such men have never, unless in some very extraordinary and accidental case, been other than what are called, self taught men, men of great natural shrewdness and intelligence, who have anxiously availed themselves of all the advantages within their reach, and obtained all the information in respect to their particular profession and art, which it was in their power to obtain. And have they not invariably themselves felt and lamented the want of education? And would not their labour have been more efficient, their improvement greater, their efforts made with superior success, if, to the native energy, and perseverance, and good judgment, and skill, for which they have been remarkable, had been added the knowledge and information, which superior earlier advantages of education would have afforded them? But produce as many of these cases of extraordinary success on the part of uneducated men as can be found, and on the other hand, of the ill success of the theoretical man, literally, book-farmer, who, without any previous knowledge, has undertaken to manage and cultivate a farm, solely by information gathered from treatises on agriculture; and the advantages will be on the side of the book farmer. Yet, if these cases were a thousand times as numerous as they are, would this overthrow the established principle of the universal value of knowledge? and if, in every other art, even the most humble, knowledge is so important, as the source of power, and an essential means of success, can we in the great art of agriculture, involving so many relations to be guarded, so many operations to be performed, so many materials to be operated upon, and so many instruments with which to operate, be guilty of the flagrant absurdity of supposing that, here, science is of no avail? Much rather is it as obvious to any reasonable mind, as the light of the sun to any clear eye, that knowledge must be valuable and important everywhere, just in proportion to the greatness of the art to which it is to be applied, and the many subjects of action or use which that art involves; and I may perhaps excite general surprise, when I state, that no art bears so close a relation to so many branches of science as agriculture. Am I wrong then in saying that the agricultural class is the most important part of our population? And can we, in respect to this class, possibly overrate the importance of education? Should not our government do more for the agriculturist than they are doing, by the increase of the grants to our Agricultural Colleges? There are about 800,000 able bodied men in the Dominion, 600,000 of whom are farmers, leaving 200,000 for all other occupations. Agriculture is the most fruitful source of the riches of a country, and of the welfare of its inhabitants, and it is only as the state of agriculture is more or less flourishing, that we can judge unerringly of the happiness of a nation, or of the wisdom of its government. The prosperity which a country derives from the industry and skill of its artizans, may be but a passing gleam, that alone is durable, which has its rise in a good cultivation of the soil. These facts ought to be constantly present to the mind of the Government, and to influence all its measures, and every exertion should be made, to give the farmer such a knowledge of his profession, as will enable him to produce three fold what he now does.

AYLMER.

Mixed Farming.

(Read before the Eastern Townships Farmers' Association, at a Meeting held in the Town-Hall, Durham, P. Q.)

MR. PRESIDENT AND GENTLEMEN,

The question for discussion, as I understand it, is, that dairying and stock raising combined, is more profitable to the farmers of the Eastern Townships, than dairying alone. The subject presents a wide field for discussion, and will doubtless draw out a great amount of talent; and it is certainly a great object for us, to effect an interchange of opinions, as well as to profit by each others experience.

In discussing this question I must, from my own convictions and experience, as well as from my observations in general, take the affirmative, and I shall endeavor to prove to you, that dairying and stock raising combined, or as I shall put it "mixed farming", (for, if we raise stock we must also raise grain) pays us better than dairying, or any other specialty: and I shall also undertake to prove to you that we have *dairied too much*.

We must first consider this question in all its bearings, and its influences on our dairy stock. If we have a good dairy, good milking stock, and raise heifer calves enough, from our best milkers, to replace the old cows, as they get past their usefulness, and also enough to bear "weeding out" the poor ones, we are in a fair way to improve our stock. Of course we must practice judicious breeding, and not trust to luck, or "scrubs" to attain this end. For my own part, I had rather have two heifers of my own rising, than three equally as good in appearance driven on to my place, from somewhere, I do not know where; the first are at home, and I know their dispositions, and I also know that they have inherited no vices, for I should consider it the height of folly, to breed from a vicious cow, as they will acquire vices enough without going back to their progenitors. Of the three purchased I am suspicious: they may be wild. There certainly must be a fight, with its attendant risks, to determine the mastery. Worse than all this, in my estimation, I, a producer, and with the means at hand to raise my own stock cheaply, must go out cash in hand, and transform myself into a consumer, which a farmer should not be, of anything he can produce. Some may contend, that they can buy them cheaper than they can raise them; and sometimes it does look so; but there are other considerations in counting the cost of raising a cow, besides the money value of the milk and hay she has eaten. She has converted so much feed into manure; and a manure that will help restore the phosphates to the pastures, whence our milk cows are every year taking much more, in proportion, than young stock: but more of the phosphate question hereafter. When a dairyman goes out to buy cows, or heifers to make cows, he must go with the profits of dairying; and where have the profits of dairying been, for a few years past? if my opinion is worth anything they have been on the wrong side of the Ledger. Farmers complain that their pastures are deteriorating, and, so long as any man confines himself to dairying alone, he must expect it; and he must also expect (for science has demonstrated the fact), that his pastures will run down much faster, from being cropped by a herd of milk cows, than by a herd composed of part cows, and the balance young stock, together with a few sheep, colts, &c. The young stock will grow into cows and oxen, with an occasional steer for the butcher. His sheep will keep his family in socks, stockings, and flannel; and it does not take many to furnish him with his every day suit besides; his early lambs are cash in July, and the later in September. Besides all the advantages enumerated, the mixed flock will keep his pastures cropped even, and not all pick for the same kind of food like a herd of cows;—some portions, rich in phosphates, being picked bare, while others are a mass of rank overgrown stuff, that nothing will eat.

I have made the assertion that we have carried dairying too far in years gone by, and shall attempt to prove it; but I must be allowed to bring in the grain question: not that I have any fears that I could not prove it without, but because I consider it a part of the question at issue: if we raise stock we must raise grain to feed.

First let us cast a retrospective glance over a period of twenty years, and consider how many farmers among us, say from ten to twenty years ago, made a practice of killing all their calves; some even carrying it so far, as to begrudge a poor cosslet lamb enough milk to raise it. Butter was high, and their dairies were

run at their fullest capacity, and they were run in some instances at the expense of the dairies themselves. Cows do not last long, and many a dairyman has found to his cost, before he was aware of it, that instead of his fine herd of cows, such as many a dairyman could point at with honest pride a few years ago, (but cannot now) he had a lot of old cow on his hands, and no young stock to replace them. The consequence was he must take the profits of his dairy, and start for the "French country", or out among his neighbors, to buy some of their *culls*.

The effects of this system are clearly discernible in our dairies of to-day; for who will deny that our dairies are *not* up to the standard of fifteen years ago. We have dabbled in Ayrshire and Jersey blood, thinking to get back that way; but if I had my number of cows to-day, after the pattern of ten I had twenty years ago, I could snap my fingers at all the blooded stock in the country, so far as butter making is concerned. I lost the blood through *dairying alone*; and though using every means within my reach, I fear it will be a long day before I get my dairy stock up where they should be. What about our pastures in the mean time; who dares say they have not run down in the last twenty years? I have said once before, what I considered the cause, but it will bear repeating; we have simply taken from them, through our "dairy alone" system, more than we have returned to them, and we have returned less, much less, by that system, than we should have by the system of dairying and stock raising combined.

Perhaps I shall be called to order for leaving the question a moment, but will risk it, for the sake of applying what I consider a remedy for our worn out pastures. We must raise more stock, and more grain, and return all the phosphates we can that way. Plow and re-seed wherever practicable, and if we can not accomplish it fast enough that way, we must do as our English cousins "across the water" do; "*done it*." (1)

But to return to the question.—I do not consider that I have exhausted the advantages of stock raising and dairying combined, over dairying alone, by any means; the subject seems almost inexhaustible, but I will leave it for the present, and consider grain raising in its relations to the question. It has been a common practice among farmers, in my section, in their anxiety to keep their dairies up to the full, to raise less grain for man and beast than they used. "Going down to the station after oats" has been a common practice; though I will say it has been less frequent for the past two or three years, owing no doubt, to the hard times; but that does not alter the principle, which is all wrong. The owner of any farm in the country, that will not produce, by good management, all the grain needed for man and beast, retaining at the same time its fertility—(yes, I will say *increasing its fertility*), had better take Horace Greely's advice, and "*go west*!"—Buying oats is bad enough, but there is one redeeming feature about the transaction—we do not import them; the money goes to our neighbors, in the adjoining counties west, and north west of us. Can we say as much for the money we annually expend for flour? Have we anything to send west to offset that enormous drain, on our resources, the amount of money we annually expend for the single article flour? If we had ever so much to send them, they do not want it. While we have been thinking about the "west" as a wild country, fit only for Indians, they have been wide awake to the main chance. While we have been thinking they would grow into something good when they got older, they, with their long western strides, have passed us while we were asleep; and, much as I dislike to say it, they are at least fifty years in advance of us in enterprise.—The amount of money we send west for flour each year, might just as well be kept here, by each man raising his own, for there is not one farm in twenty in the whole Eastern Townships, that will not produce wheat enough for home consumption. Some men have never raised wheat, because they *thought* they could not. I sold seed wheat to men, last year, that had never raised any, but wanted to try the experiment; and the result was perfectly satisfactory.

In conversation with a prominent merchant of Sutton, last fall, he condemned the practice of farmers buying flour, as strongly as I do to-day; said he did not want to sell so much flour, but his customers must have it. His annual sales of flour amounted to \$3000. And he also said that, if farmers had dairied less, and raised more grain and stock, they would not have felt the pressure of hard times, as they have felt it.

(1) Pray reflect that only Oheshire, and a few contiguous parishes, have ever paid for "boning". A. R. J. F.

Of course we all know that certain outside influences have been at work against us dairymen. I do not think, and never have, that we have suffered from over production; the now markets that have been opened up, would have kept the demand equal to the supply, had it not been for the "Oleomargarine," or artificial butter, that has been put upon market within a few years. Just here allow me to digress a moment to say this; if science can convert the fat of old dead animals, refuse grease, and nobody knows what else, into an article that experts can hardly tell from the best dairy butter, then it is high time that we brought a little more science to bear on the manufacture of the genuine article. Just so long as we continue to manufacture our own butter and cheese, just so long we shall continue to stand in our own light. We can furnish no tangible reason for every farmer being a manufacturer, or any reason whatever, except it is customary, or that our fathers did so. If any man says he can make his own butter cheaper than he can pay for making it, I do not admit it. If he says the burden on his women folks, and himself too, (if he does his part of the heavy work,) is not worth any consideration to get rid of, then I do not agree with him.

There is just as much reason in every farmer having his hand mill, after the pattern of certain eastern nations, of to-day, and two thousand years ago, to convert his grain into flour, as there is in every farmer making his own butter under the thousands of different influences that there must necessarily be, and think, with just as much reason in either case, that he could suit a fastidious market.

I shall touch lightly on stock-feeding for market, and I am done. I do not advocate it, because I do not profess to know about it, except in a general way; and I do not advocate any specialty in farming, but rather a thorough system of general farming; trying to make our farms self-sustaining, and not be obliged to show ourselves to the world as consumers, where we should be producers. If any one among us should be disposed to go into feeding stock for the English market, let us raise a surplus of grain, so that he can buy in a home market, and not oblige him to send his money a begging to a foreign market.

When we, as a class, shall have decided to combine stock and grain raising, with our dairying; making ourselves independent of the fluctuations in the grain and flour trade; having enough of everything, besides something to spare, of all kinds of farm produce, we shall be a long reach ahead of any specialty, with its attendant ups and downs, that we might adopt.

Fearing that I have already wearied you, I will submit the question, and stop short.

Remarks on Cattle Quarantines.

We extract the following remarks from the Inspector's report in the "Annual Report of the Minister of Agriculture," knowing that it will be of some interest to our readers.

The returns of contagious diseases in Great Britain, up to November 8th, show the prevalence more or less extensive of pleuro-pneumonia, foot and mouth disease, and hog typhoid, in several counties of each part of the empire. Thus *pleuro-pneumonia* is reported to exist in no less than twenty-two counties, including the metropolis, in England, and six counties in Scotland; *foot and mouth disease*, in six counties in England; and *swine fever* is reported to exist in twenty-seven counties in England, and two in Wales.

Cattle plague, (*rinderpest*), is reported prevalent in the Russian Empire, in Bessarabia, Valhynia, Ekaterinoslav, Podolia, Tauridia, Kherson and Petrokoff. It is also reported to have appeared in Russian Poland in the neighbourhood of Lubtenitz, on the Silesian frontier of Germany.

In Austria cattle plague has broken out in the government districts of Littai and Stangenplane, in Carniola; it is also said to have existed in two or three villages near Ragusa, in Dalmatia.

From most recent reports (1) from the United-States we learn that "pleuro-pneumonia exists in a portion of New-York, New Jersey, Pennsylvania, Maryland, Delaware, and Virginia, besides having repeatedly invaded Connecticut."

From the advanced sheets of a report by T. J. Edge, Esq., Secretary to Governor Hoyt, of Pennsylvania, published in "The Philadelphia Record," sent me by J. W. Gadsohn, M.R.C.V.S., we learn that pleuro-pneumonia exists in twenty-seven herds, spread over seven counties, in that State.

(1). The Lung Plague, by James Law, F.R.O.V.S., December, 1879.

The fact of these diseases existing as extensively as they do in those countries with which we have such intimate commercial intercourse, surely demands of us in Canada, into which they have not yet gained an entrance, the utmost vigilance to guard our healthy stock from such scourges. As I have repeatedly stated on the authority of Gamgee, Fleming and Findlay Dun, and recently of Prof. Law, "England imported pleuro-pneumonia in 1842, and up to 1869, it is estimated that the loss, almost exclusively from this disease, was 5,549,780 cattle, worth, say \$400,000,000. For the succeeding nine years, up to 1878, the losses have been, in the main, as extensive, so that we may set them down as now reaching at least \$500,000,000, in deaths alone, without counting all the contingent expenses of deteriorated health, loss of markets, progeny, crops, manure, &c., disinfection, quarantine, &c."

In one year alone (1872) it was estimated that, in Great Britain and Ireland, the loss from foot and mouth disease amounted to no less than \$67,205,700, and from pleuro-pneumonia about the same—representing the large amount of \$134,411,400. Cattle plague killed from 67 to 98 per cent., according to Roll in 1860-61. In the 27 districts of Austria, containing 158,800 head of cattle, 16,930 were attacked and 4,800 died. In the county of Presburg, in a bovine population of 35,566, 6,773 sickened, 5,030 perished, and 1,436 were killed. In Great Britain during 1865-66, 279,023 were reported sick; of these, 233,629 died and were killed; 40,165 recovered. In Holland, for the same period, the number attacked was 166,592; 78,111 died and 36,919 were killed, while 51,562 recovered (1).

It will thus be seen that these three bovine scourges decimate the herds, impoverish the farmers, and seriously impede the prosperity of any country whose government is culpably negligent enough to allow them to be introduced, for, as I shall show, they are all preventible, and in our case very easily so.

The diseases which are most likely to be introduced by sheep are: *Foot and mouth disease*, which affects cattle, sheep, goats, and pigs. *Rinderpest*, which, though primarily developed in cattle, is capable of transmission to other animals. *Small-pox (Variola)*, a disease of a very contagious character which has repeatedly decimated the herds in different parts of Europe, though, fortunately, so far it has never been known to occur on this continent. The mortality varies from fifteen to fifty per cent.

Scab (Scabies), a disease which occurs more or less in every quarter of the globe, is a parasitic disease which is readily communicated, and proves very destructive to a flock; I am not aware of its existence in Canada, and I believe it does not exist, and in the United-States it is known by late reports to occur only in a few places. The mortality from scab is from ten to twenty-five per cent., but the loss from emaciation, abortion, and loss of wool, and the difficulty of eradicating the disease, as every object against which the sheep may have rubbed or lain upon, fences, posts, walls, stables, trees and pasture fields, being capable of communicating the disease, make it well worth our while to protect our flocks from its introduction.

The principal disease affecting swine which is likely to be introduced, is Swine Fever. As already seen, it exists extensively in England and Wales, and in the United-States. According to a special report by the Commissioner, just published, we find the following statement: "In the preliminary report of the Commissioner of Agriculture on the subject of diseases of domestic animals, a tabular statement gives the total value of farm animals lost in the United-States during the year 1877, principally from infectious and contagious diseases, at \$10,653,423. These losses are based upon as accurate returns as could be obtained in the absence of an absolute census, but as they included data from but eleven hundred and twenty-five counties (about one-half of the whole number of counties in the United-States), the above sum falls far below the aggregate losses for that year (2). About two-thirds of this sum was occasioned by the loss of swine by diseases presumed to be of an infectious or contagious character."

IS QUARANTINE NECESSARY?

The most cursory consideration of the above facts of the enormous losses occasioned by these diseases, in conjunction with the fact that they are all traceable to importation, have all spread by

(1). Sanitary Science and Police—(Fleming).

(2) "The so-called Hog Cholera causing deaths of swine to the value of \$20,000,000 to \$40,000,000 per annum." — *National Live Stock Journal*, January, 1880.

contagion, and consequently are all provontible, will convince the most prejudiced that it is suicidal for any country free from these scourges to leave any door unguarded by which they can enter. *Canada is to-day entirely free from contagious disease in farm animals (1).* There is no country in the world so well adapted by the soil, climate, and other advantages, for the wholesale rearing and fattening of stock, and there is no branch of agriculture which will so much enrich a country as stock raising, it puts money in the pocket and manure on the soil. Great, therefore, is the responsibility of those to whom has been entrusted the protection of the vast agricultural interests of this country. If they succeed in maintaining the present perfect immunity from contagious diseases in animals they will do valuable service, not only to Canada, but also to other countries, which will look to our healthy herds for their meat supply. If they fail, from whatever cause it may be, they will deserve the severest censure, as there can be no excuse for these diseases being introduced, and if introduced, they should be at once stamped out.

WHAT PERIOD OF QUARANTINE IS NECESSARY?

On first urging the necessity for establishing quarantines for stock, in 1876, I pointed out the different periods of incubation of the contagious diseases liable to be imported from European countries, and urged that a period of three months, at least, be insisted on.

At that time, and repeatedly since, arguments were advanced that Canadian purchasers of stock in Britain would naturally use every precaution to select only healthy animals, from uninfected herds; that they would, in all probability, not ship them for a week or more after purchase; that nearly two weeks would elapse between the ports of embarkation and debarkation, and hence, one week in quarantine would be quite sufficient after arrival. Such arguments were based on ignorance of the many sources of contagion, and the long period of incubation, especially of pleuropneumonia. When we consider that these diseases are communicable by means of any substance with which a diseased animal has come in contact, railroad cars, sheds, wharves, steamboats, fodder, litter, attendant's clothing, halters, clothing, bags, etc., it will be understood how an animal may leave an uninfected farm, be itself at the time healthy, and yet in transit to the shipping port, or on the steamer on which it is carried, may be exposed to the contagion.

We must further consider the periods of incubation (2) of these different diseases.

Cattle Plague (Rinderpest) has an incubatory period of from five to six days; rarely over ten.

Foot and Mouth Disease.—The latent period is from four to six days, often sooner, occasionally longer, but rarely over nine days.

Pleuro-Pneumonia has a period of incubation extending from one to sixteen weeks, and, some say, even longer.

Scab in Sheep.—As the number of parasites usual transmitted to a healthy animal are limited, and it takes nearly fifteen days for the new generation to develop, there may be nothing unusual to be seen, especially on long woolled sheep, for the first ten days.

Swine Fever.—The incubation of this disease is given differently by different experimenters, thus:—Professor Axe, of London, gives it as five to six days; Dr. Budd, five to eight; Prof. Law, seven to fourteen; while the experiments conducted at the Montreal Veterinary College by Professor Osler, showed it to be from four to six days.

It will thus be seen that if we allow twelve days on shipboard and eight days in quarantine, it will be sufficiently long for "rinderpest," "foot and mouth disease," scab, in sheep, and swine fever; consequently a period of eight days will be quite sufficient to protect the country from the disease in sheep and swine from European stock, but for American stock, twenty days at least would be required.

For pleuro-pneumonia a less quarantine than three months is useless and dangerous, as, by imparting a certain amount of confi-

(1) This statement is based on reports received within the past two weeks from the Secretaries of nearly every Agricultural Society in the Provinces of Ontario, Quebec, New-Brunswick, and Nova-Scotia, from prominent agriculturists and veterinary surgeons, all of whom are firm that, except here and there a case or two of glanders in horses, occasionally enzootic influenza in horses, diseases of a contagious or infectious nature are unknown in the Dominion.

(2) The time elapsing from the admission of the poison to the development of the symptoms.

dence in the owners, it conduces to carelessness in taking precautions to prevent the imported from mixing with the home stock. As an illustration of this fact, permit me to quote from Fleming's Sanitary Science and Police the history of the disease in Australia:—

"It was introduced by means of an English cow imported into Victoria, and landed at Melbourne in 1858. When the disease was discovered among the imported cattle, steps were at once taken to eradicate it. All the cattle on the farm were paid for by private subscription and destroyed, and the farm placed in quarantine. Unfortunately, however, the quarantine was not strictly maintained, and a greedy, ignorant neighbour, who owned several teams of working bullocks, which he usually employed in carrying on the roads, seeing the good grass in the infected paddocks, put his cattle into them during the night, and removed them at daybreak. His cattle soon became infected, and as he shortly after took his teams on the road on a journey to the border of the colony, they spread the disease in all directions as they went. His other cattle again mixed with his neighbours, and the malady was in like manner diffused around his own farm. In this way it soon spread to the other colonies, and is now more or less prevalent in them all. Travelling stock are so frequently affected, that no sooner has a fresh race of animals grown up which have neither had the disease nor been inoculated, than they are infected by cattle travelling through their runs."

When we remember that the voyage occupied about three months, and consider that all the diseased animals were killed, and the contagion was communicated by the field, we see both its long period of incubation, and its great contagiousness.

It will, therefore, be seen that, while we have great reason to be thankful for having so far been fortunate enough to escape, notwithstanding our short quarantine, the wisdom of, and necessity for, the extension of the quarantine to ninety days by Order in Council of November 25th ultimo, recommended to His Excellency by you, will be apparent to every one.

By some it is contended that it is almost prohibitory of importation—it need not be so, the loss to the owner will be trifling, the animals have to be fed wherever they are, no charge being made except whatever is disbursed for the stock; the only expense is the attendance which, after all, is trifling. But even if it does deter some from importing, will it not lead to a better appreciation of our own stock? *It may not be generally known, but it is a fact that, for purity of blood, excellence of form, and soundness of constitution, we have herds in Canada which will compare favourably with any in Europe.*

If our breeders are wise they will go on improving their herds by judicious selections, and by producing good forms, vigorous constitutions, and maintaining our present immunity from disease, the day will come when foreign breeders will visit Canada in quest of animals for the improvement of their stock.

Professor Law, in referring to the short quarantine which we have hitherto imposed on our importations, says:—

"At present we have the anomaly of United-States importers of Dutch cattle having to submit them to a quarantine of ninety days, while the Canadian importer may introduce the same animals and ship them to us at once, free from all restrictions. Here the discrimination is altogether in favour of the Canadian importer, who is virtually offered a premium on his imports.

"Let all Canadian cattle importation from Europe be subject to a three months' quarantine, and let all cattle that have come in contact with such animals suffer a similar detention, and we shall have meted out to them the same justice we apply at home, and established a reasonable protectorate over our native herds. We have at present no law to accomplish this; and, notwithstanding the best intentions, "The Treasury Department" cannot interfere in the traffic in Canadian cattle unless they have been imported from Europe within three months. Here, there is a field for legislation, and if Canada will not extend her quarantine so as to make it a protection to herself and us, Congress must step in and forbid the importation of Canadian cattle except under a quarantine of three months. As already remarked of the fountain (Europe), so of the channel (Canada), the United-States can better afford to do without her cattle than they can risk the infection of their home herds." (1)

Since the above was written, Congress has stepped in and forbidden the importation of Canadian cattle, notwithstanding that

(1) The Lung Plague of Cattle, page 71.

no contagious disease of stock exists in any part of the Dominion. The *Buffalo Express*, commenting on the embargo says: "The exclusion of Canadian cattle is more injurious to Buffalo than to any other point. From twenty to thirty car loads a week of Canadian "stockers" and "feeders" were profitably handled here. They will now be fattened in Canada and sent to Montreal for export." Here again we think the discrimination is in favour of the Canadian farmer, who, besides making more money out of his cattle, gets the manure for his land, and supports his own railway and steamboat lines.

However, now that the only ground of complaint has been removed, and European cattle must undergo ninety days quarantine, the embargo will, no doubt, be removed (1).

Taking the cue from Professor Law, I would suggest, as with the root, Europe, so with the branch, the United States,—Canada "can better afford to do without her cattle than she can risk the infection of her home herds," and until the United States completely eradicate the plague from their herds, our ports should remain closed against their stock,—for, with a frontier line so extensive, the cost of quarantine would be enormous, and would be totally ineffective in preventing the introduction of these plagues into our healthy herds.

Beef Cattle—What they are.

Much stress is always laid on mere form, and quality in cattle too often sacrificed. But the first requisite in a good steer is quality; yet too few breeders, feeders, and even butchers, know thoroughly what quality is. The best form outside is nothing, if the beef inside is not good. Quality is above form. There is a flabby animal whose beef is flabby and never juicy, and that will never set into firmness after slaughter, unless frozen. There is a rigid, hard animal whose beef is tough and never juicy. Both flabby and rigid beef are never marbled. Of the two, the rigid is preferable, if one can have a preference between two bad things. There is a third kind of animal, whose beef is not flabby or hard. It is firm, and when fed to ripeness is well marbled and juicy. It sets quickly after slaughter, and cuts evenly, both on the block, in the butcher's shop, and on the table when served as a roast or steak. It is difficult to neatly cut flabby beef on the block uncooked, or on the plate cooked. It shifts under the knife. The hard beef cuts evenly, but with none of the ease and neatness seen in the cutting of firm beef. On the plate, the flabby beef gives no juice or gravy, and the hard beef hardly any; but the firm beef pours out an abundance of gravy, rich and delicious. The flabby beef in cooking absorbs fat, and is not palatable.

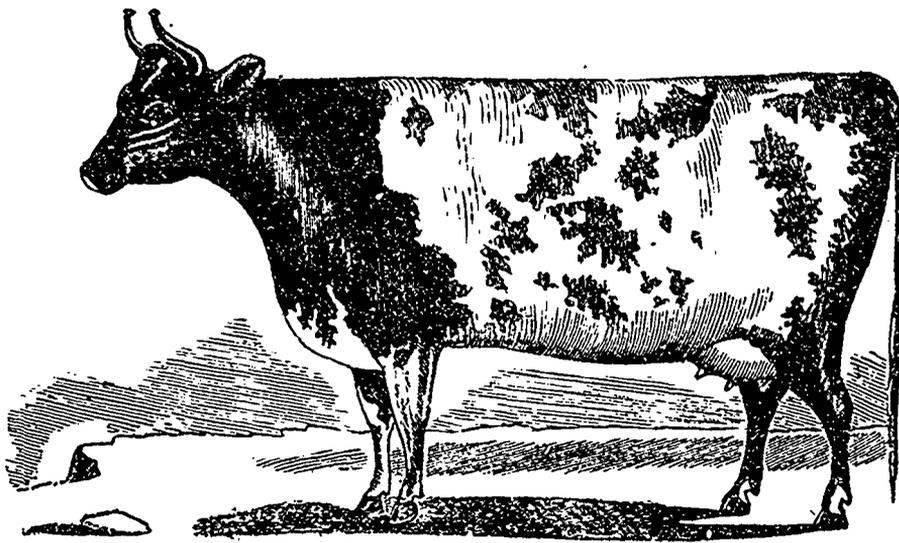
Now these three characteristics are as apparent to a first-class, experienced butcher in the living animal, as they

(2) Since the publication of the report, the embargo has been removed. Since 1st March, Canadian cattle are admitted without any restriction,

are to the eye after slaughter. It is the duty of the judge to know these things in the living animal, and if he cannot do this, he is not fit to be a judge. It is for this that we have always advocated the selection of first class butchers to act as judges of fat animals. It is their business to know how the living animal will die, and a good butcher learns it by experience, and knows it better than most of the persons who are selected as judges—not being butchers. There is nothing so stupid as the decision of judge at exhibitions of breeding animals, in nine cases out of ten. At these shows all the cattle shown are fat to excess, or, if not, then only the very fat ones ever get prizes. Yet, without exception, every soft, flabby animal wins, and the fabbier the better, if his shape be good. The judges will exclaim, "How soft! Why, he handles like a glove." Now every fat animal that is good when fed fat, and when his hide is full with meat, to be good must be as solid as a board. That is firmness. Yet how few but thorough butchers know this?

A good judge can always tell, in looking and feeling (handling is the proper term) a fat animal, whether he is prime beef, and whether his beef will marble. This know-

ledge is gained by experience—learned by comparing the touch of the live animal with his dead exhibit in his beef. Nothing but touch (handling) can determine in life what slaughter will reveal. A competent butcher, with his eyes closed, by touch would say, "this animal is flabby; this one hard; this one firm," and that of the three, only "the firm one will give marbled beef of



Ayrshire Cow.

first quality." Men without experience have read and been told that a good animal must be elastic in his handling. This means that the store animal alone must be elastic. (1) When the good store animal is fed full and is ripe, he is solid to the touch, and he shows his solidity to the eye. The flabby animal is flabby and soft, not elastic, when in store condition, and is always flabby and soft from a calf to killing age when fed fat. Softness, or flabbiness, and elasticity are two very different things.

The hard animal is always hard, either as a store, or fat. He is a slow feeder. The flabby and the firm ones feed quickly. The firm one always pays the feeder, and so does the flabby one when a fool of an ignorant purchaser is found, who pays the price of a firm, fat animal for the flabby one. But the hard one never pays anybody, feeder, butcher, or consumer.

Now the great art in breeding is to produce elastic flesh in the store animal. He is the one which, feeding quickly, makes profit; sold to the butcher he pays to him a profit; and eaten

(1) Elastic is what the great "Tommy Bates" meant by quality—the hide should seem, in a lean beast, to float on a substratum of meat. A. R. J. F.

by a consumer, he gets value for his money, gratification to his palate, good food for his stomach, and health from it to his body. But the flabby or hard steer does none of these. He pays nobody, gratifies nobody, gives health to nobody. It should be the objects of the breeder of cattle to learn all these things, and to breed cattle that, living, represent them to the eye and hand, and dead realise them.

Now these things can be known in life. They go with distinctive kinds of hair, mossy and dense coats of it, with good mellow hides of good thickness; with elasticity of flesh in store condition; increasing firmness as feeding progresses, and entire firmness when the result of full feeding is obtained. A flabby animal always has a thin hide, and thin deficient hair and is never elastic when lean, and never firm when fat, but is always soft both lean and fat. The hard animal has a harsh stiff hair, never mossy or dense. His hide is very thick and rigid. In feeding, the hide yields slowly to the meat laid on. It is a band that ties down development and increasing size within, and forces the animal to a slow growth. Beef, to be first class, must be fed rapidly; and long feeding ruins the best of flesh in the far-end. In fact, long feeding begets diseased condition, and deteriorates the flesh. Long feeding begets fatty degeneration. The feeder may quickly ripen the firm or flabby animal, but the flabby one makes bad beef, and oily tallow. Only the animal—elastic as the store one, and firm as a ripe beast—is the one that, living and dead, satisfies all who feed, kill, and eat him. The hard one is never fed rapidly, and cannot be, and pays nobody and gratifies nobody. To know all these things, is the power to be a good breeder, butcher, and meat purchaser. In them exists the science of breeding. And the chief of the knowledge of good cattle is that quality is before form, though form should go with quality, and more often does go with high quality, as shown in the lean elastic steer—firm when fat, and marbled in his ripeness—than with low quality, as seen in the flabby or hard steer. Good and bad quality both go often with defective form, but entirely perfect form never does go with utterly bad quality. The flabby beast always has an excess of paunch with weak plates, the hard one a want of paunch, and so no sufficient store room for food. The excessive paunch of flabbiness, at a given point of fitness when filled, added to the weight of flesh, brings on nervous irritation of the spine, and feeding is arrested. In the hard animal there is never a capacity to take up a full force of feed at will, and hence feeding is slow; but the elastic-fleshed steer has just that happy medium that gets full feed and appropriates it without the disturbance or hindrance that checks growth in the flabby steer, or that want of food which checks growth in the hard one.

And in the end the lesson taught is, that quality is the first of the merits of a good animal, and without its knowledge no man is, or ever was, a first-class breeder.

Kentucky Live Stock Record.

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.

MILK AS AN ARTICLE OF FOOD.

The interest which is directed to milk in relation to public health at the present time, induces us to present our readers with a few facts on the subject of milk and dairy management.

Milk is the fluid secreted by the mammary glands of the order *mammalia*, for the nourishment of the young animal till it arrives at the age when it is capable of subsisting on coarser foods, requiring more preparation by the digestive organs. From the cradle to the grave, it enters largely into

the food of the human family, yet, strange to say, there is scarcely any article of diet about which the public mind, until very recently, has been so indifferent, or careless, as to its effects on the public health. Society has long been in the habit of joking about the dishonesty of the milkman, and the profits he derives from the "iron cow", the manufacture of milk from calves brains, lime &c., but, with the exception of attempting to detect the presence of water by its specific gravity, the question in this province has not yet been treated by the authorities with that seriousness which its sanitary importance demands. Now, however, when the medical mind has been awakened to the importance of the subject, by the discovery of the fact that in many cases this fluid has been the vehicle through which the poison of Typhoid Fever has been administered; when recent investigations give rise to more than a suspicion that consumption, the fell destroyer of our race, is in many instances traceable to the milk of phthisical cows; public opinion will no doubt compel our sanitary authorities to see to it, that the milk supply of our cities is not only free from water, but free from all sources of contamination derived from the animal from which it is obtained, or subsequently.

That dishonest milkmen, and milk vendors, who wilfully adulterate the milk, should be severely punished for fraud, would be but just; but, as will be seen, the impurities added by them knowingly, are trifling compared with the impurities which gain access to this fluid through ignorance of its nature: its proneness to absorb disease germs, the chemical changes it undergoes when improperly treated, and the communicability of disease from the cow herself by its means, are of infinitely greater importance than the addition of water, if pure.

The duty therefore of our sanitary authorities is, first to instruct the dairymen who supply the public with milk on the best means of obtaining and preserving it free from injurious elements; institute a regular system of dairy inspection, not only of the animals as to their health, but their food, and water supply, the sanitary condition of the buildings, and the treatment of the milk after it is drawn from the cows; have analytical and microscopic examination of the milk by competent scientists, and disseminate among the people information as to the proper means of keeping milk free from impurities in their own houses.

By these means all anxiety can be removed, and the fond mother, the anxious nurse, the careful medical adviser, will have their fears removed of counter-acting all their loving care by administering the germs of disease in the very nourishment they give to produce health and vigour.

MILK.

Normal milk from a healthy animal should be quite opaque, of a full white colour, without deposit, tasting slightly sweet, possessing a slight odour peculiar to the animal from which it is obtained.

According to Parkes, "it should have no peculiar taste or smell;" it is well known, however, that the peculiar odour of the species is given off from the milk: thus we readily distinguish the milk of the goat from that of the cow, or mare, by its peculiar, and not pleasant, flavour. The temperature of the milk is nearly the same as that of the animal from which it is obtained. Its reaction says, Professor Mott, of New-York, depends on this:—If carbonic acid is to be considered an element of milk, then milk has an acid reaction, if not, then the reaction is alkaline; for the acid reaction is only due to the presence of carbonic acid, which, when completely expelled, leaves the fluid decidedly alkaline.

Its specific gravity at a temperature of 60° F. should never fall below 1.029—this is the standard recognized by the New-York Board of Health, and by a comparison of the observations of Schoier, Fleischman, Quevenne, Stephen

McAdam, Smee, and others, this will be found to be about correct. As pointed out by Mott, however, the specific gravity will differ somewhat, if we take all the milk from a cow thoroughly mixed together obtained at her regular hour of milking, and not the specific gravity of the first, middle, or last portions, for each of these portions would give an entirely different specific gravity peculiar to itself. A very large quantity of cream will lower it, the range being nearly 4° above, or below, the mean.

The following table from Ziemssen, vol. XIX, deduced from a comparison of numerous analyses, may be taken as a standard, below which pure milk should not fall; milk can easily be kept up to this standard by proper food and care of the cows; any falling below it is suspicious.

Average composition of pure milk.	
Specific gravity.....	1.030 +
Cream per cent, by volume	8% +
Per cent by weight.	
Sugar	4.40
Casein.....	4.30
Ash.....	0.60
<hr/>	
Solids not fat.....	9.30
Fat.....	3.20
<hr/>	
Total solid.....	12.50
Water	87.50
<hr/>	
	100.00

MICROSCOPIC STRUCTURE OF MILK.

When a drop of pure milk is placed under the microscope, we observe beautiful round shiny globules of various sizes floating in a clear liquid, (as represented in Fig. 1). These

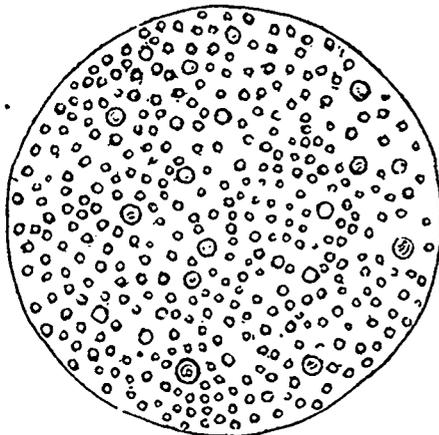


Fig. 1.

are the *milk globules*, and, in healthy milk, nothing else is observable, except occasionally a few epithelial cells, derived from the lining of the ducts. Dr. Sturtevant, of Massachusetts says: "the globules are of various sizes, some so small as to appear as granules under a magnifying power of 800 diameters, others occasionally attain a size of one five-thousandth of an inch." High powers have however shown the small ones not to be granules but globules. Sturtevant's further observations prove that the size of the globules is influenced by the food, producing a quickness of action in the glands, to the more rapid production of the globules. He also showed that the milk globules varied in size according to the breed. The globules in the Jersey breed are larger than those in the Ayrshire. By the addition of acetic acid the globules lose

their individuality and coalesce, forming large oil drops: therefore, each globule may be considered a minute drop of oil inclosed in a delicate membrane of some albuminous substance, probably casein.

COLOSTRUM.

For a varying period near the end of utero-gestation, and for a few days after the delivery, the milk secreted differs, both chemically and microscopically, from that described above, (as represented in Fig. 2). Besides the milk globules,

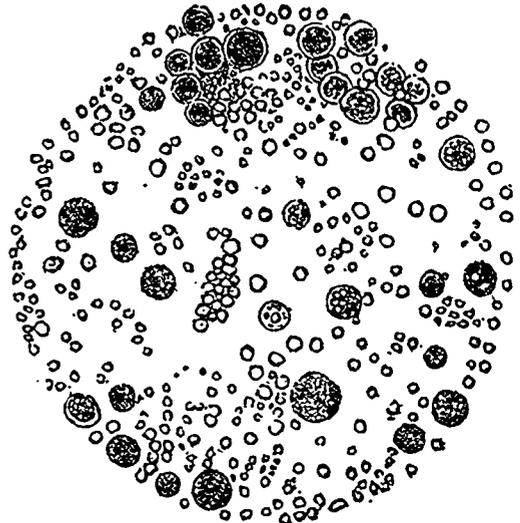


Fig. 2.

we find large round bodies composed of a collection of oil globules held together by a cement, and sometimes containing a nucleus: they are also said to possess the power of contractility to a slight extent. These bodies are known as the *colostrum corpuscles*. (Cornil, and Ranvier).

Dr. Smee gives the following analyses of milk, taken during the first and four succeeding days after calving, to determine the difference between this and ordinary dairy milk:

January	26th	27th	28th	29th	30th
Total solid — dried at 212° F.....	19.7	14.2	13.9	13.8	14.4
Total solid — dried at 212° F.....	80.3	85.8	86.1	86.92	85.6
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	100	100	100	100	100
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Fat	2.7	4.1	2.8	3.0	3.8
Non fatty solids	17.0	10.1	11.1	10.8	10.6
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Casein	6.40	4.01	5.04	4.20	3.6
Albumen.....	4.70	0.80	0.60	0.90	0.7
Sugar, &c.....	4.85	4.49	4.56	4.08	5.4
Ash.....	1.05	0.80	0.90	0.90	0.9
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	17.00	10.10	11.10	11.08	10.6

Cream vol.	40.000	16.000	8.000	6.000	8.000
Specific gravity.....	1.050	1.035	1.032	1.033	1.036

The milk first drawn after calving (six hours) had a specific gravity of 1,050, which very closely approximates to the specific gravity of blood.

This milk had a strong yellow colour, tasted like beaten

eggs, was much less fluid than ordinary milk, and set, on boiling, into a solid mass. It contained an excess of casein, and especially of albumen, it also contained blood corpuscles, which sank to the bottom, and formed a thin stratum. The cream, if cream it can be called, yielded by volume, was abnormally high to the amount of fat yielded, which was small in proportion. As regards cream, or cream-like fluid, this case is of course exceptional; still, a large per-centage of cream, by volume, frequently yields only a small proportion of fat; this is due, no doubt, to cream imperfectly separating from milk. The milk on the second, third, fourth and fifth days, approached gradually to the character of good Alderney milk.

This milk, which, from its peculiar composition and physical properties, is unfit for human consumption, yet is possessed of medicinal properties advantageous to the newly born calf, by facilitating the evacuation of *meconium*.

Such then are the physical, chemical and microscopic characters of milk as yielded by the cow. We will now observe the changes which this animal fluid undergoes after being drawn from the body which secretes it.

NATURAL CHANGES IN MILK.

All animal fluids, when removed from the body, very soon undergo changes tending to decomposition; the blood, for instance, separates into serum and clot, the milk into cream, which, in from four to eight hours, rises to the top of the watery portion. After standing for some time, it alters, absorbing oxygen, and giving off carbonic acid. According to Hoppe Seyler, "when placed in contact with three or four times its volume of air, it absorbs all the oxygen in three or four days; fat increases in amount, and oxalic acid is also said to be found. Lactic acid is developed at a later period from the lactin, the milk becomes turbid, casein is formed, and the cream disappears."

IMPURITIES AND ADULTERATION OF MILK.

This complex and unstable compound animal fluid, is very prone to changes and impurities, which deteriorate its quality, often rendering it not only unpalatable, but dangerous in a high degree. These impurities are added to it, not only during its formation, derived from the impure blood of a diseased animal from which it is manufactured by the mammary glands, as in Typhoid, foot and mouth disease, or Tuberculosis, but also from impurities to which it is exposed in the dairy. No fluid is more liable to absorb putrid exhalations than milk. Thus, Smee exposed milk in vessels to the action of sewer gases, to ascertain whether the milk could absorb these gases, and be thus altered in composition; and, while chemical analysis failed to detect any change (milk exposed in untrapped drain: water 88, solid 2.1, casein 3.5, fat 0.3, ash 0.8), the milk when distilled at a low temperature, not exceeding 120° F., yielded a distillate which had an offensive smell and unpleasant taste; tasting the distillate set up intense headache, vigorous rapid pulse, and was followed by severe diarrhoea.

He further found that milk exposed to the vapour arising from animal matter undergoing putrid decomposition, and subjected to distillation, was so offensive, and produced results so dangerous to health, that he had to refrain from making farther investigation. During transportation to market, impurities and germs of disease gain access to it, in the vessels in which it is conveyed, the water with which these vessels are washed, the water with which it is too often diluted, neglect and unscrupulous adulterations by dishonest milk vendors, the principal of which are chalk, lime, carbonate of sodium, carbonate of magnesia, tragacanth and arrowroot.

CIRCUMSTANCES AFFECTING THE QUALITY OF MILK.

It is a well known fact that the different breeds of cattle differ both in the quantity and quality of their milk: thus the Ayrshires give more milk, but not of so rich a quality as the Jerseys. Individual cows also differ as much in the quantity and quality of their milk, as they do in form and colour. So also we find the amount of the constituents varies, (casein, butter and sugar,) consequently we seldom find the milk from two cows exactly the same in taste and flavour.

Nervous excitement materially influences the milk, as cows hunted by dogs, over driven, or frightened. We know how a fit of passion, a sudden fright, or excessive fatigue, show their effects in woman, by a restless night with the baby.

The food the animal has eaten, has a marked effect on the milk, we all know how readily we can detect the flavour of turnips, cabbages, garlic, or onions, in the milk of a cow which has eaten them.

Where the cows are underfed on non-nutritious diet, the milk is poor and watery.

Viewed by the light of recent investigations, the water supply is, in a sanitary point of view, of even greater importance. For instance, numerous outbreaks of typhoid fever have been directly traced to the water supplied to the cows. Smee states that, "in an outbreak of typhoid fever which occurred at the orphan school at Beddington, England, a few years since, the outbreak was traced to a dairy from which the milk was supplied. It appeared that the dairy utensils were washed with water impregnated with sewage; and, no doubt, the milk was diluted with the same water. A change of the dairy was at once followed by the disappearance of typhoid fever from the school." He also says: "in the supplementary Report of the Medical Health Officer, to the Local Government Board," for 1874, three distinct outbreaks of typhoid fever are traced to milk. The first, reported by Dr. Ballard, occurred at Arnsley in 1872; Enteric Fever first broke out at a dairyman's, and spread among the customers: his well was polluted by fever evacuations. The second case, Dr. Ballard reported, 1873, "on Enteric Fever at Mosley and Balsall Heath"; the fever evacuations were thrown into a privy: fever spread among customers of two dairymen whose wells were polluted by soakage from this privy.

The third outbreak is noticed by Mr. Radcliffe and Mr. Power, in a special and exhaustive report on the fever at Marylebone in 1873. The outbreak was traced to milk obtained from a particular farm, the dairy utensils being washed with water contaminated by fever poison. Within the past year, the medical journals have contained reports of numerous outbreaks of typhoid traceable directly to milk. But we need not go from home to find proof of this dreadful disease being spread through the milk supply. About fifteen different families, supplied by one milkman, have had about twenty-five cases in this city during the past winter; all the circumstances pointing to, at least, very strong circumstantial evidence that the poison gained access through the water with which the utensils were washed. The well being contaminated by soakage from an outhouse, into which the excreta from a typhoid patient had been thrown.

Three years ago an outbreak of typhoid occurred in the General Hospital here; during which the House-Surgeon died from it, and several nuns and students were affected seriously. In this case it was traced to a case of typhoid in the dairy farm; a change of milkman caused the disappearance of the disease.

"Stagnant and impure water frequently contain the elements of disease, for instance: "out of 140 families supplied with milk from a dairy in Islington, England, seventy suffered from typhoid fever. One hundred and sixty-eight individual cases occurred in ten weeks, and 30 died. An investigation

showed, that the cows drank water from an underground tank built of wood, and much decayed. Here the cows remaining in perfect health carried the seeds of disease, through the imperfectly animalized secretion, to those who partook of the milk."

Professor Law relates a similar case where the milk had aropy, or slimy, character. Microscopic examination revealed the presence of certain animal germs which had their rise in the filthy pool from which the cows drank. These entered into the secreted milk, and then multiplied to such a degree as to render it entirely unfit for food.

We well know that cattle will often prefer the stagnant mud-puddle to the running stream, and that these abound in spores, eggs and animalcules; hence the necessity for not only supplying pure water, but of preventing access to impure ponds in the fields.

DANGER IN USING MILK FROM DISEASED COWS.

It is established beyond dispute, that certain diseases, such as "foot and mouth disease", are communicable from affected cattle to persons drinking their milk.

Recent investigations have shown that consumption in man, if not identical with, at least bears a strong relationship to, consumption (*Tuberculosis*) in animals.

The experiments of European investigators prove the transmissibility of tuberculosis from one animal to another by inoculation with tuberculous matter, by ingestion of tubercle, and by the milk of phthisical cows.

In a report made to the Consultation committee of public Hygiene by the Inspector General of the French Veterinary School, he speaks of the milk of phthisical cows in the following terms.

"With regard to the question of the possible transmission of tuberculosis to the human species by the continued use of milk from cows affected by pulmonary phthisis, it is of too great importance for me to treat it as a merely incidental matter. I believe that it deserves to be the object of special study on the part of the committee. I shall merely content myself with saying that the experiments of Professor Gerlach of Berlin, those of Professors Chauveau, and St. Cyr, of Lyons, and finally those of Mr. Viseur, Departmental Veterinary Surgeon of Pas de Calais, on the ingestion of tuberculous matters, and the effect of their absorption by the digestive organs, should cause reflection. Without at present attempting to solve the question as to the contagion of tuberculosis, I think it is prudent to treat it as if it were a reality, and from this point of view: that every advantage is to be derived from prohibiting the consumption of the milk from tuberculous cows."

Similar ideas are entertained on this subject by the sanitary authorities in Germany. Thus we find that "the German Society for the preservation of public health, in June 1875, adopted a resolution declaring it to be their opinion, "That the results of the inoculating and feeding experiments with the milk and flesh of animals affected with tubercle justify the assumption of a danger of infection to man, and therefore merit the greatest consideration by the sanitary police."

"At a meeting of the Munich Medical Society, in October last, Professor Bollinger read a paper on artificial tuberculosis, as induced by the consumption of milk from tuberculous cows. In the course of his remarks, he endeavoured to demonstrate that the milk of such animals had a pre-eminently contagious influence, and reproduces the disease in other animals experimented on from that point of view. He believes also that such milk, when boiled, still retains its injurious properties.

Further, he maintains that, beyond doubt, the tuberculosis of the human subject, though not completely identical with

that of the cow, is yet strictly analogous to it, and that, consequently, the wide prevalence of tuberculosis in the native herds—at least 5 per cent of which are affected—is a standing danger to the health of the community. Seeing the enormous mortality from consumption, especially in towns, Professor Bollinger believes it to be of the utmost importance to urge upon all classes, and particularly upon farmers, the absolute necessity of taking every possible means of stamping out the disease among cattle. Meanwhile some measure of safety may be secured by the rigid exclusion of all diseased stock from town dairies, a measure which forms a prominent feature in the programme of the recently established Associated Dairy at Munich, where all the cows are constantly kept under skilled veterinary surveillance, and any that may exhibit the least symptom of tuberculosis are at once weeded out." (*Veterinary Journal*, February 1880).

In this country, no statistics of the health of stock, or inspection of dairies, having yet been attempted, it is impossible to say to what extent tuberculosis exists. That it does exist to a considerable extent, we have no hesitation in stating, having on several occasions lately been consulted about it in different localities, and having in several instances made *post mortem* examinations of consumptive animals killed by our recommendation.

True, some investigators of high standing in both the Medical and Veterinary Professions deny the transmissibility of bovine tuberculosis to man through the milk, under any circumstances—others admit its possibility, if the gland itself is affected by the disease, but not otherwise; and some, refusing to be led by French or German investigators, argue that, children being the great milk consumers, consumption would be more common in them than it is; whereas it is seldom seen in children; yet who can tell how much of our infantile mortality is due to milk from phthisical cows, or how many cases of *Cholera Infantum*—*Infantile Debility*, and other meaningless names made use of to represent causes of deaths in children, are due to this cause.

That the question is not yet satisfactorily decided we are aware; yet no one conversant with the readiness with which it can be communicated from man to animals, and from one animal to another by inoculation, by ingestion, and by inhalation of atomized *sputum* from consumptives, can doubt the importance of the question; and although positive statistics, obtained by experiments on children, are wanting of the communicability through milk, the readiness with which it is transmitted to the other species warrant us in urging, in the strongest language, our Boards of Health to forbid the sale of milk from tuberculous cows as dangerous in the extreme. This can only be done by proper supervision and inspection of the dairies supplying the towns and cities.

POULTRY DEPARTMENT.

Under the direction of Dr Andres, Beaver Hall, Montreal

The Crève-cœur.

This is better known than any of the French fowls; it is one of the best of layers, not only on account of number, but also of the size of the eggs, being equal in this respect to the Spanish. It is a short-legged breed, square-bodied, deep-chested, well shaped for the table.

Like most of these breeds, it is bearded and top-knotted, but the latter appendage is not like that of the Poland. It is more like a crest, and allows room in front for the comb. This is singularly shaped, and quoting from Mr. Jacques, he says: "Comb various, but always forming two horns; sometimes parallel, straight and fleshy, sometimes joined at the base, slightly notched, pointed, and separating at their

extremities; sometimes adding to this latter description interior ramifications like the horns of a young deer."

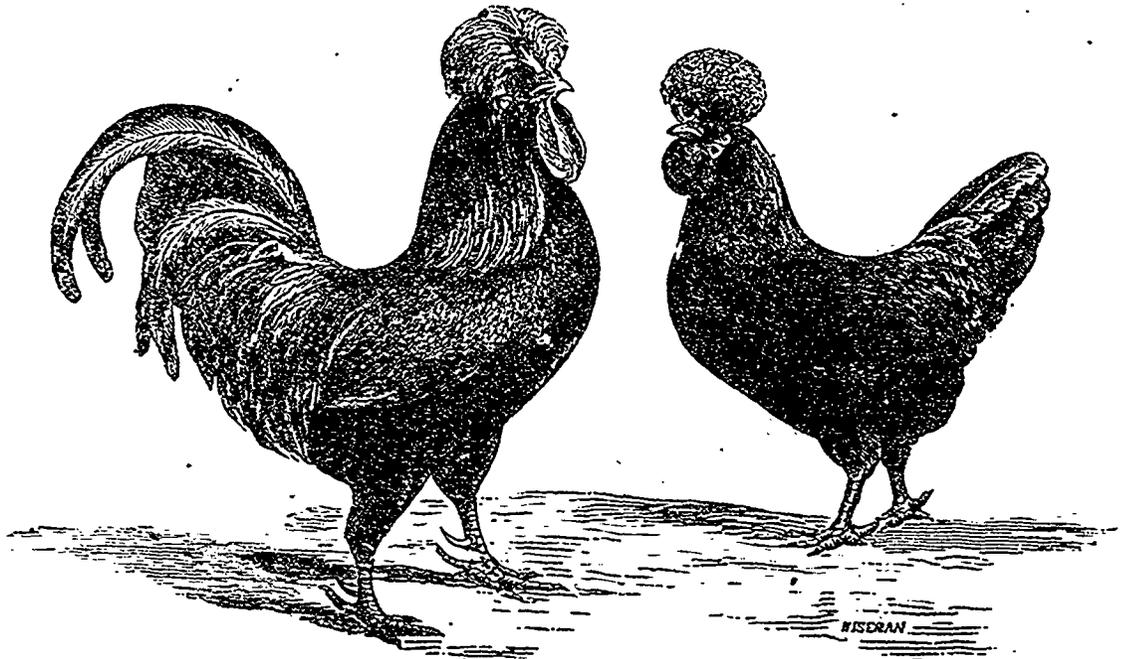
In the cock we should expect large size. Lustrous greenish black in colour, sprightly carriage, and good two-horned comb, and also good crest and muffling. The hen should have a large globular crest, with a comb rather small for pullet-breeding, but the larger combed birds are the best to breed cockerels from. Colour should be of a good greenish-black colour, not brownish black. Wright says "As layers I consider them good; this spring (1873) I have found them produce more eggs, and those exceedingly fine ones too, than either my Houdans or Dark Brahmas. For the table they are excellent, and, like the Houdan, are ready for the spit at a very early age. They are of a very sociable disposition, and easily kept within bounds; although if given their liberty they are by no means bad foragers. Crèvecoeurs make

them out of the wet grass in the morning until they are four weeks old; be careful to give only what will be eaten up clean each time.

If your young chicks are running with large fowls, make a covered slatted feeding place, about 18 inches high, and place the slats so close that the large birds cannot get in; and your chicks will soon learn to go there for their food, and will suffer no annoyance from the other birds.

We again call the attention of our readers to the disease called roup; there are different stages of this pest of the poultry yard.

Be careful to keep your birds from wet and cold runs. Give chopped onions, charcoal twice a week. A little tincture of iron in the drinking vessels (one teaspoonful to two quarts of water) and occasionally a little cayenne pepper, as a stimulant, will be useful.



THE CRÈVECOEUR.

capital crosses for the table with either Brahmas, Cochins, or Dorkings. The pure bred fowl is however so large, and matures so early, besides being so good a layer, that little beyond a greater degree of hardness is gained by the experiment.

Be careful of your brooding hens, see that they have good food and clean water, and not too many eggs under them, nine being a good number for this month. (1) Chickens hatched out this month are worth twice as much as June birds for winter layers.

HINTS IN SEASON.

We are not likely to be troubled with freezing weather now, and drinking vessels may be left out at night; but they should be filled with fresh water every morning, and all feed boxes should be kept perfectly clean.

Take good care of the young chicks, feeding generously, on good sound food, and as often as every two hours for the first ten days, giving bread crumbs mixed with hard boiled eggs, after that, cracked corn, and wheat and oatn grits, keeping

(1) April.

The disease begins often with difficulty in breathing, then the nostrils become filled with mucus, the eyes and face become swelled, the throat fills with canker, and it becomes difficult to cure.

By following the above instructions, when you first discover it, in nine cases in ten it may be prevented, and the bird saved.

To keep Food from Rats.

I have been very much troubled by rats eating up the food in my poultry-houses; and after having tried many experiments, have finally hit upon the following simple plan, which, thus far, has worked admirably, and I give it for the benefit of your readers:

Take a round tin pan, punch three holes at equal distances near the rim, and fasten a piece of wire or cord, about fifteen inches long, in each hole; secure the ends together, and attach them to a single cord, and suspend the pan from the ceiling of your poultry-house, so that the bottom of it is about six inches from the ground. Your fowls can easily eat out of the pan; but the rats are unable to, on account of the swinging motion—the pan giving way as soon as they touch

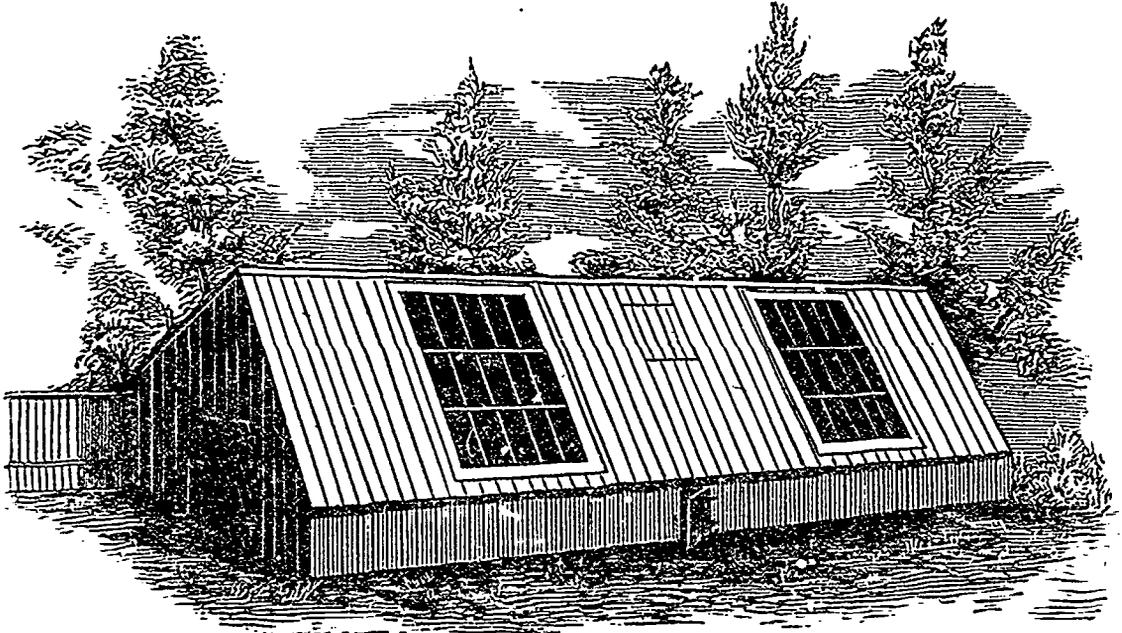
it. It is of course necessary to suspend the feed-trough, or pan, whichever you like to call it, clear of any boxes or anything from which the rats can get into it.

This method may be as old as the hills to many of your readers; but it is new to me, and may be to many others who would like to profit by my experience. — *Poultry Bulletin*.

FOWL HOUSE.

We give a copy of very convenient Fowl House taken from "The Poultry Yard." The size 11 x 26 feet. At the back, the

should come out about the first day in the new year. On the afternoon of January 1st I was delighted to find that there were eight fine strong chicks out of the nine eggs set, all alive under the hen, and I crowed inwardly to think that this year would not find me so far behind my more favoured brethren farther south. I left them in the nice warm house in which they were hatched, as the weather was very cold outside. This house has a good earth floor, and not the least smell of damp about it; in fact, it could not be damp. And, with such a nice place for them, I had not the least doubt but they would do well till strong

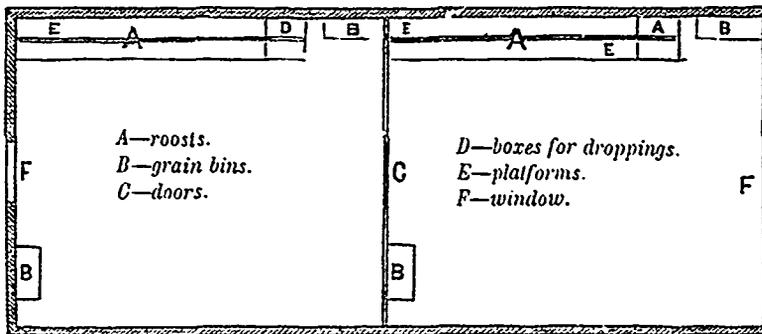


FOWL HOUSE.

caves are $1\frac{1}{2}$ feet from the ground, at the ridge 8 feet, and at the front, 2 feet. The front hip is at an angle of 45 degrees.

In the roof facing the south are two large windows, 4 x 6 feet, also the ventilator, which is hinged on the top, and held in any position by means of a rod perforated with holes and a pin driven into the casing. The house is divided by wire netting, to accommodate two flocks. It is built of matched boards, and lined with felt sheathing, making a very warm house. The roosts are three feet above the ground, and one foot above the platform which catches the droppings, which are scraped into boxes placed at the end of the platform. The nests are placed in a row under the roosts, as this method economises space.

The ground plan shows the arrangement of the interior.



FOWL-HOUSE-GROUND PLAN.

enough to go out to the yard. Day by day I watched them, till in a short time I could see that I had four cockerels and three pullets. Every night I went with lamp in hand and gave them their supper, which they enjoyed; as was testified by their happy chirp; and it was with a true fancier's delight I watched the "little beg-

Bring up Chickens Hardy.

At the end of last season I resolved I would this year try some *very early*, Brahma chickens. My hens, to do them justice, did their best to meet my wishes, for they commenced to lay in December. Accordingly, I set my first eggs so that they

"gars" grow day by day; but, alas! my hopes were soon to be doomed, for the third week I saw that they were beginning to rock on their legs, "like a ship in distress." What was to be done? Books were consulted, friends were consulted, friends were asked their advice (one advising stimulants in the shape of a curry), but all was of no use; away they went, drooping off in the most unaccountable manner possible. During this time I had hatched, with my former good luck, three broods more, of seven and eight each. The second hatched about a week later than the first, and just went off the same way, and at about the same age. What was to be done? It was something new to me, as every season I had hatched over a hundred chicks with less than ten per cent. of loss, but, observe, it was always later in the season. The thought occurred to me, what if the place is too warm? In fact, I was driven

to my wit's end, and must try something, as now the first three lots were fast dying, while the fourth, only out of the eggs a few days since, were as strong and well as possible. So I resolved that they should be put out in the shed at once; and I gave orders to my man to put them out. "Put out those young chicks in this weather as this, with the thermometer below freezing?" was his reply. "Yes, put them out." "Well, they will be dead to-morrow morning." "Never mind; we will try them."

And so we did. Those chicks are now six weeks old; and it would give any one pleasure to see how strong they are.

When I was looking at them to-day, two of the young fellows were having a stand-up fight on their own account. Since this lot were hatched I have had two other lots, and, as soon as ever they begin to peck, I put them out just under cover of a shed, free from draughts; and though the thermometer has run as low as 26° Fahr., they are as strong and as well as possible.

I have made Brahmas my study for many years; but it never occurred to me that they were such a hardy fowl as to stand the cold which these young chicks have done. I have now resolved that chicks shall not be left by me in a house after the first day, as they seem to be so much better outside; and as this bit of experience may be of some use to your readers, your finding it a corner in the FANCIER'S GAZETTE may induce a further correspondence on the subject. N. B.

CHICKEN CHOLERA.

Country Lady, in the "Country Gentleman," says she had, three years ago, 150 hens which began dying of the cholera, and she tried a great many recipes, but nothing did any good until a friend told her to feed, once a week, onions chopped fine and cayenne pepper, a sufficient quantity of each to make the dough taste quite strongly of it, mixed in corn meal dough. In about three weeks the disease abated, but it was several months before the chickens ceased dying; she lost no more fowls until the next winter, when she got out of onions, and neglected the treatment for two weeks, when several died. She immediately resumed the onion feed, and lost no more until last spring, when she again neglected it for three weeks, and lost two hens, since that time she has never failed to feed the onions and pepper every week, and has never lost a chicken.

W. Horne, V. S., says: I am afraid no one has a cure for the so called cholera in chickens or hogs. I have tried almost every thing, I keep some of the best fowls to be procured with money, and their death is a great loss to me, and of course prompts me to vigilance and care, I keep them clean, and vary the food, and yet I had a visitation of this in 1878. I have visited other places which were quite filthy, care being given beyond the fact of feeding and watering, with an occasional cleaning out, and yet they never had one chicken sick. I have observed similar neglect in other places, and found no animals sick. On the other hand I have paid visits to first class poultry yards, where all was in strict and proper order, apparently, and found many chickens sick and dying without a known cause: in almost every instance it was the cholera. I found all sorts of antidotes and remedies being used, with no apparent effect. Many persons come long distances to consult me professionally, and to look at my arrangements, and really it is quite disheartening to listen to their accounts of losses. I am inclined to believe that coal-tar around a hen roost is a good disinfectant for this disease, as it is in almost every infectious disease; at least I have found my poultry much hardier, and otherwise better, since I coated the houses with coal-tar paper board. I also place it under the perches, which are 2 by 4 scantling, flat side down, and I put it under and behind the nests. I am quite certain that the system of soft feeding produces conditions favorable to this

disease or any other, if it does not really cause disease. One of the best remedies I have ever used is tincture of nuxvomica 6 drops, alcohol 1 teaspoonful, water 1 teaspoonful. Give to each affected fowl twice a day. Should they seem to have a jerking motion, withhold it for a dose or two, then repeat until the symptoms are favorable, and gradually leave off. The best general food I find to be barley, with an occasional feed of corn and oats. Of course a little soft food will be good occasionally, say once a week, not more. Keep clean.

A short time ago our attention was called to what was at first supposed to be poison, which might have been given by mistake, and a couple of birds (a duck, and hen), were brought for examination. Thirteen hens and four ducks had died within twenty-four hours, making a serious loss to the owner, and at his request, C. Bruno, V. S., was requested to assist in a post mortem examination, to satisfy the party owning the birds, as we, having inquired carefully as to the symptoms shown by the birds before death, had diagnosed the cause to be chicken cholera. We give the result as follows:

Mouth and appendages normal, larynx and trachea filled with a semi fluid whitish mucus, the mucous membrane of the bronchial tubes very much injected, the lungs highly congested.

Pharynx, oesophagus, normal, crop, full of buckwheat, soft food, like meal half cooked, egg shells, pieces of anthracite coal, and dead grass or old straw, mucous membrane, very much inflamed, gall bladder, distended, peritoneum, very much inflamed, liver, enlarged, spongy, and soft, easily torn.

Gizzard impacted, with semi-digested food and pieces of anthracite coal, cœcum and colon filled with semi-fluid and dark fœces emitting a very offensive odor, both coats of all the intestines very much inflamed oviduct, normal.

The duck was in the same condition, in every respect.

The blood in both birds presented a diseased appearance. It was darker in color than that of a healthy fowl, being almost black, was wanting in serum, or what is called the watery portion, showing imperfect circulation, in fact was more or less congested in all the organs, proving the diagnosis to be correct.

It is epidemic, characterized by diarrhea, as a rule, and very destructive to life. The disease is generally sudden in its development. Fowls will lay on one day, and the next day be carried off by the disease; still it is not always, or frequently, so rapid in its course. We had previously examined the premises where the birds had been kept through the winter, and found they were too crowded, twenty-five birds roosting in a space about six by seven feet, and four feet high, in one corner of a dark and badly ventilated stable, and believe the cause of the disease to have been virtually blood poisoning, induced by uncleanness, careless feeding, and close, unventilated quarters at night.

We shall in another paper take up the subject again, treating it more fully than our space will allow this month.

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