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THE ILLUSTRATED JOURNAL OF AGRICULTURE

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE FOR THE PROVINCE OF QUEBEC.

Vol. II.

MONTREAL, FEBRUARY 1881

No. 10.

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The Whitfield Stock Farm.

On Tuesday, Jan. 4th, Mr. Ed. Barnard, Director of Agriculture, and I, paid a visit to this establishment. Taking the S. E. train to Mariaville, we were there met by Mr. Whitfield's nephew, a most intelligent young man, who, during our drive of 7 miles, gave us a good deal of general information on the subject of the farm and its collection of animals of various breeds and races. We reached Rougemont at ½ past 10 a. m. and spent the rest of the day, except the hours during which we enjoyed the profuse hospitality, and the pleasant conversation of Mrs. Whitfield, in examining the buildings and their contents. Mr. Whitfield was, unfortunately for us, in Barbadoes.

It is not enough to say we were pleased, we were delighted with the general appearance of the buildings, and the careful attention shown by the manager to the valuable herd under his control. A choicer collection of breeding cattle would be hard to find anywhere; and I do not believe so many choice specimens of the different sorts exist on this continent under the same owner. One knows not which to admire most: the judgment exercised in selecting the stock, or the liberality displayed in appropriating the services of the males to the general improvement of the herds of the country. Situated as the farm is, in a district occupied almost equally by English and French Canadians, the cattle of the neighbourhood must, before long, show a wonderful alteration in form and productiveness. Does a *habitant* wish to improve his stock of milk-cows? He can select for his service a Jersey, the original root whence sprang the Canadian cattle. Has my old friend, Mr. Standish, a high-grade heifer from whom he would like to rear a calf of still better quality? A pure Shorthorn bull is at his command. And all this, as far as two cows go, gratis; with only one proviso: the calves are to be reared in a fit and proper manner, so that they shall not disgrace their ancestry, when the enquiry is made: "Whose get is this?"

And if this goes on for a few years, if good judgment is exercised in selecting the males, in correcting by their impressiveness the weak points of the cows; we shall, in ten years from now, see Rougemont the chief seat of the cattle-breeding industry of the province. I am not generally credited with a tendency to overpraise in my writings what I see in my travels. But here, for once at least, I must depart from what, I fear, is called my criticising spirit, and say, that the general herd is excellent, and the picked

specimens superb. The following is a list of the thoroughbred cattle, as nearly as I can remember.

Kerry bulls 2	cows 3
Jersey " 2	" 4
Shorthorn " 2	" 5
Hereford " 1	" 4
Devon " 2	" 4
Ayrshire " 2	" 20
Galloway " 1	" 4
Kyloes (West Highlanders) 1.	" 7
Polled-Angus " 1.	" 5

14

56

Now, I may as well say at once that I have seen better Ayrshires, and Shorthorns, though they are good of their stamp, but for the rest they are as good as can be found anywhere. Mr. Barnard and I agreed wonderfully in our opinions, except that he rather fancied the younger Jersey more than his older companion; I confess, I preferred the latter. However they are both as good as need be; the elder rather hollow-backed, as these cattle generally become as age steals on. There could be no doubt about the younger Devon being as near the type of the breed as can be seen in the West of England. He is a pure *North Devon*, hardy as a mountain goat, and with all his meat where it ought to be, viz. on the roasting pieces and rounds. One of the Devon cows is a fit mate for him, and I cannot say more than that in her praise.

The Herefords were, I believe, selected by Mr. Duckham, a tenant farmer, M. P. for his native county. It is remarkable that these moderate-looking cows should produce such grand bulls and steers; but it is invariably the case, and, as I have often observed, in Worcestershire and Herefordshire, the bulls and steers ought always to be shown to a stranger to the breed, before he sees the cows. They are not great milkers, though they might easily be trained to be, but as the calf sucks the cow, and, in the majority of cases, the dam is never milked, but the young weaned early, they do not stand much chance of becoming good dairy cattle; though I have seen, at Sir Baldwyn Leighton's, Shropshire, a herd of Herefords averaging their 16 quarts of milk a day.

The Keries I said enough about in the October number. One or two of Mr. Whitfield's heifers of this breed give 10 quarts of milk a day, of a quality equal to the Jerseys.

But the marvel of the herd is *Judge*, the *Polled-Angus Bull*.

He is the same that won the first prize of his class at the Paris Exhibition of 1878, where Mr. McCombie's herd of the same breed gained the championship of the world; beating Shorthorns, Herefords, Devons, as well as all the continental races, in a canter. The *Polled-Angus* are mixed up with another Aberdeenshire polled kind, the *Buchan Humlies*. They form a feature every year at the Xmas London market, whither, this last month, seven car-loads were dispatched, in

one day, from Aberdeen. They cross famously with Shorthorn bulls; the champion winner of the Smithfield Club, Mr. Colman's, M. P., gray ox, was of this sort. The weight of his four quarters was $72 \frac{0}{10}$ of his life weight—a good though not unprecedented, per centage. *Judge* is a remarkably fine specimen of his tribe, his measurement is as follows: Girth behind the shoulder 96 inches; length from point of shoulder to setting on of tail 78 inches (1). He is said to have weighed, before shipment, 3000 lbs. and allowing, as an animal of that sort fat, but not in show order, $67 \frac{0}{10}$ of live weight, he would have afforded to the butcher just 2010 lbs. of marketable beef; which, at 15c. ($7\frac{1}{2}$ d. stg.), would give as his value about \$300. His length is prodigious, there is no waste about him, and the thickness of his loin, his rounds of beef, his masculine head, his rich coat, level crops, and his wonderful hide, have no more bone to support them than is absolutely necessary. His touch (quality) is like the touch of a very wellbred Shorthorn.

The Kyloes, whose beef fetches the very highest price in the London market, are from the Duke of Argyll's herd. They are good specimens of the race, and I should not like to see any weather that would daunt them. The curious veil of hair, from the forehead to the eyes, is worthy of observation. The whole horned stock numbers 307 individuals.

There are 84 sheep, of all sorts; as they were at some distance from the homestead, we did not see them. The herd took 26 prizes at the Montreal show, including the first prize for fresh butter, made by the fair hands of the Mistress herself (almost her *coup d'essai*), which shows how judgment and common sense can make up for want of routine experience. One red Shorthorn cow had just calved, and besides feeding her calf, gives a pailful of milk twice a day. The county of Rouville's collection of apples was enriched by upwards of 20 sorts from the Whitfield orchards, that Abbotsford could not supply! As a fruit-farm its situation is perfection, and if judiciously planted and managed, it would serve as a model for the whole country-side.

During our return to Marieville a strange silence occupied the senses of both of us. At last, it was broken by the tentative: "What a gorgeous start the Whitfield farm would make for a Provincial school of Agriculture!" "Oh!" was the reply, "then we were both pondering the same idea. I thought so, but I hoped to be the first to enunciate it. I was comparing this place with the College at Guelph. That has cost the Ontario Government, several hundred thousand dollars, though it has neither such a variety, nor such a valuable collection, of stock; it has not half the extent of land, and what it has is not nearly so varied in quality; the buildings are not to be compared, either, in convenience with those we have just seen. Can't something be done about it?"

ARTHUR R. JENNER FUST.

METEOROLOGY.

A Lecture, delivered at Frelighsburg, Jan. 12th. 1881, by Arthur R. Jenner Fust, M. A., Barrister-at-Law.

'Science!' I think I hear some honest old fellow exclaim: "In my time we heard nothing about such nonsense as that. It was enough for us to know how to plough, to sow, to harrow. It did not want much science to teach us how to do that." Perfectly true. Not much science was wanting, either, to teach you how to exhaust your land; but a little science would not be amiss if it would teach you how to restore your land to its pristine fertility. In haytime and harvest, your crops, after all your labour, are dependent upon the weather: would any help from science, which should teach you to foretell the probable weather 24 hours in

(1) These measurements are too doubtful to judge from.

advance, be a thing to despise? Two ploughs are offered you for sale—equally showy in appearance—would science be useless, if by means of the *dynamometer* she showed you which of the two would give your horses the less work? Two samples of manure—guano, superphosphate, or what not, are forwarded to you for choice: science can tell you the comparative value of each: will you spurn her aid? What is this science after all but a Latin word equivalent to our old English word *knowledge*. I don't know any modern trade that can get on without it. The builder can't; he may never have heard of the *parallelogram of forces*; but he must know all about levers, pumps, screws, and arches. The miller can't; he would not be able to adjust the diameter of his wheel to the cubic contents of the bed of his stream without it. The tanner does not refuse the aid of science in hastening the preparation of his leather, or in cheapening the materials used in his pits; and the dyes of the cloth manufacturers would be but strangely blended, were it not for the *mordants* which his chemist enjoins him to use.

Some time ago, a foundry-proprietor, weary of paying out money for coals, determined to utilise a fine water-power which lay about 2 miles from his establishment for the purpose of working his fan or blast. The pipes were laid, and the fan went to its duty with great energy—no effect though in the Cupola! How so? There must be a hole through which the air escapes—pipes were taken up and cased in tarred cloth: still all the sound in the cupola was as of an asthmatic old man wheezing away at a tobacco-pipe that would not draw. At last, science was consulted, and replied, in effect, that the foundry-proprietor might have saved all his outlay had he consulted her at first: the friction against the sides of the pipes had devoured all the power of the blast.

The days are coming when, in these old cultivated lands, we shall have but a choice of two things: either to let the soil revert to its former state of *bush*, or to restore its fertility by means of artificial manures and stock feeding. If we prefer the former—well, we must depend on others for our food, and become a purely manufacturing community. If the latter, without we know something of science, we shall be robbed with impunity on all sides.

Now, science is to many a word of vague meaning and vastly terrific sound. It must not be allowed to frighten you though. The more you know of science in general the better you will understand its principles, I mean its foundations; you need not be an engineer or an analytical chemist to be very usefully fitted for your agricultural career. A few weeks earnest application for 3 or 4 hours a day would give you such an insight into the practical working of those branches of science that concern you, that you would feel yourselves in a position to detect a fraud whenever you meet with it—and that, at all events, is more than 99 farmers out of 100 can do now. Of all impossible lies that are told in the world, commend me to those told by certain men who have trees implements or manures to sell. If you can learn, by a little study, how to avoid being robbed by those scoundrels, you will not have wasted your time.

I shall now proceed to consider that branch of science with which perhaps we have most concern—*Pneumatics*, we could not breathe without pneuma—the breath—but with us it has a wider signification. Pneumatics treats of the air, and the laws which govern its condensation, rarefaction, and gravity. The body of air surrounding the entire surface of our globe is supposed to be about 57 miles high. You can form no more idea of this than you can of what 200 million dollars are; but conceive a ball one foot in diameter having been left untouched in your drawing room, by a careless housemaid, until it has accumulated a coating of dust one-tenth of an inch in thickness: that is about he

relative proportion of the earth and the circumambient air.

Air has weight (gravity is just the same thing, the force of gravity is the force of weight). 100 cubic inches of air at 60° F. and with the Barometer at 30 inches. will weigh about 30 grains. So you see it has a considerable power of pressure—if taken at 50 miles high and at the above weight the force would be 15 lb. per square inch. This, in mechanics, is said to be one *atmosphere*—as you may see on the *steam gauge* of any engine: $\frac{5}{8}$ quadrillions of tons, or a ball of lead 60 miles in diameter, represents the total weight. Powerful stuff enough when bought wholesale isn't it, though it is such a thin, almost imperceptible concern, as we walk through it? If it is so heavy, why does it not all round and above us as it is, crush us to death? A man of ordinary size contains on his surface about 2000 square inches—the air presses upon him with a force of $2000 \times 15 = 30,000$ lbs. and yet he is not powdered! Fortunately, in obedience to the laws of equal and contrary pressure of the air *without* and *within* the body, the catastrophe is prevented. And of what is this wondrous atmosphere composed?

It contains in every 100 parts :

	by measure.	by weight.
Nitrogen	77.5	75.55
Oxygen	21.	23.32
Carbonic Acid	0.08	0.10
Water in vapour	1.42	1.03
	100	100

Observe how the carb. ac. is proportionately heavier than bulky—how watery vapour *distends* the air.

There is no chemical combination here, merely mechanical mixture. Add the two papers of an ordinary Sedlitz powder to a glass of water, and you have chemical combination—Stir up a spoonful of sugar with a spoonful of mustard, and you have mechanical mixture.

Here we are at a standstill; for we don't know anything about N. O. or C.; but let us say for the present that N., often called Azote, or life depriving, as no animal can live in it, has to be thinned by Ox. or *acid-generator*, to make our air breathable—as in N. death comes from impossibility of breathing, so in O. death ensues from rapidity of living: in N a candle won't burn, in O it burns out like fury.

These proportions in the air never vary. Animals and vegetables use the air in all places, and in using it *change* the proportions, but the sun's heat in the tropics, and their luxurious vegetation, evolve an abundant supply of oxygen, while, perhaps, the predominant existence of animals in the colder regions affords plenty of carbonic acid—this however is not certain, but at all events, whatever the source, the beneficent winds of heaven mix all the constituents of the air together, and make them fit for our inhalation.

There ought to be in every farm house in the country an instrument to measure the gravity of the atmosphere—the Barometer—I should recommend a well made aneroid as the more sensitive, tho' the upright mercurial barometer is, if large enough in the tube to overcome or lessen the friction, correct enough for all practical purposes.

Now, this instrument is founded upon a very simple theory: the column of mercury is 30 inches high, and exactly the same weight as a column of air of the same diameter, 50 miles high, and a column of water of the same diameter, 33 feet high: so that, as you may observe, the air pressing on the open end of the tube keeps the column of mercury in equilibrium. Let, however, the air become drier or more moist, and a change takes place: in the first case the Barometer rises, in the second it falls. How is this? Is dry

air heavier than moist air? I answer the question by another—is a bushel of dry sand heavier or lighter than a bushel of wet sand—a bushel of dry wheat than a bushel of wet wheat? What did we find in the air besides Nitrogen, Oxygen, and Carbonic acid? a little vapour, which by weight formed 1.03 of the 100 parts; but in bulk 1.42. Moisture, then, from its excessive tenuity in the vaporous form we find it taking in the atmosphere, causes the air to occupy more space, so to speak, and therefore to become lighter—but, in dry weather, the air becomes dense, from the highly elastic vapours, and presses with increased force upon the exposed mercury. I may as well mention here that, in the common pump the same principle is called into play. The plunger, in rising when the handle is depressed, withdraws the air from the chamber of the pump; and the column of air pressing on the water of the well or tank, causes it to rise, and fills the chamber which has been exhausted of air. Theoretically 33 ft. 9 in. is the limit of the action, but practically pumps won't lift above 28 or 29 ft. The force-pump acts by both the elasticity and the pressure of the air. The ordinary force of the column of air raises the water to the 30 ft., or so, and the elastic force of the air in the condenser sends it thence 200 or 300 feet onwards, as in your fine fire-engines.

The Siphon is also dependent on the same principle. Here we have a bent tube with two unequal limbs; the greater the difference between the length of the limbs the more efficient the instrument. But to return to our Barometers: there is another form of these "weather glasses" as they are sometimes called: the aneroid from *a neros, without moisture* (1). This handy, nay, elegant little instrument is the most portable of all barometers, and, if carefully constructed, the most correct; but it should, now and then, be compared with a mercurial barometer and, if in error, corrected. Take care in buying an ordinary barometer to see that the column is large enough: if small, the mercury won't work freely; it will stick to the sides of the tube.



Aneroid Barometer.

We may as well take the Thermometer into consideration at once, and then we shall be free to attack with these weapons our great and interesting object *Meteorology*.

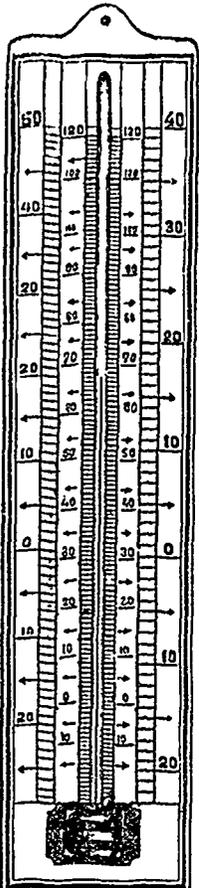
You all know what heat is, or rather what it does. A pint-pot will hold a pint of cold water—but by no means can you keep the liquid in the measure when it is nearly boiling; heat then expands objects. cold on the other hand, contracts them. Heat is the great opponent of gravity. If gravity acted alone, everything would be a dense solid; there could be no life. The property of heat is to part asunder the atoms of all bodies: it is invisible, and imponderable. I must harass you with a difficult phrase; "latent heat"; all bodies contain this quality or whatever you like to call it, it lies hid in them, and is brought into notice by friction. Rub two pieces of wood together and what happens? heat is evolved: whence did it come? it was there in the wood, and the friction drew this latent heat to the surface. Why? Because motion always is accompanied by heat, a law of

(1) The aneroid barometer is an invention by M. Vidi, of Paris. Its action depends upon the effect produced by the pressure of the atmosphere on a metallic box, from which the air has been exhausted: the box is then hermetically sealed. As the weight of the atmosphere increases or diminishes, the surface of the corrugated elastic box is depressed or elevated, as is also at the same time the spiral spring upon which the principal lever rests; and this motion is communicated through the levers to the *arbour* of the hand. The tension of the box in its construction is equal to 44 lbs.

nature, and the intensity of heat is always in a specific relation to the velocity of motion. You see then that no instrument can measure this latent heat: what does that which we call a *heat measurer* do? All that we require of it: it indicates the *relative* amount of heat in various bodies, or in the same bodies under different circumstances.

You are all familiar enough with the ordinary Thermometer. A simple glass tube, air exhausted, hermetically sealed. Three sorts are in use—Réaumur's, the Centigrade or Celsius', and Fahrenheit's.

Now, the principle on which these are constructed is the same in each. It is only in their notation that they differ. Réaumur, a Frenchman, (1683) was the first to propose the use of mercury as the expansive medium in the thermometer. Alcohol had been used, but its expansion proved to be irregular. He took the melting point of ice as his *zero*, and each of the divisions he made equal to $\frac{1}{80}$ part of the bulb cup city. Fahrenheit, a Dane (1686 to 1736), ingeniously fixed on another standard point—that of boiling water under the mean pressure of the atmosphere; in his scale 212° . He called the melting point of ice 32° , and fixed his *zero* at what he erroneously, supposed to be the greatest cold, viz. a mixture of salt and snow. Celsius, a Swede, (1670 to 1756), starting from the same point as Réaumur, divided his scale into 100 parts; hence the name given to it:



Cent. Fahrenheit, Réaumur.

The conversion of these notations is easy enough:

Multiply the degrees of Réaumur, by $2\frac{1}{2}$, or $\frac{5}{2}$, and add 32° ; you have Fahrenheit — for example; suppose we have 20° of Réaumur: then $20 \times \frac{5}{2} = 50 = 45$, to which add 32° and you see at once that 20° R. equal 77° F. Again, to convert Celsius, or centigrade, into Fahrenheit, multiply by $\frac{9}{5}$ and add 32° . Thus, if we have 20° of centigrade:

$$20 \times \frac{9}{5} = 36 + 32 = 68^\circ \text{ F.}$$

And again $\frac{4}{5} \times$ Celsius = Réaumur; and $\frac{5}{4} \times$ Réaumur = Celsius. Of course, to reverse matters is easy enough —

divide, after deducting 32° , instead of multiplying: what degree of Réaumur is equal to 77° of Fahrenheit?

$$77 - 32 = 45 \div \frac{5}{4} = 36 = 20.$$

Do not buy cheap thermometers, many of them vary even as many as 5 or 6 degrees, and are useless even for dairy-work.

Lastly, we have the Hygrometer, or *moisture-measurer*. There is a simple one, not unlike the Aneroid in shape, with a pointer composed of two pieces of wood so glued together that as the humidity increases it twists through the degrees to the right, and as the air dries twists back again. It is useless alone, but combined, as it ought always to be with the Barometer and Thermometer, with the appearances of the clouds, sun, moon, behaviour of animals, etc.; a very shrewd guess may be made, by a persistent observer, as to the probable weather for the next 24 hours.

In judging of the prospects by these instruments we must observe that the Barometer being *constant* is the surest test:

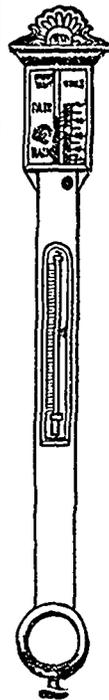
if it remains low, or if it remains high, the weather will be fixed—if it jumps about the weather will vary.

The words, *dry, set fair, &c* on some old barometers are nonsense, if the mercury is convex at the top, the whole is rising; expect fair weather; the middle rises the most easily on account of the friction of the sides against the tube. If it be concave, the whole is falling, and a change of weather is at hand. A sudden fall of an inch or so indicates a storm within 24 hours.

At St. Thomas' island before the hurricane of 1807, it sank $3\frac{1}{2}$ in. in as many hours.

If some fair morning in early summer, with a tranquil feeling of content about you, you approach your barometer and find it at 30; tap it; if it rises convexly, if the thermometer in the shade is at 75° F., and the hygrometer at 40° , you may go about any work you please without fear of interruption from the weather. Mind, in observing the indications of either of these instruments, to bring your eye to the level of the mercury; otherwise you will fall into many an error: the observations of a 6 foot or a 5 foot man would never agree.

You will now be able to understand how the barometer is used for measuring the height of mountains. You saw that the column of air, 50 miles or whatever it is, high, exactly balanced the 30 inch column of Mercury in the barometer. In ascending a mountain one mile, it is clear that $\frac{1}{30}$ part of the weight of the pressure is taken away; therefore, allowing for the temperature, $\frac{1}{30}$ part must be deducted from the sum of pressure. I say, allowing for the temperature, because heat causes the mercury to expand, by evaporating the moisture in the air; and cold contracts it by checking evaporation, and thereby increasing the density of the air. Two observers are requisite, one below the other; and both must have thermometers as well as barometers (1).



Mercurial Barometer.

The following may be taken as pretty correct indications of the weather by the barometer:

Rise: Fair weather.

Fall: Foul.

In sultry weather, a fall indicates Thunder, and the Thermometer generally falls, too, before the storm comes up.

If in winter, spring and autumn, the mercury rises, there will be cold weather.

Heat, on the other hand, is indicated by a fall in summer and autumn; but frost, by a rise in winter.

If in a frost the mercury falls, a *thaw* will follow.

When, at any season, a continuous fall happens through several fine days, continued bad weather will be the result. And the reverse.

When fine weather sets in suddenly, it will be of short duration.

A sudden extreme change denotes changeable weather.

If the temperature remains constant, a rapid rise or fall denotes wind.

A rising glass, with cooler air, indicates fair weather—rising glass with warmer air—changeable.

Wind is air in motion. If you ever lived under the shadow of the Laurentian mountains, you have remarked that the direction of the wind changes every 24 hours during

(1) Not strictly correct; as, of course, the lower part of the atmosphere is the heavier; "but it will serve," as Mercurio says.

the summer months: this change is most distinctly perceptible in a heated term: from the hills all day, and towards them in the evening; just as on the coast in hot climates, the land and sea breezes alternately heat and refresh the inhabitants.

Why does the flame of a fire just lighted ascend the chimney? For the simple reason, that being rarefied, or made thinner, lighter, it naturally seeks the highest place. The air rushes after it and you can feel the draught. Just so is it with the winds. It is all a struggle: air heated, and therefore rising, cool air violently anxious to occupy its place. The sun's heat raises the temperature of the earth in the tropics, which affects the density of the atmosphere; the air ascends, and is replaced by two cold currents from either Pole, the trade winds. Observe particularly this point—heated air rises, and is followed by fresh currents of cold air. If you feel this once you will never, as many people do, make a bungle of your stable, and other, ventilation. If you want the foul heated air to escape above, you must let in the nice cool air below. A draught of some sort there must be, only keep it away from your animals' heads. This by the way; as is also the fact that a West Indian Ouragan (Carribbee, not French) has blown cannon out of the batteries!!

We will now turn to some of the natural phenomena, most interesting to all, but especially to you farmers, phenomena which coupled with an accurate and regular daily notation of your instruments will make you safe prophets as to the diurnal changes of the weather. But I forgot, as I am sorry to say, I often do—I must first first say a word about clouds.

A cloud is a body of vapour—often of enormous size. There is, as we saw, about $\frac{1}{10}$ of the whole bulk of the air vapour. When from any cause the temperature of the air is reduced, the atoms of vapour approach each other, coalesce; and, as the steam from a kettle is visible in the kitchen, vapour becomes visible when condensed by cold, and takes the form of a cloud. Their height varies from 1,300 to 27,000 feet above the sea. Layer after layer of clouds may be seen on ascending mountains; and they may be often observed moving in opposite directions at the same time. No better presagers of weather than clouds. They look as if, in form, they were innumerable, but they may be reduced to three sorts: Cirrus, Cumulus, Stratus,—multiples of these are: Cirro-cumulus, Cirro-stratus, Cumulo-cirro-stratus, the storm cloud.

The *Cirrus* or owl-cloud—the least dense of all. Streaks of white vapour, in fibrous forms, for instance; the *gray mare's tail*: supposed to be of snow, as Glaisher, in a balloon, went up 7 miles, and then the cirri were apparently as high as they seemed from the earth. Say they are 14 miles, the temperature at that elevation must be far below zero of F.'s scale. The cirrus of rod-shape with fibres is the highest, the upturned-end-rod next; the one like a bunch of feathers is approaching the earth; and the sheet-like form is not much above the denser clouds.

If, in a clear, dry, settled-looking sky, cirri appear, there will be a change: all signs of change show themselves first in the upper regions of the air. When *mare's tails* appears, there will be wind within 24 hours, from the quarter to which the tufted head points. If during rain, you can see cirri through a broken cloud, in a deep blue sky, the rain will continue. *Noah's Ark*, a cirrus extending from horizon to horizon across the Zenith, indicates rain within 12 hours—when it does not reach our Zenith, rain will fall only on those places over whose Zenith the Ark is. If the *cirrus* and *cumulus* unite, and pass over the Zenith rapidly, rain in 12 hours. In fact accurate observation of the cirri will be an almost sure guide to the weather, and when joined to the indications of the barometer and thermometer, a perfectly sure guide.

Cumulus or heaped cloud, when like a rough hay-cook, ragged at the ends, indicates rains; but smooth and regularly formed portends fine weather. If *cumuli* remain till evening, and increase in size, rain. If they form in the morning, and towards night disappear, fine weather.

Stratus is that bed of vapour which you may often see settle down into valleys and hollows in fine summer evenings. Most picturesque, most poetical of clouds. Spires and towers stand out above it in bold relief. If the rising sun disperses it, the day will be fine; but when it lifts, and lingers long on the hill-tops, there will be rain p. m.; particularly if it creeps down again towards the low lands.

When the *cirrus*, losing its fibrosity, forms little heaped clouds, they are generally high in the air, and in summer foretell heat. If grey ones appear in the morning, heat; if red, rain. When cirri become compact and heavy looking, a thunder-storm will take place in 24 hours.

Cirro-stratus clouds sometimes appear stretched out along a hill-side cutting off, apparently, the mountain top; sometimes they run across the field of the setting sun, and afford that glorious sight of gold and vermilion bands on their upper and lower edges. These are the clouds that produce *haloes* or *coronæ*.

Cumulo-stratus is always dense. Cloud mountains spring from the long stratus, and the upper part is often mixed up with cirri.

Cirro-cumulo-stratus, a combination of all the forms of clouds, is that heavy menacing cloud we see when thunder-storms are approaching. It is too well known, and its sequel when observed too certain, to need description.

The following is a short list of cloud-prognostics.

They are not always sure, but almost always.

If clouds cling to the hill-tops, or unite with each other, rain.

If they form and vanish soon, fair weather.

Ragged edges denote rain—very ragged, wind.

If the edges are distinct, clear out, fine weather; if rolled up, thunder.

If the edges are indistinct, muddled, rain—bad weather, at all events.

High Barometer, Thermometer, and Hygrometer—little *cumuli* all day, vanishing towards night—*stratus* disappearing after sunrise, and heavy dews: fine, settled fine weather.

But winds and clouds are not the only foretellers of weather. They are about the most certain, but there are many others.

Did you ever see a *cat* scratching the leg of a table? Wind is sure to follow. So with cattle, when they jump up and butt at each other: when sheep leap and play: when pigs squeal, twist their tails, and carry straw about in their mouths: wind and rain. What does Mr. Swiveller say? "It is very fine; but last week was a pleasant one for the ducks. To-day, however, I noticed a pig issuing from a tobaccoist's shop with a straw in his mouth; from which, I argue that another fine week for the ducks is at hand!" (1) When geese and pigeons flap their wings much; when crows tumble about and chatter in their flight, wind is sure to follow.

Distrust the weather when you hear the *Robin* sing loudly in the evening—he is not a Robin, but a Thrush, and his German brother is called the *Sturm-Cock*.

When distant objects appear unnaturally near—when you can distinguish the outlines of trees on far away hills—when you hear the rattle of a train which you don't generally hear rain.

When flowers smell unusually sweet, because the air being moist carries their odour more effectively.—When swallows

(1) Dickens' *Old Curiosity Shop*.

fly low, because the insects they hunt fly low to escape the moisture of the upper regions of the air.—When ducks and geese go to the pond or river and dash the water over their backs, because by wetting the outer coat of feathers they prevent the drops of rain from penetrating to their bodies through the dry and open feathers.—When horses and cattle (not bulls) stretch out their necks, and snuff up the air laden with the fragrant perfume which increasing moisture diffuses through it.—And when all domestic animals are restless and excited: rain, rain, rain.

Spiders are, as you have doubtless remarked, crafty, as well as blood-thirsty, beasts. When they spin away merrily at their webs, fine weather; for they know flies will take their walks, or rather flights, abroad. But rain, when they hide in their holes.

Gnats, Mosquitoes, Midges, all know when it is safe for them to show themselves. You will hear the owl shouting away jollily before fine weather in his (supposed) melancholy hole—out of opposition I presume to the Robin, whom he eats sometimes, and who, as we heard just now, sings before foul weather. By the bye, there is a superstition still extant in Devonshire (the last hiding-place of witchcraft), of old women turning to hares. Many years ago, being caught by a heavy shower in the West of England, I turned into a gamekeeper's cottage for shelter. Here, I was very much struck by a glass case, containing a stuffed hare many degrees darker than hares generally are.—“What is that?” said I to the keeper; “Oh! Sir,” replied he, very sedately; “that is old Mrs. Wilson. I shot her one morning last summer about $\frac{1}{2}$ past 3 o'clock, as I was coming home from my rounds; at 10 o'clock, the neighbours, seeing that her window-shutters were still closed, went to find out the reason; and the old woman was there lying dead in her bed, with the marks of the shot, saving your presence, all over her back—she'll bewitch no more poor men's cattle though, anyhow!”

And the man believed that he had done the world good service in ridding it of an enemy and a bond-slave of Satan.

But to return to our owls: the creed is, that their hooting portends a death: they scream, sure enough, when a change of weather is at hand, and sick people on their death-bed may be hurried towards their last gasp by the atmospheric alteration, because the flickering lamp of life has not strength enough to adapt itself to the change.

Watch well your bees—you all, of course, have apiaries; they cost little, except care, and 50 or 60 hives are worth looking after. Watch, I say, your bees—when they wander far from home it is because they instinctively feel there is no danger of their being overtaken by rain. What says Vergil?

“Sunt, quibus ad portas cecidit custodia sorti,
Inque vicem speculantur aquas et nubila cœli.
Nec vero a stabulis pluvia impendente recedunt
Longius, aut credunt cœlo adventantibus Euris.”

“Some have the guardianship of the doors allotted to them, and, by turns, examine the signs of the weather. They never wander far from the hives if a shower is imminent, and stay at home when the wind threatens to be boisterous.”

Those unpleasant excrescences on the feet, again; and I fancy, since those very fascinating high-heeled boots came into fashion with the sex, they at least need no barometers: *corns*, as they are called, from *cornu*, a horn—nothing to do with wheat or maize; though any one who has walked with a grain of either in his shoe may doubt it—corns are highly suggestive of a change of weather, at least so I am told, for I don't carry any of them in my boots. Frank Smedley, in one of his novels, mentions an aunt of the heroine as being “propriatrix of a highly meteorological corn.” Well, this is no superstition: the dampness of the atmosphere affects the pressure of the body, and causes a temporary disturbance of

the whole system. If any parts of the body are in a morbid, or unhealthy, condition—a tooth, a corn, or a rheumatic bone—they will feel the change at once.

So sensitive are some flowers, that on the approach of rain, they will close their petals to protect the stamens.

You have often, I doubt not, observed Sea-gulls flying about, many a mile inland. They are the almost certain fore-runners of foul weather: they can't catch fish at sea; oet they must—a happy thought strikes them—plenty of earth-worms will be coming to the surface as soon as rain falls: let us go and eat them, as we cannot get fish. This looks like reasoning, does it not? If not reasoning, it is the exercise of memory transmitted from generation to generation.

The joyful little birds, too, cease their melodious warbling at each change for the worse. They feel a depression of spirits, as we do. Charles Kingsley laughs at the idea of a man's feelings being affected by a N. E. wind; it may be that the strenuous Vicar of Eversley never yielded to such weakness; but if his liver was ever out of order, and it must have been, sometimes, one would think, it ought to have taught him charity towards his less muscular fellow-Christians.

I never wish to see a crow before the 18th of March. An earlier arrival invariably foretells a return of winter. In fact, the unusually early advent of all migratory birds is a bad sign.

I remember well the spring of 1874.—I find in my Journal of that year, that the first Robin (Thrush) was seen, at Compton, on March 30th. Poor darling! how severely he must have felt his error in leaving his Southern abode, when he saw the next morning.—12° F. on the thermometer! Swallows made their appearance on the 12th of April—on the 30th of that month 18 inches of snow fell, winter returned, and there was no pleasant weather until May 12th!

Now, birds leave the South because unpleasant weather has set in there—unfortunately, it follows them Northwards, and they are *dished*, as the late Lord Derby said of the Whigs when he passed the Reform act of 1868.

The weather in *Spring* may be taken as the key-note of the whole season. Kirwan, a patient observer, says, that “in the course of 41 years there were 6 wet springs, 22 dry, and 13 variable.” On these data, he made out that a *dry* spring was followed by a dry summer 11 times, by a wet one 8 times, and by a variable one 3 times: a wet spring was followed by a dry summer not once, by a wet one 5 times, and by a variable one, once: a variable spring was followed by a dry summer 5 times, by a wet one 7 times, and by a variable one, once: so, in the beginning of any year, the probability of a dry spring is as 22 to 41; of a wet spring, as 6 to 41; of a variable one, as 13 to 41. A February in which much snow or rain falls is indicative of a fine spring:

“February fill dyke, be it black (rain) or be it white (snow):

But if it be white, it's the better to like.”

We won't say much about the rhyme, but the proverb is true enough.

“The hind would as soon see his wife on her bier,
As that Candlemas day should be bright and clear.
If Candlemas day be bright and clear,
Half the winter's to come and mair;
But if Candlemas day be dull and foul,
Half of the winter was past at Yule.”

I need not tell you that Candlemas day is the 2nd February, and Yule is Christmas; but we must remember, what is usually forgotten, that these proverbs were invented when dates were reckoned by the *old style*—so in fitting them to our computation, we must regard them as speaking of the present 6th of January, and the 14th of February—St. Valentine's day; just as the Green Drake, one of the Ephemerae, so dear to the trout-fisher, is, in England, still

called the Mayfly, though it never makes its appearance till the 14th of June. Another saying goes:

"March hack ham, comes in like a lion, goes out like a lamb;" i. e. good appetites, this month; wind at the beginning, fine at the end: true enough still; but the old meant is April 12th; and with this change, the proverb is as true in the central parts of Canada—London, Ontario, for instance—as it is in England.

In Summer, when falling stars are numerous, thunderstorms may be looked for. If, after a long spell of fine weather and the barometer high, the mercury begins to fall, it will generally decline gradually for two or three days before there is much sign of rain. A great fall of the thermometer occurs just before a hail-storm. *Chickweed* contracts its flowers, as do the *trefoil* and the *convolvulus*, before rain.

"If woolly fleeces (cirro-omuli) strow the heavenly way,
Be sure no rain d'sturbes the summer day."

And again:

"If clouds appear like rocks and towers,
The earth's refreshed by frequent showers."

The proverbs are:

"A swarm of bees in May
Is worth a load of hay"

Not at \$15 a ton though!

"A SWARM of bees in June
Is worth a silver spoon."

"A swarm of bees in July
Is never worth a fly."

A very true saying is the following, speaking of course of fall wheat:

"Look at your wheat in May
And you'll come weeping away
Look again in June
And you'll come home in another tune."

The *Rain-bow*, interesting as its study is, must not detain us long.

"A Rain-bow at night
Is the shepherd's delight;
But one in the morning
Is the shepherd's warning."

A rainbow at night shows that the rain is falling in the East, and, as that is a dry quarter, it will soon be over. A rainbow in the morning, shows that the rain is falling in the West, the wet quarter, and is therefore likely to last. The appearance of two or three rainbows at once indicates fair weather for the present, but foul weather with much rain two or three days afterwards.

Twilight signs are as follows: a blue sky, and the West, after sunset, covered with a purplish tinge, particularly if the atmosphere be smoky or hazy—certain fine weather.

When dense orange-coloured vapour covers the horizon, wind. If crimson or vermilion, wind with heavy rain. If green, a nasty green such as Homer calls (we have, alas! no Greek characters) *chloron deos*, rain next day—whitish-yellow the same. When the sun sets in brilliant white light, showers. *Aurora Borealis* is due to magnetic disturbance, and indicates a change of weather.

This year, if you remember, we had a brilliant *Aurora* on the 7th of November, which may have been the cause of our being done out of our *Indian summer*.

And now, one word at parting: distrust every prediction of the weather that is based upon a pretended secret. The prophet is either an enthusiastic fool, or a charlatan, a knave.

In 1836, an impostor, Murphy, had the good luck to predict in his almanack that January 6th would be the

coldest day of the winter,—right, for once, he was, and made, I believe, £10,000 by the sale of his book; but the next year he was just as far wrong; and retired for ever from the public sight involved in a cloud of ignominy and contempt. May his fate be a warning to quacks of all sorts.

But place perfect confidence in the bulletins sent out from the observatory at Toronto. I have followed them by my own observations, and they are thoroughly to be depended upon. And why?—they are founded upon pure science.

I hope next year will see all over the Province a copy of these valuable prognostications sent by telegraph to every Post-Office, and placed under a glass case outside the building, so that every passer-by may see it. If it is put up in the public room of the hotel, it will not be half as useful.

The whole of your hay and harvest crop depends upon the weather; and I entreat you to believe that, owing to the paths followed by the winds and storms being constantly telegraphed to the Toronto observers, they are as capable of judging of the time when a change of weather will take place at Frelighsburg, as if their post was set up in the midst of your village—their honesty no one will dispute.

And it is no trifle, this weather, in hay-time and harvest: it is not only the furnishing of your own pockets, or the payment of your own debts that is concerned: it is the food of the nation to which you owe your birth, and, in part, the sustenance of that nation from which your ancestors sprang, which depend upon it. Every untoward rain-storm, every unseasonable frost which occurs here, affects a population of 4½ millions of Canadians, and a population of 35 millions in the British Isles. It is your duty then as farmers, it is your duty as men with a fellow-feeling for your brothers, to lose no chance of acquainting yourselves thoroughly with all the signs of the weather, that you may never be taken unawares. You have worked hard all the winter, spring, and summer, and now, when

"The wind, the rain, the sun,
Their genial task have done,
Wouldst thou be fed?
Man, to thy labour bow,
Thrust in thy sickle now,
Reap where thou once didst plough,
God sends thee bread."

After the lecture, Mr. Deming put the question to the meeting: "Should hay be made more thoroughly for an outdoor stack, than if it is to be secured in a barn?" This was carried unanimously in the affirmative; but it turned out, upon inquiry, that the stacks in question are more like what are called in Scotland "tramp-pikes;" none of those present having ever seen an English stack of from 40 to 100 tons, trodden continually during its erection by from 8 to 10 men and women, well topped up, and pulled outside so that no loose hay remains: the finished stack being so firm that the strongest man could not draw out a handful. The general opinion, after some discussion, seemed to be, that Mr. Deming, in his amicable dispute with me in this journal, was talking of one thing, and I, of another. Of course I am utterly impenitent, as I feel sure, upon scientific principles, that no barn that ever was built can exclude air.

The letter, on "feeding cattle only twice a day," is from one of the largest, best known, and most prosperous cattle-feeders in the province. His name is at Mr. Deming's service—in confidence. Dr. McEachran's letter, on the same subject, taken in conjunction with J. Mc's, ought to set the matter at rest.

When at Frelighsburg, I saw Mr. Morrison's "Patent Heater, and Crimped Evaporator," and tasted his maple sugar and syrup, as well as some Amber-cane syrup. They were (I mean the sugar and syrups) all of superb quality,

pure and delicate in flavour. The Evaporator needs no praise from me—those who have used it, for instance, Mr. Blackwood, V. P. Council of Agriculture, Messrs. Fuller and Shufelt, commission merchants, Montreal, and all the farmers in the neighbourhood of Frelighsburg, cannot find words to praise it highly enough.

RED GRAPES.

At Abbotsford, at the Exhibition in September, the reddish grapes attracted a great deal of attention. But ten varieties were shown, yet some of these appeared in almost every collection, showing what favorites they are.

These reddish grapes vary widely in their characters. We have more or less early kinds of the Northern fox-grape type: sweet but foxy—others, the direct or indirect offspring of the Catawba, and mostly of fine quality; also thanks to Mr. E. S. Rogers, of Salem, Mass., we have hybrids with the European vine, which have been entirely successful here.

The following list is more or less in order of ripening, and

keeper is not a grape of short season. For its earliness and fine quality, we hope it will be tried as soon as it can be obtained.

NORTHERN MUSCADINE is an early chocolate-colored berry of medium size of the pure native fox-grape type. It drops from the bunch as soon as quite ripe, but it is quite sweet, and to those who do not object to a good deal of foxy aroma, very nice.

BRIGHTON.—This new grape surprised us by its excellence. It was sent by Ellwanger & Barry, from Rochester, by Mr. Bailey from Plattsburg, and by Stone & Wellington, from Toronto, and in each case good beyond what we had expected.

It was raised by Mr. Jacob Moore, of Brighton, N. Y., from Concord & Diana Hamburg. Diana Hamburg is from Diana with Black Hamburg, and Diana from Catawba, native; so that we may consider Brighton to be three-fourths native. The bunch is largish, and shouldered. The berry largish and mahogany colored, and holds well to the bunch. It is thin-skinned and somewhat pulpy; but the pulp is sweet,



BRIGHTON.

contains the names of some kinds which we can heartily recommend to those who love really good grapes.

RED POUGHKEEPSIE is a little bright red grape which we quite fell in love with. It arrived just after our Exhibition, owing to some detention, yet must be mentioned here. It was raised by Mr. A. J. Caywood, Marlborough, N. Y., who writes that "it is a seedling of Delaware, and exceeds that variety in growth of vine, and nearly always sets 4 clusters on an arm." He further states, that "it ripened this year 2 weeks before Hartford, and it would be safe to put it with that variety." That "no variety, in over 70 kinds we have, bears more pounds than Red Poughkeepsie." It has not been placed upon the market yet, but the entire stock of it is for sale. The bunch is small but rather long, and shouldered like Delaware, the berry smaller and redder than that variety; thin skinned, juicy, and perfectly pulpless; very sweet and luscious. It holds on to the bunch pretty well, and though not a late

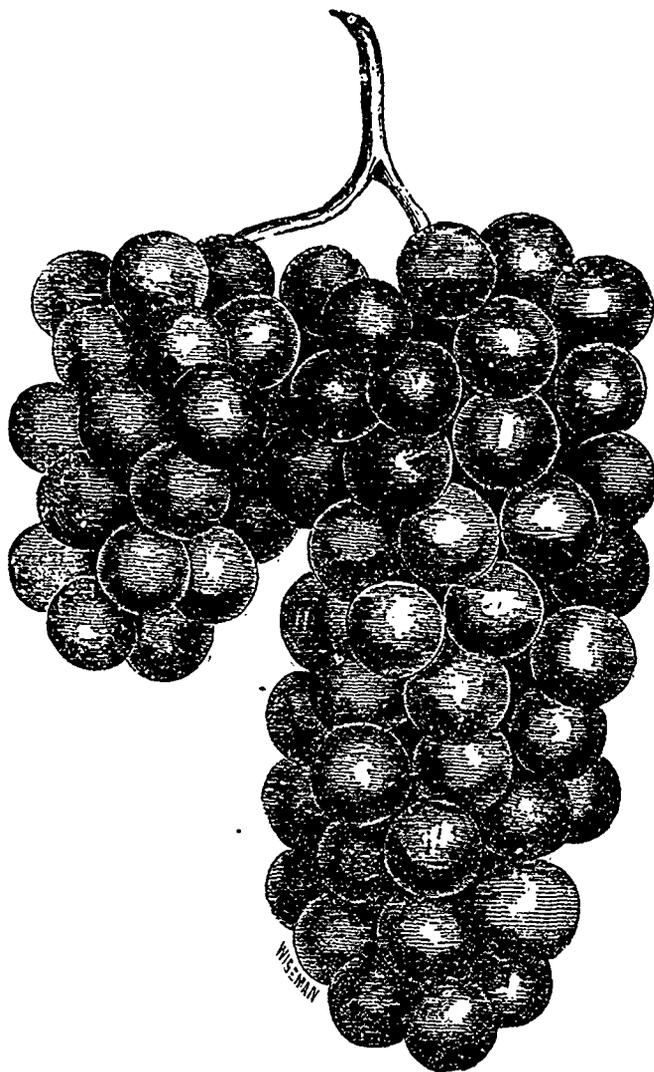
and of a molting meateness to the very seeds. Flavor rich and really good. "Equal if not superior to Delaware," says Barry, and we fully agree with him. "To my taste better than Delaware because more vinous," says Hussman.

Of the vine, we have no experience. Ellwanger & Barry say "vine vigorous, but subject to mildew in some localities; were it not for this we should pronounce it the best reddish purple grape in cultivation." Those in low damp situation should therefore plant cautiously; those in drier and higher places may safely try this grape, which combines fair earliness with such fine quality.

DELAWARE is probably a native vine. Fuller thinks it is from Catawba. Of Sheppard's Delaware, a seedling of Catawba, Downing says "the fruit and vine are similar in all respects to Delaware." The White Delaware, raised by G. W. Campbell, of Ohio, from seed of Delaware, has large thick foliage, "resembling Catawba in all respects." These

and other facts, strongly suggest Catawba parentage. Besides this, it is said that seedlings of it have been largely grown with the hope of combining greater size with its fine quality, but that these seedlings have usually proved foxy, showing its *Labrusca* descent.

This grape has been well tested here. Let us see how it has succeeded in different parts of our Province and upon different soils. Mr. Morgan, at Hochelaga, on heavy blue clay, deeply trenched and deeply enriched, has averaged for the last 6 years 50 lbs. per vine from 16 vines. It and Hartford proved the heaviest bearers, but there has been one trouble, a bursting of the berry, which has destroyed more or less of the crop each year. This fault, however, have we believe, shown itself in this garden only. In Montreal, on



DELAWARE.

heavy hard-pan clay, in St Catherine street, it has been of feeble growth, borne lightly, or fairly, and ripened thoroughly each year, for the last 10 years. At Aylmer, on gravelly loam, it has borne as heavily as any other for the last 9 years. At Como, on dry gritty gravel, it has been a thorough success for the last 8 years. In the county of Huntingdon, on gravelly upland, Mr. John Stuart, of Rockburn, has found it a good reliable bearer, and would place it on his list *first*, "for profit." With ourselves, on gravelly upland, it has borne

heavily, and ripened well, or fairly well, and fairly well only where fully exposed to our north-west winds. In the States, the Delaware is said to succeed best on warm rich soils and the notes given above favor this view.

ROGERS' RED HYBRIDS are a deservedly popular class of grape. Their large, showy, reddish berries, and good sized bunches give them great prominence on Exhibition tables, but it is their fine quality that makes this good impression lasting. Large collections are sure to include them. Ellwanger and Barry sent for Exhibition the following three, and beat us sadly in size and form of bunch. Mr. Bailey and Mr. Pattison sent the four following. We, too, had good specimens of each, of our own growth.

The parentage of these grapes we regret we cannot give. We can only refer to an incidental statement of Hon Marshall P. Wilder, President of Am. Pom. Soc., that Massasoit is from a native vine hybridized with White Chasselas. It is well known however that they are not merely crosses, but two hybrids of the native *Labrusca* species, and the *vinifera* or European vine. This was proved by Fuller who, in his "Grape Culturist," says, "from the seeds of Wilder. I have produced both wild fox-grapes and apparently pure foreign varieties."

The vines are strong in growth, and large and thick in leaf and seem well adapted to fairly favorable places, in our climate, one word of caution however we must add: Mr. Morgan, at Hochelaga, on a heavy clay soil deeply enriched, has grown Agawam and Wilder, and produced about 40 lbs. per vine per annum, but they have shown such constant tendency to mildew as to injure the crop, either in part or in the whole, every year. A singular fact is, that on the same plastic clay, but in a damp moist place in the open air, are two hothouse vines of a grape of Chasselas type in perfect health. This mildew is exceptional, and we must not assume exceptions to be rules, but to know a matter we must know all sides of it, and we mention this that those who cultivate such soils may plant cautiously.

These berries all have in our climate some pulp, yet they are juicy, sweet and rich, with a slight flavor resembling Muscat. They are great favorites with us and with those have tried them.

MASSASOIT (Rogers' No. 3) has fruited for a few years here, and given good satisfaction. At Aylmer it has been a like success. It is the earliest of Rogers' Red Hybrids, except perhaps some not yet named. It ripens with us before the Delaware; this last year, a week, at least, before that variety; yet, as an American paper has said, grapes do not ripen on schedule time.

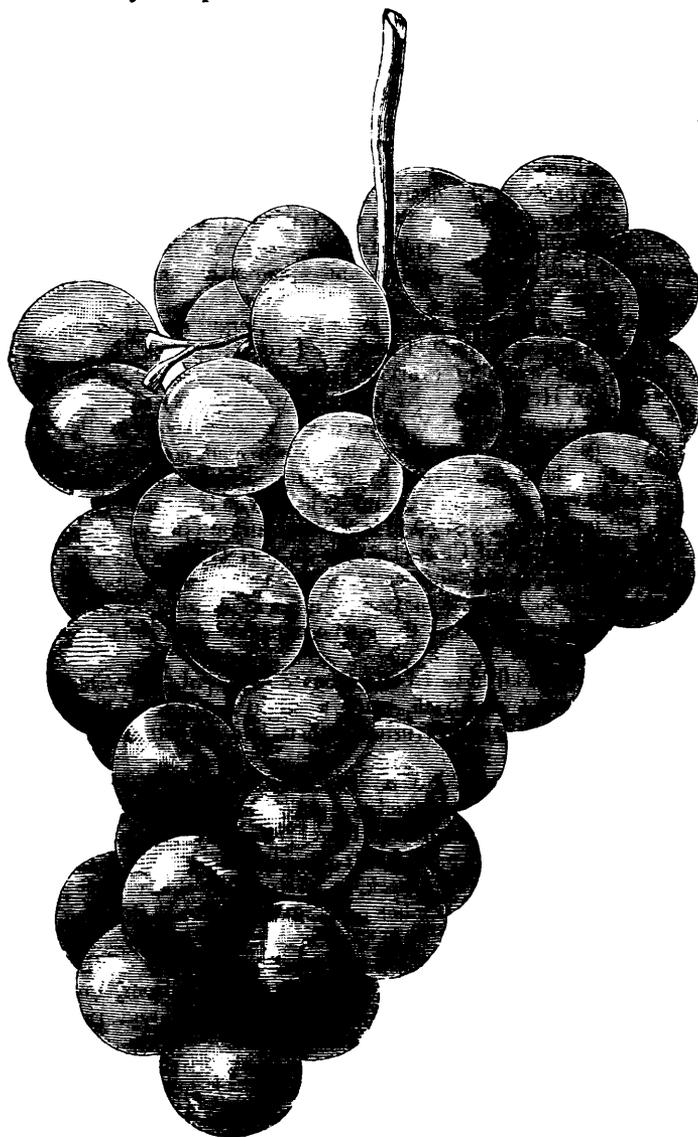
LINDLEY (Rogers' No. 9) is a great favorite here. With us its name alike suggest friendly fights at Exhibitions, and the delight of our friends at its fine appearance and rich flavor. At Ottawa, too, it has succeeded well.

It ripens with us soon after Delaware, and some time before Concord.

SALEM (Rogers' No. 22) is very popular in U. S. Here less tried than those above named. At Abbotsford it bore last year for the first time, and ripened about with Lindley.

AGAWAM (Rogers' No. 15) is the largest in berry, yet the latest to ripen, of those above named. At Aylmer, with Mr. Harvey Parker, it has borne fairly, and ripened well each year, for the last 5 or 6 years, and its fine size, its color, and its luscious Muscat flavor, seem to show it to be a desirable grape for home use, and a profitable one for market. Mr. G. H. Ryland, in Montreal, who has about 25 vines of it, has ripened it without failure for the past 12 years, and also finds it a good keeper. With us it has only fruited the past year. Our experience, and the verdict of others, is that it ripens before Concord.

GAERTNER (*Rogers' No. 14*). This appeared upon our tables, sent by Messrs. E. and B., before even its name had reached us. It is one of those hybrids of Mr. Rogers' which has been known by number, and has been but lately named. The samples sent were very large both in bunch and berry, very bright in color, and of great beauty, and rich and delicate in flavor. Marshall P. Wilder, in the *Grape Culturist*, describes it as follows: Bunch, good size; berry medium to large, color, light brown or red, skin, thin; flavor, pleasant and aromatic; season, rather early; vine, healthy and productive.



LINDLEY.

IONA is a seedling of Catawba, and in some parts of the States a very valuable market grape, and a good keeper. One good point about it is, that if picked before ripe, it afterwards becomes sweet and good. The Iona sent by Mr. Bailey was picked on 13th Sept. before it was ripe, yet in the early part of October it was sweet, good, and even rich. That sent by Ellwanger and Barry was riper and far more luscious. It is, however, later than Concord, and there are but few localities in which it could approach success.

CATAWBA This name suggests the vine growing regions of Ohio. It is the latest ripening grape ever upon our tables,

and useless in our climate; yet to be held in grateful memory for its offspring, Iona, Diana, Diana Hamburg, and Brighton, and probably Delaware; and if so, then Red Poughkeepsie, Golden Drop, Lady Charlotte, and many others.

Late as is this grape, we believed it to have been ripened at Aylmer. We had upon our tables a bunch, grown by Mr. Driscoll, which we really believe to be that variety. This was of course not yet ripe, as it was picked on Sept. 18th, but it has been ripened, and we look upon this as the rarest exploit of ripening of one of our best localities.

To the following kinds, not upon our Exhibition tables, we wish to draw either such special attention, or such passing notice, as they seem to deserve. We name them in what appears to be their order of ripening.

VERGENNES is a chance seedling from Vergennes, Vermont, said to ripen as early as the Hartford, and to combine with this earliness, high quality and remarkable keeping qualities. It has good testimonials, but, unfortunately, for the most part unsigned, and those signed are not by names widely known. The stock seems to be in the hands of F. L. Perry, Canandaigua, N. Y. We hope its merits may be weighed by some of our experimenters.

WYOMING RED, judging from scattered notices of it, seems worthy of a test. It ripens with Delaware, is earlier, and is large in berry. It is of superior quality, say some, it is more probably pretty good, and the vine is said to be healthy. Its name suggests its being a hardy wilding from a Western Territory, but it is most probably a chance *Labrusca* seedling from the Wyoming Valley in Pennsylvania.

DRAOUT AMBER, a large early grape of the fox-grape type. The vine is said to be very healthy but the berry inferior. Its use is questionable even in our cold north.

WALTER is a seedling raised by Mr. A. J. Caywood, of Marlborough, N. Y., from Delaware with Diana and is a really first quality grape. In many parts of U. S. it has been a failure, through a tendency to leaf-blight, and is not recommended for localities at all subject to mildew. We believe that we fruited this variety here last season, and we were very much pleased with its fine flavor. We have been told it has succeeded well at Pembroke, on the Upper Ottawa. It ripens before Concord, and might be tried on our uplands, as they seem specially free from the disease.

PERKINS is another of the fox-grape family, but seems perhaps the most widely popular of its class. It is well spoken of for healthiness and productiveness of vine. The berry is quite large and sweet, but foxy. It ripens, some say with Hartford, others put it as late as Concord.

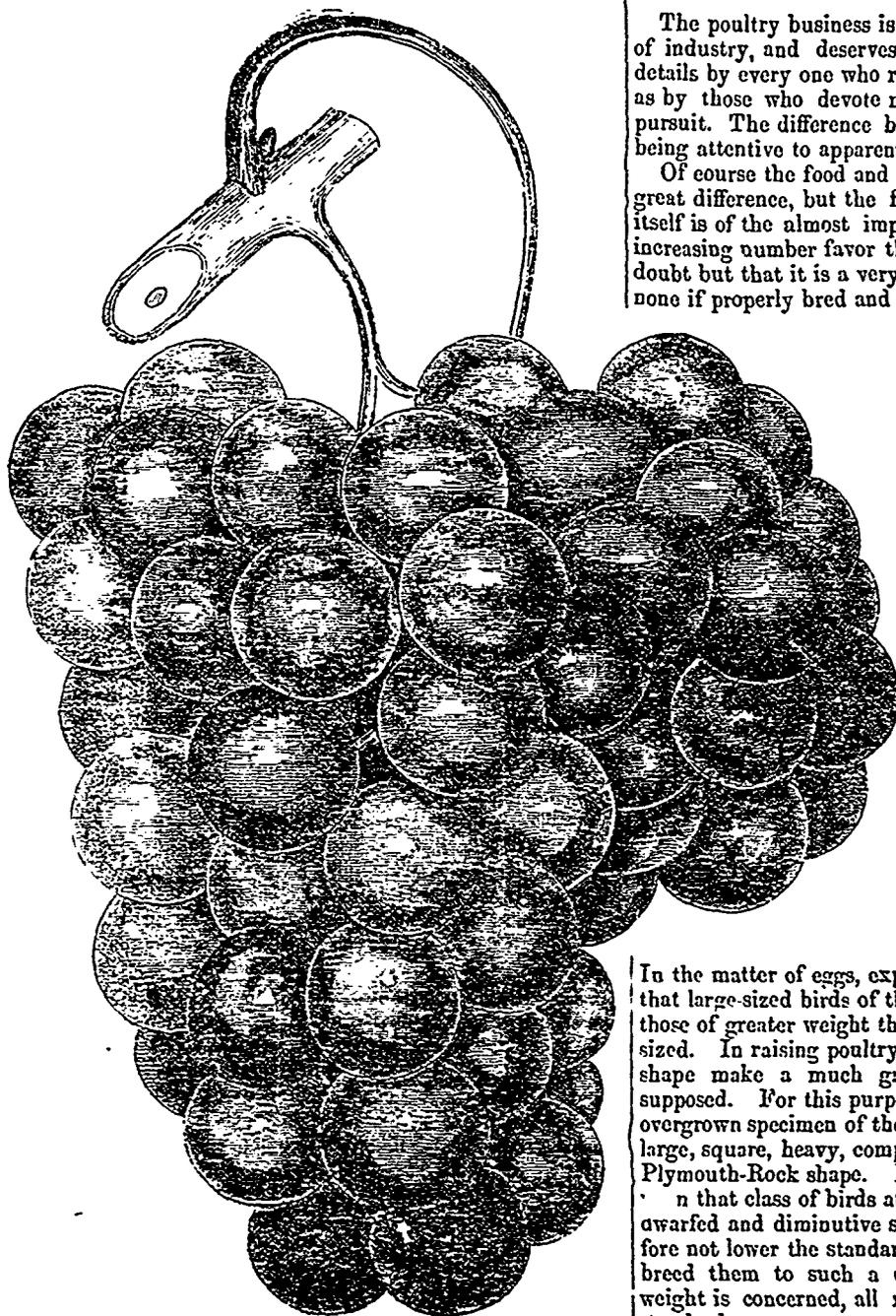
JEFFERSON. This grape we wish to draw special attention to. It is a seedling produced by Jos. H. Ricketts of Newburg, N. Y., the celebrated hybridist, from Iona and Concord, and therefore of native parentage, and it is well known to have the vigorous growth, and thick, downy, large leaves, of the latter parent. The fruit is much like Iona in color, texture, and quality. Mr. Downing says of it "bunch, very large, often double-shouldered, very compact; berries, large, roundish oval, light red with a thin black bloom; flesh, meaty or solid, tender, juicy, sweet, slightly vinous, spicy.

Letters from U. S. from a friend who has had every opportunity of judging of the merits of this grape, have led us to hope that it will be tried in favorable localities here. It ripens about with Concord, but as we have said of others, berries of this quality, even if they have to be picked a little before ripe, become good. This vine is in the hands of Mr. J. G. Burrow, Fishkill, N. Y.

DIANA HAMBURG, is a hybrid of Diana with Black Hamburg and has been grown and ripened successfully by the late W. W. Smith, in his exceptionally well sheltered garden at Philipsburg, and has been exhibited by him here. It is of

fine quality, but as it ripens with Isabella, is altogether too late, except for exceptional places in this province.

DIANA, like the above, has been ripened and exhibited here



SALEM.

by the late W. W. Smith, but as it is even later in ripening, we may consider it useless to us.

We thus see among the 19 kinds of red grapes above described, great variety in size, season, and quality; and among them kinds, which, from our own experience, we can most heartily recommend.

CHAS. GIBB, Sec. Treas.
F. G. Assoc. of Abbottsford.

POULTRY DEPARTMENT.

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

PLYMOUTH ROCKS.

The poultry business is one of the most important branches of industry, and deserves to be carefully studied in all its details by every one who raises a few chickens yearly, as well as by those who devote most, if not all, their time to this pursuit. The difference between success and failure lies in being attentive to apparently small things.

Of course the food and manner of feeding makes a very great difference, but the fact remains, viz: That the breed itself is of the almost importance. A large and constantly increasing number favor the Plymouth-Rock. There is no doubt but that it is a very fine fowl, and probably is second to none if properly bred and correctly managed.

There exists, however, a variety of opinions as to the size of these birds. The standard (correctly I think) recognizes a large size while the prevalence of the Cochin shape has caused some to favor small sized fowls.

I suspect that in many cases the real cause of such partiality is the inability, for diverse reasons, to breed and raise first class birds which even approach the standard in weight. One writer claims that the Plymouth Rock is simply an improved Dominique and nothing more. If that position be correct, we must certainly expect small sized fowls, and I see no reason why they should be called anything but Dominique. I believe however, that they are neither Dominique-Rocks nor Cochin-Rocks, but simply and solely Plymouth Rocks.

In the matter of eggs, experiments have fully convinced me that large-sized birds of this breed will produce as many and those of greater weight than those which I consider undersized. In raising poultry for market purposes, the size and shape make a much greater difference than is generally supposed. For this purpose I would not advocate a coarse overgrown specimen of the Cochin type, but should prefer a large, square, heavy, compact body which I consider the true Plymouth-Rock shape. I know that flesh can be produced in that class of birds at less expense than upon those of a dwarfed and diminutive size or Cochin shape. Let us therefore not lower the standard for Plymouth Rocks, but rather breed them to such a degree of perfection, that as far as weight is concerned, all may be satisfied with the present standard.

Newington, Conn.

F. X. CORBIN.

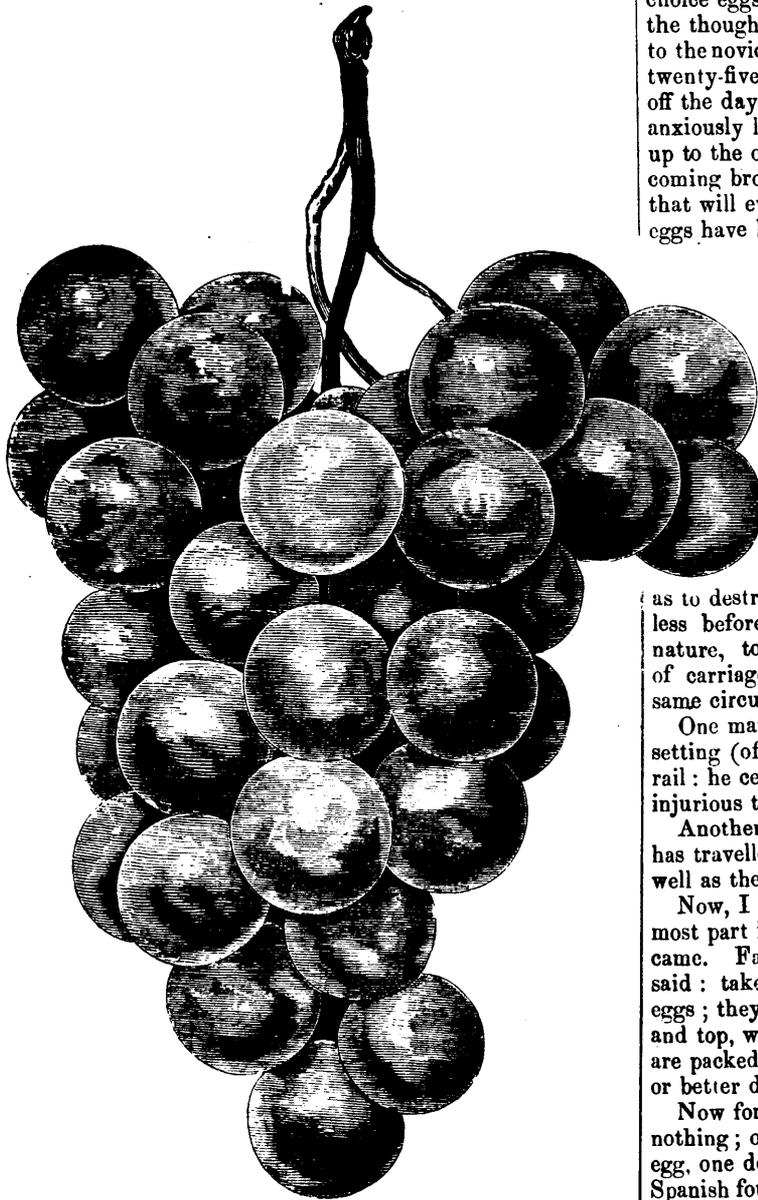
HINTS.

A word to the wise is sufficient, and we would draw the attention of our readers to the fact, that now is the time to introduce new blood among their flocks of poultry, and start fresh with another year.

Put in new male birds from other yards of good stamina, and from strains that you know to be well bred. We are

seeing all through the country every day the evil of having bred in and in for several years: diminutive size, and gradually lessened egg production, are among the results of such breeding.

We have among our farmers to-day a rather small but compact fowl of blue and grayish color, marked similarly to the Plymouth-Rock, good layers, and yielding a good amount of flesh for its size.



AGAWAM.

We would suggest that some of our readers try the effect of crossing a good full-grown cock of the Plymouth-Rock breed with the hens above described—known by many as the Canadian Dominique—and we believe that mating the progeny of such a cross with a full blooded Plymouth-Rock of good stamina, symmetry, and good markings of plumage, the result will be a great improvement in the stock of our farm yards, in egg production as well as flesh, greater size and weight, and uniformity of color.

If carried on for three years with judicious matings of birds for breeding purposes, we believe great results will

follow and greater profits will come from it, than from the careless manner in which the poultry business is now carried on by our farmers. S. J. A.

Non-Fertilized eggs.

Though the season is somewhat distant, but fast approaching, when Fanciers and others will be setting aside their choice eggs from their best stock for hatching purposes, the thought suggested itself to me that a few words at least to the novice or young beginner from the experience of some twenty-five years would not be out of place, and might ward off the day of disappointment and disgust when the long and anxiously looked for day has arrived. You cautiously steal up to the old hen, expecting at least to hear the chirp of the coming brood; but alas! disappointment and bad eggs are all that will ever come from that nest, and worse still if those eggs have been purchased from some unfortunate vendor of "Eggs for hatching, from pure bred Stock", upon whose miserable head now falls the anathema of the disappointed purchaser, who blames the seller for sending him bad eggs, and writes to him to that effect, threatening to "show him up" in all the poultry papers in Christendom. And the seller of hatching eggs replies, by saying it is the carriage by rail or steamboat, &c. that destroys the vitality, and does the mischief. Now I do not believe it is either one or the other of the above.

What sane man who expected to do a business and meet with future success would be so suicidal as to destroy his own reputation by making his goods worthless before he sent them out? This is contrary to human nature, to say the least of it. And then if it be the effect of carriage by rail, why does it not affect all alike under the same circumstances?

One man reports a splendid hatching of 10 or 12 from a setting (of 13) that had journeyed some hundreds of miles by rail: he certainly would not be of the opinion that it was injurious to send "Hatching Eggs" by rail.

Another reports few if any from a setting that perhaps has travelled but half the distance, and were packed just as well as the other.

Now, I think the cause of the whole trouble lies for the most part in the condition of the stock from which the eggs came. Facts in my own experience go to prove what I have said: take one case; I order from England eight dozen eggs; they come in a crate cushioned round the sides, bottom, and top, with about six inches of fine bog hay; each doz. eggs are packed in boxes filled with chaff; nothing could be nicer or better done.

Now for the results: four dozen Brahma and Cochin yield nothing; one doz. of G. S. Hamburg give a chick for every egg, one doz. of Houdan eleven chicks, one doz. of Black Spanish four chicks, and of Aylesbury ducks nine. Why did not the railway carriage across England to Liverpool, and passage by steamer, kill the Hamburg as well as the Brahma and Cochin.

The fact lies here: want of vitality and stamina in the stock that produced them, from most likely overfeeding and want of exercise with, perhaps, scant rations of vegetable food. I do not think those Brahma and Cochin eggs would have done much better if they had been set in England than they did in America.

I repeat it then: the condition in which you keep your stock will tell on the number of chicks from each nest. In winter when generally confined to small quarters, feed sparingly the breeding stock, make them scratch for their living

by burying their food either in straw or the earthen floor of your house, thus causing them to take that exercise which will impart vitality and vigour which is so essential to their well being and productiveness.

Montreal.

THOS. COSTEN.

If mixed with milk, either sweet or sour, all the better.

For noon, feed wheat, oats, green vegetables, or some of each. In warm weather, all that is needed is plenty of green stuff, such as cabbage, beet-tops, fine grass, and any thing else they will eat. In summer the corn can be dispensed with altogether,



Feeding Poultry.

There is one thing we must understand and follow before we can expect any great success in keeping poultry of any kind.

Our fowls may be of the very best strains; our runs houses, and ventilation the best, but without proper food our stock will not amount to much. One point in which so many of us, especially young breeders, fail, is in a lack of system in our feeding. Whatever we do we should do regularly, not that I mean that we should, as a great many people do, begin feeding corn and then feed corn, corn, corn forever simply because it is cheap, or because the fowls see to like it. There is no one food than we can give our fowls that it would be proper to feed them continually; but if we had to be confined to one kind, it should not be corn, as it makes the fowls too fat, if they are fed enough of it to satisfy their hunger.

For your laying hens in winter, feed, for breakfast, a good mash composed of wheat bran, the useless potatoes, carrots, turnips, a few onions, and once or twice a week, some cayenne pepper, boiled or scalded well, and then well stirred together.

and an occasional feed of buckwheat given; however, this last named grain should never be fed in any great quantity, as it is not good for them, except as an occasional feed. Meat should not be fed to poultry (especially chickens) except in small quantity and at rare intervals, as it gives the plumage a gross appearance, and forces the comb and wattles to a large and coarse growth. Young chicks should have as much boiled corn meal as they can eat. When a couple of months old (according to growth, feathering, and weather), they can be fed cracked corn, wheat, and other grain. The food for turkeys, ducks, and geese, does not differ essentially from that of chickens, except that less grain and more vegetable food can be given, and on this account they are considered by some more profitable.

Feed young turkeys on any kind of soft meat (mashes) mixed with milk, as they appear to do better when they have milk with their food, some turkey-breeders saying that it is essential to their health and growth. It does not appear so to me, however, as many fine flocks of turkeys are annually raised without as much as seeing milk, and in their wild state

they never get any, and as fine turkeys as we ever saw were wild ones. When six weeks old any kind of grain can be given, and if kept clear of wet or dewy grass, and vermin, they are as sure of living to Thanksgiving or Christmas as any other variety of poultry, and if they have access to a good pasture or meadow and flowing streams, they will provide the

JEFFERSON.

greater part of their own living. If fed grain, it will be a benefit to them. Ducklings should not be allowed free access to the ponds or runs of water until three weeks old, except when hatched later, say in June or July—the time when hatched in their wild state. Although in their natural state ducks get a great deal of animal flesh, no kinds of poultry will do without with less inconvenience.

GEORGE GLEN, in *Field and River*.

Early History of the Guernseys.

The origin of the breeds of cattle so widely known as Channel Island, seems to be uncertain. They have long been the race they now are, and the memory of man runneth not to the time when they were new to the islands. Mr. Geo. Torode, who is familiar with the traditions of his people, says his father supposed they came, originally, from the adjacent French coast, from near Issigny, a place still famous in Normandy for remarkable butter, and your correspondent was disappointed in not finding time to visit that part of France, to see if a corresponding breed existed there.

At Rouen, we saw a steer of remarkable beauty in a drove, self-colored, with a look something akin to the island breeds, but we were unable to find from what province he came or what stock he represented.

A writer in the valuable work "The Cattle of Great Britain," states with great confidence that no cattle of the Alderney (as all cattle of the kind are misnamed in England) (1) character are to be found in Normandy, and he gives the authority of the late Fisher Hobbs for believing, on comparison with a vast collection of cattle at the International Exhibition in Paris, in 1855, that they have been bred from some of the Swiss mountain cattle.

Per contra, Mr. Torode's partner exhibited a Guernsey cow at this fair, and won a superb gold medal, now an heir loom, and fifty guineas with her in the dairy competition; and she was purchased by the Emperor Louis Napoleon, for fifty guineas. He had, of course, the opportunity of seeing the cattle examined by Mr. Hobbs, but seems not to have changed his own opinion regarding the origin of his own breed.

The cattle now on Mr. Torode's farm are descended from the famous cow alluded to, and are of her lineal descendants, and a worthy one has come recently to America, Mr. Torode wishing to have the strain in the country whence he anticipates a great demand on the island herds.

A very elaborate series of volumes on domestic animals was issued in England in 1841, and illustrated at great cost by large plates in color. It treats all the Channel island cattle as Alderneys, but the two specimens illustrated are in color and every characteristic Guernseys.

A most interesting history and account of the island and cattle is given, showing that for over 900 years the people have been remarkably protected in their ancient customs and conservatism; retaining to an unusual degree their own laws, and managing, as they still do, their own concerns in a very independent way, although, despite their French tongue and associations, they are among the most devotedly loyal of all England's possessions.

Among other deviations from English ideas, the inheritance by primogeniture does not hold, but in accordance with the Norman laws of succession, property is equally divided among children, and this has been adhered to until the farms and fields have been subdivided to their present minute areas.

Among other legislation peculiar to the island, many laws

(1) This may have been true, forty years ago, but thirty years ago, I imported Guernsey heifers, and I can answer for the superiority of them in size and form to the Jerseys was then well understood, the generic name "Alderneys" may have been in use, among inland people, even later.

have been enacted having in view the perpetuation of the purity of the breeds of cattle, and most sturdily have these regulations been enforced, even when temporary advantages offered very great temptations to permit evasions.

In 1789 a law was passed by the insular legislature forbidding the importation of any "cow, heifer, bull or calf," under a penalty of 200 livres and the forfeiture of the boat and tackle which should bring them, and a further penalty of 50 livres on any sailor on board who should not inform of the importation.

These laws were from time to time amended, and always in the direction of more severe isolation from mixed breeds. Returning to a paper on the "Cattle of Great Britain," we quote: "We have said at the beginning of our article that Guernsey-men will not tolerate admixture into their breed of cattle, even from the neighboring island. In this respect the Guernsey people are much more exclusive than the inhabitants of the larger island of Jersey; and it is this exclusiveness which is their boast and pride. It may be, and indeed is, the case that the breeds of the other islands derive advantage from their mixture with Guernseys; for instance the old and well-known breed of Alderneys, which is now nearing extinction, has by this means become assimilated to the Guernsey. But, like the Arabs with their horses, Guernsey has ever kept, and boasts of her determination still to keep, her breed of cattle distinct and separate, and hence the law is made equally binding on the importation of cattle from the sister islands as from foreign parts."

Thus writes an authority, and there is no question that from whatever source the valuable traits of these cattle have been derived, they have been kept pure and made fixed by the persistent care they have had from Guernsey-men.

The volumes issued in 1841, conclude in referring to these cattle by saying that the Guernsey has great affinity to the races of Normandy, and the Alderney to certain breeds of Norway, leading to the conclusion that the intercourse with the north which followed the subjugation of Normandy, introduced Scandinavian cattle. It will be seen that authorities differ, and as centuries have involved the questions in obscurity that traditions have evidently not survived, it is not likely that more will be known of the origin of the best protected cattle in existence.

All the care of the island cattle usually is confided to the women of the families, and their gentle hands make affectionate animals. They move their tether-stakes four or five times a day, lead them to water, and milk them three times a day. The milk is set in stoneware jars about one foot in diameter, and the same depth. It remains in those jars until it is sour and nearly solid, and then the cream and sour milk are churned together, and golden butter results; but the best butter made in especial cases is by varying this treatment to the extent of skimming the cream and churning it alone. The leaves of the huge Guernsey cabbage are used for wrappers for the prints, and nothing can be more beautiful than the brilliant yellow pats nestling in the deep green leaves, when they are brought to the stone market-house in St. Peter's Port, where as many good things are offered as in any favored city by any sea. — *Fernwood, in Country Gentleman*.

CORRESPONDENCE.

My dear Jenner Fust,

The enclosed is the list of potatoes I planted this year; quantity planted in the first column, yield in the next, and ratio of yield to amount planted, in third column.

All were planted in the same ground, a light sandy loam, and all were manured in a precisely similar manner in the furrow, and were allowed to remain until ripe. The English sorts which I imported were from Sutton & Sons, Reading; they did not reach me till late in

the season, and each seed had long shoots already upon it, which my man, in the height of his intelligence, carefully rubbed off, so that the seed had to bring up fresh shoots, and hence were not so strong in growth as I think they should have been. I have saved all the yield (except what was exhibited at the Horticultural show which was all stolen) for seed for next year and hope to have a better crop.

Trusting my experience may be of use to induce others to give you results next year. I remain yours truly,

G. P. Girdwood, M. D.

WHERE OBTAINED.	NAME.	Planted.	Yield.	Ratio of plants to yield.
Bought in market.	Early Rose	7 1/2 bush.	80 bush.	1 to 10
	Vermont	1	16	1 to 16
My friend Dr. Godfrey	Ruby	"	84	1 to 17
	Snowflake	"	51	1 to 14
Sutton & Son	Garibaldi	4 lbs.	34 lbs.	1 to 8 1/2
	Magnam bonum	"	70	1 to 17 1/2
	Schoolmaster	"	84	1 to 21
England	Sutton's fluke kidney	"	80	1 to 20
	Salmon kidney	"	40	1 to 10
My friend Mr. Grier, brought from Scotland.	Excelsior	"	32	1 to 8
	Champion	"	128	1 to 32

It was not without reason, apparently, that I so strongly recommended the *Champions* last spring.—A. R. J. F.

Compton.

Dear Mr. Jenner Frost,

I received your letter asking my opinion of feeding cattle only twice a day. You say, I feed enough to know all about it. I have fed a long time (over thirty years), and have fed for my living (not for pleasure), but I do not think I know all about it yet. As for feeding cattle only twice a day, I think it would not be good economy. I do not think it could be done so as to make the most out of the feed, which should be the main object of every feeder. Cattle left to their own way, will eat more than twice a day. And they should not be fed at one time more than they will eat. After they have eaten their fill from hay once, they will not relish the rest of it so well, and they should have fresh hay, and if they had but two feeds a day, it would be so long between meals, they would get hungry and very uneasy, and would throw off before the next feed more flesh than they put on by the last one—I cannot see the object of it, any way. Cattle need looking to more than twice a day in the barn, and they might as well be fed often.

It would be a nice thing to do, to give cattle at one time just the quantity they would eat and no more; for some days they will eat more than others. Some think if they throw them a great lot of feed, it is all they require, but it depends a great deal on the care they have, and if a man cannot give it them, he had better not feed them.

My method of feeding cattle is as follows: as soon as I can see in the barn without a light they are fed a good feed; and when I think they have had time to eat it, I go to them again and feed them what I think they will eat; just before noon I feed again. After dinner they are turned out to drink, and if any hay is left before them, it is taken away and given to colts or young cattle. As soon as they have all drunk, they are put up and fed again, and left until just before dark, when they are fed for the night, at about eight in the evening I go to see if they are all right, and if I think they need a little more I give it to them.

This has been my way of feeding for a good many years, and I have had very good success. I can make very good beef on hay and grass. I have some cattle now that have nothing but hay, and people ask me what I feed them on. Nothing but hay, I reply, and they will hardly believe it, but they have hay, not wood. Some years ago, Col. Pomroy said my hay was not hay, nothing but grass; that is just what I want it to be—dried grass.

But cattle, to do well, must have the best of care, and it needs judgement too. I cannot give my men any rule to go strictly by, for I have, myself, to vary very often.

This has been quite a task to me, as I write but very little and this is my first attempt at any thing of the kind. I do not suppose I have written any thing that will be interesting to you—J. Mc.

I was much interested in your remarks on draining in the Journal: some time ago, I had a pasture that was somewhat too wet with surface water. My plan of draining it is this. I select the lowest places where is the most water, and plough four or five furrows, take a cart and draw them to a pile to compost with manure, then plough two furrows more in the middle, and cart that out, and also smooth it out a little, and so I have a ditch which answers the purpose very well; it does not fill up, and is not in the way of crossing; the water can run in from both sides, and if there is not too much water, the sides and bottom bear grass.

Dear Sir—In answer to yours of the 11th inst., I consider that feeding Cattle twice a day is contrary both to theory and experience. The digestive organs of Cattle demand that food be taken into the stomach in small quantity and frequently. As your correspondent in the January number of the Journal says. "A very common error for men to fall into, in adopting the twice a day system, is to over-feed." And this same *stuffing* is the objection to feeding only twice a day, as indigestion and other derangements, can often be traced to that source. When an animal, after such an interval as is recommended, is given as much as it can eat, distention of the rumen will naturally follow. This partially paralyses the coats of the rumen, rumination is interfered with, and in many cases indigestion, or even hooves is the result, so that, on physiological grounds, I must condemn the system.

Yours very sincerely,

W. McEACHRAN, M.D. V.S.

Montreal, January 17th 1881.

The following letter from John L. Gibb, Esq., of Compton, may prove interesting to many of our readers.

Dear Sir.—I am happy to tell you that I have made quite an addition to my stock at the Compton farm, in the shape of seven very nice Shorthorns. Two cows, three heifers, and two bulls, all young, good colors, and in nice breeding condition. I purpose adding a few more Shorthorn heifers and bulls to my little herd before the spring, and hope to have something good, and to be able to sell at low prices to the Canadian farmers. Now that so many beef cattle are being shipped, the farmer in this province will need to raise larger animals to enable them to compete with our neighbours, so that I hope, by keeping good pedigreed Shorthorns at reasonable prices, to have a share of their patronage. I have made several good sales of Ayrshires lately, and find my stock of them pretty well reduced. I have still, however, a few bull calves and some good heifers to sell. Also a very handsome pair of Clydesdale mares splendidly matched. We are to have an exhibition of poultry, dogs, and pet stock at Sherbrooke, on the 16th and 3 following days of February, which promises to be a first rate one. I hope you will be able to attend.

I forgot to tell you that I had purchased, from the Prince Edward Island Government, a thoroughbred stallion got from two imported English animals. A dark brown, 4 years old, stands 16 hands high, and of magnificent proportions, and splendid high action. He should do much good in this locality.

Yours, &c. JOHN L. GIBB.

Amler sugar-cane.—The *Prairie Farmer*, an excellent paper published in Chicago, and in an excellent position to advise in the matter, reiterates what it has submitted before, to-wit, that it is impracticable and unwise for each cane grower to undertake the manufacture of fine syrup and sugar. To do this successfully and profitably requires an outlay in machinery far beyond what can or should be incurred as a rule by farmers of the country. And with all the necessary appliances supplied, success can only be achieved in the manufacture of syrups having a commercial value as tested by the polariscope, by bringing to the work great experience and skill in the business. We intend, very soon, to lay before our readers an interview we had recently with a gentleman who is probably the best posted man in this business in the country, in which the most important practical facts pertaining to this industry will be presented, and which will indicate the true and safe policy for farmers generally to pursue. That fine syrups and good merchantable sugar from this cane are practicable and feasible has been abundantly established, and what remains to be determined is, the proper or most judicious course for all concerned in the various departments of this industry to pursue.

Vick's Floral Guide.—This annual publication is too well known, and too favourably regarded, to need much notice from us. It is enough to say that the letter-press is well written, and the illustrations carefully copied from nature. The colouring is perfection.

Mr. Cochrane, of Hillhurst, has not got rid of his *Shorthorns*, as certain *Hereford* men have been pleased to hint in

the English Agricultural Gazette. *Duke of Oneida 3rd.* and *Duke of Oxford 35th.*, are the bulls in service, besides which there are *10th Duchess of Airdrie*, pregnant of her eleventh calf; *Airdrie Duchess 4th*; *9th* and *10th Duchesses of Hillhurst*, twenty other cows, and nineteen heifers, besides eleven young bulls. Nobody denies the excellence of the Herefords for grazing purposes but their breeders will gain nothing, in the long run, by belying their rivals.—A. R. J. F.

The Kansas Board of Agriculture and its doings.—The Fourth Quarterly Report of the Kansas State Board of Agriculture for 1880 has been received. It is a pamphlet of 134 pages, containing statistics relative to live stock of the State, the production of butter and cheese, number of acres in farms, meteorological data, quarterly report upon the condition of crops and farm animals, a short account of the Inter-State Agricultural

Convention, at Springfield, Ill., together with valuable papers on bee-keeping by prominent apiarists in various parts of the State. The special feature of the report, and probably the most valuable one, is that portion of the volume devoted to "breeding, raising and management of horses in Kansas." Commencing with a short descriptive history of the thoroughbred, the trotter, Percheron-Norman or French draught, and Clydesdales, the papers, sixty-three in number, giving the experience and observation of breeders from every part of the State, aggregate a vast amount of practical experience of great value to the farmers of Kansas. This portion of the report is followed by a short paper upon epizootic, and extracts from Dr. D. E. Salmon's article upon Texas cattle fever, recently published by the Commissioner of Agriculture. The last paper of the volume is an illustrated essay upon "Insect-Eating Birds." This Report may be obtained by inclosing two three-cent stamps to the Secretary, J. K. Hudson, Topeka, Kansas

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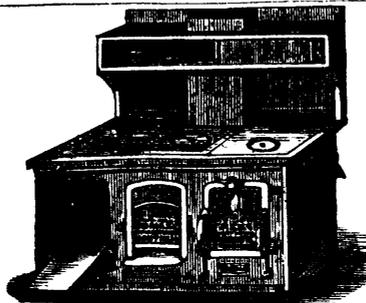
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