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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

Vol. XIV.

TORONTO, SEPTEMBER 16, 1862.

No. 18.

The Provincial Exhibition.

The approaching Exhibition of the Agricultural Association of Upper Canada, to be held in this City on the 23rd, 24th, 25th, and 26th inst., promises to surpass all former occasions. Although the entries in some of the departments are not yet been finally completed, sufficient is already known to warrant the conclusion, that all the principal materials constituting the basis of a general Industrial Exhibition, the details of which are now about to take place will not be found wanting. Although the present season has not been, in some important respects, the most favourable to agricultural pursuits, mainly in consequence of severe and extensive drought, during the spring and the early part of summer, the subsequent genial rains and temperature soon produced an agreeable and astonishing change in the backward and languishing vegetation; and we have good reason for expecting to see at the approaching show, superior specimens of roots and cereals, as well as live stock in general.— There will also be several excellent specimens of animals, as well as mechanical productions, of which but little known in Canada.

His Excellency the Governor General will, on his first visit to Upper Canada on this interesting occasion, who will be accompanied by Mr. Monk and family, and also, it is expected by the Governors of New Brunswick and Nova Scotia. The Local Committee, in conjunction with the citizens of Toronto, intend giving a cheap Agricultural Banquet, at which

their Excellencies and other distinguished guests will be present. This will no doubt be a great attraction, and we hope to see many hundreds of our enterprising farmers, merchants, manufacturers, and others, gathered around the festive board, to do honour to the Representatives of Her Most Gracious Majesty on this continent, and the great cause of the agricultural, mechanical, and general industry of this rapidly improving Province. Public meetings will be held in the new Agricultural Hall, on the corner of Yonge and Queen Streets, on the evenings of Wednesday and Thursday of the Show-week, for addresses and discussions on subjects affecting the interests of Canadian agriculture.

The Grain Aphis.

The following papers, involving somewhat of a controversy on the habits and effects of the Grain Aphis that has appeared in large numbers this season in several parts of Canada, and elsewhere, has been sent to us, and which we insert for the edification of our readers. Our columns are always open to communications whether original or otherwise that have a bearing on Agriculture or the mechanical arts; or that are in any way relate to such industry. We earnestly invite all parties connected or interested in such pursuits to send us concise statements of the results of their observations. It is in this way that truth is elicited and the knowledge of it diffused. Any display of acrimonious feeling in such mat-

ters should be equally deprecated and avoided. The Grain Aphis in some localities has unquestionably been productive of a greater extent of mischief than at an earlier period we had anticipated. Winter wheat as a general rule escaped, but late spring sorts have in some places suffered considerably. The chief injury inflicted consists in the lessening of the weight of the grain. The constant draining of the sap that flows into the ear, causes it to be very light, and in extreme cases, withered and almost worthless. No artificial means of a certain practical character for driving off or destroying this pest have yet been discovered, but nature in this, as in similar cases, has provided external enemies of these extensive tribes of depredators. The lady bugs, *coccinella*, as larvæ and beetles, the golden-eyed flies, *crysopa*, as larvæ, have been the past season in great numbers in wheat fields, busily engaged in devouring the plant lice. Whether they will happen next year is quite uncertain, and the causes of their recent increase are equally involved in obscurity. The army worm appeared in vast and destructive numbers last year, but we have heard little or nothing of it this season. Let us hope it will be the same with this grain aphis next year.

Plant Louse, (Aphis) or Grain Destroyer.

To the Editor of the *Peterborough Review*.

DEAR SIR—Having heard much of this new and formidable-looking "depredator," I paid a visit on Monday last, to the farm of J. Harvey, Esq., one of our oldest and ablest agriculturalists, where, after a careful examination of his crops, we drove to the farm of Mr. Alex. Rosborough, where, in company with Mr. R., we examined his beautiful and extensive fields of grain. Here, as at Mr. Harvey's, we found his Oats and Spring Wheat literally covered with this unwelcome visitor, giving to the heads of the Wheat in some of the fields a most extraordinary checkered appearance of red and green.

The insect, which in size is something less than the midge, presents, when viewed through a glass, a round oblong body of a pale redish color, without covering and quite transparent; feelers and legs black, and the wings, which were found upon a few of them only, were long, of a greyish color, edged with black. We observed also that the bodies of some of them were of a dark greenish color; the number of these, however, was not very great; and although we discovered neither eggs nor deposit of any kind, we found the insects of various ages

and sizes; the young ones were without wing or the appearance of any; those further advanced being partially fledged; while those full grown were fully fledged, and were not loth in showing us the use of them, by leaving parts unknown. Their position upon the grain also attracted our attention, collected as they were in groups, sometimes to the extent of a dozen, heads downward, around the small stem which connects the chaff or husk of the grain with the stalk, and as busily engaged in obtaining their food as were ever a litter of pigs.

Mr. Harvey informed me that the number upon his wheat had diminished within the last four or five days by more than one-half, and that upon entering the field at the period near which they would rise up in clouds and leave, proving pretty conclusively their intention of leaving as soon as fledged.

On our way homewards we looked into several fields of Wheat and Oats, and found that all more or less affected; and I regret to state upon authority which I believe to be thoroughly reliable, that the attack is very general in that part of the Province.

What amount of damage this heretofore unknown foe may do, is at this moment impossible to determine. That it will be serious have little doubt. With the Wheat the process of filing appeared to be going on as usual though I discovered in many places slight colouration of the husk or chaff. Oats, however, ever appeared to be suffering most; and in the field of Mr. Rosborough's, I believe there fully one-third destroyed now.

Trusting that our fear may not be realized,
I am your Obedient Servant,

W. S. CONGER.

Peterboro', Aug., 1862.

To the Editor of the *Peterborough Review*.

SIR.—There were published in the last issue of the "Review" two communications respecting the appearance, this year, of an insect with whose antecedents but few Agriculturalists in Canada seem to be familiar, and whose advent has, in consequence, produced a more or less considerable amount of alarm. The letters are from the pens of Professor Buckland and Mr. W. S. Conger respectively.

Professor Buckland's has been reproduced more than one occasion since its original publication, and is, in my opinion, so satisfactory emanating from such a source, that, although subsequently to its perusal I personally inspected fields of both wheat and oats infested by the insect in question, I scarcely thought any notice of it, unless some new light thrown upon the subject, would prove sufficiently interesting to your readers to encourage to admit it within your columns; more especially as the "*Canadian Agriculturist*" of A.

16, 1861, and of March 1, July 1, and July 16 of the current year, contains full reports of its appearance and of its operations.

Mr. Conger, however, is of a different opinion, and furnishes us with a very minute description of the insect, and with his melancholy forebodings as to its destructive qualities.

Unable to take for granted that his description is correct, and unwilling that erroneous notions should be circulated without contradiction, I hazard a remark or two in contravention of his assertions and his theories.

Mr. Conger calls the insect in question a "new and formidable looking d-predator." If he refers to the "Canadian Agriculturist" of August 16, 1861, he will find that it is by no means new. The author of an article in that number, an article written a twelvemonth ago, says that "it is not probable that it now (1861) makes its appearance for the first time;" and another writer on the same subject in 1846, remarks, "to say that wheat is subject to the presence of aphides, or plant-lice, is only to state in the case of wheat what may be affirmed of almost every known produce of our soils." Neither can I admit the correctness of the other double epithet; for to such as are acquainted with it, it was no very "formidable" aspect; and the writer of the article in the "Agriculturist," who quoted, observes, with respect to its prevalence, that "there is not much cause for concern;" and refers analogically to another species of the same family, the *Aphis fabæ* which attacks in countless myriads, the bean crops in England, observing, somewhat quaintly, that, notwithstanding, the English "farmers do not dread their bean-crops very light."

But Mr. Conger proceeds with his entomological disquisition. After describing the form and color of his louse, as "viewed through a glass," he says, "although we discovered neither eggs nor deposit of any kind, we found the insects of various ages and sizes; the young ones were without wings, or the appearance of any; the more far advanced being but partly fledged; while those of full growth were fully fledged." Here is a "Natural History Society" established in Montreal. Should the eye of any member of that Society, be fortunate enough to view Mr. Conger's description, that gentleman will doubtless, at the next meeting of the Society, be nominated for the honor of Fellowship. I venture, with great humility, to suggest, that the *Aphis* is viviparous as well as gregarious, and that, therefore, if I am correct, need scarcely excite much surprise that, although young *Aphides* were found, the broken shells which the observer ought, he thinks, have discovered by the help of his "glass," were imperceptible. Again, as to the "unfledged," "partially fledged," and "fully fledged" I, once more, almost tremblingly, hint while some of those interesting insects are

evidently possessed of wings, some also, the greater number, are what is called *apterous*, or wingless, and never succeed in raising those appendages. The winged females never, I believe, lay eggs, but produce their young alive.

Many other matters of interest there are connected with the family of *Aphides*, of which, by the bye, there are at least 70 species; but the limits usually assigned to a newspaper letter forbid any greater enlargement upon the subject.

I therefore, in conclusion, direct attention to Mr. Conger's lugubrious, and, I trust illfounded, peroration; his peroration is a bane to which Professor Buckland's letter provides the antidote.

But, for the remedy? None is known, you say. Recollect, and I write the words with a feeling of profoundest reverence, that "The things which are impossible with men are possible with God." He who inflicts the disease furnishes the means of cure. He whose "great army" is "the locust, the canker-worm, and the caterpillar, and the palmer worm," can, when he sees fit, withdraw those forces, or cause them to be overcome. This *Aphis*, so much dreaded, has enemies more fatal to its existence, than are its own attacks upon the crops. The *Ant* will carry the living *Aphis*, insect after insect, to its subterranean cavern, and keep them there, stilled as it were, to feed upon their honey like excretions. The *Ichneumon* plunges her ovipositor into the body of the *Aphis*, and therein deposits her eggs, many *Aphides* being thus converted into hatching-places by a single fly. The little beetle, popularly known as the *Lady-bird* is an insatiable devourer of *Aphides*; as also are other insects, in addition to numerous birds. So that these Plant-lice being peculiarly inactive, seldom, as I believe, or believed till I read Mr. Conger's graphic account of their air-borne propensities, their fleeing to "parts unknown," which "parts unknown" are, I apprehend, the stomachs of their above named foes—making use of their wings, and as they are pursued incessantly and perseveringly by enemies so voracious that one single fly called *musca aphidivora* requires at least thirty *Aphides* to enable him to feel a comfortable, after-dinner lassitude, I think I may take the liberty of endorsing Professor Buckland's opinion, and of offering it to the attention of the Peterboro' Farmers, in opposition to that of Mr. Conger,

I am, sir,

Your obedient servant,

B. A.

Peterboro' August 16, 1862.

TO THE EDITOR OF THE REVIEW.—Dear Sir, —I observe that your correspondent B. A., has taxed his time and ingenuity in criticising my letter on the appearance of the Plant-Louse, published in your paper of the 15th inst. In the exercise of that right B. A., has in my opin-

ion shown a desire to indulge in a little ill-natured sarcasm which might as well perhaps have been omitted, and has attempted to draw conclusions from my letter which its language does not warrant; while the over-weening pedantry, and spirit of dictation displayed throughout his whole communication is quite in keeping with the well-known character of its author. Witness, for instance, his *excessive modesty* when he says that *he* did not, after reading Professor Buckland's letter, consider farther notice of the subject necessary.

It may have been an act of presumption on my part to write, and of you to publish anything on the subject of Entomology without B.A.'s consent, but a long indulged habit of seeing, *thinking and forming opinions for myself* has become so strongly engrafted upon my nature that it is more than probable I shall continue to do so, regardless of whether such opinions are in unison with those of B. A. or not.

B. A. commences by saying, that "he had read the communications of Professor Buckland and myself, respecting the appearance, this year, of an insect with whose antecedents *but few agriculturists in Canada seem to be familiar*, and whose advent has, in consequence, produced a more or less inconsiderable amount of alarm," and proceeds to say that Professor Buckland's letter was so satisfactory to him, as emanating from such a source, that he scarcely thought further notice of it necessary. Why this change of mind? Let us, however, before we proceed further, examine the letter of Professor Buckland, and ascertain what those opinions were which gave to this distinguished author and critic, such unqualified satisfaction as to induce him to offer them with *his endorsement* to the farmers of Peterborough in opposition to mine, and see in what particular they differ from those I have ventured to express.

"In hops," says Professor Buckland, "the Aphis is often very destructive, but among grain its devastations are seldom of an alarming character, although in appearance the vast numbers seem *exceedingly formidable*. I have often seen fields of the horse bean in England," says Professor B. "very much affected by the Aphis, and yet a pretty good crop has been obtained,—*no doubt their presence* is generally *more or less injurious*, but nothing like Midge or Hessian-fly. *I am in hopes* that you and your neighbours will not find it *this year* so injurious in the result as present appearance may seem to indicate; as to remedy we are almost powerless, the insect appears to be a *new comer* in your part of the country."

So much for Professor Buckland's letter and opinions. In my letter I spoke of the insect as a "new and formidable *looking* depredator," and in my concluding paragraph said: "*what amount of damage this heretofore unknown foe may do is at this moment impossible to determine*, that it will be serious I have little

doubt."—And pray how much less has Professor Buckland said? Has he not also declared 'insects to be *destructive, formidable* in their appearance, and beyond doubt, *injurious*. Yet, notwithstanding the great similarity of opinion expressed in the letters of Professor Buckland and myself, B. A., with his usual regard for truth and fairness, approves of the one and condemns the other.

But suppose for a moment that Professor Buckland's opinions—which were given on 20th of July, before the insect had shown itself in any great force—had in some measure differed from those I ventured to express: the result of an examination made by Mr. Ivey and myself, on the 11th of August at a time when these insects were most numerous. Would it in any way have affected my statement? were we not at that time in a better position to judge of the probable effect they would produce upon the crops than those whose examinations were made three or four weeks before at a time when the insect first made its appearance?

B. A. also questions the correctness of my description,—though he does not venture to say in what particular I have erred. In reply to this I may simply state that while I make no pretensions to the science of Entomology, I challenge B. A. or any one else who has made similar examinations, to show wherein I am wrong. My description of the insect and its operations upon the fields of grain we visited, was given precisely as we saw it, and as it then appeared, omitting entirely to notice any of the fine details of theories of Naturalists as to its nature and habits. Leaving such of your readers as are desirous of obtaining more minute information to consult the writings of Reaumer, Kirby, Curtis, Fitch or Professor Hind, where they could find all they desired quite as well as if reproduced by B. A. or myself. It is true I did not fill my communication with high sounding words selected from works upon the science of Entomology. But I believe I made myself understood by a class of your readers who are most interested in the matter. And although on the occasion which I speak of, I had not the assistance of the brilliant eyes which B. A. says "assisted him in watching the operations of his diminutive *grubber*," yet I had the assistance of two excellent and highly intelligent farmers, quite able to judge of what they saw, and who were tempted to describe, as Professor Buckland says, and who fully concurred in the views expressed.

In conclusion I will give you for B.A.'s special benefit, the following opinions of Professor Hind, whose essay on the Weevil and other grain destroyers obtained the first prize in 1841.

Professor Hind in his admirable essay on the Aphis, says: "The wonderful fertility of this tribe of insects exceeds that of any other species, and elevates them to a position in the scale of pests and plagues which scarcely

the *second* if not—in many temperate climates—the *first place* among insects depre-
cated. A few weeks is sufficient to convert a
hundred of these viviparous and oviparous in-
sects into countless legions, which, taking flight,
fill the air with their numbers." I must
close, before closing this already long letter, re-
spectfully advise B. A. to extend his reading,
before he again ventures upon unknown
ground, to understand his subject.

As for his sneer about the chances of my be-
ing offered a fellowship in the society of Natural
History, he will permit me to say that it is pos-
sible my chances are quite equal to those of the
"armed delineator of the insect" "grave dig-
ger," and would be Professor of Entomology.

I am your obedient servant,
W. S. CONGER.

Peterboro, 26th August, 1862.

P.S.—Since writing the above I have seen
my farmers, and regret to learn from them
of the fears I expressed in my letter of the
past, as to the probable damage the "Ap-
ple" or Plant-Louse, would inflict upon the
trees in this part of the country, are likely to
be more than realized, and persons who at that
time considered their grain uninjured, have dur-
ing the last few days, while harvesting, discov-
ered that their oats and spring wheat have suf-
fered seriously.

Yours,
W. S. CONGER.

Peterboro', 30th Aug., 1862.

Chinese Sugar Cane.

DEAR SIR,—In looking over the Prize List of
the approaching Exhibition, I regret to notice
that a prize is offered for an agricultural pro-
duct now becoming one of the most important
articles of the Western States, and which might,
if encouraged, become a most important addition
to our provincial produce and manufactures;—
namely, to the *Chinese Sugar Cane* or *Sorghum*,
which grows wherever Indian Corn may be cul-
tivated.

I have seen it stated in late American News-
papers that in one State, either Illinois or Indiana
much has been raised of Sorghum during the
present year, that the wants of the population,
for Syrup, or Sugar, (or both) will not only be
supplied, but that there will be a surplus for ex-
portation. Throughout the entire west, during
the present year, no less than about 50,000 acres are
to have been occupied by this compara-
tively new plant. I have tested its growth in
this Province and am convinced we could raise
it to advantage as well as our neighbours in the
West. Syrup and Sugar are of universal con-
sumption, and I have no doubt every farmer who
raises Indian Corn, can raise the cane to sup-
ply his own syrup or sugar. We want the ma-
chinery for crushing the cane, and the apparatus

for evaporating the sap or juice, but these can
easily be produced, as they now form ordinary
articles at the west. I regret that this impor-
tant product of the soil has escaped the notice,
or failed to excite the interest of the managers
of the affairs of the Provincial Exhibition.

I beg also to refer to some agricultural ma-
chinery or implements which do not appear in
the List, but which seem to me of considerable
importance to farmers generally.

1. A good cheap Horse-Power for one or two
horses for ordinary farm purposes.

2. A simple machine for sowing Lime, or
Plaster by horse-power.

2. A simple but effective machine for sowing
Turnip, Carrot, Parsnip, Man-elwurzel seed &c.
in two drills at once, by horse-power.

The proposed erection of a Sugar Refinery in
Toronto, by Mr. W. Molson, of Montreal, might,
in my opinion, greatly facilitate the growth of
the Chinese Sugar Cane in the County of York
or the neighbouring counties, as farmers could
conveniently exchange their home-made syrup
for sugar, which I believe is commonly done in
the west wherever there is convenient access to
a sugar refinery. The sap of the Sorghum con-
tains, I learn, about five times the amount of
Saccharine found in the Maple, and the manu-
facture of the syrup is a rapid and simple process
and from 200 to 300 gallons may be produced
from an acre

I am, my dear sir,
Yours respectfully,
JAMES LESSLIE.

E. W. THOMSON, Esq.,
President Board of Agriculture, U. C.
Toronto, 29th Aug., 1862.

REMARKS.

[The Board of Agriculture is always glad to
receive suggestions of the character of the above,
and feel grateful for them. We shall be happy
to receive communications from our readers who
have had experience in the culture of the Sorgh-
um, and of its conversion into syrup and sugar.
The other subjects to which Mr. Lesslie refers
shall not be lost sight of. It has always been
the practice of the Board at the annual Provincial
Exhibitions to notice and give extra prizes to
articles of merit, although not enumerated in the
prize list. Eds.]

Woods at the International Exhibition.

(From the *Mark Lane Express*.)

One of the most extensive and interesting of
the numerous collections now on view in the
International Exhibition is certainly that of the
woods, sent from so many countries and climates
and from far separated districts. A complete

analytical examination of these would be of the greatest importance in the interests of manufactures and commerce. The British Colonies, Asia, and Africa, North and South America, and the various European States, all contribute of their forest wealth, adapted for the many convenient purposes for which wood is in demand. Much as Iron has come into use of late years to take the place of wood for ship building, it has not yet entirely replaced it; and there is still a large, and indeed, increasing demand for wood for lining the great iron-cased war vessels which recent invention has brought into play.

In the absence of any useful work on the products of the forests of the globe, to which reference can be made, it will, we think, be found exceedingly useful to advert from time to time to the series of woods which have been collected at much trouble and cost, to be displayed to the eyes of the world at South Kensington. These specimens may not, it is true, be very attractive or interesting to the mere idler and sight-seer at the Exhibition unless perchance he be struck with surprise at the huge dimensions of some section of a monarch of the forest, the growth of several hundred years; the great length of some planks, like those of Western Australia and Tasmania, shown in the gardens of the Royal Horticultural Society; or the picturesque timber trophy of Canadian woods, erected in the north-eastern transept, towering upwards to the roof. But, as indications of the soil, as mementoes of indigenous wealth, open to the axe of industry as materials for the use of the skilled mechanic and artificer, these collections of wood open up one of the most instructive fields for investigation, and will diffuse much that will supply thought hereafter. Capt. Fowke, R. E., who has already published some most interesting results of experiments on the strength and properties of colonial and other woods shown at the Paris Exhibition in 1855, is now conducting at the South Kensington Museum a daily series of tests on many of the woods exhibited; the published results of which will be of great importance.

Of the British colonies, Canada stands out most prominent in the collection of woods, and the colony on this occasion, with limited funds at command, has done well to confine itself chiefly to a noble display of her vegetable and mineral treasures. There are several collections of wood shown; and although they are more characterized for utility than for beauty, yet they are such woods as could not be done without; and our Australian and tropical colonies come in, too, with furniture and cabinet woods generally. It affords us much gratification to learn that an effort is making on the part of the representatives of the various colonies to establish by colonial aid, a permanent museum of colonial products; and from the unanimity with which the movement has been originated, there is every probability of its success, and of the most valuable collection now on view being re-

tained in tact. The usefulness of such a museum to the manufacturer, the artisan, the emigrant and indeed to all interested in the progress of our colonies, will be generally admitted; while France with but five or six colonies long maintained such a colonial museum, it does seem singular that Great Britain, with its many important colonies, spread over every part of the globe, should not long since have had such a collection, instead of being obliged every year or ten years to have to go to enormous expense in forming collections which immediately are sold and disposed of and lost to the world.

New Brunswick, considering her forest resources, has not produced so good a display of woods as she might have done, although it are some very fine ornamental illustrative British Columbia and Vancouver have done as well as could be expected from their great distance and the expense of transit of the specimens—the planks and sections of the Dress pine and other giants of the forest indicate one of the sources of colonial wealth.

The Australian colonies have all come well in a display of their woods—and it is but to award the palm. New South Wales, Queensland, Victoria, Tasmania, Western Australia and New Zealand, all show very fine specimens of their woods in all stages—rough, polished and manufactured. Ceylon shows some of the beautiful furniture woods and their application. India has not done so much as she might have done, but she is circumscribed for space to exhibit the noble sections of wood lying at her house, the India gallery being chiefly occupied with works of art more attractive to the general public. Mauritius, St. Helena, and a few other small colonies have a fair display of woods; Natal stands as the representative of South Africa, and proves that there are some woods to be found in that quarter.

Passing to the West India group of colonies we find that great efforts have been made on this occasion to develop its woods and to bring them into public notice, and the beneficial result of this effort cannot fail to be felt. Ornamental woods of Jamaica, of Trinidad, British Guiana have taken the public by surprise, and the cabinet work made of them is of singular beauty, and we do not wonder that the woods have been highly commended and rewarded by the juries. British Honduras, Dominica and some of the smaller islands have also taken their attention, we hope with profit, to a cultivation of their indigenous woods, with a view to the formation of their properties and uses. Valuable squared logs of mahogany show the Haytian court, the woods of Europe, Africa, and the French colonies, are all the eyes of the dormant wealth yet available, awaiting settlement and the progress of population, making greater havoc among the forests, the forethought of individuals or governments, replacing by replanting.

On the Cultivation of Wheat in Canada, and on the Season of 1862.

In the July and August numbers of this Journal we noticed the "Home Manufactures of Canada," and the "Use we make of our Mineral Resources," we now propose to devote a few pages to the Industry of the Soil, and the Manufactures which are dependent upon a constant and cheap supply of grain. In collecting material for this subject, the extraordinary fluctuations in the production of wheat in Lower Canada came so prominently into view, when contrasted with the rapid and steady increase in Upper Canada, that we were led to devote more space to this important subject than would appear to belong to the pages of this Journal, and our notice of "the Cultivation of Wheat in Canada and of the season of 1862," has extended to a far greater extent than was anticipated, when a mere introduction to the condition of different manufactures in the Province, dependent upon a supply of rye, barley, wheat, and Indian corn was in contemplation.

There are many important questions which require solution, with respect to the cultivation of Wheat in Canada.

Two facts are patent to all from the results of the last census. These are:—

First; The cultivation of wheat is rapidly diminishing in Lower Canada, and the quantity raised does not amount to one-half what is required to feed her population, assuming that each man, woman and child consumes five bushels only per annum.

Second; The cultivation of spring wheat is rapidly increasing in Upper Canada, and more than twice the quantity of land is devoted to spring wheat than to fall wheat.

With regard to the first statement—namely the diminution in the cultivation of wheat in Lower Canada—we find that section of the Province formerly exported a very considerable quantity of wheat, the produce of her own soil. The following table shows the exports of wheat from Quebec between 1793 and 1802, inclusive;

Year.	Wheat, bus.	Flour.	Biscuit, cwt.
1793.....	478,900	19,000	9,800
1794.....	414,000	13,700	15,000
1795.....	395,000	18,000	20,000
1796*.....	3,106	4,300	3,800
1797.....	31,000	14,000	8,000
1798.....	92,000	9,500	12,000
1799.....	129,000	14,400	21,500
1800.....	217,000	20,000	25,000
1801.....	473,000	38,000	32,000
1802.....	1,010,033	28,300	22,051

In 1802 the population of Upper Canada did not exceed 60,000 souls, and there is no reason to suppose that that part of the Province contributed much wheat for export previous to 1802.

*The exportation of wheat was prohibited this year, in consequence of the bad crops of 1795.

The frontier States of the Union did, no doubt, contribute flour and wheat "in casks." We will therefore strike out from the above table all the exports of flour and biscuits, and credit them to the frontier States and Upper Canada, amounting to 855,500 bushels wheat, and 169,451 cwt. biscuit, from 1793 to 1802, a period of ten years.

With these deductions, the total quantity of wheat of Lower Canada growth exported between 1793 and 1802, amounted to 3251,139 bushels, or at the rate of three hundred and twenty-five thousand bushels per annum.

The quantity of wheat raised in Lower Canada in 1827, '31, '44, '51 and '60 was as follows, showing no increase, but, in proportion to the population, an extraordinary and indeed alarming decrease:

Year	No. of bushels.
1827	2,931,240 (1)
1831	3,404,756
1844	942,835
1851	3,045,600 (2)
1860	2,563,144 (3)

The quantity required to feed the population of Lower Canada, at five bushels per head, the usual allowance, is 5,553,320 bushels. Hence the people of Lower Canada, if they consumed wheat after the manner of their forefathers, would require an importation of not less than 2,990,206, or nearly three million bushels.

Nor is this decrease compensated by the production of other kinds of grain in due proportion. The total amount of barley, rye, peas, oats, buckwheat and Indian corn, raised in 1851, amounted to 12,147,000 bushels, and in 1860 to 23,534,903 bushels; † an increase of 11,387,533 bushels—not in fact even doubling in ten years, while during the same the population increased from 890,271 to 1,110,664 souls.

The comparison between Upper and Lower Canada stands thus in relation to population and the production of the following articles:

	Upper Canada.	Lower Canada.
Population, 1851	952,004	860,261
" 1861	1,306,091	1,110,664
Wheat crop of 1860, bus	24,620,425	2,563,114
Indian corn, rye, oats, barley, buckwheat and peas	36,122,340	23,534,903

Total bus. grain in 1860..60,742,765 26,098,017
 Proportion of grain produced in Upper Canada to each inhabitant, 43 bushels.
 Proportion of grain produced in Lower Canada to each inhabitant, 23 bushels.

The change is astonishing which has taken place in Lower Canadian husbandry during the

(1) Rouchette (2) Census 1851-'2. (3) Mr. Galt's Budget Speech.

† Mr. Galt's Speech.

The Aphids which appear in Spring are exclusively females, no males being found till the autumn. It is not necessary for the young females produced during the Summer to pair with males; yet these females go on producing each year living young ones, all of which become in a short time as fertile as their parent.

It does not come within the province of this journal to describe more in detail the habits of these insects, but to those of our readers who are conversant in this curious subject we may refer them to the following accessible works, in which they will find much valuable information.

First and Second Report on the Noxious, Beneficial, and other Insects of the State of New York. By Asa Fitch, M.D.
Lectures on Insects. New Edition.

The Farmers' Encyclopdia. By Cuthbert Johnson.

The English Cyclopdia.
Stephens' Farmers' Guide.

The question naturally arises, why were these insects so numerous during the present year? The cause is to be traced, very probably, to the extraordinary dryness of the spring months of 1862.

The Aphis multiplies much faster in a dry season than in one which is humid; like the red fly, and many other destructive insects, it is bred in a warm and dry atmosphere. The month of May was extremely dry, and the quantity of rain recorded at the Toronto Observatory was only one third of the average which has fallen in that month for twenty two years.

The month of June was also remarkably dry, the amount of rain which fell reaching only one fourth of the average of twenty-two years, and it was the driest June which has occurred during the entire period in which observations have been made at Toronto. Fortunately for the wheat and other crops July was extremely wet, the rain nearly double the average fall of rain, so that not only were the crops pushed forward by the unusual moisture of the earth, but an immense host of insects were washed off the surface of the growing crops by the heavy and copious fall of rain. By the most unusual providential fall of rain in that month the multiplication of the Aphis was arrested and the crops of the country saved. It will be noticed throughout Canada, that in general the fall wheat has been harvested at an average time of the year—the spring crops are later than is common in other years. The fall wheat was sustained during the long drought by the great amount of moisture in the soil at the advent of spring, from the melting of snow and rain which fell in February and March. In March we had one inch more of rain and nearly ten inches more snow than the average of twenty-two years.

The retardation in the growth of spring crops was owing from the dryness of May and June has probably been of immense value to the country

in destroying the Midge. That this insect was very abundant in many parts of Canada during the present year there is no reason to doubt; observations in many different quarters have recorded its presence in infinite numbers, but the fly appeared before the wheat was ready to receive it, and its eggs were deposited where there was no suitable food for the young worms when hatched; myriads would consequently die for want of food, and therefore we may look upon the unusually dry spring of 1862 as having been a blessing of incalculable value to the Canadian Farmer by destroying one of the worst and most widely distributed enemies of his wheat crops. The maggots of the Midge were also seen in vast numbers in the fall wheat, but generally it was too far advanced for them to injure it to any considerable extent. The fall wheat was suddenly pushed forward by the July rains (which at the same time destroyed the Aphis) and the Midge could not penetrate the chaff or sheath to deposit its eggs, or if it succeeded in penetrating the germ the young worms were hatched after the grain had been formed. Although this year has been one of most exceptional character in relation to the distribution of snow and rain, yet when viewed in the proper light it will afford a striking illustration of that wise and merciful beneficence which disposes and adjusts all things for some excellent purposes, which do not appear to our eyes until the object for which the disposition was made is attained, and sometimes not even then.

The following table from the records of the Provincial Observatory has been kindly furnished by Professor Kingston—an examination of its contents will show the extraordinary character of May June and July of the present year.

	May.	June.	July.
Mean Temperature 1862	52.17	60.52	66.70
Average for 22 years ..	51.39	61.36	66.85
Difference from average	+0.78	-0.84	-0.15
	Inches.	Inches.	Inches.
Depth of Rain, 1862 ..	1.427	1.007	5.244
Average of 22 years ..	3.241	3.100	3.490
Difference from average	-1.814	-2.093	+1.854
	Days.	Days.	Days.
No. of Rainy days 1862	8.0	10.0	15.0
Average of 22 years ..	11.3	11.9	10.0
Difference from average	-3.3	-1.9	+5.0

May, 1862, was mild, and extremely dry, but it was thrice surpassed in that respect: it only records one-third of the average depth of rain.

June, 1862, was comparatively cold and extremely dry, the depth of rain recorded only reached one-third of the average; it was absolutely the driest June during the last 23 years.

July, 1862, was comparatively cold and extremely wet, showing nearly the double the aver-

age depth of rain, it was only once surpassed, viz. in 1841 when the depth recorded amounted to 8.150 inches.

A comparison of the foregoing with the corresponding months of the several years may be made by referring to the comparative tables that accompany the monthly reports for May, June, and July, 1861, published in the *Canadian Journal*.

A glance at the following table will show how dependent the prosperity of the country is upon a good harvest. It will be seen that the difference between the agricultural exports of 1856 and 1857 amounted to more than six millions of dollars, and that our exports last year exceeded those of 1857 by ten millions of dollars.

Table of the absolute value of all Agricultural products exported, exclusively of Canadian growth, for the years 1853 to 1861, inclusive.

Year.	Value of Ag. Exports.	Year.	Value of ag. Exports
1853	..... \$8,032,535	1858	..... 7,904,400
1854	..... 7,316,160	1859	..... 7,339,798
1855	..... 13,130,399	1860	..... 14,259,225
1856	..... 14,972,276	1861	..... 18,244,631
1857	..... 8,882,825		

- In our next issue we shall endeavour to exhibit the use we make of a considerable portion of our rapidly increasing grain crops and show how closely dependent many important manufactures in Canada are upon a good harvest.—*Journal of Board of Arts and Manufactures.*

A Drop of Rain-Water.

BY CUTHBERT W. JOHNSON, ESQ., F. R. S.

We are often, but erroneously, said by foreigners to be far too attentive to the weather—that it is too often the leading topic of our conversation; but if the remark had any foundation it is hardly a matter of surprise, as we have more reason than most nations for having our thoughts thus directed; we are more dependent upon the weather for our food than those blessed with more certain seasons; our corn, our vegetables, our fruits, are all natives of other and warmer lands; we can only preserve by very great care and skill what nature spontaneously produces in more southern soils, and under a more serene climate. We are all, therefore, whether gardeners or agriculturists, deeply interested in atmospheric transitions in temperature, and in the degree of moisture to which our plants are exposed. It is but rarely, however, that we inquire of the *origin and history* of the meteorological phenomena which encircle us. The research might, however, be attended with more profit than we may at first suspect. It is with that conviction that I propose in this and a subsequent paper to endeavour to trace the history of a drop of rain-water.

The *origin and progress* of a drop of rain-water is a history of many things which relate not only to our comfort and enjoyment, to the growth of the vegetable world, but to our very existence. We do not commonly inquire about such matters; we have always been used to see the rain descend; there is nothing novel about it, to cause us to search as to its history—what it falls upon our fields, whence it comes, where that water proceeds in its course when it disappears in the earth from our sight? We do not engage in such examinations, because the phenomenon is neither novel nor startling; the fall of a meteoric stone arouses more attention although we can neither discern its origin nor its usefulness, than all the rain-drops, which we well know spread the oil of fatness so continuously over our fields. Could our lot have been cast in a totally rainless district, like that of the Chinchu or Guano Islands, on the Peruvian coast, our wonder would have been considerably excited when first placed in a shower of rain—our inquiries about its origin more fervid, our gratitude to its great Author more deep. It may be more useful, then, if we travel together with an imaginary inquirer of this kind, who wishes everything to learn with regard to a drop of rain-water, and is anxious to find its origin, nature, and why and whence it disappears and evaporates.

The size, shape, the composition of a drop of rain seems to be naturally the first portion of inquiry. Its size varies from the very small, say 1-24th to about $\frac{1}{2}$ of an inch in diameter; its shape is spherical. An early reflection suggests itself when we are considering the size of a drop of rain,—the beneficence of its Divine Architect in adapting the weight of those drops to the wants and safety of His creatures. Falling as they do from a great elevation, they descend with a force which, had they been considerably larger, would have spread death and destruction in every shower. We all know the painful effect produced upon our heads by a rapidly-descending current of water, or when a few small drops of rain are congealed together by a low temperature as they descend from clouds, and hailstones formed. In our hot summers, it is true, we may desire, in figurative language, "torrents" of rain upon our languishing crops; but no one wishes to receive drops as large as turnips, or rain falling in urns. A prayer for a hailstorm was never yet uttered. We see, then, that even rain-drops were weighed by their Divine Architect, their gravity adapted to the powers and good of His creatures, and the bed of earth on which they were to descend and fertilize. The annual fall of rain on the entire surface of earth is estimated at about five feet (*M. Phys. Geo. Sea, 207*); but the amount of average annual fall of rain varies, however widely in different countries, from the dis-

the Andes, where the rain rarely ceases, to not a hundred miles distant, around Lima the rain is almost unknown.

In our quarter of the globe, the annual rain varies with different countries, altitudes, and measures to moist westerly currents. At Madeira, which is placed on an elevated plateau, the annual rainfall is only about 10 inches. At Colaba, in Portugal, a fall of more than 200 inches has been recorded. Extraordinary rainfalls occurred occasionally in the South of England. On October 25, 1825, 32 inches fell at Exeter, and October 9, 1827, at Joyeuse, in the north of France, 31 inches fell. In the East Indies 13.06 inches fell at Mahabuleshwur, September 2, 1833; but 11 or 12 inches is not rare. In July, 1840, 134.42 inches fell at that station. In Bombay, July 1, 1844, 7.44 inches fell in forty-four hours, 2 inches falling in seventy minutes (*ibid.*, p. 366). In England our rain does not nearly approach amounts like these. E. J. Lowe has recorded the most rainy months and days at Beeston, near Nottingham, from 1843 to 1857:—

MOST RAINY MONTHS.

	Inches.
1852, November	7.0
1852, September	5.3
1849, September	5.0
1847, May	5.0
1853, June	5.0

MOST RAINY DAYS.

1843, August 9	1.095
1846, October 19	1.300
1847, May 8	1.645
1848, June 18	1.055
1848, September 28	1.155
1849, July 25	1.084
1850, July 24	1.106
1851, July 26	2.063
1852, September 6	2.044
1853, August 17	1.502
1855, July 14	1.060
1857, June 30	1.590
1857, August 13	3.010

In our country, the smallest rainfall is in Essex, which hardly averages 20 inches. The most is in the westerly counties, where it varies from 35 to 46 inches. On some of the mountains in Westmorland 108 to 148 inches have been recorded in one year.

ITS ORIGIN AS VAPOUR.

When we noted the fall of rain—seen it descend from the clouds—the next portion of our inquiry is. How did that rain water get into the atmosphere? We need hardly be reminded that it is by the evaporation of water from the earth's surface. "To evaporate," observes Mr. Tyndall, in his valuable work on the Physical Geography of the Sea, "water enough annually

from the ocean to cover the earth to a depth of five feet with rain-water, to transport it from one zone to another, and to precipitate it in the right places at suitable times and in due proportions, is one of the grand offices of the atmosphere." This water is evaporated chiefly from the torrid zone. Supposing it all to come thence, to raise as high as the clouds, and to lower down again, all the waters in a lake sixteen feet deep, three thousand miles broad, and twenty-four thousand long, of the annual business of this invisible machinery. Well may we exclaim, What a powerful engine is the atmosphere! And how nicely adjusted must be all its cogs, and wheels, and springs, and compensations, that it never wares out, or fails to do its work at the right time and in the right way! "According to Laidly," adds Maury, "the evaporation at Calcutta is about 15 feet annually; between the Cape of Good Hope and Calcutta it averages in October and November, nearly three-quarters of an inch daily; between 10 and 20 degrees in the Bay of Bengal it was found to exceed an inch daily. The South Seas then should supply the atmosphere with watery vapour, while the northern hemisphere condenses it. We should therefore have more rain in the northern hemisphere. The rivers tell us that we have, for the great water courses of the globe, and half the fresh water in the world, are found on our side of the equator. The rain gauge also tells us the same story. The average fall of rain in the north temperate zone, according to Johnstone, is 36 inches: he gives but 26 inches in the south temperate. The observations of mariners corroborate this conclusion. Rains, fogs, thunder, calms, and storms, all occur much more frequently, and more irregularly on this side, than they do on the other side of the equator.

Let us begin our examination by finding out the ordinary amount of vapour present in the air, and with what gases it is mixed. The composition of the atmosphere, at a mean temperature and pressure, is as follows:—

By measure. By weight.

Nitrogen gas	77.5	75.55
Oxygen gas	21.0	23.32
Aqueous vapour	1.42	1.03
Carbonic acid gas	0.08	0.10

Whoever wishes to see that aqueous portion of the atmosphere made apparent to his senses, need only to introduce a glass of very cold water into a warm well-tenanted room—the vapour of its atmosphere is immediately condensed on the glass. It is not as is commonly said, the heat of the air, but its warm aqueous vapour, that strikes, that is condensed upon the glass.

The state in which water exists in the atmosphere seems now pretty well determined. It was formerly supposed, by the majority of philosophers, that it was in a state of chemical combination with the atmospheric gases; but later researches seem to show that it is in a state of

steam. Saussure long since had shown that the amount of steam existing in a given space and temperature is the same, whether the space be free from or filled with air; and then Dalton distinctly proved that the vapour of water mixed with air, or other gas permanent over water, differs in no respect from pure steam, and is subject to the same laws. The aqueous vapour of the air constitutes, in his opinion, a distinct and independent atmosphere, the elastic force of which forms at different temperatures different proportions of the elastic force of the whole. For example, at the temperature of 95 deg. it gives to air 1-50th of its elasticity. According, therefore, to this view, which is confirmed by the experiments of Gay Lussac and others, a volume of air, or gas, at any temperature, saturated with moisture, contains as much steam as would exist, at the same temperature, in a vacuum of the same extent.

The insensible vapour in the air we may then conclude is merely mechanically mixed with the atmospheric gases; there is no chemical combination. It is the diffusion of water in the state of steam, produced by the evaporation from the earth's surface. This evaporation is hardly ever interrupted; it continues very often even when rain is falling, or the ground covered with snow—under the burning sun of the equator, or in the eternal ice of the arctic regions, it still proceeds. It is, indeed, remarkable, as the Rev. L. Jenyns observes ("Meteorology," p. 164), that evaporation still goes on when water is frozen, the same as when it is liquid: even the most intense cold is insufficient of itself to put a stop to it. This circumstance often strikes persons with astonishment who witness it in its effects without being aware of the true cause. They see a fall of snow gradually waste—if light, wholly disappear—or a block of ice sensibly diminish during the continuance of a frost, especially if the wind blows tolerably fresh from some point towards the north, without the least sign of liquefaction on the surface. And they perhaps naturally enough wonder what has become of it. Sometimes also in deeper snows the surface becomes curiously grooved or channelled, by the wind acting unequally upon it, and thus promoting unequally the evaporation. This phenomenon is best observed around the trunks of trees, and near the interstices of palings, or wherever a stream of air acquires an increased force in a particular direction. There is every reason to conclude with Dr. Prout, that the quantity of vapour thus formed from snow and ice is precisely equal to what would be evaporated from water itself, provided water could exist as a fluid before the temperature at which it is congealed.

The amount of water in the air, from an average of seven years' observation at the Greenwich observatory during each month of the year, has been given by Mr. J. H. Belleville, in his "Manual of the Thermometer."

In the following table, column I, gives the

mean weight, in grains, of vapour in a cubic foot of air at 9 o'clock, a.m., and column II. amount at 3 o'clock, p.m., Column III. gives the mean addition of vapour required for complete saturation of a cubic foot of air at 9 o'clock and column IV. the amount needed at 3 o'clock.

	EXISTING AMOUNT.		DEFICIENCY.	
	I. 9 A.M.	II. 3 P.M.	III. 9 A.M.	IV. 3 P.M.
January..	2.70	2.84	0.17	0.30
February.	2.58	2.72	0.25	0.67
March ...	2.77	2.85	0.40	1.00
April	3.26	3.37	0.68	1.41
May	4.02	4.06	1.10	2.00
June	4.71	4.78	1.45	2.44
July	5.07	5.26	1.50	2.27
August...	5.00	5.07	1.18	2.27
September	4.66	4.77	0.73	1.90
October..	3.96	4.01	0.35	1.00
November	3.27	3.42	0.22	0.50
December.	2.78	2.89	0.17	0.37

The amount of water which the air contains let us remember, increases with its temperature. The mean relative humidity of the air, Mr. Jenyns observes, is greater at 9 a. m. than at 3 p. m.; the mean quantity of vapor in this respect actually *increases*, but as the increase is no proportion to the increase of temperature the same interval, the air is relatively drier.

November, December and January are months when the air is most frequently saturated with vapour. As Spring advances the air comes warmer, and the point of saturation is then removed. A cubic foot of atmospheric air, when saturated with water, at the temperature of 66 degrees, contains only about eight grains of water. Dalton calculated the medium quantity of vapour held in solution at once in the atmosphere may amount to about one seventieth of its bulk.

That vapor we have seen is mainly supplied by the evaporation of the surface of the ocean, but the land contributes a large proportion: vegetable and animal worlds do the same. As to the portion yielded by the land, the amount of water evaporated from its surface has been examined by various experimentalists. Smeaton conducted his trials on a small scale, on different earths exposed in trays to the sun and winds (*Journal R. A. S.*, vol. i. p. 177). He found that the difference in the evaporation from the surface of different earths was not so great as might have been anticipated. He determined that when a given surface of calcareous earth lost by evaporation during four hours 146 parts, an equal extent of fine garden-mould lost 128 parts, some black turf soil 128 parts, and specimens of clay soil each lost 123 parts.

Some years after Smeaton's experiments, Dickenson (*ibid*, vol v. p. 151) examined the amount of the annual evaporation from

of soils of Hertfordshire. The following are some of the results he obtained—

	1842.	1843.
Depth of rain in inches.	26.43	26.47
Evaporation.....	14.7	13.37
Filtration.....	11.76	8.10

In the same years, on the limestone soils of Wiltshire, Mr. C. Charnock obtained the following results (*ibid*, vol. x., p. 517):—

	1842.	1843.
Depth of rain in inches.	25.11	24.9
Evaporation.....	21.56	26.11
Filtration.....	4.55	4.28

It is noticeable from these trials how much water is the evaporation from the limestone soil from the chalk; and how much less the breeze. The wind produces a far more considerable amount than the mere heat of the sun. Marine-salt makers, who expose sea-water, in shallow ponds to the action of the atmosphere, are well aware how much faster the warmer breezes evaporate the water than the sun on a still day; every washerwoman is aware of the same fact. Mr. Charnock experimented upon this question; and found that—

	1842.	1843.
The annual evaporation from water to both the sun and the wind was in inches.....	33.61	34.17
From water exposed to the wind, but shaded from the sun.....	22.48	22.7.
From a drained soil.....	21.56	20.11
From a soil saturated with water.....	30.02	31.19

It is not only the surface of the earth and waters from whence the insensible moisture of the atmosphere is derived. Plants contribute copiously, too, to the supply. It is certain that plants of all kinds exhale moisture in large quantities. Mr G. Philips (*Jour. R. A. S.*, vol. p. 306) found that the polyanthus, in a pot of earth, between the 28th of February and the 14th of April, 1845, evaporated 2.01 grains of water daily for every square inch of surface of its leaves, the mould 10.8 for every inch of surface: he found that a polyanthus, with sun and wind, always promoted evaporation, while a dull, cold day always retarded or stopped it. The evaporation from the leaves of a polyanthus, under similar circumstances, was much less, being at the rate of only 1.4 grains per inch for each square inch of surface. The transpiration of moisture from plants increases progressively from March to August, after which period it declines. It is the most copious from sun-rise to noon, after which hour it lessens. Other plants emit moisture at a much greater rate than the polyanthus or the potato. Hales found that the sunflower transpired, in July and August, 15

grains of water from every square inch of its surface; a cabbage, under favorable circumstances, has been found to emit, daily, water equal to its own weight.

Need we attempt to calculate the enormous amount of aqueous vapor which the vegetable world thus contributes to our atmosphere? the whole covering of our Emerald Isles pouring in an incessant stream of moisture; the vegetation of all lands contributing their portion. The dense steaming forests of the equatorial regions adding perhaps the largest amount in a given space, enormous, though insensible streams, rivalling in their weight of water those of the Amazon and the Mississippi. From the vegetation of the whole world, in every clime, in every soil, and at every altitude, from the level of the sea up to the lines of eternal snow, by day and by night, is this out-pouring going on; no winds prevent its continuance, by no change of temperature is this invisible stream of watery vapor entirely stayed.

But the emission of vapor upon the air by the surface of the earth, its waters, and its vegetation, are not the only sources of the supply of atmospheric moisture. All animals contribute a considerable share. As I have elsewhere had occasion to remark, the evaporation from the surface and from the lungs of animals is very considerable; it varies, however in different species and individuals. Cruikshank calculated it from his experiments to average about 7 pints in a man, during the 24 hours; Lavoisier and Seguin made it amount to only 3½ pints, the maximum being 5lbs, the minimum 1½lbs. They calculated that, in every 18 parts of water thus evaporated, 7 parts were from the lungs, and 11 from the skin. Its amount is increased by drink, but not by solid food. Its minimum amount is immediately after a meal, and in close, foggy weather: it attains its maximum during digestion. It is, as might be expected, the most considerable in warm and breezy weather, in hot climates, and after great exercise. This is indicated by the enormous quantity of liquid consumed by those who labor under such circumstances; the daily 14 pints of beer, the 24 pints of cider allowed to the reapers (*Jour. R. A. S.*, vol. xiv., p. 445); and by the 30 pints of porter swallowed by the London coalwhippers—an amount which is often unequal to the loss they sustain by transpiration. The evaporation from labourers in certain situations, is, in fact, enormous. Dr. Southwood Smith made some observations upon the men employed in filling and emptying the Phoenix Gas Works. These men are thus engaged twice a day. On a foggy day in November, when the temperature of the external air was 39 degrees, the greatest loss of weight by these men in an hour and a quarter, was 2lbs. 15 oz.: and the average of eight men was 2lbs. 1 oz. On a bright day in the same month, when the temperature of the surrounding air was 60 deg., the greatest loss

of weight was 4lbs. 3 oz., the average loss being 3lbs. 6 oz. On a bright, clear day in June, the greatest loss sustained in the hour, by a man who had worked in a very hot place, was 5lbs. 2 oz.; the average of all, 2lbs. 8 oz.

Such are the chief sources of the vast fountains of vapor which replenish the atmosphere with the water that we shall presently trace becoming visible to our senses, in clouds, in dew, and in the rain drop. The atmosphere in which we are enveloped, and in which, and by which we live, is indeed, full of marvels abounding with evidences of design, and the benevolence of its Creator. It is such testimonies that our readers may profitably study, not only in their fields, but by their study fire; and as an able American author, whom I have before quoted, remarks, in one portion of his excellent works "to him who studies the physical relations of the earth, sea and air, the atmosphere is indeed something more than a shoreless ocean, at the bottom of which he creeps along. It is an envelope, or covering, for the dispersion of light and heat over the surface of the earth: it is a sewer into which every breath we exhale, we cast vast quantities of dead animal matter: it is a laboratory for purification, in which that matter is recompounded, and wrought again into wholesome and healthful shapes; it is a machine for drawing up all the rivers from the sea, and conveying the waters from their fountains in the ocean to their sources in the mountains: it is an inexhaustible magazine, marvellously adapted for many benign and beneficent purposes. Upon the proper working of this machine depends the well-being of every plant and animal that inhabits the earth. Its movements, therefore, cannot be left to chance. They are guided by the laws that make all parts, functions, and movements of the machinery as obedient to order, and as harmonious as the planets in their orbits.—*Farmers' Magazine.*

In Breeding Horses, do the Stock Take Most After the Sire or Dam?

So important is it that agriculturists should have definite ideas on this interesting subject, that we this week place at the head of our column, a query addressed to us by a correspondent from Kiaross. Judging from prevailing practice, we can scarcely avoid the conclusion, that farmers generally deny that the mare has much or any influence on the development and growth of the progeny. How else can we explain the notorious fact that an immense proportion of the breeding mares throughout the country are selected not on account of their superior appearance and qualities, but because age, accident, or hereditary effects have rendered them less valuable for work. How opposite is this to the more rational practice of those keen horsemen the Arabs, Money fails to purchase their best mares

According to the view first distinctly set forth several years ago by Mr Orton of Sunderland, and concurred in by most good judges, the progeny appears especially to resemble the dam in the head, carcass, internal organs, and temper, whilst the influence of the sire is more especially noticeable in the colour, and the form and style of the limbs. The powers of endurance depending upon the deep chest, arched ribs, and well developed lungs, are the valuable qualities of many a priceless mare, and descend with great certainty to her offspring by various horses. On the other hand, the colts got by particular stallions usually exhibit great similarity in color, in the style of their action, and also in the defects of their limbs. If the horse has been subject to splints, spavins, or such other bony deposits, a large proportion of the colts will exhibit a similar tendency. This view must not, however, be carried too far. It must not thence be presumed that the sire exercises no influence upon the development of the internal organs or temper, or that a mare's weak or misshapen limbs will not reappear in her progeny. It only justifies us in saying, that whilst the male and female appear to impress their characters tolerably equally upon the offspring, the characters, peculiarities, and even the diseases of the internal organs, are in the majority of cases those of the female parent, whilst the skin and organs of locomotion usually indicate the preponderating influence of the sire. From this law, however, two important practical deductions may be safely drawn—1st, never to breed from mares with narrow contracted chest or weak loins, or delicate constitution: and 2 to eschew as decidedly entire horses with weakly shaped, or diseased limbs.

But other influences are also at work affecting the share which the two parents have on the offspring. The parent in the highest state of health and vigor always imparts more than its own share of character. Thus the progeny will more resemble the active vigorous young stallion than the old worn-out mare to which they may be put. Hence the importance of maintaining in a healthy and natural state all animals intended for breeding purposes. It is further most interesting, that of the two parents, the best bred or highest descended is most strikingly reproduced in the offspring; and this is so notorious, and applies so constantly to all the higher animals, that breeders should avoid all half-bred sires, and use only such as have, in addition to good shapes, a fair unblemished pedigree. The character and qualities of such parents being transmitted through many generations, and are permanently and indelibly fixed, and are far more likely to be impressed upon the progeny. Thus a well-bred Short-Horn bull will produce from a lot of ordinary cows, calves resembling their sire and each other in color, heavy, of superior quality, and all other good points. The strong capability of such well-bred animals

duce their good qualities may be judged off the frequency and persistence in their stock certain slight markings. How frequently, for example, do well bred bulls, with a strong infusion of Duchess blood, get their calves out of us of all sorts and colors distinctively marked with the white spot on the loin, and frequently on the tail!

To obtain a tolerably certain result in breeding, parents must be selected possessing tolerably similar characters. Uncertainty and disappointment are sure to follow from the attempt to breed from unlike or very dissimilar parents. The failure generally follows the union of the sought mare and thorough-bred horse, or vice versa. The dissimilar characters of such unlike animals cannot be properly blended in the offspring, and nondescript horses with big heads, deficient action, weak limbs, and bad feet, are the usual results. All this, we thought, was already sufficiently well known to every farmer and breeder, and yet we this week met an intelligent gentleman returned home from the Cape, who purchasing to take out with him a number of smart fillies to be put to an Arab, and from this talent and unsuitable union a good stamp of kind horse is expected. Time and money could be great better spent on strong, active, affbred mares, which should, in our opinion, be put, not to an Arab, but a strong stout, well-boned, short-legged English thorough-bred.—*With British Agriculturist.*

Judging Stock, &c., at the Provincial Exhibition.

EDITOR OF THE AGRICULTURIST—SIR,—I take the liberty of sending a line to you, as I see the complaints in last number of the *Agriculturist* in reference to having too many Judges on Sheep. You say you want communications on subjects touching the different merits of the arrangements of the show. Formerly one set of Judges had to act on two or three classes of sheep, and I have frequently seen sheep shown in two different classes. When thrown out of the Leicester class, they could turn right into the Longwool. I think by having sets of judges for every class, making them all come out at the same time, is the best preventive against such mixings. The principle is a good one, and would be carried out every year, however much it may displease a few exhibitors. Surely if a man has got ambition to raise five or six distinct breeds of stock, he can or will employ men to look after his own interest when it would be only for one or two years.

I have been an exhibitor of late and shall be one this year, and think it behoves every one to try and have the show conducted in a

proper manner. I am sure the managers will not encourage anything else, as it is to the verdict of those shows that we look for satisfaction. Yours respectfully,

AN EXHIBITOR.

Halton, Sept. 1862.

Agricultural Intelligence.

Agricultural Exhibitions this Autumn.

PROVINCIAL AND STATE.

Upper Canada, at Toronto, September 22nd—26th.
New York State, at Rochester, September 30 to October 3.
Illinois State, at Peoria, September 30 to Oct. 4.

COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.
North Simcoe, at Barrie, Oct. 1st.
Brockville, at Brockville, 18th and 19th.
South Simcoe, at Bradford, Oct. 2nd.
Durham West, at Bowmanville, Oct. 9 to 10.
North Lanark, at Almonte, Sept. 16th.
Russell, at Osborne, Sept. 30.
Peel, at Brampton, Sept. 17th and 18th.
North Leeds & Grenville, at Frankville, Oct. 1
North Ontario, at Prince Albert, Oct. 7th.
East York, at Markham Village, Oct. 9th.
South Wellington, at Guelph, Oct. 10.
North Wellington, at Fergus, Oct. 14.
South Grenville, at Prescott, Oct. 8th and 9th
West Northumberland, at Grafton, Oct. 15.
Addington, at Newburgh, Oct. 25.
Dundas, at Morrisburgh, Oct. 2, 3.
Niagara, at Niagara, Oct. 9.
Lambton, at Sarnia, October 8th.
South Waterloo, at Ayr, October 1st.
Prescott, at L'Orignal, September 26th.
Kent, at Chatham, October 9th.
West Elgin, at Wallacetown, October 14.
Norfolk, at Simcoe, October 14.
South Hastings, at Belleville, October 7.

TOWNSHIPS.

Puslinch, at Aberfole, Oct. 8th.
Hamilton Township, at Baltimore, Oct. 9.
Barton and Glanford, at Ryckman's Corners, Oct. 2nd.
Camden, at Centreville, Oct. 18.
Vaughan, at Burwick, Oct. 30.
Norwich, at Otterville, Oct. 11,
Portland, at Harrowsmith, Oct. 17th.
Erin, at Hillsburg, October 16.
Yarmouth, at Clark's Hotel, St. Thomas, October 14.

Edwardsburgh, at Spencerville, October, 14.
Asphodel, Belmont and Dummer, at Norwood,
October 14.

Whitchurch, at Aurora, October 1.

Southwood and Dunwich, at Fingal, Sept. 16.

Hay, (County Huron), at Rogerville, Oct. 8.

Winchester, at West Winchester, October 8.

Great Annual Sale of Shropshire Sheep.

As the Shropshire breed of sheep is gaining great popularity in Britain, and as some importations have, of late, been made by a few of our enterprising Canadian Farmers, the following account of the public sale, abridged from a late number of the *Shrewsbury Chronicle*, may prove interesting to many of our readers:—

On Monday week an extraordinary exhibition of stock was exposed for sale by Mr. W. G. Preece, at The Plask, in this town. The stock consisted of 250 magnificent rams of all ages; of these no less than 229 were absolutely sold or let; and on Tuesday 750 breeding ewes of the best blood in the county. The sale commenced with Messrs. Crane's lot, which were knocked down at sums varying from 9 to 46 guineas. These were followed by two belonging to Mr. W. G. Peerce; Robin Rough sold for 33 guineas, and Channock Ranger for 21 guineas. The Rev. C. P. Peter's rams ranged from 9 to 21 guineas; Mr. H. Smith's, of Sutton Maddock, 7 to 29 guineas; Mr. J. Evan's, of Uffington, 6 to 21 guineas; Mr. Stainer's, Wroxeter, an average of 12 guineas; Mr. Madlox's, Harley, averaged 14 guineas; and Mr. Claridge's, Pitchford, averaged 15 guineas. Mr. Joseph Meure's lot were let and sold at prices ranging from 6 to 13 gs.; Lord Wenlock's sold at 7 to 21 guineas, and Mr. Sheldon's Braileshouse, 7 to 27 gs. Mr. Horton's five sheep were let at the following prices:—One to Mr. Hatton at 70 gs.; one to Mr. Davies, Meer Old Hall, 60 gs.; one to Mr. Williams, 28 guineas; one to Mr. Henry Nicholls, 19 guineas; and the last to Mr. G. Cnerton, at 20 guineas. Mr. P. W. Bowen's lot sold on an average at 18 guineas. Mr. Mansell's, 16 guineas; Mr. Matthew's, 17 guineas; Mr. R. Lee's, 10 guineas; Mr. Lander's, 9 guineas; Mr. Thornton's, 8 guineas; and Mr. Stubbs, Weston, 20 guineas. Among Mr. Adney's was the grand five-year-old ram, Lord Harley, sire of Havelock, the winner of the first prize at Bat-tersea. This fine old sheep was purchased by Mr. Horley of the Fosse, the owner of Havelock, for 39 guineas. On Tuesday, the sale of the ewes took place, and the competition was carried on with great spirit throughout. Messrs. Crane's ewes ranged from 3 to 5 guineas each; Mr. Evan's, Uffington, 2½ to 4 guineas; Lord

Wenlock's, 2½ to 5 guineas; Mr. Minor's, £; Mr. P. W. Bowen's, 3 guineas; Mr. T. Mansell 60s. to 75s.; Mr. A. Mansell's, 2½ guineas; Mr. W. G. Preece's, 70s.; Mr. Thornton's, 60s.; Mr. Brooke's, Rowton, 55s.; Mr. Belliss's, Burlington, 2½ to 3 guineas; Mr. R. Lee's, 50s.; Mr. Pembrey's, 60s.; Mr. Plimley's, 60s.; Mr. A. Cherley's, Moortown, 63s.; Mr. Pitt's, Pose hall, 50s.; Mr. Preece's, Cressage, 63s.; Lord Berwick's and the Hon. N. Hill's from 2 guineas upwards; Messrs. Homer's, Sankey's, Harris &c., &c., from 40s. to 50s. each.

Malignant Disease among Sheep in England.

In a recent number of the *London Times*, we find the following startling article, from which it would appear that *small-pox* has suddenly broken out among a large flock in the South of England, in a very malignant form. The facts are exceedingly interesting:—

It is impossible for words to describe fully the excitement which has for the last few days prevailed in Wiltshire and the upper parts of Hampshire, in the agricultural classes, in consequence of the breaking out of a malignant disease, one of the largest breeding flocks in the west of England—in a flock, too, that has for the last 50 years been regarded as one of the most healthy flocks upon the Beckinham Downs. For a few days there was some secrecy in the matter, but so completely impregnated is the whole flock that for the sake of flock masters generally it is desirable that a notice of the attack, and the means which are being taken to subdue it, should be forthwith promulgated. The facts are briefly these:—It is now about a month ago that Joseph Parry, of Allington, was riding alongside one of his folds, containing about 300 two-year-old ewes, when he observed one of them lying by the hurdles. The animal looked in a pitiable condition, soon breathed its last, and was put out of the way, and for the time being more was thought of the occurrence. But in a day or two after, other sheep in the same flock showed symptoms of illness, exhibiting great internal suffering, loss of appetite, heaviness and indisposition to move, and general prostration. The two-year-old ewes had, up to this time, been kept with their lambs; but thinking it better to separate them, the latter were now removed and put with other lambs upon another farm, the former being turned among the general breeding flock, making altogether 1,500 ewes and 700 lambs. The nature of the attack upon the two-year-old ewes surpassed all apprehension. That it was eminently contagious was certain. In the course of a fortnight, the same symptoms began to show themselves among the older ewes and among the lambs, and in days in succession as many as 20 or 30 of

died in a most loathsome state of disease, bodies covered with pustules and a vicious matter running from the nose and from the eyes, rendering the sheep completely blind, and emitting the most foul stench that can be conceived. Local remedies are entirely unavailing. The malady was a mystery, and it became necessary that the best possible advice should be had, and that, too, without delay. Mr. Joseph Parry went to London, last Monday week, to consult Prof. Simonds, the well known lecturer at the Royal Veterinary College. After hearing Mr. Parry's explanation of the symptoms. Professor Simonds came immediately to the conclusion that the disease from which the sheep were suffering was small-pox; but as small-pox has never been known to make its appearance except through infection—as, wherever it has appeared, its origin and propagation have always been traceable—its introduction into Mr. Parry's flock is perfectly unaccountable. Every suggestion which the Professor could offer was at once met by Mr. Parry. There had been no change on the male side of the flock for at least half a century. New male blood was only introduced once every two years; and it was now two years since Mr. Parry had purchased or hired rams from another flock. Neither could it have been imported by the shearers, as all the flocks which the sheep shearers had shorn this year, both before and after Mr. Parry's, were known, and in neither was there the slightest symptoms of disease. In short, there was no traceable means of accounting for the visitation. A "chill" could not possibly produce it, as a common cause of illness would not produce a special disease of this description. Its spontaneous appearance, therefore, is a thing unheard of. Moreover, it is a disease unknown among English flocks; the only occasion of its appearance was having been in 1847, when some Merino sheep which had just been imported were sold with the small-pox upon them at Smithfield market. This was the first known appearance of the disease among sheep in England; and although it was then unfortunately communicated to two flocks belonging to Mr. Statham, a farmer at Tetbitt, near Windsor, and Mr. Weale, of Pinney, and for a time found its way into Norfolk and Hampshire, it was ultimately eradicated, and from that time to the present there has been no known instance of small-pox in this country. To account for it in the present case, therefore, seemed impossible, inasmuch as Mr. Parry's had always been a notoriously healthy flock—well bred, carefully fed, and with all the advantages of a fine down air. Still, from the symptom, Professor Simonds had no doubt about the fact, and he went to Allington on Friday last fully convinced of his previous persuasion. On examining the sheep he found them suffering in almost every stage of the disease. Some in which the disease had first shown itself exhibited a staggering gait, with slight fever, and swelled eyelids; others, when it had become more fully de-

veloped, red spots (easily discernable upon the bare parts on the inner surface of the legs) were found thickly studded over the body, while in those where the complaint had still further advanced, pustules (in form like the heads of linary small-pox) and malignant ulcers, emitting a thin stinking matter, were the distinguished features of the malady. A more loathsome sight than the sheep exhibit in this advanced stage can hardly be imagined. The contagious nature of the disease is truly astonishing. An instance is related (when it was introduced into England by the Spaniards in 1847) of its having broken out in a flock peined some distance off, but in the same field, while feeding on rape, clearly showing that infection was carried in the air from one flock to the other. Considerable danger has in the same way arisen on the continent (where the disease is well known) from the driving of a healthy flock on the same road or on the same down which had previously been travelled over by diseased sheep, or by the immediate transit of a sheep dog or a shepherd from one fold to another. But while it is so highly infectious to sheep, it is by no means so to other animals or to human beings. Cases are recorded in which children of all ages have been inoculated over and over again without any specific disease resulting; and the like experiment upon the cow, and even the goat, have been equally unavailing. Upon examining the flock on Saturday and Monday and again on Tuesday, Professor Simonds found that a great number of sheep had already passed through the most trying part of the malady while some (as many as 170) were declared by him to be perfectly convalescent. This being the case, it is impossible to say how long the disease has actually impregnated the flock; but to reduce its continuance to a certainty, and as the most effectual means of preserving those that have not already been attacked, Prof. Simonds suggested that the whole of the sheep should at once be inoculated; and, having placed the case entirely in the hands of the Professor, Mr. Parry assented to this proposition, and the whole flock of 1,700 sheep and lambs (exclusive of those which have died and those which have recovered) are accordingly at this moment either in an incipient or a malignant state of small-pox.

Adding misfortune to misfortune, the old shepherd who had tended the flock for the last thirty years dropped down dead among his sheep last Thursday evening. Proud of his flock, which had borne a high character, and reflected credit upon his management, the poor man seemed to feel the visitation most acutely; and there is no doubt that the anxiety under which he had been labouring for the previous month, acting upon a diseased heart, tended to bring about his melancholy end. He was endeavouring to catch one of the sheep on Thursday evening, when he fell with the animal under him, and almost instantly expired.

Horticultural.

Toronto Horticultural Society.

THE HORTICULTURAL EXHIBITION.

The last exhibition for this year of the Horticultural Society in their Gardens, Gerrard street. The weather was fine, though, before the sun went down, exceedingly warm. The attendance, considering the attractions, and the large number who have visited previous shows, was small. In the evening, when the temperature was pleasant, and the lamps were lit, the largest numbers were there, and to judge by the merry peals of laughter which ever and anon rang through the darkness, the folks enjoyed themselves amazingly. The exhibition was not a large one, but in quality, the fruits, flowers, plants and vegetables shown have never been excelled in Toronto, at this season of the year. Perhaps the grapes attracted as much attention as anything else. The people hung around them with their eyes, as they were not permitted to do so with their teeth. The most luscious and beautiful specimens came from the vineries of Mr. Eccles and Mr. Gzowski. The exhibition of cut flowers was very fine; the colours good, and the specimen placed on view numerous. The collection of bouquets was perhaps the best, though certainly not the largest, offered at any exhibition of the Society. There has been considerable improvement during the last three years in the making of bouquets. Our florists are beginning to understand that there is something more necessary to this than the mere tying up of a bunch of flowers. They must be carefully assorted, the colours contrasted or blended one with the other, "violent" hues must be subordinated, and the best flowers made prominent, without at the same time placing the rest out of sight. These requirements have to a great extent been met, but there is room for improvement. One of the most tastily "set up" bouquets was exhibited by Mr. George Tattle. It consisted merely of wild flowers gathered from Canadian woods and fields, but looked very beautiful. Fall flowers, such as astorias, phloxes, verbenas, asters, dahlias, &c., were plentiful, and well grown—the phloxes especially being very fine. Stove and green house plants amongst which were some new varieties, were exhibited by Hon. I. C. Morrison and Hon. S. B. Harrison. Apples, pears and plums, celery, cauliflowers, parsnips and onions occupied considerable space, and formed a good representation of Canadian vegetables. The judges found their duties very onerous, and had more than ordinary difficulty in deciding between the merits of many rival claimants at their hands. Having discharged their duties, however, they with the Committee adjourned to lunch. When justice

had been done to the eatables, the chairmⁿ Hon. G. W. Allen, in proposing the health the judges, remarked that in order to avoid jealousy among exhibitors, the judges were brought from a distance, so that no charge of favouritism or of partiality could be preferred against them. Mr. Miller of Guelph, responded to the healths of the active and attentive secretary of the Society, Mr. J. C. Small; and of liberal President, Mr. Allen, was also drawn. Mr. Humphries kindly entertained the company with a few good songs, interspersed between his speeches. We nearly forgot to mention that the band of the 30th was in the Gardens' day. During the evening they played a variety of popular pieces, which were greatly enjoyed by the company.—*Globe*.

Dwarf Apple Trees, once more.

EDITOR OF THE AGRICULTURIST,—Friend Warden's last article in the *Agriculturist* about Dwarf Apple Trees, would seem to demand a reply more lengthy and pointed than I have present either time or inclination to devote to. With your permission, however, I will again venture to make a few remarks, not in defence of those Nurserymen in Rochester or Toronto, who have "humbugged" Mr. Werden, but in defence of those charming objects of the fruit garden viz. Apple Trees upon the Paradise stock.

To state in the outset that such trees are so hardy, will generally bear much earlier, and grow much slower than when grafted upon the common apple stock, would be only to repeat what every Horticultural and Agricultural Journal, both in Europe and America, have stated again and again. If Mr. Werden denies this, why must he agree to differ. After all his cry of humbug, however, he says:

"Now I do not say that there is not such a thing as a Dwarf Apple Tree as described, but unfortunately for me, I have not got them. Surely Mr. Editor, the trees are not to blame: Dwarf Apple Trees are such, whether Mr. Werden has them or not; and his crying humbug cannot alter the character of the trees in the least. If any nurserymen have cheated Mr. Werden, let the persons be named and blamed, but let not genuine Dwarf Apple Trees be called a humbug. Mr. Werden says, "I hope Mr. Arnold will take pity on us and send me some genuine Dwarf Apple Trees." No, friend Warden, Mr. Arnold will do no such thing, he is too much feeling for his Dwarf Apple Tree, to submit them to your "continual warfare pruning, cutting back, pinching and nipping." The fact is, Sir, that apple trees dwarfed, in sixteen varieties out of twenty, require scarcely nipping, pinching or pruning; but like the rebels in the South, all they ask is to be let alone. Why, Mr. Editor, if I should send Mr. We-

would he not again cry out humbug, and that I had written all this for the purpose of my trees; most assuredly he would, and by refusing to send the trees, perhaps Mr. Werden will say that I am afraid to put the trees to the test; but in order to test the thing fairly, Mr. Werden put 25 Dwarf Pears of his own selection, and I will put 25 Dwarf Pears of my selection in the hands of the members of the the Toronto Horticultural Society, or if he prefer it, in the hands of Judge Gage, the President of the U.C. Fruit Growers' Association. And if my Dwarf Apples do not produce more fruit for the first two, or if he prefers twenty years, than Mr. Werden's Dwarf Pears, I will pay for the Pears. And if the apples yield more than the pears, then shall Mr. Werden foot the bill. But Sir, to come to the point, and test the question fairly as to whether the Dwarf Apple will grow slow and bear earlier upon the same stock than upon the common apple. Let us walk out amongst them. Now, here we are, and here stands a Dwarf (Red Canadian) planted in 1853, it measures six feet in height, and stands six feet high, it has borne seven full crops in 9 years, and every Spring produces a mass of blossoms, and the sight of the blossoms alone well repays me for the ground it occupies, and for the trouble of cultivation. And here stands (a few rods from the first) a Standard of the same variety, planted the same time, and both have received the same cultivation, viz., ordinary cultivation, or as other trees or bushes generally get in the gardens of our thrifty farmers or mechanics. The Dwarf Apple is at least three times as large as the Standard in every way, and has borne me just three crops in nine years.

I could give at least a dozen other instances of the same results as to growth; but, as Mr. Werden says he "would not mind going a hundred miles to see a bush of the Northern Standard for St. Lawrence in full bearing at the age of two feet." I will instance the Standard of two feet, and let that suffice. And here in my nursery, rows of 3 year old plants, in the Standard trees, there are four bearing fruit, thus: four, three, and one severally; and not one of these bearing trees is more than 2½ feet high. But my two standard specimens, the Standard of St. Lawrence, 9 years planted, and at least 14 years old, fine, large, healthy trees, have never yielded me a dozen apples. And now, Mr. Editor, one word more and I have done. Mr. Werden has referred us to his prize essay on fruit culture, let us turn to it on page 10 of the Transactions of the Board of Agriculture for the year 1859, and let Mr. Werden's "fellow farmers" read it—here it is, for dwarf apple trees, I feel so well satisfied that they will give good satisfaction, that I commend every man that has ground only a garden, to fill it up with these trees, * * * and, my word for it, it will be

more profitable than 50 acres to agricultural purposes." What, a garden of dwarf apple trees more profitable than 50 acres to agricultural purposes! Tell it not in Gath, publish it not in your city, Mr. Editor, lest some of those wicked politicians should get hold of it, and should attempt to prove from this prize essay that our noble, Provincial Agricultural Association was a humbug; that the funds of the society were squandered upon essays on fruit culture, which were calculated to lead the people astray; if the advice respecting dwarf apple trees was followed. Surely, sir, if the term humbug will apply to any one in Canada who has written on the subject of dwarf apple trees, he who wrote the prize essay on fruit culture for 1858 is the man. That they afford a great amount of pleasure, and some profit, but few that have tried them will in my opinion deny. But the real profit in dollars and cents is another matter, and I would very much like to see the portrait of the man who had become rich from the profits arising from the sale of fruit that was grown either upon dwarf apple or dwarf pear trees.

Yours, &c.,

CHARLES ARNOLD.

PARIS, Sept. 13, 1862.

Interesting to Fruit Growers.

Any person travelling through the country will observe a general decay of fruit trees. Old orchards in particular, are in many locations an entire failure. What is to be done? Are we to be deprived of fruit, or is there some way to recuperate and prevent further decay? So far as the winters have an influence, we probably need not hope for any change, unless the severity be abated. Extreme warm weather, followed immediately by extreme cold has been the cause, I think, of the general decline of fruit trees. Then the borers and mice have made strange havoc among young trees. I set a row of trees, some third of a mile, near the wall, some five years since. Now there are a very few remaining, and several of those were saved by inserting scions across the wounds inflicted by mice—thereby carrying the sap from top to root. I have recently examined an invention called a "Tree Protector," by Homer B. Record of Turner, consisting of a shield and bonnet. The shield prevents the mice, borers and other insects from access to the trunk of the tree, while the bonnet prevents them from ascending into the branches. The material used is wire cloth, light canvass or what may be equivalent. The cloth is cut so as to go about one third around the tree and to extend upward about one foot. It is slightly enlarged at the bottom so as to conform

to the tree. The top of the shield is provided with an elastic band, somewhat larger than the part of the shield to which it is attached and expands with the growth of the tree. The bonnet is composed of the same material, in the form of a cane and goes around the tree above the shield, with which it may be connected by a small wire, or it may be detached. This too is supplied with an elastic band, so as to expand with the growth of the tree. The bands pass around the tree and fasten with a hook or button. The underside of the bonnet is smeared with tar, then a quantity of cotton or its equivalent applied, which adheres closely to the bonnet. Thus it will be seen that all insects that attempt to ascend the trunk of the tree will become entangled in the bonnet and there die together with their larvæ. The expense for small trees will be from ten to fifteen cents, I think.

Fruit growers should examine this apparatus and satisfy themselves of its utility. I see no reason why it should not produce desired result.—*Maine Farmer*.

T. C.

Decayed Orchards.

It is a well known fact that fruit trees of various descriptions in most parts of Canada have suffered severely from the inclemency of the weather. Many orchards—some of them not old—are in consequence in a state of rapid decay. Indeed from the depredations of insects and other causes, fruit growing in this Province seemed fast approaching an end. New trees, however, have of late produced occasionally heavy crops, and the produce of most kinds of fruit the present season is abundant. We take the following from a recent number of the *Maine Farmer*; it has reference to the Sandy River valley in that State:—

The orchards throughout the valley seemed to have suffered greatly by the severity of the winter, the trees in most instances presenting the appearance of having been scorched by fire. It is a fact clearly demonstrated by observation—although it is not easily accounted for—that apple trees situated upon elevated localities are found to be more thrifty, and withstand our winters better than those in valleys and low places. With the sad sight which orchards here present—if taken as an average of the condition of those throughout the State—it will not be long ere we shall cease to be an apple producing region, unless something is done. The proper remedy is to be found in commencing anew, and starting young orchards again. We were therefore gratified to see numerous young orchards, some just coming into bearing; and also a num-

ber of nurseries of apple and other fruit trees. It should be borne in mind that orchards need rotation as much as other crops, and it will far better to begin a new orchard on a new piece of ground, than to patch up and doctor the old one.

Fruit Prospects and Birds.

In our last issue we drew the attention of fruit growers to the fact that an extensive show of blossoms is no certain criterion of a plentiful crop of fruit, but very generally the reverse.

Birds are too indiscriminately accused of deterring the fruit buds. They do no such thing. The fact is, when they are supposed to be so engaged, they are actively employed dislogging and devouring insects which have already taken possession of the buds, being there hatched from the eggs deposited by the adult females; and left unmolested by these useful creatures would not only devour the buds, but continue the multiplication of their species until in time they would eat up every green thing. The infinite wisdom of the Great Creator is in all things seen to be perfect; and in none of his works this more beautifully displayed than in the ordering of that balance which exists between the animal and vegetable kingdoms, and which if left alone, would work harmoniously for the benefit of man.

The great majority of butterflies, moths, and beetles, in their caterpillar or grub state, feed on vegetables, and it is only when in that state they become our enemies; and their power of propagation is so great as to have no parallel in the whole range of animated nature. Many of them are so minute as to be almost invisible to the naked eye, yet the mischief they occasion is beyond all human calculation, and their habits are so curious and obscure as to be only understood by the scientific entomologist. The cultivator of the land, whose interest is so much at stake in respect to the economy of these, the almost lowest grade in animal life, treats the study of entomology as a chimera and delusion, and so long as he shuts his eyes to the truths of science, so long will he suffer in his basket and in his store.

Certain classes of insects are made to feed on vegetable food alone; so also have certain classes of birds to be maintained. Hence birds are classed as insectivorous, granivorous, and carnivorous. To understand their classification so to be able to understand one of these classes from the other, should be the study of both the gardener and the farmer, if they wish for the preservation of their crops; but instead of quiring into these distinctions, which should be considered as first principles for their guidance, they have through ignorance, maintained an unnecessary, and mistaken war of extermination alike against their feathered friends and foes.

It is at this season of the year that the great variety of birds may be most easily determined; upon this point a very slight degree of observation must lead conviction to the mind of any natural being. Insects are making sad havoc in our orchards and gardens at the present moment, and to them, in addition to the effects of superabundant blossoms, noticed in our last, is attributed the damage doing at this time, we have not to complain of late spring frosts this season. Our contemporaries are one and all giving very dismal accounts of the fruit prospects in every part of the kingdom. The farmer deemed it necessary to join in the universal cry in favour of the birds, and even such has come out in his own peculiar manner with a well timed and forcible broadside. Birds when encouraged not only keep in check their insect enemies, but they greatly reduce the number of our noxious field and garden weeds feeding upon the seeds after the insect season is passed.

The following birds are insectivorous—that is, feeding insects *alone*, and abstaining from fruits & seeds:—The golden-crested wren (*Regulus satrapus*), wood wren (*Sylvia sibilatrix*), the slow wren or hay bird (*S. fittis*), the chaffinch (*Fringilla loquax*), the nightingale (*S. Luscinia*), the linnet (*Saxicola rubetra*), the stone-chat (*S. rubicola*), the wheat-eat (*S. Cenanthe*), the slow wag-tail (*Motacilla flava*), the tree-pipit (*Anthus arboreus*), the meadow-pipit (*S. pratensis*), the cuckoo, fly-catcher, the greater or lesser butcher-bird, the night jar, the night-bird, the wryneck, the creeper, the bottle-nose, and to these several others might be added.

The following are insect-eaters, but also eat seeds:—Hedge sparrow, common wren, thrush, red-stark, tom-tit, cole-tit, marsh-tit, water-tit. The number of seeds of weeds which these devour are immense.

The following are fruit-eaters, and also feed upon insects:—Black cap, garden warbler, white thrush, cabillard, missel-thrush, song-thrush, robin, and starling.

The following are grain-eaters, some of which are the house-sparrow, eat insects largely:—Corn-bird, yellow-hammer, reed-bunting, corn-lark, skylark, woodlark, linnet, chaffinch, field-sparrow, mountain-finch, house-sparrow, and field-sparrow.—*Scottish Farmer*.

The Birch—Its Varieties and Uses.

A correspondent of the *Cultivator* thus writes of the birch: "There are seven species described by the botanists of New England.

"The White birch, sometimes called the gray birch, is a well known tree, and cannot be mistaken for any other tree of the celebrated birch family. It is about a third tree in rank, growing from 20 to 30 feet in height, and sometimes to a higher. It has been denominated the com-

panion of the pitch pine, which together usually indicates a light soil. Coleridge calls it the "lady of the woods." It grows rapidly in all soils. It makes good stove wood. One man said of it, "white birch is the most valuable fuel I have, for I can make a good fire of it, and have all the wood left." In good land a crop of birch wood may be taken off once in ten years. It ripens seed in September and October. The bark was formerly used by fishermen along our brooks for a torch-light. The seed should be sown in the fall if it all, and covered lightly.

The paper or Canoe birch is indigenous to deep soils as well as American, and is natural to river banks and intervals. It is a beautiful and most attractive tree. The smooth white bark of the trunk may be separated into delicate horizontal layers, which may be written on by pencil or pen and ink. It grows 40 to 70 feet in height, and varies from one foot to three feet in diameter. The bark was used in olden times in New England, as by the Indians, for making canoes. Michaux enumerates a great many uses to which it has been put in Canada and Maine. The wood takes a fine polish, and is therefore used for hat blocks and cabinet work, and for making shoe-pegs. The bark was formerly used beneath shingles, as I have seen in stripping roofs many years ago. It is almost imperishable.

The Black, Sweet, or Cherry birch is easily distinguished from either of the preceding species, from the dark color of its bark, which gives it the most common name of Black birch. The resemblance of its bark and leaves to the cherry has led some to call it the Cherry birch, and the pleasant sweet taste of the inner bark has led others to call it the Sweet birch. It grows from 30 to 70 feet high, and is from one foot to two feet, and more, in diameter. It is common in deep soils, and flourishes best in mountainous regions. The wood is easily wrought, and is used in arts. It is a delicate rose color, which deepens from exposure. It is used by some for ox-yokes. It makes good fuel; and its bark is used in coloring woollen drab, resembling or bordering on a wine color.

Yellow birch is a lofty tree, growing from 40 to 80 feet in height. It is common in moist woods and swamps. The wood is used for various purposes, especially in chair work, such as posts and bars. It is a valuable fuel.

The Red birch, in aspect, differs from the others. It is found bending over streams, with its roots in the water. It grows with the red maple and the swamp oak. The bark lacks the tenacity of the White and the Canoe birch. On old trees the bark is a dark grey, and very rough. Within, it is of ocre-red. The wood is white and hard. For fuel it is nearly equal to hickory. It is of rapid growth. Yokes are made of it; they are likely to crack unless seasoned in log under cover or in water. It is easily propagated

along streams, and serves as a protector of banks liable to wash from the water coursing therein, thus adding beauty to the stream, while growing valuable timber and wood.

The Dwarf or Tiny birch is from one to three feet in height, and is common among the Alpine heights of Maine and New Hampshire. It is not common away from mountainous regions in New England.

The Low birch, or as some call it the Dwarf birch; the latter being called by such, the Tiny birch—grows in mountainous districts, to the height of from two to six feet.

Here I have attempted to sketch the natural history of the Birch Family, with which I, with most New-England-born boys, have been very familiarly acquainted, even from earliest recollections."

Qualities of Fine Vegetables.

The garden is the most important appendage to many of the substantial comforts, and some of the most refined luxuries of human sustenance. Its cultivation furnishes a source of health, pleasure and economy, which may be enjoyed by every industrious owner of a few rods of ground, who can devote a little time between his hours of business or labor to this delightful employment. If his occupation and extent of his enclosure will allow him to indulge his taste for fruits and flowers, he might take much pleasure and derive great profit from the management of the vegetable garden alone.

For the purpose of selecting an assortment of the purest vegetables, best suited to the use for which they are grown, we have fixed upon certain qualities which we seek amongst the different kinds.

In the blood beet we always look for a deep color, smooth, handsome form, small top and sweet, tender flesh. In the orange carrot, small top, smooth root, and deep orange color. In the cabbage short stump, large, compact head, with but few leaves. In the cucumber, straight, handsome form, and dark green color. In the lettuce, large close head, pleasant flavor, with the quality of standing the heat, without soon running to seed. In sweet corn, long ears, very shrivelled grains over the end of the cob. In the cantelope melon, rough skin, thick, firm flesh, and high flavor. In the water melon, thin rind, abundant and well-flavored juice, and bright red core. In the onion, thick round shape, small neck, deep color, mild flavor, and good keeping quality. In the parsnip, small top, long, smooth root, rich flavor. In the pea, low growth, full pods, large and tender peas, rich flavor. In the scarlet radish, deep color, small top, clear root, and quick, free growth. In the squash, medium size, dry, fine-grained, deep-colored flesh. In turnips, handsome form, small tops and tap root, sweet crisp flesh.

Those who have never seen better sorts than they possess, suppose they are of the first quality when they may be very inferior, or almost worthless, when compared with the finest varieties.

Domestic.

A SIDE DISH.—Boil some eggs hard, cut them in two, the yolks to be taken out and beat up with a little parsley, pepper, and salt. Replace this into the whites, and serve up with a nice white sauce,

PANCAKE PUDDING.—Make a few thin, small pancakes, fry them a light brown, spread the with currant and apricot jam alternately, and roll them. Put them all round a mould make some rather thick custard and pour into the middle, strewing it with the bits of pancake you have cut off in fitting them round the mould. Cover the whole with a small thin pancake, and steam it for two hours.

FRENCH SOUP.—Take a large lump of butter, a table-spoonful of flour, and brown the in the saucepan you mean to cook the soup in. Cut up carrots, onions, celery, sorrel, and potatoes together very fine, then put all in the saucepan, with pepper and salt. Pour boiling water over them, and let all stew over the fire from three to four hours—it cannot simmer too much. A little thyme, parsley, cress and mint is a great improvement.

TETE MARDREE.—Take half a pig's head (if fresh, so much the better), the ears, at two or three feet, boil all these, in as little water as possible, till you can slip out the bones. Take all out, and, having separated the bones, boil them in the liquor until it reduced. Cut the meat when cold, in squares, put it into the liquor, season to taste, and when boiling pour the whole into a mould. Leave it several hours to cool and set, when turned out it will form a very pretty dish for luncheon or supper. The stronger the liquor the better.

TO MAKE PORK SAUSAGES.—Three-fourths of what are passed off for sausages in London are nought but a *farrago* of faded meat of different kinds, chopped up with sour bread and faded lard; inasmuch, that if the party who ventured to eat them knew in real what "London sausages" were composed they would sicken at the thoughts of the. To regulate your appetite with a degree of wholesomeness and cleanliness, let your sausages be made after the following manner: Obtain two pounds of lean young pork from a respectable dairy, supplied by a country farm connection in the country; let the same be chopped up as finely as it may be required to be; add to the meat six green sage leaves

For an ounce of ground mace, the peel of half lemon cut up very fine, one shallot, ditto, and a quarter of a pound of pigs' "flare," ditto; salt to your taste. Mix up the whole together, have your skins ready spread, and introduce your sausage meat into the same, filling them up somewhat loosely. You can make them of any size you please by stretching the skin or bladder round where you wish to leave off, and continue to fill up in succession, according to the size you have wanted. Prick before cooking them with a coarse needle; invariably broil them, and, when they are done, serve them up with a dish of good apple sauce. Have mustard and ground pepper at hand.—N. B. Some persons are in the practice of mixing chopped veal with their pork, which makes very little difference in the flavor of the meat—indeed, if cold veal was eaten with mustard, not one in a hundred would contradistinguish it from pork.

WASHING SILKS.—No person should ever tug or crush a piece of silk when it is wet, because the creases thus made will remain forever, if the silk is thick and hard. The way to wash silk is to spread it smoothly on a clean board, rub white soap upon it and brush it with a clean hard brush. The silk must be washed until all the grease is extracted, then the soap should be brushed off with clean cold water, applied to both sides. The cleansing of silk is a very nice operation. Most of the colors are liable to be extracted with washing hot suds, especially blue and green colors. Little alum dissolved in the last water that is brushed on the silk, tends to prevent the colors from running. Alcohol and camphene dissolved together is used for removing grease from silk.

WASHING WOOLENS.—If you do not wish to see white woolens shrink when washed, use a good suds of hard soap, and wash the colors in it. Do not rub woolens like cotton cloth, but simply squeeze them between the hand or slightly pound them with a clothes mangle. The suds used should be strong, and the woolens should be rinsed in warm water. By rubbing flannels on a board and rinsing them in cold water, they soon become very thick.

OUR DAILY TABLE.—If the art of "plain cooking" was better understood, the masses of the people—the bone and sinew of the land, who perform most of the hard labor—could have vastly better tables at less cost of living. But the art of plain cooking is not understood half so well as it ought to be, and the consequence is that we live worse at a higher cost than we otherwise would. But what can we expect anything else when our masters, even in the country, are, to a great extent, so theoretically brought up? How

many mothers fail in this respect to practically instruct their daughters in all the duties of house-keeping—cooking and baking in all their branches, as well as in the most economical system of management in the household. Many who read this will, I have no doubt, feel some compunctions at this grave neglect of parental, I may say, religious duty. But when I refer to the young women in our towns and villages, tenfold is the solemn injunction of our Lord utterly ignored. Especially is this the case in villages where factories abound, wherein are employed a large proportion of the young women of the place. How much do they know of house-keeping when they come to get married? Absolutely and literally nothing. Residing with their parents, and receiving good wages, and with plenty of leisure, what do most of them do? They spend their money upon their backs, parade the streets, join parties in dancing and flirting with the young men whom they attempt to capture with their finery, and let house-keeping never enter their thoughts. They all look forward to be married and go to house-keeping—and pretty wives and house-keepers many of them make, and comfortable lives they lead their duped husbands. Pardon me for being thus severe. I feel obliged to be so to enforce attention to what I say. I want *all* our young women, wherever they may be, and whatever may be their condition or employment, to give heed to what I say, who was once young like themselves and not old like now. *I want them all to study the business of house-keeping.* I want them all to be good cooks, good bakers, and good managers—but this important knowledge can be acquired only by systematically going through and through the whole routine of house-keeping. They will find it to be the most valuable *accomplishments* they can possess—accomplishments which will be more admired by a sensible husband and more lasting and valuable, and better calculated to secure his affections and promote his happiness, as well as the general comfort of the family, than any others that were ever created or invented. I speak from what I know. MARTHA, *In Germantown Telegraph.*

The Dairy.

Cheese Dairying—its Permanency and Profit.

There is perhaps no branch of business more permanent or profitable than dairying; and this must necessarily be so, from the fact that but little land, comparatively, is suited to the business, and hence there can never be that wide competition as results from other species of far

ming. The characteristics of a good dairy region, are a beautiful supply of springs and streams, and of pure and never failing water, and soil that will hold the grasses permanently. When these are wanted it is evident that dairy farming cannot be conducted with success.

The demand for cheese is increasing, it is believed in a ratio beyond that of the business of manufacturing, and as quality improves, foreign markets will gladly take all the surplus (after supplying home consumption,) that this county can produce, and at such prices as to render the business permanent and profitable. We are assured that England cannot manufacture cheese at less than 12½ cents per pound,—her rents and taxation are extremely high, while the quantity of cheese produced per cow, does not exceed that of our best dairies. What the foreign markets demand, is choice quality, and if we can furnish such as shall be equal to their own manufacture, the English Dairyman must ultimately be driven from the field, and turn his attention into other channels of agriculture.

The statistics of exportation for the last three years give abundant evidence of the progress we are making in supplying Europe with dairy products. The Journal of Commerce, under date of January 4th, 1862, publishes the following table of exports from New York, from which it appears that the increase in exportation of butter and cheese for the past year over that of 1860, is truly astonishing, and affords encouraging assurance that our efforts to produce a really desirable article, have been and will be responded to by our European neighbors in a satisfactory manner. The subjoined table is the one referred to:

Exportation of Butter, Cheese, and Lard from New York for 3 years.

	lbs. butter.	lbs. cheese.	lbs. lard.
1859....	2,194,000	9,287,000	11,015,000
1860....	10,987,000	23,252,000	18,860,000
1861....	23,149,000	40,011,000	47,200,000

Cheese manufacture for several years past has undergone important changes, and the desire to produce choice qualities is becoming more and more general. This has been brought about partly by the system of buying and selling for cash on delivery, which has been gradually adopted in this county, and discrimination according to the quality of cheese; so that every load and dairy of cheese stands on its own merits. A few years more of steady persevering effort on the part of our dairymen, to improve in this direction, will render Herkimer County cheese as far famed and widely sought for as its excellence deserves; continuing as it ever has done, to hold that prominence in market, that the genuine Jonhanisberg holds among wines.—*Country Gentleman.*

Veterinary Department.

(Conducted by A. Smith, V. S.)

Bowed Legs, or "Sprung Knees in Horses"

Bowed or sprung knees is a very great deformity as well as a serious eye-sore to the owner of the subject; at the same time it seriously impairs the usefulness of the saddle horse, for he is apt at any time to fall, bruise his own knees and break his rider's neck.—As a draught-horse, however, such an animal may prove serviceable, and perform ordinary duty, and, should he fall, he hurts no one but himself; yet he should never be used as shaft-horse in a one-wheeled vehicle, because he is there liable to stumble and fall in consequence of the weight being thrown near the shoulders and four-legs.

This deformity is sometimes congenital and manifests itself very soon after birth, in such cases are rare; it is usually the result of rheumatic affection, which attacks the flexor tendons, their sheath, and the metacarpal ligament, which confines them to the back part of the knee.

When the disease is not congenital, we may observe predisposition lurking in the part which is known by the flexor tendons (which bend the leg,) being tied close in at the upper part of the cannon or shaft bone, just beneath the knee; any one with a practiced eye can easily detect this condition, for there is want of symmetry in the limb, and at the same time, as light deviation from the perpendicular line may be observed in one, or perhaps both, fore legs.

Should the slightest curvature appear, and gradually augment, without any assignable cause, it may be inferred that the animal, owing to some peculiarity of conformation, the fore legs, is predisposed to curvature, bowed legs; in such cases, overwork at rapid travelling become the exciting cause. At other times, when predisposition exists, faulty shoeing may prove an exciting cause, for example, when by paring too much from the toes, the heels are left thick, or when the heels of the shoe are made thicker than at the toe, the foot is then made to assume a faulty position, the tread is not natural, and curvature may be the result. The remedy is to pare the heels, and make the shoe of an equal thickness all around.

When the deformity is known, or supposed to result from inflammatory rheumatism, which may be known by its sudden appearance, or its migrating from muscles to tendons, attended with more or less lameness, the parts are to be rubbed twice, daily, with a portion of equal parts of olive oil and sulphuric acid.

at the same time the animal must be properly fed.

In cases when a *gradual* curvature has taken place, and the animal is very much debilitated, nothing short of a surgical operation can be of any benefit, and even this cannot be relied on in the case of an aged animal. The operation consists in a division of the flexor tendons, and the application of a shoe, having a long toe-piece welded to it, which prevents the animal from bending its knees; in this way the tendons cannot unite directly, but they finally do so indirectly, by granulations, which are thrown out from the divided surfaces, so that the tendons acquire an inch or two of length.—*American Stock Journal*.

LAMBS DYING FROM WOOL IN THE STOMACH.
Lambs very frequently swallow particles of wool, which, in playfulness, they suck and bite from their dams; to prevent which, the dams, when this occurs, should be smeared with a mixture of aloe and water, or assafoetida and water. When they swallow the wool and it gets mixed with curd in the stomach, it forms hard balls that are indigestible; but the administration of a teaspoonful of soda mixed in water twice or thrice a day dissolves and digests the curd, if not so far gone. Calves frequently die of the same disease, and the only remedy yet found is the soda.—*Irish Farmer's Gaz.*

Miscellaneous.

The Manufacture of Leather Cloth.

The manufacture of leather cloth as a substitute for Morocco leather, was commenced in the year 1749, in the city of Newark, U. S. The first specimen of it seen in this country, was exhibited in 1851. The Americans have ascribed the merit of producing many labor-saving machines and articles of domestic convenience, and many of them are becoming increasingly known and extensively adopted in this country. It is certain that this article of leather cloth has superseded the use of leather for many purposes to which the old material has hitherto been applied, besides being put to uses for which leather is wholly unsuitable. Messrs. Crockett, the inventors and patentees commenced the manufacture of leather cloth in England in 1855, and their factory was a large workhouse, situate in one of those dreary, unromantic marshes at West Ham, in Essex, a locality somewhat famous for its insalubrious manufactures. The firm was known as the Crockett International Leather Cloth Company. In 1857 Messrs. Crockett surrendered their business to a company formed under the

title of "The Leather Cloth Company Limited," which purchased the entire European business.

The new company, with a paid up capital of £90,000, and having Mr. A. Lonsont as their managing director, began the enterprise with great energy. They erected substantial and extensive premises which cover ten acres of ground, employing upwards of 200 men. They produce daily 1000 pieces of 12 yards long and 1½ yards wide, or 15,000 square yards; sufficient if laid end to end to reach from their factory to the warehouse in Cannon Street West—a distance of seven miles.

It will be evident that an article intended to resemble leather should be pliant, supple, and not liable to peel off or crack. These excellencies are to be obtained by the peculiar ingredients of the composition with which the cloth is covered, and the method of applying it. On entering the factory our attention was first directed to the boiling room, in which there are 12 furnaces, with a large cauldron over each for boiling linseed oil. This process is attended with considerable danger from the liability of the boiling oil to generate gas and explode; hence, a man is stationed at each cauldron stirring gently the boiling mass and watching a thermometer inserted in it, and which at the time of our visit stood at 580°. The oil is supplied to the boiling house by pipes from an adjoining building, where there is a huge tank with nine compartments containing 3,200 gallons each, or 28,800 altogether, amounting to 122 tons of oil. The boiled oil being allowed to cool is conveyed on a tramway to the mixing house, where, in a puddling machine, it receives several other ingredients, the principal ones being lampblack and turpentine, which being mixed into a composition is ready for use.

The cloth to which this composition is applied is known by the name of "greys," or unbleached cotton. It is of a peculiar manufacture, and made expressly for the company. The store room is a spacious building, and will contain an immense stock; at present it has 25,000 pieces, or 300,000 yards. Here the cloth is calendered, and cut into lengths of twelve yards. The two ends of each length are sewn together to make it endless; two sewing machines are in constant operation at this work. The pieces are then removed to the "milling" rooms, so called because they contain the mills in which the cloth receives the composition. These mills are rough looking wooden structures, having a drum at one end and a roller at the other, over which the cloth is passed, and then tightened by a crank and wheel at one end. A large frame-knife or scraper, is then dropped down close to the cloth, a measured quantity of composition being laid on the cloth along the edge of the knife, the mill revolves, and the cloth receives as much of the composition as can pass under the edge of the knife. The piece is then

carried to the heating room adjoining, and hung up on the rack to dry till next morning.

There are on the premises six milling rooms, with three mills in each, and having three men attendant upon each mill. The adjoining rooms for drying are heated by three rows of pipes laid along the wall. These pipes, during the day are at a temperature of about 130°. The temperature is increased towards the evening, and during the night to 160°, and it is the duty of the watchman to open the doors for ventilation and cooling preparatory to the men resuming their work for the next coating.

Of course, in a building so greatly heated, and having so much inflammable material within it, the danger of fire is imminent, but every precaution has been taken which prudice could dictate. The building is fire proof, the floors are of metallic lava, and the roof which is flat, is of the same material. A large pipe runs up the outside wall by the partition which divides the drying rooms, into each of which runs a branch pipe with a valve, which can be worked from the outside. A deluge of steam can by these means be poured into the rooms in a few minutes by day or night. There are fourteen fire plugs around the buildings, on the main of the East London Water Works, with hose and turn-cock at hand, so that ample means of extinguishing fire exist on the premises.

But to return to the manufacture. The coating being thoroughly dry, the cloth is then taken to the "rubbers" whose business it is to remove all inequalities from the surface and make it perfectly smooth. This is done by the "rubbing machine," (an ingenious contrivance of Mr. Eagles, the manager,) by which the cloth is made to pass between two rollers revolving in opposite directions. These rollers are covered with pumice stone, and do the work completely and expeditiously, which, till lately, was done by hand at great expense of labor. The "coating" and the "rubbing" being repeated four, and in the case of heavy goods, five times, the cloth is ready for the "painters." The "painting rooms" contain machines similar to the "mills;" but instead of a drum they have a roller at each end, over which the cloth passes slowly, and a man at each side supplies the paint, "meeting each other half way." Dependant partly on the colours, and partly on the article to be produced, is the number of coats of paint to be applied. Sometimes two will be sufficient, at other times four are necessary. The last coat receives several applications of a peculiar elastic enamel, chiefly of copal varnish, to protect it from the action of the atmosphere.

At this stage of the process the edges of the cloth are rough and have to be trimmed, and the seam by which the ends are sewn together has to be cut. This is done by a machine called the "Guillotine," and we now follow the cloth to the "grainer." This latter, and to the ordin-

ary leather cloth, finishing process, is done by remarkably beautiful iron machine, having rollers, the upper one being of polished iron and obliquely on the surface, the other one of paper. Between these two rollers the cloth passes twice and receives its external resemblance to more cow leather. There are six machines used in this finishing process, and others for embossing from the small diamond to the large medallion pattern. The latter consumes much more time, passing through the machines. The cloth is now stamped with the trade mark, labelled, and rolled up ready for transmission to the warehouse in Cannon Street West.

On looking at the pieces when finished, one is struck by the extreme cleanness of the inside after passing through so many soiling operations; this is owing to the practical skill with which the men handle the cloth, and to the agility with which they remove it from the several machines, and carry it to the drying room. While watching the process, we thought that many respects, it was similar to the tanning with sumach, from the leaves and stalks of the *Rhus coriaria*, by means of which skins are made into morocco leather. As the leather cloth cannot be made permanently soft and elastic by the matter combining with the texture of the cloth as it does with the fibres of the skin, the imitation is complete and successful.

There is another room in this establishment specially interesting to the artist, where the cloth is printed in gold and colours, in designs which are really chaste and beautiful, and which when used for the furniture and hangings, add rooms with something of oriental splendour. Here, too, there are table-covers with floral borders rich in colour and choice in grouping, and centre-pieces, which, as specimens of decorative art, are very effective. Many of these may be displayed at the International Exhibition, and, we doubt not, will excite both surprise and admiration.

The mixing room is a kind of *sanctum of managers*, and we suppose that from the excellence of the colours are prepared arises much of the excellence of the company's manufacture. In a room adjoining there are sixteen cog grinding mills, constructed on the American principle, and worked by machinery, as indeed almost everything on the premises seems to be. The machine which sets all in motion is a high pressure double cylinder engine of 50-horsepower made by Woods, of Halifax. There are three immense Cornish boilers by Hill, of London, which have been tested to a water pressure of 130 lbs. to the square inch and have sent 60 horse power. One of these is sufficient to work the engine by day and heat the drying rooms by night. We observed that, by the generosity of the company, a part of their premises had been given for the use of the Fifth

the Rifle Volunteers, the drill-room and armoury are magnificent apartments, such as are seldom seen devoted to such a purpose.

A writer in a very useful work on the "Manufactures of Great Britain," asks somewhat triphantly, "What substitute could be found for leather? a substance at once durable and elastic, affording a protection from wet and from cold, capable of being formed into innumerable articles, and susceptible of a high degree of ornament, and supplying lining to our carriages and covers to our books." This hook was published in 1848 under the direction of the "Committee of general literature and education," and now in 1862, we have a substitute answering all the requirements here specified.

As to protection from wet and cold, the whole American army is equipped in leather boots in the shape of capes, leggings, and knap-sacks, our upholsterers can vouch for its durability and elasticity. The useful articles into which it can be made, and the degree of ornamentation it can receive, are becoming every day more manifest. We line our railway, our street carriages, and our hats with it; and as to books, if they are not covered with it they ought to be. Truly our progress in art and science is defying all prediction as to what we may yet accomplish, and rendering absolute many of our familiar proverbs, and none more strikingly than that "there is nothing like leather."—*Mechanics' Magazine*.

THE DUST HEAPS OF LONDON—The contents of every dust bin in this vast London are carried away periodically. The dustman receives a small gratuity from each householder, and when he has collected a cart load, he demands another thing at the gate of the Paddington wharves: he deposits it within their precincts. A dust heap is very valuable to the contractor, and a single one is said to be worth four or five thousand pounds. It has to be sifted, sorted and stored. We can give but a slight idea of its miscellaneous contents. Its chief constituent is cinders, mixed with bits of coal, and the carelessness and waste of thousands of housewives, which the scavengers pick out of the street to be sold forthwith. The largest and most valuable of the cinders also are selected for the use of landraces and braziers, whose purpose they are better than coke. The far greater remainder is called breeze, because it is the portion left after the wind has blown the cinders away from it, through large upright iron sieves, and shaken elbow high by the women who stand in the heap, whilst men throw up the stuff into the sieves. The breeze and ashes also are sent to the brick makers, the ashes are mixed with the clay of the bricks, and the breeze is used as a fuel to burn between their layers. But the heap likewise includes soft ware and hard ware. The former includes all vegetable and animal matter—all that will decompose.

All these are carried off to be employed as manure. Stale fish and dead cats come into this list—the skins of the latter being stripped off by the sifers, who can sell them for fourpence or sixpence, according to their colour, white being most in request. The "hardware" does not merely mean broken pottery, though of this there is great abundance. Part of the pottery is mended and mended by the women who find it, and becomes their perquisites; the rest, with the oyster shells, is sold to make new roads. But hardware in the dust heaps means rags, which go to the paper makers; bones, which go to the bone boilers; old iron, brass and lead, to salesmen of those metals; broken glass, to old glass shops; old carpets, old mattresses, old boxes, old pails, old baskets, broken tea-boards, cardsticks, fenders, old silk handkerchiefs, knives, and salt cellars, not forgetting old shoes, which go in baskets to the "translators," who turn old shoes into new; everything in short that the householder has thought "not worth mending," besides many a wasteful addition which the masters never knew, from mansions where recklessness and extravagance bear rule. Some of the contents are the sifers' perquisites—a certain amount of cinders, and as much paper and wood as they can carry, and corks of bottles, by which alone some boast they can find themselves in shoe leather: pill boxes also, and gillipots, are their lawful property. Jewelry, silver forks and spoons, and money, are occasionally found, and too often appropriated by the finder. One day a check for a considerable sum was discovered among the waste paper.

THE ROOK AND THE CATERPILLAR IN LUSS GLEN—A few weeks since a colony of caterpillars made an unwelcome lodgment in the beautiful oak copse in Luss Glen, the property of Sir James Colquhoun. In the course of a short time the trees, covering an aggregate space estimated at thirty acres, were completely stripped, and the trunks are now as bare of foliage as they are in the heart of winter. The hand of man was perfectly helpless against these pests, which marched forward, or rather which were eating their way onward, millions strong, and the utter destruction of this beautiful glen seemed only to be a question of time. At this stage a new adventurer appears on the scene; for it fortunately so happened that a wandering family of rooks flying over the glen, at once discovered that of which they were in quest—viz., rations in immeasurable abundance. They commenced an assault upon the caterpillars at once, and having dined most heartily, they generously departed to make proclamation to all the rook brotherhood of the land of Goshen upon which they had lighted. Although the nearest rookery is eight miles distant, an advanced guard set out from it without a moment's delay, and was immediately followed by the whole force of the

rookery. By some extraordinary telegraph other crow communities picked up the tidings, and within a day or two it is believed that every rook within a circuit of twenty miles had found his way to the grub feast in Luss Glen. Our informant, who witnessed the scene in the beginning of the week, states that the glen and the fields around it are blackered with rocks, and that the caterpillars have fairly met their match. The birds commence the assault by the earliest streak of morning light; and after making a copious breakfast, they retire to the fields for rest and digestion, returning to the feast time after time until darkness covers the land, and they can eat no more. The rocks which live farthest from the spot have deserted their ordinary homes for the time being, and have pitched their tents in the glen, where it is presumed they will remain as long as there are grubs to feed them. As it is, the progress of the caterpillars has been completely checked since the birds have commenced in earnest, and it is believed that before long they will have exterminated these destructive insects. The rooks are ably seconded by a corps of jackdaw auxiliaries, and indeed they have allies in most every bird that flies; being the most hungry of the assailing force in Luss Glen.—*Glasgow Daily Herald.*

TAKE CARE OF THE FEET.—"Of all parts of the body," says Dr. Robertson, "there is not one which ought to be so carefully attended to as the feet." Every person knows from experience that colds, and many other diseases which proceed from colds, are attributable to cold feet. The feet are at such a distance from "the wheel at the cistern" of the system, that the circulation of the blood may be very easily checked there. Yet for all this, and although every person of common sense should be aware of the truth of what we have stated, there is no part of the human body so much trifled with as the feet. The young and would-be genteel-footed, cramp their toes and feet into thin-soled, bone pinching boots and shoes, in order to display neat feet, in the fashionable sense of the term. There is one great evil, against which every person should be on their guard, and it is one which is not often guarded against—we mean the changing of warm for cold shoes or boots. A change is often made from thick to thin-soled shoes, without reflecting upon the consequences which might ensue. In cold weather boots and shoes of good thick leather, both in soles and uppers, should be worn by all. Water-tights are not good if they are air-tights also; India-rubber over shoes should never be worn except in wet splashy weather, and then not very long at once. It is hurtful to the feet to wear any covering that is air-tight over them, and for this reason India rubber should be worn as seldom as possible. No part of the body should be allowed to have a covering that entirely obstructs the pas-

age of the carbonic acid gas from the pores the skin outward, and the moderate passage of air inward to the skin. Life can be destroyed in a very short time, by entirely closing up the pores of the skin. Good warm stockings and thick-soled boots and shoes are conservators of health, and consequently of human happiness.

WHAT IS DYSPEPSIA?—With due attention to temperance, exercise, and early hours, you may set dyspepsia at defiance. Neglect one of these precautions, and you lay yourself open to the approaches of the enemy—neglect two of them and it is hardly possible that you can escape. And above all things, keep this in mind, that no other disease or affection of the body is so stealthy or insidious as dyspepsia. If the first instances of carelessness or transgression were to be visited with pains and penalties that afflict the patient when the malady has become chronic, few men would be so insane, or so obstinate, or so reckless as to postpone the work of reformation. But the earlier symptoms are rarely of an alarming kind. The appetite is not sensibly affected, though the digestion is impaired; and the complaint seems to be limited to flatulency and heartburn. Such unpleasant sensations, however, can be easily removed. Essence of ginger and fluid magnesia, seldom fail to give relief, and the patient flatters himself that there is ground for apprehension. But the symptoms do not disappear. They recur with great frequency; and the antidotal doses, though increased, are found to have lost their efficacy. The stomach has now become more seriously deranged. All kinds of food generate acid; in this stage the patient usually has recourse to the carbonates of soda or potash, which in their turn give a temporary relief, though without any way arresting the disorder. By this means dyspepsia, like an insidious serpent, has fastened the victim within its embrace, and is squeezing him at its leisure. Everything he eats disagrees with him, and seems to undergo a wondrous transformation. That which he served up at the table as haggis, seems converted, two hours afterward, into a ball of knot-tow—a mutton chop becomes a fiery cinder rending the interior with his claws; and even rice-pudding has the intolerable effrontery to come revived as a hedge-hog. After that comes nausea and vomiting. You derive no benefit from the food you swallow. From twelve stone weight you dwindle down to ten. Your countenance becomes ghastly, your eyes hollow, you totter prematurely upon your pins. The mere notion of exercise becomes distasteful. You feel as if you had no strength for anything. You are pensive, moody, and irritable. Your mind loses its elasticity and power; and when you sit down to compose, instead of manfully writing, you produce nothing but the dream-drivel.—*Blackwood's Magazine.*

The Points of a Short-Horn Cow.

The following features constitute, I trow, the beau-ideal of a shorthorn cow:

- are massive, round, deep-barrelled, and straight-backed;
- quarters level, lengthy, and well-packed;
- ough wide, fleshed inwards, plumb almost to hock;
- st deep, conjoining thighs on one square block;
- in broad and flat, thick-fleshed, and free from dip;
- ck ribs "well home," arched even with the hip;
- is flush with back, soft-cushioned, not too wide;
- is full and deep, well forward on the side;
- is well fleshed, and rounded like a drum;
- anks that even with the elbow come;
- op "barrelled," flush with shoulder and with side;
- th large and round—not deep alone, but wide;
- nders sloped back, thick-covered, wide at chine;
- is snug, well-fleshed, to dewlap tapering fine;
- vein filled up to well-clothed shoulder point;
- full above, turned in at elbow joint;
- short and straight, fine-boned 'neath hock and knee;
- ly cylindrical from drooping free;
- st wide between the legs, with downward sweep;
- set round, massive, prominent, and deep;
- st fine at head, fast thickening towards its base;
- small, scope wide, fine muzzle, and dished face;
- is prominent and bright, yet soft and mild;
- is waxy, clear, of medium size, *unfiled*;
- is fine, neat hung, rectangular with back;
- is soft, substantial, yielding, but not slack;
- is furry, fine, thick-set, of color smart;
- is well forward, with teats wide apart.
- is points, proportioned well, delight the eye
- razier, dairy-man, and passer-by,
- is these to more fastidious minds convey
- pearance stylish, feminine, and gay.—*Mr. of Stackhouse, in the "Highland Society's Journal."*

SAND STORM IN CHINA.—Extract from a letter, dated, Tien-tsin, March 31, 1862: "We had an awful dust, or sand storm, last night, which kept us in darkness or nearly so three days. It was the most fearful looking I ever saw; particularly so at its commencement, at about three o'clock in the afternoon. In five minutes it was pitch dark, and had to light candles. This lasted three days, when the wind increased. 'Tis almost impossible to describe it. The very smallest sand seemed drawn out of the earth by its intensity, and penetrated everywhere. We

all looked like red Indians, and once or twice during the first hours, when it was so intense, if the sun got a chance through a break, the world seemed on fire, then total darkness again; and so it continued more or less for three days. Very many of the Chinese who were at work in the fields perished, as they could not find their way home, and died for want of shelter. A party came in from Peking more dead than alive, and it is a wonder how they reached, for they scarcely knew what they did or how they escaped. Sand storms are not unusual here, but nothing like this has occurred for nearly half a century. At Taku the Chinese suffered severely, but Europeans seemed to have escaped most wonderfully everywhere.—The foreign shipping also, both inside and outside the bar, were but little damaged, whilst sad havoc took place among the Chinese, both as regards their lives and property."

THE SPARROW A SCAVENGER.—Nobody will deny that the city sparrow is a scavenger, ay, and a "regular dustmen" too. There is very little of the Adonis about him! Washing and bathing are unknown, uncared-for-luxuries. He glories in dirt. Plump as an alderman, he rather waddles than hops, and pays far more attention to his stomach than to his *personnel*.—This last shows sad negligence. Suing himself to his company and his situation, he is rarely in a state of repose. Observation tells me that eating, drinking, bustle, noise and confusion are his strong points. His life is one continued round of dissipation. Early and late he may be seen slyly stealing into some "likely" place where he may discover something for his inside. Up to every move, deeply read in the physiognomy of butchers' boys, vagrants, and birds' enemies generally, he is never caught napping.—Wide-awake to them all, he cunningly watches his opportunity, slips in, commits theft, steals out, and is "gone" almost before he is seen.—And how thoroughly does he relish stolen property. Boys, girls, and birds, are all alike in this respect, I fear.

Stolen sweets are always sweeter,
Stolen kisses much completer,
Stolen looks are "nice" in chapels,
Stolen, stolen be your apples!

So sings the poet. I have neither the wish nor the power to contradict him.—*WM. KIDD, in the Queen.*

HOGS AND CURCULIO.—It is the practice of many to allow their hogs to run in the orchard and gather up all the fruit as it falls. In this way the insect is not allowed to leave the fallen fruit and perpetuate its species in the ground. If no hogs are about, the fruit should all be picked up and destroyed before the insect leaves it.

PRESENTS FROM HER MAJESTY TO THE ZOOLOGICAL GARDENS, REGENT'S PARK.—A short time ago her Majesty received twelve or fourteen beautiful Brahmin bulls and cows, as a present from India. Desiring that our Zoological Gardens should participate in the gift, Mr. Bartlett was last week directed to proceed to Shaw Farm, in the Home-park, at Windsor, and he there selected from the splendid herd a male and female—the former a pearly grey and the latter a creamy white—both very fine animals. Her Majesty also presented a wild sheep of North Africa (female), called the *aoudad*, the society being already in possession of a male of the same species—*London Field*.

BREEDING FROM YOUNG SOWS.—The *Maine Farmer* says "it is quite common to breed from young sows, say fall pigs, to come in with a litter of pigs when one year old, a practice to be utterly condemned, and if continued in the same family for a few generations of the swine, they will be found to dwindle down from three or four hundred hogs to two or three hundred. It is much better to keep the sow three or four years, or even much longer. They have been kept some fifteen years to advantage. The hog is some years in his natural state in maturing. It is a fact well known, at least to every Irishman in the "ould" country, that pigs from old sows will grow into hogs some thirty or forty pounds heavier than those from young ones.

TIMOTHY MEADOWS.—Care should be taken in cutting timothy not to cut too close, as the roots of this grass are bulbous, and if cut too close or feed too close, the top of the bulb is injured and the wet causes it soon to decay and die. Timothy meadows should always be rolled in the spring to secure as even a surface as possible.

Editorial Notices, &c.

THE LONDON QUARTERLY REVIEW—July, 1862. Contents; Memoirs of Sir Marc Isambard Brunel, a most interesting biography; Sussex; Lives of the Archbishops of Canterbury; The Volunteers and National Defence; English Poetry, from Dryden to Cowper; The International Exhibition; The Hawaiian Islands; and The Bicentenary.

THE EDINBURGH REVIEW,—July, 1862. Contents; The Explorer of Australia, an article of great and universal interest; Wellington's Supplementary Despatches; Sir G. C. Lewis's Astronomy of the Ancients; Earl

Stanhope's Life of Pitt; Troyon's Lacus Abodes of Man; Weber's Gleanings from man Archives; Iron, its uses and manufacture; Remains of Mrs. Richard Trench; Dollinger on the Imperial Power.

These numbers commence new volumes affording a good opportunity for new subscribers to procure those valuable products which are issued by LEONARD SCOTT & 79 Fulton-street, New York, within three weeks of their original publication in London, and at one third of the English price.—The above, with the North British Westminster Reviews, and Blackwood's mortal Magazine, can be had for the unprecedentedly low charge of \$10 per annum! they can be subscribed for separately, Review, (quarterly) \$3, and *Blackwood* (monthly) \$3 *per annum*. BLACKWOOD August is, as usual, exceedingly interesting. We are happy to know that these British periodicals, of the very highest literary and scientific character, are, in consequence of these cheap and well executed reprints, being extensively circulated throughout the United States and the British Provinces.

SALE OF PURE-BRED STOCK, SHEEP AND

—We have much pleasure in calling the attention of our readers to Mr. Stone's Advertisement in the present number. Mr. Stone merits as an importer and breeder of Shorthorns and Herefords, and of the most appropriate varieties of sheep and pigs, are now too well known and appreciated to need any recommendation from us. He has spared no time nor expense in getting from Britain the best specimens, and no one can visit his farm at Guelph and observe the management on there without being convinced that the owner is a man in whose judgment and integrity the public may safely place confidence. Mr. Stone's animals, whether cattle, sheep, or pigs, are alike a credit to himself and to Canada: and that his brother farmers there is shown by their having elected him President of the Agricultural Association of Canada for the present year. We trust the approaching sale at Moreton Lodge will be equally successful with those of previous occasions.

MORTON LODGE NEAR GUELPH, C. W.

Important sale of Imported & Pure Bred
SHORT HORNED CATTLE!

Wethers, Leicester and South Down Sheep,
Berkshire and Small White breed of Pigs.

Mr. W. S. G. Knowles, begs to announce that
he has received instructions from Fred. Wm.
Esq., to offer

**FOR SALE BY AUCTION ON
WEDNESDAY, 15TH OCTOBER NEXT**

Morton Lodge, near Guelph, Canada West
Thirty Imported and Pure Bred

SHORT HORNED CATTLE,
Hundred and Fifty Imported and Pure Bred

**COTSWOOD, LEICESTER & SOUTHDOWN
SHEEP,**

Consisting of Rams, Ram Lambs, and Ewes.
and 25 Berkshire and small White Breed of

PIGS, of different ages.

The Short Horns are Imported and bred from
some of the most fashionable Herds, such as
Messrs. Gunter's, Col. Kingscote's Messrs. Tan-
ner's Ambler's Bolden's, Sandy's, Jonas
Esq's, Smythe Owen's and other eminent
breeders. The Cotswold Sheep are imported,
and bred from Imported Stock. From the flocks
Messrs. Ruck, Slatter, Brown, Langston,
& Wakefield and other celebrated breeders.
Leicesters imported from Mr. Pawlett's
Farm, and the Southdowns, imported and bred
from the celebrated Buckland and Babraham
farms of Sir R. Throckmorton and Jonas
Esq. The Berkshire pigs, from the finest
Blood Stock. The small Wheat Breed from
Messrs. Gunter's

Full Catalogues, with Pedigrees, and other
particulars, are now in preparation, and will
shortly be issued, and may be had on application
to Mr. Knowles, or of Mr. Stone, of Guelph.

Guelph, 8th Sept. 1862.

EAST RIDING YORK

**Agricultural Society Fall Show,
WELLINGTON HOTEL GROUNDS,
MARKHAM VILLAGE, 9th October, 1862.**

Entries to be made by the evening of the
9th to be peremptorily excluded.

A. BARKER,
Secretary.

Horse Infirmary and Veterinary Estab- lishment, Corner of Bay and Temperance Streets, Toronto, C. W.

A SMITH, Licentiate of the Edinburgh Vet-
erinary College, and Veterinary Surgeon to
the Board of Agriculture of U. C., begs to return
his thanks to the Public generally for their sup-
port since opening the above mentioned establish-
ment, and respectfully solicits a continuance of
the same.

And also begs to announce that Veterinary
Medicines of every description are constantly
kept on hand:—Such as, Physic, Diuretic,
Cough Cordial, Tonic Condition, and Worm
Balls and Powders. The constituents compos-
ing the Cough-balls, have been found (by Pro-
fessor Dick, of Edinburgh) most serviceable in
alleviating many of the symptoms of Broken-
wind or Heaves in Horses. Colic Draughts, &c.,
a mixture which owners of Horses should always
have beside them.

Liniments for Sore-throat, Sprain, Curb,
Spavin, Ringbone.

Blistering Ointments. Liquid and sweating
Blisters.

Horses bought and sold on commission.

Toronto, Aug. 30th, 1862.

THOROUGH-BRED STOCK FOR SALE

THE Subscriber has for sale DURHAM and
GALLOWAY CATTLE, LEICESTER,
COTSWOLD, and LINCOLNSHIRE SHEEP,
Male and Female 10 Durham and Galloway
Bull Calves—price from \$100 to \$200; 20
Shearling Rams, weighing from 230 to 285 lbs.
each—Price from \$50 to \$100 each.

JOHN SNELL,

Edmonton P. O., C. W.

Four miles from Brampton Station G.T.R.

FOR SALE!

**Ayrshire Cattle, Leicester Sheep, and
Berkshire Pigs.**

THE Subscriber offers several Young Bulls,
Heifers and Cows, on very Liberal Terms.
Specimens from his *Prize Herd* will be on Ex-
hibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862.

6-mos.

THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham
and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and
Cheviot Sheep; Cumberland and Yorkshire im-
proved Pigs. All imported stock.

GEORGE MILLER,

Markham, June 3rd, 1862.

6t.

TO BE SOLD BY AUCTION,

On Thursday, Oct. 16, 1862,

THE well-known Herd of NORTH DEVON CATTLE, consisting of more than forty head of Cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

THE SPLENDID FARM,

Consisting of upwards of THREE HUNDRED ACRES, to be sold by private bargain, on accommodating terms.

DANIEL TYE.

County Waterloo, Wilmot, August 1862. td

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Editors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

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Office in the New Agricultural Hall,
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HUGH C. THOMSON.

Toronto August, 1862.

FOR SALE.

A LOT of thorough bred Essex Pigs from recently imported 1st prize and who have this season taken prize both Township, County, and Provincial.

JAMES C.

Clochmor, Galt P. O., Oct. 19, 1861

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