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WETA

Box 348

NOVA SCOTIA



Published under direction of the Board of Agriculture of Nova Scotia.

*Omnium rerum, ex quibus aliquid acquiritur, nihil est agriculturâ melius, nihil uberius, nihil homine libero dignius.—Cicero: de Officiis, lib. I, cap. 42.*

VOL. III.

HALIFAX, N. S., DECEMBER, 1878.

No. 22.

HALIFAX, December 1st, 1878.

The Agricultural Societies of the Province, taken as a whole, were never in a more efficient state than they are at this present moment, and we now look forward to the approaching Annual Meetings, as likely to afford evidence of still further increase in activity and vigour. The Meetings of Societies throughout the Province will be held simultaneously on Tuesday, the 3rd December, when the Members assembled, of each Society, are required by the Act to elect a President, Vice-President, Secretary and Treasurer, and not more than five Directors.

The officers and directors shall hold meetings from time to time, and may alter and repeal bye-laws and rules or management, subject to approval of the Central Board.

In addition to the ordinary duties of management, the officers and directors shall present at the Annual Meeting in December, a report of the proceedings of the Society during the year, in which shall be stated the names of all persons to whom premiums were awarded, with the name of the animal, article or thing in respect of which the same was granted, together with such remarks upon the agriculture of the county as they may be enabled to offer, and a statement of the receipts and disbursements of the society during the year, which report and statement, if approved at the meeting, shall be entered in the journal of the society, and a true copy thereof, certified by the President and Secretary to be correct, shall be sent to the Central Board. It is further pro-

vided that an attested list of the members of the society whose annual subscriptions have been paid, together with a certified statement of the year's accounts and report as presented to the annual meeting, shall be forwarded by the President or Secretary of each Society to the Secretary of the Board not later than the thirty-first day of December in each year, and societies failing to comply with the provisions of this section shall forfeit their claim to any share of the Provincial allowance to societies for the year. If any Secretary has not already received a copy of the ruled schedule for this return, he should write or telegraph at once to Professor Lawson, Secretary of the Agricultural Board, Halifax.

The county society, where but one exists in a county, and the several societies, where more than one is established therein, shall be requested to hold an annual show, for the exhibition of agricultural and horticultural produce, farm stock, and articles of domestic manufactures, at which prizes shall be granted for the best specimens produced of farm culture, and such shows shall be held at such time and place, and under such regulations, as the majority of the officers and directors of the several county societies may determine.

If the officers and directors of the agricultural society of any county, or part of a county, consider that any other system might advantageously be substituted for that of shows, and that the sum allotted to such societies might be better applied to the importation of stock, or to any

other purpose for the improvement of agriculture,—in such case they may apply the said sum, provided notice thereof has been given to the Board of Agriculture, and its approval of such appropriation obtained.

It may here be added that the Board regard the purchase and keeping of suitable thorough-bred registered stock as a very important function of these societies, and as, in many cases, the most desirable purpose to which their funds may be applied, as many of the counties are not yet provided with suitable Exhibition buildings.

It is the duty of the officers of every Agricultural Society, immediately after their election at the annual meeting in December, to nominate a person suitable for appointment to the Central Board, and the Secretary of every society shall forthwith transmit to the Secretary of the Central Board the name and address of the person so nominated.

The Governor in Council shall select six from among the persons so nominated to be members of the Central Board, one being chosen from each of the districts specified in Schedule B, and the preference being given, for each district, to the person nominated by the greatest number of societies. In case of an equality of votes for any number of the persons so nominated for any district, the Governor in Council shall determine who of the number shall be the member.

In case the officers of the Agricultural Societies shall neglect or refuse to nominate any person for appointment to the

Central Board, or if the Secretaries of the Societies shall transmit no such name and address, the Governor in Council shall appoint a member of such Central Board for such district.

All members of the Board shall retire annually on the thirty-first day of January, but shall be eligible for re-appointment.

When vacancies occur in the Board from other causes than the annual retirement of Members on the thirty-first day of January, the Governor in Council may at once appoint new members without reference to nominations by Societies.

#### SCHEDULE B AS AMENDED.

*District No. 1* shall include the Counties of Halifax and Lunenburg.

*District No. 2* shall include the Counties of King's, Annapolis and Queen's.

*District No. 3* shall include the Counties of Digby, Shelburne and Yarmouth.

*District No. 4* shall include the Counties of Hants, Colchester and Cumberland.

*District No. 5* shall include the Counties of Pictou, Antigonish and Guysboro'.

*District No. 6* shall include the Counties of Cape Breton, Richmond, Inverness and Victoria.

#### PRESENT MEMBERS OF BOARD OF AGRICULTURE FOR THE RESPECTIVE DISTRICTS.

These Members are eligible for re-election.

*District No. 1*, Colonel Laurie, *President*.

*District No. 2*, W. E. Starratt, Esq., Paradise.

*District No. 3*, Charles E. Brown, Esq., Yarmouth.

*District No. 4*, Israel Longworth, Esq., Truro.

*District No. 5*, David Matheson, Esq., Pictou.

*District No. 6*, John Ross, Esq., Boularderie.

THE publication of the Pedigrees of Registered Thorough-bred Live Stock will be resumed next month.

MR. HENRY has imported from Ontario, and sold at Truro, a car load of very nice Sheep, which realized fair prices. It is stated in the papers that he intends in future to make annual importations, which we hope is the case.

We regret to hear that the fine Ayrshire Cow BERSEY, purchased by Mr. Barss at the Kentville sale, has lost her calf. She seems to have been hooked by the other cows in Mr. Barss's Herd, and calved prematurely, and the calf was found dead. We must hope for better luck next time.

#### NOVA SCOTIA HERD BOOK.

The Central Board of Agriculture having determined to bring the existing Registers of Thorough-bred Stock in the Province under a thorough course of revision, with a view to the publication of an authoritative HERD BOOK, it is requested that any criticisms or information relating to registered animals be transmitted without delay to the gentlemen who have been requested by the Board to undertake the collection of material, viz.:

For *Devons*, Colonel Laurie, Oakfield.

For *Ayrshires*, David Matheson, Esq., Pictou.

For *Short Horn Durhams*, Colonel W. E. Starratt, Paradise, Co. Annapolis.

For  *Jerseys*, Mayor Longworth, Truro.

WE have received from E. B. Hyson, Esq., of Mahone Bay, a few very nice bunches of well ripened Grapes, grown at Mahone Bay. Anxious to know by what process he had succeeded in growing them so well, we made enquiry, and here is his reply:

*Mahone Bay, Nov. 5th, 1878.*

Your favour of 30th ult. duly received, contents noted. The Grapes I sent you were raised in the open air without any glass being nigh them, the name of the Grape vine is the *Concord*. It was planted in the Spring of 1872. It has been bearing for the last three years. I raised last season some very large bunches, but this year the bunches were not so large, as the vine had upwards of a bushel on it, and the vine grew to a very large size.

*Onslow, Nov'r 15th, 1878.*

DEAR SIR,—In the last number of the *Journal* you expressed a willingness to note any sales of thoroughbred stock. I would beg leave to say that I have sold to the Agricultural Society of Raddeck, C. B., the following mentioned animals, viz.:

Ayrshire Heifer calf "May Queen" 295,  
" Yearling bull "Lord Raglan" 239,  
" 2-year old bull "Harry Moore" 153.

Have still a yearling Ayrshire bull, and one or two heifers for sale.

[Our correspondent has forgotten to add his name. We cannot be far wrong in guessing that it is John A. McCurdy, Esq.]

THE following from the *Country Gentleman*, is a reply to an inquiry of the Secretary of the Board of Agriculture of Nova Scotia, who, ascertaining that cotton seed cake was likely to be imported into the Province as a cheap and efficacious

feeding material, took this means of ascertaining its physiological qualities. As a cheap food for steers, it is no doubt excellent and profitable:—

"COTTON SEED CAKE FOR COWS.—I see in the *Country Gentleman* an inquiry about cotton seed cake. Having known trouble with numerous abortions in valuable herds of cattle which seemed to trace to the use of linseed cake, probably adulterated with cotton seed, I made some inquiries, and learned that in the cotton-growing States, cotton seed is never fed to pregnant cows; further, that a tea made thereof would prevent conception. Inquiry at drug-stores revealed the fact that "extract of cotton root" is kept and often sold. Hence I would say, don't use cotton seed cake unless as a feed for steers." P., Sennett, N. Y.

#### AGRICULTURAL CHEMISTRY.

WE are indebted for the following valuable paper to Colonel James, of Richmond, Virginia, whose concise and practical speech at the Truro Meeting for discussion of Manures will be well recollected by many of our readers:—

There being at the present time a general disposition manifested by our agricultural communities to investigate the application of commercial fertilizers to their crops, a statement of some of the known principles on which they are based, as well as of the organization of the plants themselves, may serve a useful purpose.

If a plant is burned, over ninety per cent. of its weight is dissipated in smoke and gases, and there remains an "ash," which by analysis, is found to contain some of the elements which compose the surface of our earth; continue the experiment, and we find that though the relative amounts of these various "ash-constituents" vary in different plants, and even in different organs of the same plant, yet the greater portions of them are invariably present. Yet this very small amount of mineral matter—less than ten (10) per cent.—left in the "ash," is absolutely essential to the growth of plants, and if we plant seed in a soil so prepared that these ash constituents are absent, the plant will not grow. They are therefore, as stated, necessary for the growth of the plant, and *must exist in the soil* in such a condition as to be capable of assimilation, that is of being taken up and absorbed in the growth of the plant.

All plants receive their nourishment or food through two (2) channels, viz.: through their leaves, from the atmosphere; through their roots, from the soil. The leaves absorb all the carbon, most of the nitrogen (as ammonia) and some little water. The roots take up a part of the nitrogen (as ammonia or nitrates); the water, and such elements as constitute the "ash" when burned. These

"ash-constituents," forming so prominent a part of the food necessary for plants, must either already exist in the soil, or be supplied from artificial sources, and are called "ash-food." Some plants require more of one substance than others. Thus, there are potash plants, as corn, beets, turnips, potatoes, and root crops generally, whose "ash" contains more than half its weight of potash; lime plants, such as beans, peas, clover, etc., having their ash composed chiefly of lime and magnesia. Plants absorbing more or less of silica from the soil—wheat, oats, rye and barley. In all these different ashes, no matter what the class may be, phosphoric acid forms a large proportion, and is usually united with the predominant bases of the ash.

It appears then, from the foregoing, that the roots of plants absorb from the soil, some ammonia, phosphorus (or phosphoric acid), potash, lime, soda, magnesia, silicic acid, and some other substances not necessary to enumerate in this article, but which, together with the magnesia, silica, and a good deal of the soda, exist native in most soils in sufficient quantities. What remains, together with any lack of sulphur, should be furnished in the composition of all high grade fertilizers, but are not considered of sufficient importance to appear in analyses, unless specially designated. Eliminating these, we have to consider the four principal essentials, as they are called, in the composition of what are termed "complete manures," viz: ammonia, phosphoric acid, potash and lime; and, in the incomplete fertilizers, or "chemicals for composting" as many of these essentials as are given by the analyses. A fertilizer is called "complete" when it furnishes a given number of these principal constituents, such as will act of themselves in such a manner as without the aid of other ingredients a crop will be perfected; "incomplete," when they are prepared to cooperate with the product of the stock yard or farm pen. Each is valuable only as its constituents appear in harmony with the crops for which they are intended, and are soluble for use in the natural acids of the soil, and in water, for without such solubility they are not available for the processes of nature's laboratory.

In purchasing fertilizers then, consider specially these two main points, viz: The character of the crop to be planted, and the description of land where it is to be grown; the best fertilizer adapted to the crop, and the amount of soluble and available elements it contains,—for if the per centage of insolubility is high, and the available acid low, the slow action of the goods will produce dissatisfaction in results, and, more than probable, a hastily formed opinion that commercial fertilizer

fail to meet your wants. It should also be borne in mind that all of the responsible companies furnish an analysis of the goods manufactured by them, and, in purchasing an article, the analysis made by the proper Provincial authorities, should always be produced for reference.

In the United States, the different State and Corporation chemists and inspectors have settled down to a basis of valuation, averaging about as follows:

Soluble phosphoric acid	16 cts. per lb.
Reduced " " "	16 " "
Insoluble " " "	5 " "
Potash (actual) .....	6½ " "
Nitrogen .....	22 " "
Ammonia (from sulphate) 25	" "
" In nitrogen of blood,	8½ " "

These are average rates, and vary somewhat with amount of freights, charges, etc., packages, and state of the markets.

To find the commercial value of any fertilizer, first find by the percentage in the analysis the number of pounds of any given ingredient, remembering that the commercial ton is of 2000 pounds net weight; then multiply the number of pounds by its price. The sum of the individual values will approximate closely to the value of the goods."

#### CONTROLLING SEX.

Eds. *Country Gentleman*.—When we consider how much is written and published by practical farmers and others on the best methods of raising stock, from their birth to maturity, and of crops best adapted for such purposes, one might well be pardoned for thinking that no more could be learned on either subject, than is already known, and that there need be no further search after knowledge in that direction. There are many practical farmers, good ones too, who differ in opinion as to the best methods of raising the various crops; also in the raising of stock, to say nothing about different breeds. If these differences of opinion lead to a careful consideration of the subject by those who advocate them, good must result eventually from such differences—if not to those who hold them, there will certainly to those inquirers after the best methods, who endeavor to profit by the practices of their neighbors.

In your paper of Nov. 29, page 766, Mr. Franklin Sherman has a letter on the subject of "Sex Breeding," in which he says: "To control, or even greatly influence the production of sex, would be a power of such great value to the human race that time and space devoted to the discussion of this obscure question is not misused." Mr. Sherman also says, if there is a truth to be discovered, he thinks the "search for it will be helped, not so much by combatting the ideas of others,

as by seeking additional evidence in support of one's own." I like Mr. Sherman's letter, as he seems to be seeking after the truth in the art of breeding, rather than theory or the support of a theory. Having had some experience in breeding farm stock, and having a theory of my own (or perhaps I should say, noticing practical results in my own herd), I will state them, so that if any person who is engaged in the breeding of cattle can derive any benefit therefrom, my time in writing will not be lost; and if not, it may be the means of causing some one better qualified to give his experience.

In 1842, I purchased my first Short-Horn bull to improve my dairy stock, and, as was natural to most young farmers, I was desirous of raising as many heifer calves as possible, but how to accomplish it I did not know—and I might add that I do not know even now. The bull came on the farm June 14th, having been on the road four days on foot, consequently he had been reduced in flesh and vigor during that time, although perhaps scarcely perceptible in his appearance. On his arrival at the farm there was a cow in heat, and they were coupled; the cow being fresh, the bull tired. The result was a heifer calf. The bull had been kept up and fed meal before I purchased him, but being a very quiet animal, although three years old, I turned him into the pasture with the cows, and did not have any grain fed him during the remainder of the season. He fell off somewhat in flesh, which decreased his vigor, while the cows were of course increasing in vigor, especially the heifers that were not giving milk. The following spring I had ten heifer calves and two bull calves. The bull served some forty cows in 1842, a large proportion of which were heifers. This bull was kept on the farm for a number of years, and during the winter, with ordinary feeding, he would invariably gain in flesh, while in the working season on grass he would fall off in flesh, but in no year so decidedly as the first year he came on the farm. During the years he was kept I always had more heifer calves than bulls. My theory since has been, that to breed heifers, the cows must be well fed and in full vigor, while the bull should not be so well fed, but be gradually reduced in flesh during the serving season. In no case however has there been any absolute certainty what the sex would be, and as already stated, no definite knowledge has been obtained that could be relied on, but in many cases the sex produced was in direct opposition to the theory.

The theory that in order to produce a female, the cow should be served as soon as she comes in heat, has been tested very thoroughly by the writer, and after years of persistent trial I have been forced to

give up the idea of breeding of sexes at will by that method. I believe it is generally conceded that there are nearly an equal number of the two sexes usually born of the different varieties of animals as bred on the farm, so that no great preponderance of either sex in a series of years is usually observable. This being the fact, it would seem that an all-wise Creator had established certain immutable laws that could not be changed, and therefore the sexes would continue to sustain the same relations to each other in the future as in the past.

If Mr. Stuyvesant's theory proves true when tried by breeders at large, it would seem that there was provision made by the Creator for equalizing the sexes, so that by careful observation the different sexes could be produced at will in those animals that usually bring forth only a single young at a birth. If the writer fully understands Mr. Stuyvesant's theory, it is that by serving at the first heat in a female the produce will be a male, the second under like circumstances will produce a female, and so on alternately.

Mr. Stuyvesant's statement was wholly new to me, doubtless it was to most other breeders of farm stock, and whether it will prove in practice what he claims for it, time and the practices of a few breeders only must determine, as it is not to be supposed that it will be generally tested at present by the mass of farmers and breeders. Since the publication of Mr. Stuyvesant's theory, the writer has taken some pains to look over his past records, and was surprised to find so much in them to corroborate Mr. Stuyvesant in this. I have found only a single instance in twenty-five cows that did not corroborate that theory. I will give a few examples from my service record, and your readers may draw their own conclusions.

The cow Lady Oxford 2nd had calved late in the season of 1875; her first turn of being in heat was Dec. 8th; she was served, and according to Mr. Stuyvesant's theory should have produced a bull calf. The 28th of December she came again in heat, and was then served by the same bull; this service should have produced a heifer calf, and she dropped one, Oct. 4th, 1876. The cow Duchess had calved the same day as Lady Oxford 2nd; she came in heat the first time Dec. 18th, and was served. She came in heat again Jan. 7th, 1876; was then served, and dropped a heifer calf Oct. 15th. The cow Lady Constance calved Oct. 8th, 1875; came in heat and was served Dec. 7th; was in heat and served again Dec. 29th (heifer); was served again Jan. 18th, 1876 (bull); served again Feb. 7th (heifer); served again March 28th (bull); again April 18th (heifer); again July

3rd, and dropped, April 13th, 1877, a bull calf. Lady Constance 4th calved May 30th, 1875; she came in heat July 7th, was served, and dropped a bull calf April 21st, 1877. Lady Constance 5th produced a bull calf March 25th, 1876; she came in heat April 19th (heifer); she came in heat again June 3rd, was served, and dropped a bull calf March 20th, 1877. Lady Oxford 7th had a bull calf March 6th, 1876; she came in heat the first time May 31st and was served (bull); she came in heat again July 29th, was served, and produced a heifer calf April 12th, 1877. Lady Oxford 12th calved Nov. 16th, 1876; first came in heat Jan. 18th, 1877, and was served; she dropped a bull calf Nov. 3rd, 1877. Duchess, mentioned as having dropped a heifer calf Oct. 15th, 1876, came in heat for the first time Feb. 16th, 1877; was then served (bull); again in heat March 9th, was served, and dropped a heifer calf Dec. 16th, 1877.

We had six calves this fall, and in every instance they had been in sex according to Mr. Stuyvesant's theory. When the cows were served we knew nothing of the theory; consequently there was no attempt made to prove or disprove its correctness. Since the publication of Mr. Stuyvesant's communication, we have been making some experiments, the result of which will be communicated to the *Country Gentleman* when known another year. I hope this theory will be tested by breeders, and if it should prove correct, or nearly so, the thanks of breeders will be due to Mr. Stuyvesant. JONATHAN TALCOTT.

Rome, N. Y.

—In *Country Gentleman*.

#### SHORT-HORNS, THEIR GENERAL UTILITY FOR ALL PURPOSES.

THE following lecture read by Mr. Fawcett, of Childwick Hall, before the North-East Somerset Farmers' Club, excited much interest and elicited much comment among the English farmers. We have not been able till now to find room for it in the *JOURNAL*:—

Mr. Fawcett said he was not there to suggest, or for a moment to suppose, that he could teach them their business, or advise them to place any kind of stock upon any of their farms, without taking very carefully into consideration the character of the soil, the character of the herbage, the character of the water, and various other circumstances, the difficulties of which they had to contend with. He was not there to attempt for a moment to advocate any particular breed of cattle, or to say that Shorthorns were right here, there, or everywhere, for it was very important to stock a farm correctly; it was

perhaps the very act that must lead either to their success or to their failure, whether they stocked it rightly or wrongly, and no one could so well judge of the character of the stock suitable to a particular farm as the persons who resided in the immediate neighbourhood, and who knew the climate and the various circumstances that had to be contended with. They must not, therefore, suppose he was there for a moment to attempt to induce any to sell or part with the stock that he might happen to have upon any particular farm which he had carried on successfully, and say to him, "place Short-horns there instead," because he knew that the stock must be adapted to the place, or the farmer possibly could not be successful. Having said so much to them he would now tell them as briefly as he possibly could what little he knew of Short-horns, and in what he said he would endeavour to say nothing but what he believed to be strictly true, and so keep them from running after these animals with that degree of madness—for he might call it madness—which had lately been adopted. First of all, then, he would touch upon the origin of Short-horns. Their origin would be some hundreds of years before the Herd Book was compiled, therefore they would observe at once with him the folly of arguing simply upon the foundation of the Herd Book. For instance, the Stanwick Park herd was said to have existed at least 200 years before Messrs. Colling purchased the cow called Duchess, and Messrs. Colling's Herds were sold some ten or twelve years before the Herd Book was established. He mentioned that, to show them that no breeder ought to be guided solely by the pedigrees of the Herd Book. Messrs. Colling, who were probably the first parties who bred the Short-horns in and in, purchased from Messrs. Maynard and others, who had been breeders of Shorthorns long before the Messrs. Colling started. No pedigrees were then kept, the Herd Book only commenced in the year 1822 or about then, and therefore the early pedigrees as found entered in the Herd Book were necessarily to a very large extent made up from hearsay, or at best, from very questionable information. People referred to the Herd Book as though it related to the beginning of the breed of Shorthorns, although it was well known they had been known as the Teeswater or Dutch cattle, for hundreds of years before, but no exact account existed as to their origin or the process by which they were improved.

No doubt the Galloways and the West Highlanders were those which improved the quality of the flesh and the hair, reduced their size, shortened their legs, and increased the valuable proportions as well as the flavour of the flesh. The Durham

Ox was calved about the year 1796, was got by Favourite 252, and was out of a black and white cow, bought in Durham market for £14, some twenty years before the Herd Book existed. Messrs. Maynard, Witham, Charge, Harrison, Millbanks, and many others were well-known bull breeders long before that period. Hubback, No. 319, was pointed out as the foundation of the Shorthorn breed, but no one knew how he was bred. Mr. Wm. Fawcett had him, and used him long before the Collings had him, and he believed that his dam was a black Galloway cow, which went in the lanes. He was sold for £1 to a Mr. Nattras when a calf (so it was said), but there was great doubt as to this calf being the bull that was afterwards called Hubback. Messrs. Colling and Waitson gave £10 for him, and sold him to Charles Colling for £8, and Mr. Hubback bought him from Charles Colling, hence he got the name of Hubback. This bull died in 1791, some 30 years before the Herd Book was compiled, and therefore they might judge how difficult and uncertain it must have been, to arrive at anything like the correct pedigree of the animal. There was no positive proof whatever of his breeding. He passed through the hands of various persons who kept no record of the breeding of their animals, who seldom knew what cow they were from, or by what bull they were got—for bulls in those days went, as he was sorry to hear many did in that place, in the fields and often in the lanes. It was perfectly clear that Hubback did not originate the Shorthorns, which it was now generally stated he did. They must have existed before to produce him, and as to his exact breeding, no one knew what was the breeding of his dam or sire, it was mere supposition or imagination.

Then, again, Favourite 252 calved 1794, died in 1809. (They would observe again, that was about ten years before the Herd Book was established). He was not from stock of Messrs. Colling's breeding, but descended from a cow bred by Messrs. Maynard. He was by Bolingbroke, No. 86, and bred by Phoenix, by Foljambe, from Mr. Maynard's Favourite, sold to Messrs. Colling for something like £30, and Bolingbroke's stock was said by many old breeders to have resembled the Hereford cattle very strongly indeed. They had red bodies and white faces, white legs and white backs; and many of the old breeders believed that the Herefords were used as a cross in some of the early Shorthorn cattle. Some of them went so far as to say they remembered some bulls of that breed going with the cows in Stanwick Park. It was well known that Messrs. Colling crossed with the Red Galloways (viz., Scotch cows without horns), and Mr. Richard Booth also used them for a cross, and the longhorns, if not

the Herefords and Devons, were also used. Some of the early Shorthorn cows were hornless, and some had cock-horns; indeed some of Messrs. Booth's best animals had cock-horns to this day.

*Milk, hair, size, and beef*, were the properties at which the early breeders aimed, and were what they desired and considered necessary. Now a-days pedigree appeared to give the value almost entirely. Were gentlemen who gave these enormous sums for particular pedigrees justified in what they were doing? Let them take first the purity of blood. Now a-days they heard of little else but the *purity of the blood*, just as if Providence had given to some particular men, such talent or ability, that no other men could produce animals like them. Messrs. Booth resorted to Messrs. Colling for bulls, and to the common markets for their cows. They also used Exquisite, which was sold in the Wiseton sale for £370, and was purchased by the late Messrs. R. and J. Booth and Mr. Torr conjointly. Messrs. Booth also used Lord-Lieutenant, and he was by a Ruins bull. They also used Water King, which was half Bates and Booth. They also used Mason's Matchem. These were some of the bulls they used, and it would be observed that these were not of their own breeding. Charity was a daughter of Buckingham, granddaughter of Leonard, half Ruin and half Craddock; and she was the dam of Crown Prince.

Now, let us see how Crown Prince was bred, and how much *pure blood* there was in him. Crown Prince was supposed to be the best bull ever bred by Messrs. Booth. He was the sire of Windsor, the sire of most valuable stock. He was got by Fitz Leonard (Booth); Fitz Leonard was got by Leonard (Booth); Leonard was got by Lord-Lieutenant (Rain); Lord-Lieutenant was by Thorpe (Rain); Thorpe was by Charles the Second (Cattle); Charles the Second was by Percy (Cattle); Percy was got by Charles (Mason); Charles was by Pope (Mason); Pope was by St. John (Mason); St. John was by Favourite (Collings). The result was, they had here ten bulls, and only two of them were bred by Messrs. Booth, yet at the present day many gentlemen who were breeders of Shorthorns would tell them with the most unblushing effrontery, that Crown Prince was a *pure Booth bull*; and his stock would sell for an enormous price, simply because he was so represented. There could be no greater rubbish published by anybody. He had in his hand a catalogue of the animals sold at the Killerby sale in 1852. Mr. John Booth's cattle, including two of the most valuable descriptions of cattle known in the present day, were then sold by Mr. Whetherell. One was the Bliss of Bonnett Tribe, which was considered one of the

most valuable families; Wide-awake, lot 28, was then sold, and purchased by Mr. Emerson for 10 guineas; Farewell, (of the Mantalini family) lot 29, was sold, and purchased by Mr. Emerson for 21 guineas. Now, in 1872 there were animals sold which were descended from the Rose of Primrose, and the Rose of Hope. The Rose of Hope was sold by auction by Whetherell, in 1865, and was bought by Mr. Barber for £50, and the Rose of Primrose was sold at the same time, and purchased by Mr. Charlesworth for £56. They afterwards passed into Mr. Pawlett's hands by private purchase, and in 1872 were sold by auction, and because they were considered to be pure Mantalini or pure Booth, a calf from the Rose of Primrose sold for 560 guineas, and the Rose of Summer for 360 guineas. And, so if he were to read the catalogue through, they would find that from 150 to 550 guineas were given for produce of these two cows, which he had refused at 60 guineas each. People seemed to like to give high prices, because the cattle were said to be of pure blood.

Mr. Fawcett now wished to draw attention to the meaning of *pure Bates*. He said they would all probably remember that a short time ago, a Duchess calf was sold at 2,000 guineas, and was considered exceedingly cheap. A gentleman he knew very well purchased her, and some of the Duchess cows were sold in America, and purchased by gentlemen in England, and were sold at how many thousand pounds each he did not know. He had with him Bates' sale catalogue, which any gentleman could see; he was speaking from facts, and should endeavour to say nothing but what was perfectly correct. Here is the catalogue; the first animal was called a pure Bates, Oxford 2nd, which was sold for 52 guineas, and it was only a short time ago some Oxfords were sold at the Duke of Devonshire's sale, and it would be remembered the prices they realised were from 1,000 to 1,100 guineas each, and the cow they descended from was bred by a farmer named Brown. Mr. Pell's Book, page 289, stated, "Mr. Bates did not search after the pedigree of the Matchem cow, because he knew well it would lead him up to Mason." If that statement were correct, it would be perfectly clear the Oxfords, instead of being pure Bates, ought to be called Mason's Blood, or Brown's blood; and if it were true, it would show a very improper desire to withhold the truth from the public. The Duchess foundation, so far as it was known, was Colling's blood; no proof whatever existed of any pedigree before, or of any herd having existed in Stanwick Park. The Duchesses were no more pure Bates animals than Norfolk (2377), and Belviders (1706) were; it might as well

be said, that Comet (155), Favourite (252), Daisy Bull (186), Hubback (318), and J. Brown's Red Bull, (97), were all pure Bates; and, if so, there would be just as much truth in that statement as in the other. Lot 2, a Wild Eyes cow, was sold for £20.

The general impression of the public was that Messrs. Booth and Mr. Bates bred animals by using their own animals only, and therefore called them pure Bates or pure Booth. This was not correct, because Mr. Bates used Belvidere (1706), Norfolk (2379), and many others, and the same bull, Matchem, was in both Booth and Bates pedigrees; therefore that blood must be mixed and similar. At one period the whole of Mr. Bates' cows were West Highlanders, and to those he used the Durham bulls, and at the present day there were a good many pedigrees beginning with a cow bred by the late Mr. Bates. But nobody knew how the cow was bred, whether she was from a West Highlander or not. The Duchess cow was purchased for £13, and was said to come out of Stanwick Park, but it was a fact there was no Shorthorned pedigree proved to go back to a herd in Stanwick Park. That there was a very large mixed herd in Stanwick Park long ago was true, but it was a very mixed herd, like many other country herds, and therefore why they should consider that the Duchess cow, or that blood, was superior to any other he was at a loss to imagine. If they could show that the beef was superior, that they gave more milk, that the milk was richer, that the milk made more cheese or butter, or that it made better cheese or butter; if they could show that there was more constitution, or that the beef was of a superior quality, that there was any superior, intrinsic merit in a Duchess animal, he should say they were right. But they could not do so; and, therefore, why were these Duchess animals now selling at so many thousands of pounds more than other families of Shorthorns, which were equally good for any purpose?

Messrs. Colling's cows were purchased in the ordinary markets and fairs, and the Durham ox could not, of course, either be called a pure Bates or a pure Booth. He was only one cross, the first, and might be considered one of the best animals ever produced. The Duchess cow was purchased out of Stanwick Park nearly 40 years before the herd book existed, and yet her exact breeding was said to be known. Now did they believe the breeding of any cow in that neighbourhood could be traced 40 years after the cow had passed away? And, again, there was no record of any pure Shorthorns existing in the Park at that time. He held in his hand the catalogue of a sale at Gaddesby, which took place on the

10th of July, 1873. The first animal that was sold was Waterloo, described as a pure Bates, and that was the reason the animal fetched the money it did. He would just read them from that catalogue what the "pure Bates" realised when sold by auction simply for pedigree, and not for any worth or intrinsic merit. That cow (Waterloo the 11th) sold for 81 guineas, and she was descended from a cow sold at Mr. Bates' sale for 21 guineas. That was not very extraordinary. Lady Waterloo, lot 5, sold for 150 guineas, descended from Lady Waterloo the Fourth, sold for 21 guineas in Mr. Bates' sale. Wild Princess, lot 8, sold for 400 guineas, descended from Wild Eyes 16th, sold for 22 guineas, in Mr. Bates' sale. Lady Waterloo 21st, sold for 260 guineas, descended from Lady Waterloo the Fourth, which was sold in Mr. Bates' sale for 21 guineas. Lot 13, Wild Duchess of Geneva, sold for 335 guineas, descended from Wild Eyes the 16th, sold in Mr. Bates' sale for 22 guineas. Water Lass sold for 325 guineas, descended from Waterloo the 10th, sold in Mr. Bates' sale for 60 guineas. Lady Waterloo 25th, sold for 355 guineas, descended from Waterloo the Fourth, sold in Mr. Bates' sale at 21 guineas. Wild Princess, and he thought they would agree with him that it was a wild price, realised 460 guineas, and she descended from Wild Eyes the 16th, sold in Mr. Bates' sale for 22 guineas. Now that was buying pedigree, and those prices were given because the animals were supposed to be pure Bates. The 14th Lady of Oxford sold for 905 guineas, and she was descended from Oxford the 13th, sold in Mr. Bates' sale for 63 gs. Wild Duchess of Geneva 2nd sold for 355 guineas, and descended from Wild Eyes, sold in Mr. Bates' sale for 22 gs. The 12th Duchess of Geneva sold for 935 guineas, descended from Duchess 55th, sold in Mr. Bates' sale for 105 guineas. He thought he had given them sufficient examples of buying by pedigree. There were 17 bulls in the pedigree of the 12th Duchess of Geneva, of which Mr. Bates bred five; and yet she was called pure Bates. Still men gave enormous sums for these animals, because they were called pure Bates.

Now they had another family coming up and becoming exceedingly fashionable. He had no doubt there were gentlemen present who saw a very plain old cow sold the other day at Birmingham for 200 gs., just because she was a Gwynne. In July, 1873, at Mr. Hetherington's sale, Lot 13, Minstrel, sold for 71 guineas, and Lot 52, Minstrel, sold for 41 guineas. The first was bought by the Duke of Devonshire, and the second by a gentleman known to most of those present, Mr. Garne. During the same year some animals of similar pedigree were sold for 550

guineas, and 600 guineas, in the Gaddesby sale. Therefore they saw a cow, Minstrel, sold in the month of July, 1873, bought by the Duke of Devonshire for 71 guineas, and they had others sold in the same month in the same year, descended from the very same cow, for 550 guineas and 600 guineas. There could be no difference in the blood there. Either those who bought at Mr. Hetherington's sale bought very well, or those who bought at the Gaddesby sale must have given very high prices for animals with similar pedigrees.

Then, again, as to the Waterloos in Mr. Hetherington's sale, they sold for 65 guineas, 36 guineas, 48 guineas, and 32 guineas respectively; but at the Gaddesby sale similar pedigrees sold for 150 guineas, 165 guineas, 260 guineas, 305 gs., 325 gs., 355 gs., 150 gs., and 110 gs. This happened in the same month of the same year. Then, again, as to the Wild Eyes: They sold in Mr. Atherton's sale, and he purchased some of them himself for 40 guineas (which was not an unreasonable price for a cow), 76 gs., 26 gs., 60 gs., and 30 gs.; but in the Gaddesby sale they fetched 400 gs., 835 gs., 480 gs., 355 gs., and 305 gs. So, again, with the Gwynnes. There were gentlemen in that room who saw the old cow sold, just because she was a Gwynne, for 200 guineas, yet at Mr. Atherton's sale the Gwynnes only fetched 41 guineas, 57 gs., 39 gs., 40 gs., 30 gs., 51 gs., 31 gs., and 37 gs., and the Cherry Duchesses were sold at the same sale for 36 gs., 100 gs., 205 gs., 120 gs., 62 gs., and 140 gs. They saw therefore what the Cherry Duchesses made in those days, yet at Lord Bective's sale, which took place on the 10th September last, one Cherry Duchess sold for 1,220 guineas. In the year 1851, when he was much younger than now, he went to Lord Lax's sale. He bid against Mr. Bolden for a cow called Brandy, and Mr. Bolden purchased her for 33 guineas. She was a nice little red cow. After she passed out of Mr. Bolden's hands, some gentlemen got hold of her and called her Cherry Brandy, and her descendant Cherry Duchess sold in Lord Bective's sale for 1,220 guineas, on the 10th September, 1874, just because she was a Cherry Duchess from the 33 guineas Brandy. That was pedigree, and that was the way Shorthorns were valued at the present time. There were a great many more cases similar to those, but he thought he must not trouble them with too many.

The Duke of Devonshire had a sale on the 9th of September, 1874, and a great many extraordinary prices were given by the nobility, and some middle-class farmers who were beginning to follow the example of those gentlemen who gave such prices. He was not there to advise those present to do so, for particular pedigree only, nothing of the kind, but he was there to tell them the truth, and nothing but the truth. At the Duke of Devonshire's sale there was one family called the Rose of Raby, supposed to contain the best animals the Duke of Devonshire had then. He would tell them the descent of these animals, and then they should hear what prices they realised the other day. The Rose of Raby was bred by Mr. H. E. Surtees, of Dane End, near Ware, Hertfordshire, and was there a short time before Mr. Surtees' sale of the 30th of April, 1862. There was a

little calf there that was very poorly. It was very quiet and so ill, that they thought there was nothing in this world for it but dying. He said to the bailiff, "If you can get another man and manage to hold the calf up, we will see if it is strong enough to suck the cow. If it can manage to suck the cow it may possibly live." He fetched another man or two; they got the poor creature to suck, and after sucking a few minutes it got a little strength. He advised them to let it suck a cow often in the day. They did so, the calf got better, and was sold at the sale to a gentleman named Betts (who had a good deal of money, but who was not a farmer) for 86 guineas, because it was a pure Bates. That calf passed from Mr. Betts into the hands of the Duke of Devonshire, and it was called the Rose of Raby. The whole of that family in the hands of the Duke of Devonshire were bred from that identical miserable-looking calf. Now, he would tell them the prices they realised in September, 1874, and these were considered the best animals sold at that sale. Lot 10 sold for 250 guineas; lot 15, 350 guineas. Another was sold for 150 guineas, and lot 25 was sold for 230 guineas. They would, therefore, observe that from a poor little miserable calf, for which none of the gentlemen present would have given five shillings had they seen it as he saw it, had descended some of the best animals in the possession of the Duke of Devonshire, and which had realised such prices.

(To be Continued.)

BUTTER AND CHEESE.

[Passage from Dr. Sturtevant's pamphlet in London Agricultural Gazette.]

BUTTER made from different cows of the same breed, on similar feed, and giving the same quantity of milk—made at the same time and in the same way—does not necessarily present the same colour, as is shown by the following experiment, made with three Jersey cows:—

	Gaselle.	Desdemona.	Beatrice.
Colour of skin..	Very orange	Middling.	Light color'd
Cream.....	1 lb.	1 lb.	1 lb.
Skim-milk....	7 1/2 lb.	7 1/2 lb.	6 1/2 lb.
Total milk....	8 lb.	8 lb.	7 1/2 lb.
Temperature at which set....	88°	85 1/4°	83°
Average size of globule....	1.6260	1.440	1.5520.
Time in churning.....	30 minutes.	18 minutes.	34 minutes.
Temperature of cream when churned....	.....	66°	66°
Distance of cow from calving..	27 days.	15 days.	40 days.
Butter product.	5 1/2 oz.	5 1/2 oz.	6 1/2 oz.
Colour of butter	Very high coloured.	Good colour.	Light colour
Melting point..	99°	99 1/2°	96°
Character of butter.....	Most Waxy. Good Grain.	Waxy. B st Grain.	Less waxy than others. Poorest grain.

It is, then, not correct to claim depth of colouring as characteristic of the butter of any one breed. I have seen Ayrshire butter of a deeper colour than

\*I am indebted to the kindly cooperation and personal assistance of Mr. E. P. Borditch, of Framingham, for this experiment; made with cows selected from his valuable imported and thorough-bred herd.

Jersey butter, and *vice versa*. I am inclined to think, however, that there is a difference in the shades of color in the butter from the different breeds. The Jersey butter is usually, perhaps always, coloured by an orange pigment, which is seemingly characteristic. Owing to this orange tints to the fats, and the character of the substance investing the globule, the Jersey cream oftentimes appears high coloured, especially after standing. This peculiarity of colour to the cream is not confined to the Jersey breed, but seems more usually present or more prominent in this breed than in the others. The colour of the Ayrshire butter is yellow, oftentimes a deep yellow, but appears to lack the particular orange shade already described. The few samples of the Dutch butter I have examined were of a light yellow colour, without trace of orange.

The grain of the butter apparently depends on the state of mixture of the fats in the globule, the waxiness from the greater or less proportion of the solid fats. So far as I have examined, the grain seems to vary according to the size of the globule. In the Jersey butter the grain is well defined; in the Dutch butter, very fine; in the Ayrshire butter, intermediate.

When equal quantities of Jersey and Ayrshire butters were washed in boiling water, and the foreign matter which was removed was allowed to settle, it was found that this nitrogenous matter was not only more abundant in the Jersey butter than in the Ayrshire, but showed a slightly different character, perhaps by calling it more flocculent. Theoretically, we should, therefore, anticipate the difference in the keeping qualities of these butters which we have found in our experiments.

Some pats of Guernsey, Jersey, Ayrshire, and Dutch butters were placed in a warm cupboard, near a steam heater. The Guernsey pat moulded in spots in about a month; in seven weeks the seven Jersey pats were all rancid, one sample having lost its colour in spots, the white spots resembling tallow in appearance; no butter flavor. The two Ayrshire pats had lost flavour, and were poor, but not rancid; one sample in the same cupboard, but on another shelf, retained its butter flavour and taste for three and a half months. From October 15th to January 30, and although not strictly first-class at the last, yet was of fair quality. The Dutch pat not only retained its colour and sweetness, but also its flavor, and this notwithstanding it was unsalted. Perhaps this "keeping power" is the direction of the usefulness of this breed. Holland has for centuries been famous for its shipping butter, and it is possible this keeping quality may be as much in

the nature or endowment of the milk as in the care exercised in manufacture. My experiments with the milk of this cow have, however, been too few in number to allow of my dwelling more particularly upon my results.

*Primum facit*, the milk most economical for the cheese manufacturer to use is the one which will allow the globules of fat to remain in the cheese, giving it richness and flavour. That the distribution of the globules in the cheese is an important feature can be inferred from the remarks of Dr. Voelcker, who not only writes that the price of cheese is usually influenced by the quantity of butter contained therein, but also continues on another page: "The rich appearance of old cheese, however, is by no means attributable entirely to a very large proportion of butter, nor is the poor condition of new or badly made cheese referable solely to a deficiency of butter. One of the chief tests of the skill of the dairymaid is the production of rich tasting and looking, fine-flavoured, mellow cheese from milk not particularly rich in cream. That this can be done is abundantly proved by the practice of good makers."

To the influence of the milk must also be attributed, in part, the discrepancies in the opinions of skilled manufacturers. Some advocate the removal of a portion of cream from the cheese vat, for the purpose of butter-making, and deny much injurious influence thereby on the cheese, whilst others deprecate this course. Its practice is, however, far more common in the late than in the early season, and it will also be remembered that this paper shows a decreased size of the globules as cows are distant from their calving. Mr. Gardner B. Weeks reports sales from his creamery of skim-milk cheese in quantity, at a price within 1 1/2 cent per lb. of the highest quotations for whole milk cheese. All writers unite in testifying to a loss of butter in the whey, and many processes have been invented for its extraction.

These discussions, although of much value, have heretofore left the difference in the milk out of consideration. Quality of milk does something for the maker; skill also does something; both combined bring great success. The mixed milk of numerous cows does not always indicate to chemical appliances the actual or potential value to the dairyman, for he deals not alone with composition, but with structure also in the process of either butter or cheese making.

During the ripening of cheese, a portion of the casein or curd suffers a decomposition, and is partially changed into ammonia; the latter, however, does not escape, but being an alkali combines with fatty acids produced in course of time from the butter. The peculiar mellow appearance of good cheese, though due



to some extent to the butter which it contains, depends in a higher degree upon a gradual transformation which the casein or curd undergoes in ripening.

Such being the process, it is clear that an even distribution of the fatty matter (the globule containing the olein, margarin, &c., each compounds of their own fatty acid) through the curd is desirable, in order that each particle of ammonia and acid as set free may, at the moment, be in contact. Consequently, that milk which is the richest in butter by analysis, and yet which throws up the least cream upon standing, and whose cream, when once risen, will readily remingle with the milk upon agitation, most nearly fulfils the desired condition.

So much confidence do I feel in the correctness of these conclusions, which are derived from the study of the milk globule, that I am willing to affirm that the same care used in making cheese from milk of each breed will produce a different quality in the result, although the milk may contain equivalent amounts of fat by analysis. Even the cream of a few hours may be skimmed from these milks, and the cheese made from the remainder will produce such variable grades in ripening that some may be sold as skim-milk and others as full milk cheeses.

The Jersey milk, according to these views, is unfitted for the cheese-maker, and the farmer who keeps Jersey cows to supply milk for cheese-factory use is, paradoxical as it may seem, producing results most beneficial to neither himself nor the manufacturer.

The Ayrshire milk is remarkably fitted for the uses of the factory, as not only does it contain the chemical elements of cheese, but the fat contained in that form which is the most useful, and the forms not carried to such extreme as to unfit the milk for changes in the manufacturing system. With Ayrshire milk I cannot doubt but that reasonable skimming, or that skimming which would ordinarily take place in manufacture, could take place without necessarily deteriorating, to any great extent, the quality of the cheese produced. Whatever loss there might be would be so trifling as to be readily compensated for by the skill of the manufacturer, for only that cream, in practice, would be removed which usually escapes in the whey as waste.

The Dutch milk would appear by its structure to be hardly equal to the Ayrshire milk for cheese purposes, but it is possible that the ready miscibility of the cream with the milk, after the rising, might affect the deficiency of granule.

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Fifty cents per annum—payable in advance.  
Single copy five cents.

Printed at the Office of the *Nova Scotia Printing Company* corner of Sackville and Granville Streets, Halifax, N.S.