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THE

Canadian Agriculturist,

OR

JURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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assification of the Aliments to be Considered in the Production of Milk.

[Abridged from the "*Journal de la Societe rale d' Agriculture de Belgique.*"]

Every agriculturist knows that the milk of ned animals is liable to remarkable phenome- which occur frequently during different ods of the year. Thus it is not uncommon see the milk on a farm increase or diminish, rding to the seasons, and without any ap- nt cause, always affecting the "traction" lking) in a similar number of cows. After , the milk is by and by of good quality, e a little later it has a mixed taste, and is n spoilt, or liable to morbid changes. In farm this substance is bitter, vitiated, and able of coagulating; in a neighboring farm sweet, soft, rich in buttery substances, in um, and agreeable to the taste. Here it is dull tint, grey or whitish; there it is strong- lored with blue, with red, or even with a of lead color; elsewhere quite the con- is observed, and the milky secretion is to increase, diminish, or cease entirely. is the cause of these changes? What the various peculiarities which we have noticed.

is well known that the quantity and the na- of the food given to the cattle have great on the qualities of the milk. If reason give the force of law to this observation the facts that can every day be collected in the districts of Herve, Dixmude, Neufchateau, every where, in short, where animals of the bovine species receive abundant nourishment—would soon establish the justice of the principle. Starting from this line of consideration, several German, English, and French writers have pretended that it is possible to classify the food given to the cows, and afterwards to determine their value, according to the quantity of milk which they cause to be produced. They have thus admitted, in a general manner, that 100 lbs. of good meadow hay (well harvested) are worth

200	lbs.	Potatoes.
460	"	Beetroot, with the leaves
350	"	Siberian Cabbage.
250	"	Beetroot. without the leaves.
250	"	Carrots.
80	"	Hay, Clover, Spanish Trefoil or Vetches.
50	"	Oil-cake, or Colza.
250	"	Pea Straw and Vetches.
300	"	Barley or Oat straw.
400	"	Rye or Wheat-straw.
25	"	Peas, Beans, or Vetch-seed.
50	"	Oats.
500	"	Green Trefoil, Spanish Trefoil, or Vetches.

If these proportions are just and well established, which we will readily admit to a certain point, it is also right to say that there are certain inaccuracies, which it will not be useless to mention. Thus, is it not plain that the straw and hay grown on a rich and loamy soil are much more nourishing than that grown on exhausted

ground? Does this not prove that there is a great difference between fresh straw, and that which has been long thrashed—between the straw produced by cereals completely ripe, and that of cereals cut before maturity—between the produce mixed with bad herbs, and that which has been kept in a proper state of cleanliness? It must be remarked, that each kind of food exercises a different action, according to the nature of the animals which consume it. One likes straw, another prefers hay, one agrees better with meadow hay than clover, while another thrives better in pasture than in the stall. The nutritive power of the food, moreover, is influenced by the state of the temperature. The nourishment acts differently, according as the weather is dry, dull, or rainy—according as the animals are left at rest or used for hard work; and according as they are well or ill treated. It it is equally unquestionable that the milk is much more abundant in one season than in another, which must necessarily be attributed to the direct influences of the armosphere.

This is not all—the disposition materially affects the milk. Give any horned animals new or particular food, and you will immediately perceive a change in the flavour and the color of the milk. This fact has been again recently established, by an experiment made at an institution for instruction in agriculture. Food, consisting exclusively of spergula, had been given to the cattle at this establishment; and this food, to which are attributed such precious properties for milk in nearly all the other districts of Belgium, had been almost forsaken by the animals; it is needless to add, that after that the milk suffered a considerable diminution, both in quantity and, quality.

This example shows once more that the natural disposition of each animal acts for good or for evil upon the organs of digestion, and has consequently a direct influence upon the animal economy, and upon the amelioration or the deterioration of the milk. It only remains for us to add to the preceding observations, that any sudden excitement of sensations, as fear, alarm, &c., produces unpleasant results upon the quantity of milk obtained from the animal. The proof is, that the state of the food and of parturition remain the same, the secretion is much more abundant when care is taken to leave the anim quiet, and when their food is given to th at regular hours, as is the case on every w directed farm. Let us observe, in short, t the same food may produce opposite effec according as it is very cold, very hot, or at ordinary temperature; and that it is much bet for the animal to favour perspiration and di tion, either by baths or other means.

It is thus seen how inexact are the equiv ents which are understood to be established the different food used for the maintenance the animal. It is equally plain, when we refle on the different methods pursued for the prese ation of the animals, that we are still far fro having attained that perfection towards whi our efforts tend. Visit one hundred farm taken by chance, in different parts of the countr and you will find, in each, methods directly o posite—a totally peculiar manner of managin the stalls; you will see in short, that the co ditions of food, of treatment, and of hygien remain not under stood in seven-eighths of rura farms.

Veterinary Practice and Instruction.

We have much pleasure in announcing th Mr. A. Smith has arrived in this city, from Sco land, and that he intends commencing the pra tice of his profession as a Veterinary Surgeon under the patronage of the Board of Agriculture For some time, as several of our readers know the Board has been making arrangements o this nature, and we are now happy to find th their important object is about being realize Mr. Smith comes among us with the highes testimonials as to personal character and pr fessional ability. He is a graduate of the o Edinburgh Veterinary College, founded and p sided over for nearly half a century by the ce brated Professor Dick. We observe from elaborate report, published in the *Scotsman*, the late terminal examination of the colle that Mr. Smith won a very distinguished positi The number of students was large, and the co petition consequently great. The standard examination in this college, as well as that London, is high, and much more difficult t formerly; and among the examiners were so of the distinguished Professors in the Univer

of Edinburgh. Mr. Smith had the honor of obtaining the medal of the Highland and Agricultural Society of Scotland, for the best general examination; also medals for the best examination in chemistry, anatomy, and materia medica, respectively. What the Board have particularly in view in getting out a Veterinarian whose professional education is fully up to the present advanced state of the science, is first that he may establish for himself a remunerative practice, and communicate instruction to students and young farmers, in the hope of ultimately forming a regular Veterinary school for the Province.

Australian Farming.

[The following facts, from an article in the *Farmer's Journal*, published at Melbourne, ill give the reader some idea of managing ral affairs in the flourishing colony of Victoria, here the advantages of agricultural machinery e beginning to be understood and appreciated.]

"A short time since we paid a visit to the m of Mr. Barton, situated on the basaltic plains the southern base of the Anyaghe Yowang, bout half way between Geelong and Melbourne ilway. Mr. Barton, like some of the most ccessful farmers in the Australian colonies, as ell as in the United States, had no knowledge farming, practically or theoretically, till he arved in these colonies; but being a shrewd obrver, he has made good use of his opportunities ce that period, as will be seen by the sequel. great deal has been said of late about farming being a remunerative business, but against e opinions of more theorists we put the actual perience of a really practical man.

The soil on the ranges, and on the slopes in immediate vicinity, is of the richest description, and consists of a deep black mould, such we generally find near the site of volcanic uptions. The natural grasses are very luxurih, and support at the rate of about three ep to the acre. One gentleman has 2,000 es fenced in, and rendered sheep proof, which ports, at the present moment, 3,000 sheep.— e crops, too, have turned out excellent, and much as forty bushels of wheat and upwards acre have been attained on the slopes of the ges. Mr. Barton's farm, however, is situated some distance from the ranges, and the soil is a very different description from that referred

Here the soil is of a brownish, stiff clay, s on the surface, and here and there a plenti outcrop of boulders. The natural grasses too of the poorest kind. In fact, the farm forms rt of the stony plain before mentioned; and as bleak, barren, and unpromising a plain as one could well imagine. It will be seen, then, that the soil Mr. Barton had to operate upon was not the very best in the world; in fact there are hundreds of thousands, we might almost say millions, of acres similar to this in the colony, considered to be totally valueless except for sheep-grazing purposes. The vast dreary, treeless, basaltic plains, which extend westward from the Moorabool to the Hopkins, at present but partially occupied as sheep runs, are precisely the same description of land as we are speaking of; and there are large tracts of a similar kind in various parts of the colony. The actual working expenses in the cultivation of soil of this description, together with the produce per acre, we shall now endeavor to lay before our readers.

The actual working expenses, then, in ploughing, sowing, and harvesting, on this farm, in 1859 (we take this year because the season following was altogether an exceptional one, from the excessive rains, and Mr. Barton had in the meantime removed to another farm which was already cropped), amounted to £1 4s. per acre. This is allowing one pair of horses to plough five acres per week, the land being previously broken up; and allowing for wages 20s. rations 6s., horse feed 10s., and blacksmith work 4s., per week. Total for five acres, 40s. or at the rate of 8s. per acre. In sowing—two teams of working bullocks (four bullocks to the team) and one man, for sowing, managed five acres per day, allowing wages and rations as before, and a little for tear and wear, the expense will be 12s. 2d. for five acres. Then there is the seed at the rate of 1¼ bushels to the acre, 12s. 6d.—for the five acres, 62s. 6d.; allow also for contingencies an additional sum, say 5s. 4d. This will make for the whole five acres £C, being at the rate of £1 4s. per acre. In harvesting, Mr. Barton employs one of Mellor's Adelaide stripping machines, along with one of Hornsby's spike roller winnowing machines, and so the reaping, winnowing and bagging operations are carried on in the field at one and the same time. By using these machines he was able to reap, clean and bag his wheat at the rate of from seven to eight acres per day, and at a cost of (what to many may seem incredible) only 9s. per acre!— Mr. Barton estimates that the whole of the plant and machinery requisite for farming, say 150 acres of wheat, on land similar to his own, may be purchased for £200; and he believes that £50 per annum, or 25 per cent., for tear and wear, depreciation of stock, &c., would be amply sufficient. On 150 acres, then, this would amount to 6s. 8d. per acre. The wheat crop on this farm yielded from 20 bushels and upwards per acre, and the price obtained on the farm was 7s. 3d. per bushel on the average.

We think we are now in a position to ascertain whether farming, as carried on under such conditions as we have referred to, and accord-

ing to this system of management, will pay or not. Allowing, then, the same rate of expenditure as we have given above, together with a fair rent for the land, say 20s. per acre; and say the extent of land under wheat to be 150 acres, averaging 20 bushels to the acre, the price, say 6s. per bushel; and we have the following result:—

Ploughing, per acre	£0	8	0
Sowing	0	2	6
Seed, at 1¼ bushel	0	12	6
Reaping, &c.	0	9	0
Tear and wear, and depreciation of stock	0	6	8
Rent	1	0	0
Cost per acre	£2	18	8
150 acres, 29 bushels, at 6s	£900	0	0
Cost of do. at £2 18 8d per acre	435	0	0
	£465	0	0

Showing a profit more than cent. per cent, to the annual outlay.

This is, no doubt a very different result from what most farmer's books will show. It is on the reaping, threshing, &c., that the greatest amount of expenditure is incurred, under the old system of hand-reaping. Under this system, instead of 9s. per acre, as above, the expenditure will be somewhat as follows:—

Reaping per acre	£1	0	0
Rations and grog	0	2	2
Carting	0	5	0
Thrashing	0	11	8
Winnowing and bagging	0	5	0
Cost per acre	£2	3	10

This amount added to the £2 9s. for ploughing, sowing, and other expenses except reaping, will amount to exactly £5 12s. 10d. per acre; and 20 bushels per acre. at 6s., will amount to £6, from which deduct the cost of production as here given, will leave a balance in favour of the farmer of only 7s. 2d. per acre, instead of £3 1s. 4d. Of course, farming will not pay at this rate; and the farmer can only cultivate with profit on rich soil, when the produce exceeds the amount we have taken as our average. We will refer to this subject on a future occasion, meantime we think we have furnished materials enough to engage the consideration of our readers.

Scientific Culture of the Strawberry.

[*From the pen of Mr. Leonard Wray, in "Simmonds Technologist."*]

Amongst our British fruits the strawberry holds a very high rank, and is justly esteemed both for the table and for preserves. A very large extent of land is appropriated to its culture, much capital is expended, and no small amount of "art" is exhibited in bringing this before the public in its choicest condition.

Size, colour, and flavour have been studied very successfully, as the large and beautiful specimens which are exhibited at the various horticultural shows, and in the windows of the fruit sellers, fully demonstrate. New varieties are eagerly sought for, and found by the great strawberry growers—as Myatt, Turner, Robertson, and a host of others; and as the result of their intelligent labours we see, and fully appreciate, in those choice new varieties, the "Oscar," the "Wizard of the North," the "Surprise," the "Empress Eugenie," the "Mammoth," the "Prolific Hautbois," &c.

These are of the highest excellence; and in our northern climate can possibly not be surpassed in point of size, colour, and juiceness—points so assiduously aimed at by our great strawberry growers; but we may well inquire whether these varieties, or any of them, fulfil all those conditions so necessary in a really perfect strawberry plant. In fact, we may and must ask the question, "Is science brought to bear on the art of strawberry culture in this country?"

We fear that we shall "offend the susceptibilities" of a great number of professionals and amateurs, when we express our opinion, that in the culture of the strawberry in the United Kingdom science has not been applied in aid of the art so liberally bestowed.

We take the ground, that so hardy a plant should certainly appertain more to open field culture than to the elaborate and expensive horticulture of the garden. The former may be designated as a natural growth, under man's care and supervision; the latter is truly a forced and unnatural (*id est*, an artificial) existence, more suited to the requirements of a tender exotic than to the hardy strawberry.

Growing wild, close to the Falls of Montmorenci (near Quebec), we have seen and eaten its highly-flavoured fruit, the intense frosts of Canada and Labrador hurting it not. In the sweltering regions of Charleston and Savannah (in South Carolina and Georgia) we have feasted upon it for many months in the year, the tropical heat doing it no harm. On the Alpine heights, as in the hot valleys of Spain, it meets us again. Far up on the Himalaya mountains, beyond "Nynee Tal," and even the highest abodes of man, this kindly fruit offers its tiny fruit to the weary and adventurous traveller. Down again in the heated vales of Cashmere we find it expanded into a greater size, and remarkable for its lusciousness and aroma.

Why, then, is this plant treated in England like a weak and tender exotic? Why is it pampered, so swathed, so swaddled; and its hardy habit so utterly ignored? It is because science has not been applied to the art of giving this great gift of nature.

The productions of Myatt, Turner, and others, re admir.'le in their way, and for the especial stination for which they are grown—viz., for he tables of Belgravia, and of the richer class-; but for the million, and for those great pre-rve-makers, Crosse & Blackwell, Batty & Co., d others, who supply millions of families with rawberry jam and jelly, in small and very ick-bottomed pots, their modes of culture are holly unsuitable, and the supply furnished is tally inadequate to the demand.

Let us now examine into the causes of all : and let us see if science will not aid us in ging about a very different state of things. Botanists have been too much in the habit of mulgating the doctrine that in the strawberry wer the male and female organs exist in a rfect state; whereas generally speaking, this by no means the case, for the sexual differ-e is peculiarly well marked in almost all va-ties of the strawberries.

Let us sow the seed of a strawberry, and we ll find, on a careful examination of the seed-g, that we have obtained Staminates, Pistil-s, and Hermaphrodites; that is to say, Sta-ates or male plants; Pistillates or female nts—neither of which, by itself, will bear a gle berry—and hermaphrodites, or plants in ch the male organs are perfect, and the fe-le organs are more or less imperfect. It is and has been particularly insisted on in pect to certain varieties (especially amongst white kinds), that some of these hermaphro-possess both the male and female organs perfection; but, although entertaining a ng doubt upon that point ourselves, we are ertheless quite aware that, in particular in-ces, they do possess female organs very y perfect, sufficiently so, indeed, to lead to common belief. On the other hand, we w that, in the great majority of cases, so imperfect are these female organs in these -aphrodites that they seldom produce other a very scanty crop of inferior and imper-berries.

he most vigorous of all are the staminates, are males, abounding in large flowers, and g out a profusion of runners; the pistil-flower very abundantly, but have small ms, and very few runners; the hermа-dites bear a medium sized flower and out numerous strong runners.

or the purpose of the high-priced strawberry er, the better kinds of hermaphrodites may do answer admirably well, seeing that their is to obtain only a very few large-sized es on each plant; but place these plants in pen field, deprive them of their finely pre-mould and their hand-glasses, their artifi-impregnation, and the unremitting care and ifulness of their human attendants, and the would soon become apparent; they would failures. In a word, for a general crop are quite unsuitable.

About the year 1809, the celebrated horticulturist, Keen, from amongst his seedlings, picked out all those which had borne a heavy crop of fruit, and planted them in a bed by themselves, quite apart from those that had proved sterile, or had borne but lightly. Spring came, and with it his pet seedlings put forth a profusion of bloom, but his surprise was intense when he saw that there was no swelling whatever for fruit. His intelligent mind prompted a critical examination of the flowers, and then he discovered that the pistils, or female organs, were perfect, but that there was no stamens, or male organs; consequently, that his famous fruit-bearers were pistillates, or pure females. Having thus stumbled upon a very important discovery, his next step was to examine his other seedlings, and finding that they possessed male organs in perfection, he plucked a number of their flowers, and placed them in phials of water, and suspended them in different directions immediately over his bed of pistillates. His experiment was eminently successful; the pistillates began immediately to swell for fruit, and every blossom produced its berry.

These celebrated plants were known under the name of "Keen's seedling," but it is doubtful if they are in existence at this day, the variety so called now being a very favorite hermaphrodite, and not a pistillate. The reason for this is not difficult of explanation. Fine bearing pistillate plants are carefully removed from all others, and planted by themselves, perhaps, in some gentleman's garden, being regarded as a great treasure; the next season, abundance of blossom, but no fruit. This first miscarriage may be attributed to late frosts, slugs, &c.; so another season is awaited, but the same result disgusts both master and gardener, and the poor unmated females are declared worthless, and are cast on the dung-heap. In this manner profuse bearers are thrown away, and the partial hermaphrodite takes their place, and gives rise to the universal complaint, "How badly my strawberries bear! I had a fine show of bloom, very fine, but somehow or other I have had scarcely any fruit. It is provoking!" Yes, so it is—very provoking indeed; and, knowing and feeling this, we are now endeavoring to diffuse a little information on the subject, hoping that our readers will circulate this information, as well as take advantage of it in their own practice.

After Keen, a Mons. Duchesne arrived at a similar knowledge of the sexual differences in the strawberry plant; but as far as the practice is and has been concerned, it really seems as if the discovery made and published by Keen had been entirely lost sight of. We have conversed with our largest and most eminent nurserymen and seedsmen, and have even ventured in our innocence to speak on the subject of staminates, pistillates, and hermaphrodites to the fruit sellers in Covent Garden market and in the city;

but the blank looks of some, and the honest confession of others that they really did not know anything about the matter, would lead us to the conviction that if these sexual differences are known and recognised at all in England, it must be by very few, indeed. It may be that strawberry growers posses this knowledge; but, if so, they keep it remarkably secret, perhaps that they may reap the greater (supposed) advantage from its exclusive practice, although we can scarcely imagine this. We were ourselves as ignorant on this subject as the English public at large until we visited the town of Cincinnati, in the United States, and had the matter clearly explained to us by our highly esteemed friend, Robert Buchanan, the celebrated wine grower of Cincinnati—a gentleman who, together with Nicholas Longworth, has done so much real good for his country. In Mr. Buchanan's instructive little *brochure* on "grape culture" is included some very interesting letters, statements, and reports upon the culture of the strawberry plant; and as these afford most valuable information we shall briefly allude to them.

(*To be continued.*)

Canada as a Field for Flax Culture.

We take the following article from the *Northern Whig* of August 28th, a leading commercial paper published in Belfast, Ireland. The gentleman alluded to as visiting that country in connextion with the Canadian government is Mr. Donaldson, who has just returned home. Mr. Donaldson, we understand, is favourably impressed with regard to the profitableness of flax growing in Canada, and as he intends visiting the approaching Provincial Show, to be held in London, he will doubtless have an opportunity of stating publicly his views on this important subject, which must soon more earnestly and generally occupy public attention.

The never ceasing energy of the Lancanshire cotton-spinners has been the wonder of all nations at all able to comprehend the gigantic efforts they have made. year after year, for the larger suppy of raw material. In their case neiter time nor money has been spared for the accomplishment of the great object in view, and the result has been to bring into play an annually increasing amount of cotton wool, equal to the almost illimitable wants of the spindles.—Last year there were imported into the United Kingdon 12,419,000 cwts. of raw cotton, against 5,150,000 cwts. imported in 1840. Owing to the existing state of affairs in the different States of America, a decrease of supply may be looked for from thence; and to avert the consequences of any material falling off, the Cotton Supply Association has been actively at work. Already the agents of that institution are busily engaged in Egypt and the West Indian Islands, while east of the Ganges there are hosts of influences engaged in extending the growth of the Oriental staple.

Some few weeks ago, an inquiring gentleman wrote to the London papers on the vital question of cotton supply, and in course of his observations he proposed a new mode of preparing flax fibre so as to cottonise it, and thus add to the supply of material for muslin goods. The plan was excellent in is way, and brimful of ingenuity; but, unfortunately for its practical application, the spindles of our own staple trade have only been partially supplied with flax for some years past; there is, consequently not a single pound of that article to spare from its legitimate source of consumption. To give effect to any plan of producing from flax a substance like cotton we must first have enough and to spare—a result not likely to be realised for some years to come.

Merchants and other capitalists connected with the linen trade have been making great exertions, for years past, to bring about a more ample supply of raw material; but, to this day the effect of their exertions has only been partial, and still the cry of famine in the flax markets rings from Belfast to Dundee, and from Dunfermline to Leeds. During the last forty years the value of raw cotton has so fallen in price that its manufacturers have been enabled to produce goods suited to the wants of all classes, and thus the use of muslin and calico as articles of clothing has become so general in nearly all parts of the world that steam power, acting on spindle and loom, is taxed to the uttermost to its gigantic strength to meet the necessities of the millions of people of all nations and climes who clothe themselves with the products of the cotton plant. We have alluded to the vast reduction which has taken place in the cost of cotton wool since 1841, but from that date no such change has occurred in the value of flax; and hence the linen trade has lost all the advantage which would inevitably have resulted from a gradually downward figure in the price of raw material.

Within the last few days, we have had some conversation with the highly-intelligent gentleman who, as the accredited agent of the Canadian Government, has been sent over to this country for the purpose of ascertaining the probabilities of success in a extended system of flax culture in Upper Canada. From all we have been able to ascertain on the subject, it seems to be no donbt that, by due energy on the part of the Canadian, coupled with a fair prospect of remunerative prices here, the farmers of that colony would soon produce very large additions to our present supplies of flax. It is known to those acquainted with the agricul-

fairs of Canada, that many of the farmers here have for years past been growing wheat on the same lands, until as was once the case with the potatoe fields of the South and West of Ireland, the soil has been seriously deteriorated in its productive powers. The change, therefore, from the incessant cropping with one description of grain to the rotary system caused by the introduction of flax-growing would benefit the soil hardly less than it would advantage the cultivator.

It has been said that the labour is still too high in Canada to admit of any remarkable success in the growth of the article that requires so much attention during its culture; but those who argue thus forget that the Canadian colonist is the monarch of the soil on which he has located himself. The land is his own property, purchased direct from the Crown; he does not owe fealty to any landlord. Where he stands, within the limits of his farm, he is its chief; and the extent of local taxation does not exceed a fractional per-centage on the value of his land. Then, as to the nominal price of labor, we grant that is far above the value in this country. As a set-off, however, it may be stated that an able-bodied man will do as much work there in the course of a day as is usually performed here in a day and a-half. Agricultural energy is pushed forward with great spirit; in fact, the farmer and his relatives seem to work with steam at high pressure.

Again, then the Canadian flax-grower has so many points in his favor—if he has lands which contain all the elements so peculiarly required for the food of the plant—we do not see why he should not be able to produce a quality of fibre which would fully remunerate him for his outlay of enterprise. What with the recent improvements in the machinery for spinning yarn, and the remarkable success that has attended the application of steam to the linen loom, there seems to be no limit to the quantity of flax that could be worked up in the United Kingdom, provided that flax produced in such amplitude and at such prices as would give full play to the demand for the wear of linen as the article of clothing. For some years past, the supply of flax has actually been falling off in the country. In 1853 there were 1,882,400 cwts. of foreign flax imported, and 867,000 cwts. growing in Ireland. Last year the imports only amounted to 1,464,300 cwts., and the produce of Irish flax did not exceed 650,000 cwts. While this decrease was going on in the supplies of flax, the consumption of cotton rose from 8,500,000 cwts. to 9,000,000 cwts.

The India Flax Society has gone to work in real earnest, and we doubt not, will be able to produce large accessions to existing supplies; but, omitting all this, there will still be a wide field of operations; and that field might be well occupied. Were the farmers in that colony to annually three hundred thousand acres of flax, every single stone-weight of the produce could be worked up by Irish spindles alone. We would request the special attention of spinners, manufacturers, and bleachers to this subject. It is a vital one now, more than ever it was before. With the ports of France opening to us, Belgium will also take largely of our yarns and linens.

The Hanse Town, with their half million of people, took last year ten million yards of our linen cloth; and Holland with its population only equal to that of the city of London, took three and a half million pounds of yarn. Other States are following in the wake of these Free-trade countries; but, to enable our capitalists to take full advantage of the favorable opening for yarns and goods, there must be a full supply of cheap material. Canada is now within nine day's run of the Irish coast; facility of transport is, consequently, on the side of the enterprise; and, if the flaxspinners and merchants of Belfast and other seat of the manufacture join with the Canadian Government in setting the thing afloat, the project cannot fail of success. So far as we can learn from merchants conversant with the subject in Canada, as well as from the Government agent now in Ireland, the farmers require little more than something like certainty; but, if they produce flax of a certain quality, they will be sure of getting a ready market for it.

Numbers of North of Ireland farmers are located in York, of which Toronto is the capital. these men will only require a short education to enable them to grow flax at least as well as their relatives who still reside in the old country. If farmers here can raise thirty-five to forty stones of clean fibre to the statute acre, Canadian settleas will soon be able to take as much out of their adopted soil.

Utility of Birds in Defending Farm Crops against the Attacks of Insects.

The harvest this season in France, it is said, will fall much short of former averages; and one of the principal causes assigned is the increasing destruction of late years of the smaller kinds of birds, for the various forms of French cookery. It is well known that some kinds of birds in particular feed on the larvæ of insects, which if allowed to mature often prove injurious and sometimes destructive to the crops both of the farm and the garden. In matters of this kind nature has beneficiently established a wise system of self adjustment and compensation, whose economy it is unwise and often fatally injurious to disturb. Rookeries in Europe have sometimes been complained of by the neighboring farmers

as the birds will devour sown grain unless prevented by artificial means. But in cases where rookeries have been broken up, the crops have in all cases been found to have been afterwards attacked by insects in an unprecedented degree, and in many instances the farmers have prayed for the restoration of these interesting and useful communities.

From a report read before the French Senate, praying for the protecting of those birds which destroy insects hurtful to our crops, we find it stated that the wireworm consumed £160,000 worth of corn in one department alone, and was the cause of the three deficient harvests which preceded 1856. Out of 504 seeds of colza, all but 296 had been rendered worthless by insects, entailing a loss of oil equal to 32·8 per cent. In Germany, according to Latrielle, the *Phalaen monacha* consumed whole forests. In Eastern Prussia three years ago, more than 24,000,000 cubic metres of firs had to be cut down, being so destroyed by insects. Man is unable to cope with these destroyers of the produce of his labours. His eye is too dull to perceive, and his hand too slow to catch them. Without the aid of birds he would be vanquished in the struggle. The commission, while it excludes birds of prey from its protection, partially includes buzzards and rooks, because the former consume 6000 mice yearly, and the latter an incalculable amount of wire-worms and other grubs. Sparrows are re-habilitated, and their usefulness shown by reference to the facts, that when their destruction was attempted in Hungary, winged insects increased so rapidly, that rewards for the destruction of sparrows were suppressed, and given for bringing them back. Frederick the Great ordered the destruction of sparrows, because they ate his cherries; but in two years time he found his cherries and all other fruits devoured by caterpillars. In a sparrow's nest in a terrace in the Rue Vivienne were found the remains of 700 Tipulæ, the larvæ of which turn to wire-worms—the greatest enemy the gardener and farmer have to contend with. Owls, and birds of that class, which agricultural ignorance pursues as birds of evil omen, ought to be welcomed. They are ten times more useful than the best cats, and not dangerous to the larder. The martins that were killed were found to have in their stomachs the remains of 543 insects. In order to protect these insect devourers, the report proposes the prohibition of all means of destroying birds save by fire-arms, with the exception of nets for wild ducks and palmipedes generally. The report also proposes the prohibition of bird-nesting, and destruction of eggs and the young birds."

We append an extract from another source, in reference to rooks versus grubs:—

"The grubs of the tipula family are amongst the most destructive enemies the gardener and farmer have to contend against. Their eggs are deposited in the soil. As the grubs are hatched they commence an active attack on the roots of most plants. The perfect insect appears in August, and is well known in Scotland as Daddy Longlegs—in England as Gaffer Longlegs, Tom Taylor, or Tommy Longlegs. Their operations being carried on under ground, enables them to elude the vigilance of man, but the instinct of the rook is a match for them. It has been calculated that a family of rooks will consume 3,847 grubs per day. Supposing the consumption to be continued throughout the year, it would amount to 1,404,156; and supposing a single grub to destroy as many plants of wheat or other crop as might grow upon a space of nine inches square, a family of rooks would preserve from destruction more than two acres of corn. If we extend our ideas further, and suppose all these grubs to live and propagate their species, it is more than probable that if this one species of bird alone were extinct, the labour of the husbandman would be nearly, if not altogether, in vain. Man therefore, should be aware how he disturbs the balance of power maintained throughout the whole animal kingdom.

The power of reproduction in insects is of truly astonishing, and their destructive influence on cultivated crops, and sometimes even on trees of the wild forest is equally remarkable, our farmers of late years in particular, are too well acquainted. The study of the formation, changes and habits of these little creatures is exceedingly interesting, and is pregnant with valuable, practical results. A correspondent in a recent number of the *Ohio Farmer*, speaking of the increase of insects, says:

"It is a well-known fact in natural history that there is such a thing as alternate generation, and it is an equally well-known fact to entomologists, that there are viviparous and oviparous generations of the same insect, during the same year. May not the first generation of the canker worm be oviparous, and the succeeding generation be viviparous, as in the following case of aphides. All the aphides, it has been well ascertained, which appear in the spring are exclusively females, no males being found till the autumn; and these females are endowed with fecundity almost incredible. M. Latreille states that one female during the summer months, may produce about twenty-five a day, and Bonnet calculated that one aphis may be the genitor of *5,904,900,000 descendants*. It is necessary for the young female aphides produced during the summer to pair with a male, which indeed, would be impossible, as no males are then to be found; yet these females go on producing each their twenty-five a day of [illegible]

ung ones, all of which become, in a short time, as fertile as their parent. The following calculation of the fecundity of a species of aphides, from Prof. Owen's lectures on "Comparative Anatomy," will offer some explanation of the extraordinary numbers in which these creatures sometimes occur. The *aphis lanigera* produces each year ten viviparous broods, and one which is oviparous, and each 100 individuals.

Generations	Aphis produces.
1st "	1
2nd "	100
3rd "	10,000
4th "	1,000,000
5th "	100,000,000
6th "	10,000,000,000
7th "	1,000,000,000,000
8th "	100,000,000,000,000
9th "	10,000,000,000,000,000
10th "	1,000,000,000,000,000,000

Salt as a Weed Destroyer.

Weeds are said to be robbers of the soil, taking that which was not designed for them, and for more useful plants. But, like other robbers, they do little mischief, if closely watched, and the proper means is taken to prevent their depredations. Indeed, weeds are not an unmitigated evil, for did they not grow, and make ploughing and cultivation, and hoeing, absolutely necessary, we fear our corn, potatoes, and all "hoed crops," would suffer for want of necessary culture; and the loss from this cause, especially in a dry season, would be far greater than it now is from foul weeds. While saying much for the weeds, it must be admitted that there are some varieties so tenacious of life, and with such abundant means of propagation by the roots, that they are perfect pests, and among them there are the Couch Grass, Canada Thistle, &c. Almost every week some afflicted owner of the soil applies to us for a sure and speedy method of effecting their eradication. But we know of no easy process, for the price of success we have found to be the same as that which patriots declare to be the price of liberty, "eternal vigilance." Occasionally we have received accounts of partial success by the use of salt, while with others, perhaps from the use of too large a quantity, or an improper mode of application, the remedy has been found as bad as the disease. Salt, in large quantities, will destroy almost all vegetation. There are only a few of our cultivated vegetables, such as as Asparagus, that will endure its liberal application.

A late English paper contains an account of experiments by a practical farmer in the use of salt for the destruction of Couch Grass and other weeds, which were eminently successful, the salt not only proving effectual in killing the weeds, but materially lessening insect depredators, and greatly increasing the crop of roots. We give the most important part of the report, to which we invite the especial attention of our readers. If such great benefits are to be derived from the use of salt, American farmers cannot learn the fact too soon.

"Some years ago, being troubled on my grass land with a weed which I could not eradicate by mechanical means, I sowed a heavy dose of salt, and at once effected the object. A season or two back, it struck me that if the experience was worth anything, it should teach me a quick way to rid my lands of weeds generally—the arable land, I mean. The consequence was that when the autumn arrived, the fields that were intended to fallow, received a very heavy coat of salt—coarse-grained, agricultural salt; which is, in fact, the sweepings from the salt works, and the refuse of the pans. The quantity sowed was 12 cwt. per acre. The winter which followed was a severe one, and, in connection with the frost, the chemical action of the salt upon the soil was charming to the eye, which delights in the sight of a beautiful friable mold, in the place of a churlish, unkindly clay, which usually resists the expansive, and disintegrating glacial influences of winter. The field, too, on which the experiment was tried had long possessed a reputation for Couch Grass, and that particular species of it known as Water Grass, the most hopeless and most troublesome of all. The hoe would not kill it, the twitch rake would not gather it, and the children in seeking it on the surface after the harrows had left it exposed, usually secured half of it, and stamped the rest into the soil to perpetuate the kind. This Water Grass, then, which the hoe would not kill, which the rakes could not collect, nor the children pick off, was quietly disposed of, never more to trouble me, while it lay at its winter repose. The salt had slain the thief of my profits, noiselessly as the ferret sucks the life blood from the rabbit in its retreat; and when the first spring furrow was turned, the view of the shrivelled enemy—the enemy which had baffled all my ingenuity and kept my exchequer low—was cheering indeed. One length after another of the sinuous, wiry weed, was examined, but there was no sign of life; not even at that critical point, not even at that critical point the knot, could I detect, by the means of the microscope, any indication of vitality. The "foal's foot," which runs down far into the substratum, were many of them dead, though not all. In looking for the buttercup roots, also, scarcely any were to be found; and glad I was, for bother enough they had been to me.

"The land then received one or two furrows to incorporate the salt thoroughly, and diffuse its power beneficially, so that it might invigorate everywhere, and yet not remain in sufficient force in any once place to endanger the seed which followed.

"At the proper season, and without any other

preparation, the Mangel seed was sown, and speedily vegetated. There were but few weeds to hoe, for the salt had attacked the principal vitality in the seed of the annual, as it lay secreted in the clod, as well as that of the Couch Grass. and the mangels grew to be a finer crop than ever before flourished upon the same plot of land. The foliage was thoroughly vigorous, and the bulbs were remarkably well matured and sound. The weight per acre reached 25 tuns, when before the maximum had been 20 tuns—by the aid of several loads of dung and an immense amount of labour.'

"The following year, upon a field of the same character, I tried the same experiment, varying the course of *management in some degree*. I applied, in October, 12 cwt. of salt, upon the upturned and weedy surface of that land destined for the root crop, and allowed it there to lie and do its silent work as before, until, in February, the soil was dry enough to allow of being worked. As in the first instance, the result perfectly justified the means. Together with the frosts of winter, the salt had performed wonders in breaking down the stubborn clods and comp essed, livery furrow slices. The soil was reduced to powder, and the weeds were gene ally dead, so that the Mangel, which was planted in a finely pulverised seed bed, had nothing to do but to grow without the rivalry of weeds—neither shaded by them from the sun, nor robbed by them of the nourishment purposely stored for their use. I said, however, that I introduced some change into my practice this second time. The change was as follows, Just after the last furrow was, I sowed 4 cwt. more salt, which I harrowed in before the seed was dibbled. The result proved the wisdom of the addition, I have reason to think—for the weeds were even fewer, the foliage of the Mangel was finer, and the bulbs were larger than in the former case, where the application of salt was merely made in the autumn.

"It strikes me that our Mangels are freed also from another enemy by the use of salt. I mean insects. Slugs and wire worm, both very destructive during certain seasons, are certainly banished by salt, if not killed."—*Rural New Yorker.*

On Economizing the Liquid Manure of Towns.

For a long time it has been know that if the liquid excrements of towns and cities could be collected and applied to the land, that the health of the people and the produce of the soil would be greatly improved. Considerable difficulty, however, of a pratical nature, continues to be experienced in this matter, and the benefits which science so clearly points out have, as yet, been but very partially realize This is not simply a question belonging to th denser populated countries of Europe, but it ha a practical application and importance to all ou larger towns in Canada. In the following cor respondence between Mr. Chapman of Nottin ham, and Walter Fyfe, the Agricultural Chem ist, the readers will find much that is of an in teresting and suggestive character.

My Dear Fyfe.—Knowing that you not on ly take an interest in the advancement of agri culture as a science, but have considerabl practical knowledge in relation thereto, I wis to have your opinion and advice on a matte which has engaged my attention for some fe months. Perhaps you are not aware that, sinc you left this part of the country, we have erected number of public urinaries, which are used by very great number of people—one in particula near our post office, affords accommodation about 2,000 persons daily. Now the value *human urine as a manure is universally admitte* If my memory serves me, Liebig (no mean aut ority) considers it to be the richest and most va able of all liquid manures. He states that ' pound of human urine is sufficient manure for pound of wheat." Then why shonld such va able manure be wasted? At the single urina I have named there is daily wasted an amount manure that would, if collected and distribut on the land, produce 1,000 pounds of whe But the mere loss of this valuable material is t the only evil; for it passes into the sewers, then to our streams, rendering them disgustingly off sive, and will if the evil be not checked, u mately deprive us of our fresh water fish. are sending to the other hemisphere for th sands of tons of guano annually, the chief m of which, as a manure, is its ammoniacal sa But need we continue to incur this great ex I reply, no! empathatically, no! When we flect that, at one public urinary alone, in town of Nottingham, there is worse than was every day the manure that would produce l, pounds of wheat, what quantity of this valu material must there be lost amongst a popu tion of nearly 100,000 people? If the urine the United Kingdom were to be economized, n we send to the other hemisphere for guano? shall endeavour to get some enterprising farm in our neighbourhood to assist me in my sche which I shall lay before the town council as s as I have obtained sufficient evidence to m out a good case. Can you give me any idea suggestions? My scheme is very simple t It is merely to construct large tanks in con tion with all public urinaries, with a valve to closed during the daily process of cleans which valve will shut out the water, and, w the tank is full, pump out the liquid, and im diately put it on the land or compost heap should advise that the tanks be so large

they would only require to be empted about six times a year; thus the ammoniacal salts would be fit for immediate use.

WM. CHAPMAN.

Nottingham, June 21, 1861.

MY DEAR CHAPMAN,—You are about right in applying to me in regard to the economy of town urine, as, if only for the interest I take in the salubrity of Nottingham, I shall have pleasure in devoting my next 'Practical Paper' to the question at large; and will, in a few days, probably be able to send you a proof. Meanwhile, I throw out a few hints for your satisfaction and guidance.

No doubt, urine is valuable; but, like every other manure known in agriculture, all its practical value depends upon its management. In the case of Peruvian guano, the base of which is urate, accident has supplied apparently the most effective means of enhancing the value of the manure by so disposing it *in situ* and saturating it with the salts and liquid exudations of decomposing matter, as to economise most perfectly its ammoniacal properties for fertilizing the earth. And I must confess that the readiest mode of dealing with the urine of the farm-yard at home seems to me to be that which I have recommended in the first of my 'Practical Papers for Farmers' Clubs'—to keep pumping it over the dung heap.

I am however, aware of one instance in which very valuable manure based on urate, or altogether one, was manufactured by Messrs. Tennant and Co., of St. Rollox, Glasgow, and employed with immense advantage by that very eminent and strictly practical farmer, the late Mr. John Finnie, of Swanston, Edinburgh.

This salt, which I suppose is still made and sold by Messrs. Tennant, is produced I believe, by digesting the urine in a tank with other substances, and Mr. Finnie found his advantage in being able to substitute this production at £5 a ton for Peruvian guano at £12.

The great difficulty in the way of Nottingham would be in using up the fresh urine. There is no exception of which I am aware to the law of putrid or decomposition in the action of agricultural stimulants. The decomposition may be volatile, or it may be percipitant; the manurial substance may have a tendency to go off into aerial gases, or to subdue into liquid putrefaction; but decomposition in some sort must ensue before any manurial value accrues. Now, the great value of urine arises from its rapid capacity of putrefaction, owing not only to the amount of ammoniacal salts which it holds in solution, but to the quantities of animal matter it retains in mechanical suspension. To prevent the participation of the latter, agitators must be kept at work in the tank or receptacle where the urine must be kept for preservation; so that you are met with a difficulty at the very outset; for if you could expect a farmer to take off the liquid manure, you must necessarily save and husband it for him in the first instance. But farmers will not readily be induced to take off the supply. I do not think you are likely to meet with even one so disposed; for most farmers find it more to their purpose to cony experiments that have already proved successful (and this, indeed, they are willing and ready to do) than to embark in doubtful attempts, however clear they might feel convinced of their scientific accuracy.

It seems to me, then, that whenever there might arise an opportunity for a corporation or other public body, showing what could be done to convert the national waste into productive value, it might eagerly be embraced upon public grounds. And then, when the salvage of urinary and excrementitious matter had become in this country as much a part of our fertilizing economy as in Flanders and in China, the agriculturists would catch the spirit of the movement, which I feel satisfied might thus be introduced, and would thenceforth save the sanitary bodies throughout the kingdom all anxiety respecting the cost of economising the civic voidings.

But what means are to be adopted of preserving the liquid exudations pure? I have a wholesome recollection of having been worsted long ago whilst conducting the *The Agricultural Journal*, by Dr. Skae, of the Royal Lunatic Asylum at Morningside, whom I had accused of polluting the stream of the Jordan (a river resembling the Leen), and wasting much fertilising matter, by running off into it the sewage of 600 inmates. In reply, the doctor certified and sent me a jar of the water. I had it analysed by Dr. Anderson, the Highland and Agricultural Society's distinguished chemist, and it proved to appearance valueless, being, of course, much diluted; although as pure water fertilises, this might not in the result have greatly affected the efficacy of the sewage applied as liquid manure. Your Nottingham urine must necessarily to some extent be collected in a diluted state, as, of course, you have to keep the urinaries sweet, as at the principal railway stations, by the constant trickling of the fresh water, which we will assume dilutes the urine to half its extent or weight with water. If there were more water than urine, the weights would be however, about equal, owing to the difference of specific gravity. You are to take this fact into account, then, in estimating, by quantity, the value of the urine so collected; and besides it must be remembered that although 2,000 visits may be paid to the urinaries during the day, these are not to be reckoned as the yield of 2,000 individuals. On the whole, I do not suppose that more actual urine would be caught for economical purposes than might have been derived from the 600 individuals at Morningside.

Well, but how are you to conserve and apply it? A pipe and a reservoir appear utterly indispensable if this is to be done; and then the question becomes one of expense. The plan I

have to suggest, however, might turn out self-supporting. But the first question is, where it might be desirable the receptacle should be situated. The fine slope from Albert Gate to the level of the Leen gives the command of the meadows between the Leen and the Trent and betwixt the Trent and the railway, and the liquid could be led thither by gravitation, at no great cost. I am very much afraid that any reservoir with agitators situated at an intermediate distance might be regarded as a nuisance—though not a greater nuisance than the gas works, which are placed upon the outskirts of your population. But as I find that the best mode of applying liquid manure is by the spreading cart, exactly resembling the water-carts in your streets. It seems preferable, therefore, to carry it on to the meadows at once; and, having provided an establishment for the sale of it, in which I would recommend the use of carts, charged so much an hour, and provided by the Board of Health, to be included, you might try whether the tenants and holders of the grass meadows would not come forward in sufficient numbers to take up the supply for the improvement of their glass lands. If not, a certain portion of meadow land sown down with *lolium Italicum*, the Italian ray-grass, and yield six or seven heavy grass crops early and late in the season, when grass is of double value, would soon repay all outlay. When I will tell you that the Figgate Whins, near Edinburgh, which once rented for half-a-crown an acre, now bring £20, £30, and this year the incredible sum of £40 per acre, owing to the city sewage, you may imagine what margin there would be for trying all this with safety. You may feel surprised that since I suggest the urine being led down to the meadows. I do not adopt Mr. Mechi's expedient of branch tube hydrants for laying it on direct to the land. You will bear in mind, however, what I have hinted of the necessity for stagnation (if stagnation it can be called with agitators going), putrefaction, which redoubles, indeed, the manurial value; and besides this, I found that Mr. Huxtable, on his celebrated Dorsetshire farm, had abandoned the use of hydrants (which are still in his fields), except for loading the liquid manure carts; for, as he says, you never know what you are doing, and which bit is watered and which not, when throwing it in showers; but by means of the cart, one cart loading while another is dispersing, you can measure exactly what you see when a stetch of land is saturated, and distribute equally.

With kind regards, yours truly,

W. Wallace Fyfe.

Charminster, near Dorchester, June 24, 1861.

Beet-root Sugar.

Editors Canadian Agriculturist. Gentlemen—I have a small piece of White Beet under cultivation and shall feel obliged if any of your correspondents will describe the process of conversion into syrup and sugar Are the roots materially injured by being taken up some time before used? I am Gentlemen,

Your Obedt. Servant,

Briar.

If any of our readers have experience in making sugar from beet we shall be glad to publish their mode of performing the operation. It is seldom done, we believe, on so small a scale as to meet the case of our correspondent, and we doubt whether, within such small limits, it could be made profitable. In some European countries, France in particular, the manufacturing of sugar from Beet-root is carried on in extensive establishments; but even then the manufacturer cannot compete with cane grown sugar, when the latter is at a moderate price. We should think that the roots would not be materially injured by being taken up a considerable time before they are used, *if they are properly stored*, so as to protect them thoroughly from the effects of heating in the lump, and from frost. Eds.

Agricultural Intelligence.

Universal Exhibition

OF MOWING-MACHINE, HAY MAKERS, HORSE RAKES, WAGGONS, AND HAND INSTRUMENTS FOR THE HAY HARVEST, HELD IN THE HARRLEMMEER POLDER, BY THE DUTCH SOCIETY OF AGRICULTURE, ON THE 28th AND 29th OF JUNE, 1861.

From the Weekblad Van Haarlemmermeer

It was a good notion, that of renewing every year the exhibition of mowing machines, held in 1860 for the first time in the Netherlands. It showed, it is true, that after the lapse of a twelvemonth there still remained great room for improvement in the construction of the machines, but in order to the wider spread of their reputation it was desirable that this year opportunity should be given to see them in motion. Although it had certainly been pleaded hard that the exhibition should this time be held in the heart of North Holland, in the midst of the rich meadow and hay lands of Beemster, Purmer, and Schermer, it was nevertheless an agreeable proof of the watchful interest of the chief committee in its youngest section to order the exhibition to take place in the Harlemmermeer polder. And with respect to this *polder*, or dis-

marsh, where at this present time some 9,000 bunders (about 4,500 acres) are already reclaimed as grass land, mechanical mowing is a matter of the very highest moment, on account of the deficiency of hands not unfrequently felt in times of pressure.

The favourable arrangements of the direction were in chief part due to the ready concurrence of Baron Verschner, who kindly placed his grounds at the disposal of the committee.

The influx of grass-mowing machines was numerous. Messrs. Keyser and Swertz, as the agents of Burgess and Key, had sent in three: a joint mowing and reaping machine of Burgess and Key. with two horses; one ditto for one horse; and an exclusive grass-mowing machine of the said manufacturers, the same instrument which obtained the first prize last year at Loosduinen. Cranston, of London, had sent one two-horse and one one-horse grass mowing-machine—Wood's system. G. Stout, of Tiel, the machine of Manning, which was tried at Lousduinen last year, and carried off the second prize; and one machine after Wood's system: they were not, however, made by the exhibitor. The "Domaine Privé Royal," of Berg, had also prepared a machine for competition. The model, which last year did not work well, was much improved, particularly in imitation of the one then exhibiting by Burgess and Key, and which gained the prize. Messrs. Gevers, Deynoot, and W. F. Ceshmjsen had sent in their machines without competition. Announcements had been made of the arrival of machines from Mr. O. R. Van Andringa de Kempenaer, and from Messrs. J. Peignat and Co., but they did not make their appearance.

On Friday the trial took place before the committee of judgment and various members of the society appointed for that duty by the chief direction, or admitted for that purpose. On Saturday afternoon the trial was resumed before the members and the general public, on payment of an admission fee of 2 guilders. The whole of the machines did not then work, and but few of them for any length of time or regularly; so that only such persons as were present on the first of those days were enabled to form a complete and settled judgment touching the different merits of machines on trial. We would, therefore, rather wait the report of the committee of judgment than publish a probably ill-grounded opinion of our own. This committee was composed, for the mowing machines, of Messieurs Hœufft van Velsen, Staring, Borgesius, van Waneningen, Kakebecke, and Cotz.

The decision as to the prizes was to this effect:

First prize of 250 guilders to the joint grass-mowing and reaping machine of Burgess and Key, on Allen's system, for two horses, exhibited by Messrs. Keyser and Swertz.

Second prize of 200 guilders to the grass-mowing machine on Wood's system, for the two horses. As two of these machines were exhibited both of which worked equally well, this prize was divided between Messrs. G. Stout, of Tiel, and W. M. Branston, of London.

Third prize of 50 guilders to the joint grass-mowing and reaping machine of Burgess and Key, for one horse, exhibited by Messrs. Keyzer and Swertz.

Messrs. Burgess aad Key, therefore take precedence, precisely as they did last year.

The Royal Irish Agricultural Show at Belfast.

We had intended giving a report of the Exhibition, condensed from our excellent contemporary, the *Irish Farmer's Gazette*. That paper, however, unfortunately got mislaid, and we subjoin some account of the Belfast Show from the *London Farmer's Gazette*. The improvement which agriculture is making in Ireland is truly encouraging, and it is pleasing to see so many unmistakeable signs that that formerly oppressed and unhappy portion of the United Kingdom is rapidly taking a foremost position, both in agriculture and the industrial arts generally.

The energy and intelligence of the northern province of Ireland had been called into requisition at this year's meeting of the Royal Agricultural Society of Ireland. It is needless to institute comparisons which affect provincialism, and which would only lead to no useful result. We have followed Royal shows in their itinerant progress through the various provinces of Ireland. We have watched their influence, and more especially the enthusiasm and public spirit which they have excited. We have seen more excitement among the warm Southerners, and more of the glorious rapture of the warm Celt in the West; but on no occasion have we seen that the show was made a more useful means of instruction than at this Royal meeting. We cannot speak with precision though safe in saying we have seen a larger attendance than at Belfast, but at no previous show have we witnessed the prevalence of so large a number of men earnestly bent upon gaining information. And this, after all, might have been expected by those who are conversant with the circumstances of Irish agriculture. In the North there is a race of industrious tenant farmers, whose prosperity has grown with the growth of industrial spirit and industrial enterprise in that province.

For our own part we cannot say the success of the show has at all exceeded our expectations. On the whole, perhaps, our hopes have not been realized. The meeting has, however, been successful and useful; and were the Royal Irish Agricultural Society to enter a little more into

the spirit of modern agricultural progress, and to infuse into its proceedings a little freshness and vigor, and to address itself more to the sympathies and wants of the tenant farmers, of Ireland, we could augur for it a still wider measure of support and success.

Short-horns.—It is impossible that we could in this weeks impression give a full critical review of all the points of interest in the exhibition. Our dispatch is forwarded ere some of the prizes are awarded. We will, therefore, give the prize lists as best we can hereafter, and offer a few passing remarks on the Short-horns.

In Section I., Bulls calved after January 1, 1859, it will be seen that Lord Kinnaird won 1st prize with Lord John Russel; the second prize being awarded to Volunteer, the property of Lord Bangor. Volunteer is a little defficient behind the shoulder; handles well, though covered with short hair. Lord John gives a fair elastic touch; and has a better developed flank than his competitor.

In the next section we were not much prepossed in favor of either of the prize animals. Henry the Eighth out of Hopewell has a mellow hide, is a robust two-years old bull, but his legs are rather long. The 2d prize animal in this section, Priam, got by Musician, is a spotted animal. His touch is not so mellow, nor so silky.

In Section III., Bulls calved on or after 1st January, 1860, Lord Talbot de Malahids gained the 1st prize with Victor Emanuel, which is a very showy animal, nice and pleasing to look at, but there his merits chiefly end. He is light on the breast. We were glad to see a successful Irish breeder, Viscount Monck, once more in that place of distinction to which his judgement and spirit as a breeder of Short-horns entitle him. Adam Bede with which his Lordship wins his laurels on this occasion, is a nice animal, possessing good points, including a good flank, but a little harsh in touch. On the whole this was a good section. There are some exceedingly promising animals, such as Young Edwin, exhibited by Mr. Patteson, of Dundalk, and whose pliable skin indicates health, vigor, and usefulness. Edwin, though out of Booth's Bridesman, commanded no attention from judicial eyes at Belfast.

Of the Bull calf class, little need be said. No "No eye for Short-horns" will dispute the award, though the second prize calf is an animal of promising sweetness.

The Full-grown Cow class justly excited no small amount of attention. Already one of the Royal Irish Cups has crossed the Channel, and forms a monyment of honorable rivalry among the prize plate at Towneley Hall. And on this occasion the example of the renowned breeder of Royal Butterflies is creditably followed by Mr. Eastwood, who we believe is agent to the gallant Colonel. Mr. Eastwood entered three cows, the famous Rosette of Royal Irish renown, and Emma and Faith, the former bred by Colonel Towneley, the latter by Mr. Grundy. Rosette did not put in an appearance, but among such associotes as Mr. Christie's Queen Beauty the Second, Faith won 1st and Emma 2d rank. If we mistake not, Mr. Eastwood's success at the Royat Irish meeting is now crowned with the permanent possession of the Challenge Cup, for which he has so honorably contested.

In Section 7.—Heifers in milk or calf, and calved in 1859—Captain Ball carried away 1st and 2d honors Faw will deny him the merit of of deserving it. We cannot help admiring the peculiar style in which Mr. Ball shows his animals. Models of symmetry and good breeding, they attract the eye without prize cards, or Royal ribbons. Rochester and Nightingale are old favorites. The former is a sweet animal. The Nightingale, a beautiful white, does not handle so well.

In the next Section, Captain Ball gains still *higher laurels His Pride of Adare not only* obtains 1st prize, but effectually assists her two placid and stylish associates, Flirtation and Peahen 11th in winning the Waterford Cup, value 100*l*. We must own, however, that the Pride won her position at Belfast, by a neck and neck competition. Mr. Crosbie's Florentine, which stands second is a fine animal, well shaped, not quite equal, it is true, in quality to the Pride, but of more substance. If Florentine's eyes peered out a little brighter from their orbs the contest would, we apprehend be still closer. As it was, one of the most successful Irish Short horn breeders declared for the Kerry dame.

In conclusion, we have only to remark, that we have heard some of the best stock in Ireland was not exhibited at this meeting; the cause is not explained. It may console those who have held back to know that though their presence would have been acceptable, yet a respectable exhibition can be held without them.

Implements.—The Implement department of the Exhibition was on the whole satisfactory. The enteries were numerous. Many of the leading manufacturers exhibited some of their best constructed implements and machines. There was *in short quantity and quality. The most* interesting feature connected with this department was the trial of mowing and reaping machines, of ploughs, harrows, &c., which took place on Tuesday at the Knox Station, on the County Down Railway. The mowing machines commenced operations on a field of Clover, a rather light crop. All appeared to do the work in an admirable mannner; But those that attracted the greatest amount of notice were Wood's, Burgess & Key's, and Samuelson's. A few local manufacturers also competed, but were entirely thrown into the shade by these Leviathan exhibitors. The trial of this class of machines would in every way have been more complete, and satisfied the larger number of spectators, had it taken place in a piece of old me-

dow ground. The haymaking machines were then set to ted out the Grass, which was operated on by the mowing machines. Smith Brothers' new patent hay-maker deserves particular notice. The machine is entirely on a new principle; all the tines are placed on barrels consecutively in pairs, so that it separates the Grass much better, draught much less, and is never liable to clog.

Simultaneous with the working of the mowing and hay-making machines was the ploughing. This was carried out on a piece of old lea, well suited for the purpose. Gray's ploughs of Uddingston, seemed to take the lead in making cleaner work and packing the furrow slices in a superior manner; but he was ably followed up by his powerful Irish rival in this department, Gray of Belfast, in turning the furrow over at a better angle. If our Belfast friend would adopt the improved construction of the English mouldboard, we have no doubt but that it would make a material improvement in the working of his ploughs.

The principal reaping machines were Burgess & Key's, Buthbert's, Samuelson's, and Wood's. The trial was performed on an Oat crop, pretty heavy, and somewhat lodged. The visitors seemed prepossessed with the Working of Cuthbert's machine, which on the whole did its work well. The others failed to a great extent when cutting with the incline of the crop. It was remarked, however, by some present that the latter machine would not have proved so successful if its working had been in the hands of an inexperienced person The proprietor, in this case, as in all others, we believe, managed the implement himself.

Experiments with Special Manures and the Conclusions Arrived at.

1st. Every description of crop requires an ingredient essential to its production, and without it such crop cannot be raised in perfection.

2nd. If a soil does not contain in itself what is essential to the growth of the plant upon it, it must be supplied through the medium of one or other of the specific manures.

3rd. The essential substance necessary to be added to the soil may be discovered by consulting the nature and property of the plant to be raised.

4th. Nitrate and ammoniacal substances, except in the production of straw, grass, or potatoes, and turnip tops, without an equivalent production of grain or bulbs; so these substances should not be applied alone, but in combination with others containing phosphates. This is illustrated by the fact that saltpetre refuse and nitrate of soda, applied with guano or prepared light soil and animal charcoal, improve their individual production, either in quality or weight, or in both.

5th. Salts which are sulphates produce grain in larger proportions to their straw than other salts which are nitrate or ammoniacal.

6th. Bone manure, though dissolved in sulphuric acid, may be generally enhanced in value by the addition of ammoniacal substances; hence it is inferred that substances capable of imparting additional luxuriance to the foliage of plants largely administer to their necessities, and, combined with phosphates, are highly advantageous.

7th. Sulphuric acid is eminently beneficial to the potato crop, and in recorded experiments on that crop it has proved itself a preventive of the disease called "cure," having produced a healthy crop, when from the same seed, and otherwise treated in the same manner, the other plants of the field were much infected with that disease.

I am aware that some of these conclusions are mere repetitions of ascertained facts, but truth is never injured by repetition. Perhaps I should have added to the list of my conclusions, this one, that farm manure and guano, combined in the proportion of 15 tons of the former to 3 cwt. of the latter, is the proportion in which I have found these substances to succeed best; and as regards night-soil, the best proportion is 25 tons of the former to 1½ cwt. of the latter. This last result, however, may be greatly improved upon, and therefore should not be taken as a just criterion, either for the purpose of estimating the value of the night-soil or determining the best mode of applying it.

Bone dust was applied nine years ago as manure for a turnip crop, in a field of medium soil, and this field was ploughed this year and sown with oats. The land where the bones had been put gave 7 bushels oats and 50 stones more of straw than the land to which farm-yard manure had been applied at the same time to the turnip crop, besides the grain having been 2 lb. per bushel heavier; and, during the time this field lay in grass, the portion manured with bones could be pointed out from the rest by a darker colour and greater luxuriance of pasture.—*Farmer's Friend.*

Provincial State Shows this Autumn.

Upper Canada	London,	Sept.	24–27
New Brunswich	Sussexbale,	Oct.	1–04
Illinois	Chicago	Sept.	9–13
Ohio	Dayton	"	10–13
New York	Watertown	"	17–20
Kentcky	Louisville	"	17–21
Iowa	Iowa City	"	24–27
Wisconsin	Madison	"	24–28
California	Sacramento	"	16–21
Michigan	Detroit	"	24–27
Minnesota	St. Paul	"	24–27
Oregon	Oregon City,	Oct.	1–04

County and Township Shows.

West Durham Agricultural Society at Newcastle, Oct 4.

South Ontario Ag. Society at Whitby, Sept. 18 and 19.

Fullarton, Logan and Hilbert Society, at Mitchell, Oct. 2.

Russell Co. Society, at Smith's Hotel, Osgoode, Sept. 27.

Hay Township Society, at Rodgerville, Oct. 9.

South Wellington and Guelph Townships, at Guelph, October 10.

In the Counties of Lanark and Renfrew, at Perth, first Tuesday in October.

Lanark, second Tuesday in October.

Smith's Falls, first Friday in October.

Ferguson's Falls, third Tuesday in October.

Carlton Place, first Tuesday in November.

Clayton, second Wednesday in November.

Packenham, second Thursday in October.

Franktown, second Tuesday in October.

Almonte, last Thursday in October.

Sand Point, first Tuesday in October.

Renfrew, second Tuesday in October.

Ross, fourth Tuesday in October.

Pembroke, third Wednesday in October.

Roseville, second Thursday in September.

Arnprior, first Thursday in October.

North Simcoe Society, at Barrie, Sept. 19.

Blenheim Township, Drumbo, Oct. 4.

Norwich Township, Norwichville, Thursday, Oct. 10.

North and South Wentworth and City of Hamilton, United Show at Hamilton, October 9 and 10.

West York and York Township, at Yorkville, October 22 and 23.

East York and Markham Township, at Unionville, Markham, Oct. 9.

Ancaster Township, at Ancaster, Oct. 3.

Peel County, at Brampton, 17 and 18 Sept.

City of Toronto Elec. Div. Society, and Toronto Mechanics' Institute, Union Exhibition, commencing Oct. 7, and to continue for two weeks.

North Oxford and Ingersoll, at Ingersoll October 9.

Eramosa Township, at Jones' Inn, Eramosa, October 8.

Erin Township, Erin Village, Wednesday, Oct. 16.

Woolich Township, at Conestoga, Tuesday, Oct. 8.

North Leeds and Grenville, Frankville, Wednesday, Oct. 5.

South Simcoe, at Bradford, Thurday, Oct. 3.

Bayham Township, at Staffordville, Saturday, Oct. 15.

West Gwillimbury, at Middleton, Thursday, Oct. 10.

Northumberland West, at Cobourg, Wednesday, Oct. 16.

King Township, at Bowmanville, Oct. 11

Whitby Township; at Oshawa, Thursday, October 17th.

Oro Township, Bell's Tavern, Penetanguishene Road, October 3rd.

[Secretaries of Agricultural Societies will oblige us by informing us of the days on which their shows are to take place.—Eds.]

Horticultural.

Toronto Horticultural Society.

THIRD EXHIBITION.

The third exhibition of the season, under the auspices of the Toronto Horticultural Society, was held yesterday afternoon in the Botanical Gardens, Gerrard Street, and attracted a very large and fashionable attendance of visitors. The flowers, fruits, and vegetables were exhibited in a mammoth tent erected at the head of the gardens, and everyone was of opinion that the Fall Exhibition this year was superior to that of any previous year. Every season, new and rare plants and flowers are introduced, and the Exhibitions of the Society, as they deserve to be, are decidedly popular. The centre tables were appropriated for flowers, and presented a most brilliant appearance, the colors harmonizing beautifully. There was a fine display of Phloxes, and Mr. John Gray, Lake View Nurseries carried off the first prize, and Mr. George Lesslie the second. One of the great attractions for the visitors, however, was the large assortment of beautiful Dahlias. In this department, Mr. George Lesslie, Mr. Fleming, and Mr. Eccle were the principal exhibitors. The first named gentleman carried off both the first and second prizes. Mr. John Gray exhibited some very fine double Petunias. new varieties, and newly imported into Canada. They were universally admired, but the judges awarded the first prize to Mr. Gzowski for single varieties, Mr. Gray obtaining the second prize. In Verbenas Mr. Forsyth, Normal School, Mr. S. Heward, Mr. T. Tilman, and Mr. Gray, were the principal exhibitors. The latter gentleman had on view twenty-four varieties, (named,) all newly imported. Mr. W. H Boulton showed a few good specimens of foliage plants, and also some fine Cockcombs. In Achimenes, Mr Gzowski and Mr W. H. Boulton were competitors, the specimens shown by each being very fine. The display of Greenhouse plants was not large, and there were few competitors in this department. Judge Harrison carried of the first prize, and Hon. J. C. Morrison the second prize. Mr. Morrison also exhibited a very pretty stove Orchis, growing in moss, which was highly commended. Mr. J. Fleming had on view three varieties of the Gladiolus, a very showy and handsome plant which attracted much attention. In Annuals Mr.

Forsyth, of the Normal School, bore away the palm There was a good display of beautifully arranged hand and table bouquets.

FRUIT.

In this department the fine display of grapes requires to be first mentioned, and certainly finer grown grapes were never shown in Canada than those on exhibition yesterday. Crowds of persons lingered near them for hours, and all saw something to praise. The clusters were large and luscious. Three bunches belonging to Mr. H. Eccles weighed in the aggregate no less than 121 oz. Hon. Mr. Cayley exhibited five varieties grown in a cold grapery, the clusters weighing from 32½ oz. to 47¼ oz. Mr. C. S. Gzowski carried off the Vice President's medal for eleven varieties, while Judge Harrison and Mr. W H. Boulton exhibited specimens which were greatly admired. Near the middle of the centre table was a very fine grape vine in a pot witth six large clusters, and was from the nursery of Mr. John Gray. Hon. J. H. Morrison also exhibited a handsome grape vine in a pot. The display on the tables gave ample proof that all kinds of grapes can be profitably cultivated in Canada. The number of peaches was not very large, and those exhibited by Judge Harrison, and Mr. D. L. Macpherson presented a fine appearauce and gained the prizes. Mr. W. H. Boulton and Judge Harrison were the principal exhibitors of nectarines, while some beautifnl plants were shown by Rev Edmund Baldwin and Mr. H. Eccles. There were many varieties of apples on the tables, but none of them calling for special mention. The pears were fully up to those of last year. Mr. John Gray, Hon. Mr. Allan, and Mr. R. Hibbard excelled in this department.

VEGETABLES.

While great attention appeared to have been paid to fruits and flowers, the tables yesterday gave ample evidence that the kitchen garden had not been neglected; and, although a pretty young lady asked her mamma, "Who would be so vulgar as to look at onions?" the visitors gave much attention to the vegetable department. On the tables were a very fine collection of mammoth cabbages, turnips, onions, potatoes, beets, cauliflowers, tomatoes, sweet corn, vegetable marrow, celery, parsnips, and salsify, and, as usual, there was a large number of exhibitors. In potatoes, Mr. C. S. Gzowski gained the first prize, and Mr. Tattl the second. In cabbages, Mr. Wm. Burgess was the successful competitor, while Mr. T. Tillman gained the prizes for red cabbages. Mr. Edward Lewis, and Mr. Tattle showed some very fine cauliflowers, and the last named gentleman also exhibited a few large specimens of beets and tomatoes. The onions belonging to Mr. George Vear were awarded the first prize, as was also the sweet corn belonging to Mr. E. Lewis, and the large vegetable marrows exhibited by Mr. H. Eccles. The Judges in almost every department appeared to have considerable difficulty in giving their decisions, owing, no doubt, to the excellence of the various specimens exhibited.

The splendid band of the 30th Regiment was in attendance in the pavillion from four in the afternoon till half-past six o'clock in the evening, and performed the following well selected programme, under the able leadership of Mr. Weston, Band Master:—

March—
Overture, "Masaniello"—*Auber.*
Waltzes, "Donna Julia"—*Laurent.*
Selections, "Bianca"—*Balfe.*
Galop, "Submarine"—*D'Albert.*
Selections, "Atilla"—*Verdi.*
Quadrilles, "Zurich"—*D'Albert.*
Overtures, "Stradella"—*Flotow.*
Mazurka, "Jager"— ———
Selection, "La Traviata"—*Verdi.*
Waltzes, "Queen of the West"—*Coote.*
Galop. "Leviathan"—*D'Albert.*
"God Save the Queen."

During the performance of the several pieces the visitors assembled in the pavillion or promenaded in the grounds, which, at the present time, present a most beautiful appearance. Taken as a whole the Exhibition may be pronounced one of the most successful of the many given under the auspices of this well-managed and popular Society. The weather was all that could be desired.—*Globe.*

Asparagus.

To the Editors of Agriculturist.—Will some one of your able and respected Horticultural correspondents be kind enough to answer the following questions, regarding the required treatment of the above valuable vegetable?—

Is it necessary that the stalks of the above root should remain on till they wither, and the balls of the seed turn red, before they are cut down?—or will the root suffer if the stems and seeds are cut whilst quite green? Beds 3 and 4 years old, and plants very luxuriant.

Also, *how late* in the fall may it be safe and judicious to pull old beds to pieces, and transplant the roots into new ones?

Respectfully yours,

A Subscriber.

Co. Wellington, Sept. 13th, 1861.

[We shall be obliged if some of our horticultural readers will furnish us with an article on the culture of Asparagus generally. The usual practice of allowing the stalks to get yellow before cutting them off, is no doubt well founded, for if cut green the stock would in some degree

become weakened, as a fresh effort of growth would commence. October is soon enough for cutting and manuring the beds. Autumn planting of Asparagus is not to be commended, as severe winters are likely to affect the roots Spring is by far the best time for making new beds;—taking care to have all the needful preparations completed as early as the season will admit.—Ed.]

Buying and Planting Fruit Trees.

The subjoined communication is appropriate to the season. The time for fall planting of apple and other fruit, as well as ornamental deciduous trees will arrive in a few weeks. When farmers or others incur the expense and labor of purchasing and setting out trees they ought to take some little care that the trees are of a good kind, of sound growth, and adopted to the climate in which they are expected to live. In this connection, we are well informed that since a great check has been given to the nursery business in the United States by the unfortunate state of politics there prevailing, large numbers of agents have perambulated this Province in nearly all directions asking for orders in this branch of business. This would not be so very bad, if these agents were really what they pretend to be, the employees of respectable nurseries. But in fact many, if not the most of them, are mere speculators, who take the orders at high prices, and afterwards purchase the trees for their customers any where he can get them at cheap rate, without caring whether they are likely to grow, or whether they are the kinds they profess to be or not Some of these pretended Agents represent themselves as the employes of Canadian nurseries, such nurseries in not a few cases existing only in the fertile imagination, or the showy placards of the agent. We have actually seen handsomely printed catalogues, probably representing some genuine nursery in the United States, which by the ingenious device of merely printing a new outside cover for them were made to duty for some flourishing Canadian nursery, in some well known township, such nursery as before said having no real existence at all.

However, the orders taken and the purchaser supplied by cheap and unreliable importations from abroad as in the other cases. It should be recollected also that many of the trees produced in the Rochester and adjoining nurseries were intended for the southern market, and although they may be very good for that purpose, they are not equally adopted to a colder and more northern climate, where in consequence of the southern market being closed to them, they are now liable to be brought in large numbers at a cheap rate.

We think there are several good reasons for resorting to our own Canadian nurseries, where the article desired can be obtained, rather than to those out in the country. We have many respectable nurserymen in Canada, from whom trees that may be relied upon can be obtained We need only mention here Messrs. Leslie and Grey, of Toronto, Beadle, of St. Catherines, Bruce and Murray, of Hamilton, Lovekin, of Newcastle, Arnold of Paris; but their are doubtless many others whose names do not now occur to us. However, if any person intending to plant trees, prefers applying to foreign nursery, we should recommend sending the order direct to some well known respectable establishment rather than to trust to perambulating agents.

Setting out Fruit Trees.

Editor of Agriculturist.—As the time approaches, when persons having orchards and gardens may be desirous of obtaining fresh supplies of fruit trees, will you allow me through the medium of your paper, to say a word of caution to the public with regard to the parties from whom they purchased.

In this neighborhood we have suffered much disappointment, through the impositions practised by men representing themselves as accredited agents of respectable Nursery Establishments in the States, but who doubtless have assumed the post with authority, as it cannot be possible that any upright establishment could send out such trash under false labels as they disposed of. Latterly, experience has rendered us more guarded, and we have found perfect satisfaction in our dealings with Dr. Beadle whose Nurseries are near St. Catharines. His agents are all intelligent, respectable young men, most pains-taking in attending to orders. His trees plants, &c., well grown and vigorous, true to their labels, carefully packed, and punctually delivered on very moderate terms, and heartily do we wish our accommodating and honest friend every success.

Yours very truly,
Thos. Greene.

The Dairy.

Milk.

We might fairly expect that milk would be exceedingly rich in nourishing materials, since it is the first food tasted by all ranks of mamalian animals, and the food upon which they make most progress in the shortest time. The constituents of milk are much the same in all species of mammalian animals, the difference in the quality of milk depending on slight differences in the proportions of the constituents. A cow's milk

; that almost exclusively employed in the ntry for the preparation of the dairy produce e following remarks apply more particularly to is kind of milk. We shall better understand ese remarks by first observing the general com- sition of milk, which may be represented as llows:—

COMPOSITION OF MILK.

	Cow's Milk.	Ass's Milk.	Human Milk.	Cream.
ater.....	87.04	91.65	88.80	62.50
seine.....	4.26	1.80	3.82	5.62
ter.....	3.13	1.12	3.04	30.58
gar.....	4.77	5.03	4.20	trace.
n. constituents	.80	.40	.14	1.30
	100 00	100.00	100.00	10-000

t is the fat or butter of milk that imparts its haracteristic white, opaque appearance. The t occurs in a multitude of little globules, which, stributed throughout the substance of the id, gives rise to its peculiar white colour The e globules being slightly lighter than the fluid which they float, slowly rise to the surface on nding, and form a layer, more or less thick, hich we call the cream. By suitable means whole of the fat-globules can be removed, d a transparent liquid obtained, which contains the other constituents of the milk. It is oft- supposed that the cream is not the essen- l part of the milk, and we hear of its being en to children in the belief that it is a kind concentrated milk of superior nutritive value. is, however, is not the case; cream is only m fatty substances, and its use in our sys- is much the same as is performed by the fat meat. Indeed, we may say, that cream or the tter is to milk what fat is to meat—viz., that rtion which furnishes respiratory material.— e may, however, regard it as a superior and re highly-organized kind of fat, since it ap- oaches more nearly to the kind of fat occurring our own bodies. The market prices of new skim milk are quite disproportionate to the lative nutritive value; since the latter, having t nothing but its cream (a material for which er substances could be easily substituted) is little inferior in point of feeding qualities to milk; and where, as in many country districts milk, of better quality than that frequent- supplied in town as new, can be had for a lfpenny a quart, a more extended use of it ongst poor persons would be greatly to their vantage. In milk from which the cream has n removed, the other constituents may be arated as follows:—On the addition of a few ps of hydrochloric acid, or of vinegar, the ine, or cheesy matter, separates in flocculent es. When this is removed by straining, we e left in solution the sugar and the greatest of the mineral salts, which may be obtain- by evaporation, or boiling off the liquid in a bath until it dries up, The casein is, perhaps, the most interesting of the above- named constituents of milk. Casein is one of the group of plastic elements already spoken of as the flesh-forming materials of food. It resem- bles very closely, in its chemical properties, the gluten of grain, or the fibrine of flesh. We have also mentioned the close relation that ex- ists between the casein of milk and the vege- table casein of peas, beans, and other legumin- ous products. The mineral elements of milk are exceedingly rich in phosphoric acid, a substance especially necessary in the development of the bones of the young animal it is intended to feed, with the other salts of food.—*Gibbon's Every-Day Chemistry.*

The Royal Dairy, Frogmore, Windsor.

A new dairy has been constructed at Frog- more, near the lodge, for her Majesty and the Prince Consort. It stands upon the site of an old cottage, and contiguous to the Royal Aviary and Model Farm. The dimensions within the walls are 37 feet 7 inches long, 23 feet wide, by about 23 feet high to the flat of the ceiling. The walls to the spring of the sloping part are 15 feet high. The length is divided into four bays, and the breadth into three bays, by six columns of an octagonal form, made of timber, as is all the frame work, neatly coloured, decor- ated, and enamelled. The capitals of the col- umns are carved, and enriched with colour. The walls are surrounded with white marble tables, supported on marble shafts, inlaid with English and Belgian marble. Beneath these are reservoirs of a bluish encaustic tile; these re- servoirs are to contain a flowing stream of cold water. The walls are lined with tiles of a deli- cate tint and pattern, surrounded with a green border. There are ten windows, each filled with stained glass, carrying a border com- posed of the may-blossom, daisies, buttercups, primroses, &c. Opposite the windows, on the side, are slight recesses, made to correspond in richness. Between these, and between the win- dows, are delicate bas-reliefs in majolica, of agri- culture subjects, and the four seasons. Below these bas-reliefs are a border of richly coloured tiles, which continues round the heads of the windows and recesses. Above this is an elegant frieze in majolica, having a rich scroll pattern with medallions, containing portraits of her Ma- jesty the Queen, H.R.H. Prince Albert, and the whole of the Royal Family, at equal distances, and relieved by shields, with monograms. The ceiling above the cornice is painted with a deli- cately-pencilled pattern, enamelled, to corres- pond with the frame work. There are two fountains, one at each end of the room, in maj- olica ware, of similar design, composed of a large shell supported by a heron and bulrushes. In this shell rises a Triton, supporting another

but smaller shell. from which issues the jet of water In a niche in the wall opposite to the window is a little figure in marble, holding a vase, from which flows a stream of water into a majolica basin. The whole of the floor is laid with encaustic tiles of a rich pattern. The flat of the ceiling is filled with compartments of perforated majolica tiles, for ventilation. This charming apartment owes much of its elegance to valuable suggestions from her Majesty and the Prince Consort during its progress. To Mr. John Thomas, of Alpha-road, are due the design and decorations. Messrs. Minton were the manufacturers of the majolica ware and tiles. The ventilation was the work of Mr. Watson, of Halifax. *The whole has been carried out under* the careful superintendence of Mr. Turnbull, of Windsor Castle.—*Builder.*

Song of the Dublin Dairyman.

They may boast of Ayrshires, and Jerseys and Kerries,
And brag how good each of them is for the pail;
But I'll tell you what, boys, it's all bosh, and there is
No cow like the cow with the good iron tail.

In winter and summer, at all times she's ready;
Though others go dry, her supplies never fail;
No turnips nor oilcake, no hay needs that lady
Who stands in our yard with her old iron tail.

Teetotallers tell us there's nothing like water—
That it's better than whiskey, or porter, or ale:
That the more we drink of it, the more we'll get fatter;
So, hurrah! for the cow with the good iron tail;

Then sure they can't blame when we follow their practice,
When we go to the pump to help out our sale;
So good people believe me, I tell you the fact is
No cow's like the cow with the old iron tail.

She's both meat and drink to myself and the childer;
She's fed us and clothed us; of rent paid each gale;
But you're vex'd I would [illegible] your head [illegible] bewilder
If I told all she's done with her old iron tail.

General Chorus, with grand accompaniment on empty milk cans.

Hurrah for the cow with the iron tail?
Good luck to the cow with the iron tail!
Though others go dry, the supplies never fail
From that wonderful cow with the iron tail!

Veterinary.

The Horse.

The history of the horse spans the distance between remote epochs. He has seen many changes come over the face of the earth, and his enduring powers have experienced without injury mutations of temperature that have destroyed other genera, or driven them to warmer latitudes. In nearly every region of the world, and at various depths of the earths' surface, *his bones are found with strange and diverse bedfellows.* In Polar ice, with the Siberian mammoth; in the mountains of the Himmalaya and the caverns of Ireland; in the caves of the elephant, rhinoceros, tiger and hyena; n Sevion at Argenteuil, with th mastodon; in Val d'Arno and on the borders the Rhine, amid colossal urns, he has taken h long rest. His grave is everywhere, and ever where also his share of usefulness. The frier and servant of man under an infinite variety conditions and circumstances, he takes part the achievements and glory of his master. I honor and dishonor, triumph and defeat, del cately tended at Newmarket or munching a scar meal on the roadside, winning the Derby c drawing a dust-cart, dying on the field of batt or surrendering his life a needless victim t science under the cruel knives of the veterina professor at Alfort and Lyons, who demonstrat *equine anatomy to their pupils,* twice a week fo seven hours a day, by the interesting process c *vivisection*—the noble brute offers many affe ing points of resemblance to the chequered li of his tyrant.

The Emperor Caligula treated him worthil creating him a high priest and consul, assi gnin him a marble palace, and decking him with ra pearls and the costliest garniture that the enti Roman Empire could furnish. Lord Byr would fain have had his bear the recipient of th highest academic distinctions of Cambridge; the last century an English gentleman did act ally seduce the authorities of a German Univ sity into conferring an M.D. degree on his d Ponto; but we are not aware that any mode enthusiast has reduced Caligula's cynical affe tion for his steed. The creature has not, ho ever, been without him in death. Sir Franc Head speaks of our equestrian statues to Charl the First, William the Third, George the Thi George the Fourth, and the Duke of Wellingto *but he omits to observe that until recently th* equestrian statue was kept in this country, as is still in some States, as the peculiar honor Royalty. Alive the horse might serve the m ignoble; but dead, he might be matched on with kings.—*Athenæum.*

Docking and Nicking.

These barbarous methods of depriving t horse of his natural form and appearance, order to made him conform to the fashion of t time, is, fortunately, very fast going into d use. If the tail of the horse were given him f no good purpose, and if it were not a desig of nature that he should have the power moving it forcibly to his sides, there might some excuse for cutting it off, within a fe inches of his body, or for separating t muscles at its sides to lessen this power; bu that this is not the case, must be acknowledg *by all who have seen how a horse,* whose t has been abridged by "Docking," or weake by nicking, is annoyed by flies.

If a horse has a trick of throwing dirt on rider's clothing, this may be prevented by c

ting of the hair of the tail, below the end of the bones, as is the custom with hunters in England, where the hair is cut squarely off about eight or ten inches above the hocks.

No apology is offered for not giving here a description of these two operations; they are so barbarous and so senseless, that they are going very rapidly out of fashion, and it is to be hoped that they will ere long have become obsolete, as has the cropping of the ears, formerly so common in England.

A more humane way of setting up the horse's tail, to give him a more stylish appearance, is by simply weighting it for a few hours each day, in the stall, until it attains the desired elevation. This is done by having two pulleys at the top of a stall, one at each side, through which are passed two ropes which come together and are fastened to the tail, the ropes having at their other end weights, (bags of sand or shot are very good for the purpose) which must be light at first, and may be increased from day to day.—The weighting should be continued until the tail has taken a permanent position as desired. It is true that this method requires a somewhat longer time than that of cutting the muscles, but while it is being done the horse is never off his work, and he suffers infinitely less pain.

The method of nicking or pricking, as usually performed in this country, is not quite so cruel nor so hazardous as the cutting of the muscles.—*Herbert's Hints to Horse-Keepers.*

Transactions.

Report on the County of Bruce.

(*Continued from page* 539.)

AGRICULTURAL SOCIETIES.

These are the next institutions that command our attention. There is a county society, with several township branches. They are so much like all others in the county, they need no description. They are all composed of a President, Directors and Members, they pay their subscriptions, obtain the government grant, and divide it as equally among themselves as possible. Now and then there is some grumbling when some party gets rather more than his share, and a successful candidate thinks he might have a few prizes more than are awarded to him. He is very much dissatisfied and threatens to withdraw, but somehow or other he repents before the time for subscribing has expired, and holds on for another year. After the first two or three years every man gets the same prize for the same kind of stock, grain, roots, vegetables, and manufactures, and there is little improvement effected in the practice of agriculture.

At a meeting of the Directors, one time, there was a preposition to apply the funds of the society to purchase a superior bull for use of the members; another proposition was made for the introduction of flax; prizes were offered for the best tilled farm, for the best tilled gardens, but none of these measures resulted very satisfactorily.

That agricultural societies have been of incalculable benefit to the country no one can deny, but the principles of a society that would work very well in the Home and Gore Districts would be but ill suited to a green bush county. But a system could be adopted to suit both. Every Township should be a society of itself, the council should be the board of directors, the funds should be levied by general taxation. Prizes should only be awarded for the working of the soil, such as Draining, Trenching, Subsoiling and Manuring. The competitors should be of two classes, first on a large scale with the plough, second on a small scale with the spade. Seeds of the best kind should be procured for every one that required them, and that would be every one in the Township, for when they understood that they were paying for them they would take them whether they would sow them or not. In like manner if every one was compelled to contribute funds for the promotion of agriculture they would all endeavour to reap some benefit from it.

But there must be some particular rule laid down for their guidance, some established principle that if rightly carried out cannot fail of success. As long as the potato succeeded in Ireland nothing could induce the people to try any thing else in the shape of root crops, and although they had ample warning, they headed it not. In the year 1836 the blight first made its appearance and it was not until 1857 that it reached the roots. Then and then only would they be convinced that the potatoe was not to be depended on, nor was it until millions had died that they were roused to any exertion to provide a substitute. But the people of Ireland are very differently situated from the people of Canada, as every one in Ireland has to rent the land he labours for the very highest price the landlord can obtain for it, and that varies from $5 to $25 per acre per annum, exclusive of other taxes. From this you will see that the tenant has but a very scanty subsistence

for himself and family, and that consists or rather did consist of potatoes, oatmeal, sour coarse bread made from the worst of the wheat or barley, with some salt meat, more or less, according to the means of the land holder.

The most that these people could do was to live from year to year, without anything to spare. Then what must their situation be when their only hope was swept away at one swoop. The landowners were first applied to, but they were in a very little better condition themselves. Those that had the means fled to America, and those that had nothing remained to die of either famine or disease.

The government, as soon as they were convinced of the state of affairs, lost no time in rendering assistance in the shape of loans of money, to be expended in draining, and improving lands. Root crops were cultivated, and carrots, parsnips, turnips, and mangel wurzel were grown by people that would as soon have thought of growing lemons or oranges three years previously. In the year 1836 turnips were scarcer than apples: none but estated gentry would attempt to cultivate them, such as had £2000 or £3000 a year.

The reason the Irish peasant does not like to try experiments is this: he is ruined if they fail, and as long as the article that he is acquainted with does, he is enclined to let well enough alone. On the green and root crop system he can do more on 10 acres than he could on 20 before, even when the potato suceeded to his utmost wishes. On 10 acres of land of average fertility the tenant can keep 3 cows, 1 brood mare, and fatten 18 cwt. of pork on the same ground on the old system 2 cows, 1 horse, and 8 cwt. of pork was all that could be kept in it.

Now at this present time the gentry are working heaven and earth to get every one to sow flax, as Great Britain pays over *£3,000,000 sterling per annum for flax, hemp,* and seeds, to foreign nations. This in time of peace, is enormous, and what would it be in war, when the demand is infinitely greater and the supplies altogether stopped.

The Canadian, in like manner, while the wheat crop flourished, would think of nothing else. The native might make a little potash, but this the old countryman, unless he is near those that can give good assistance and advice is sure to run himself at. But the wheat crop is sure to fail, as well as the potatoe, if it is pressed too hard, and sown too often in the same ground without manure. It is true this year there are a good many turnips grown, but that is because people were terrified about the grain crop as well as the hay. But there are no root houses for their reception, and there is no doubt large quantities will be frozen, and, if they are not frozen in the pits, the house, the cattle are kept in are so open that they would be partly frozen while stored in them, and from this the old settler would consider that turnips are not the things for Canada.

But, it is not so; there is no country in the world better adapted for the growth of root and green crops than this. Our winter frosts are better pulverizers than all the instruments and implements that ever were turned out of all the mechine shops in England. When our land is properly drained the small seeds can be sown as soon as the frost leaves the ground, and that will be three weeks earlier than in undrained land. Parsnips, carrots, mangels can be sown any time after the ground softens; in sand especially, when sown early in the spring, they keep hold of the moisture all the season, which is a strong reason for sowing sandy land with plants having long roots. No one ever saw mulleions or burdocks fail yet, in the driest year that ever occured. Every thing with the same length of root will thrive equally well. Then there is the sun to scourge the weeds, cut them off to-day and by this time to-morrow you will not know that such a thing had ever existed. The parsnip should be the staple root of Canada; no heat can injure it while growing, and the hardest frost only improves it, they can be grown to any size with the help of deep digging and manuring. Seventy five bushels of parsnips are worth 100 bushel of potatoes for feeding purposes, and then there is the advantage of labor. The root crops are in the first of April. Peas, wheat, and oats, between April and *the first week in May. Flax, second* week in May. Weeding and sowing turnips first two weeks in June. Cutting hay and weeding the two last weeks of July. Haying, weeding, and cutting fall wheat and peas, pulling flax and harvesting spring grain August and September. Manuring and sowing fall wheat, October. Trenching and taking up the tenderest roots November; finishing the roots, December, this month and the next are mostly spent at short jobs; the flax should be cleaned in February; March, manuring and preparing for spring grain. But many

will ask what will you do with all this stuff you propose raising? you can't sell roots or vegetables to any amount in this country, Granted, but you can fatten beef, pork, geese, turkeys, ducks, and fowls. You can send them to any of the provincial markets, and after a little while you can send them to England, where they fatten all the beef on turnips and oil cake. If every farmer in Canada was to turn his attention to stall feeding, and flax and hemp growing, our railroads and ocean steamers would pay the best of any in the world, after a little time they would take freight, dead and alive, with no more trouble to the producer than taking it to the railway depot, and directing it to where he wishes to have it sold, just the same as if he were living in Ireland or Scotland.

There is another feature in this kind of cultivation. Any one enjoying average health from seven years old to seventy, can be of use. The inmates of all the poor houses in the United Kingdom could be sent out with advantage to all parties. The second year after this system became generally practised, one acre of flax and hemp to every hundred occupied in Upper Canada, would produce the quantity required by Great Britain: and this much would in no wise interfere with the growing of wheat. The only opposition set up against flax growing is the want of machinery to clear it. This, I think, could be very easily supplied. The breaking and scutching apparatus, I am told, are very simple, and both could be driven by the horse power of a threshing machine. Motion is all that is wanted; power is only a secondary consideration.

If the Government, or Crown Lands Department, would furnish seed to the settlers on unpaid lands, and in a manner compel them to sow an acre of flax or hemp to every hundred they held, and protect it from seizure for any debt, past, present, or future, excepting arrears on the land, there would not be an unoccupied lot but would be paid for inside of five years.

The land in this county is admirably adapted to the growth of flax. The townships of Huron, Kincardine, Bruce, Saugeen, are composed of the following kinds of soil. Along the lake shore it is principally white sand from the water's edge to the high ground, which is erroneously called the clay banks, and which rises from 50 to 100 feet above the level of the lake. These flats extend the full length of the county, sometimes running as far as two miles in from the lake. This land is but seldom tilled. One crop is the most ever taken off it. The practice of burning in the drought of summer is very injurious, as it destroys all the vegetable matter that has accumulated for years. Yet any of it that it is possible to remove the stones off of, would give good crops of flax, hemp, beans, peas, onions, &c., when manured with the marl to be found on the banks above it. Where these flats are composed of the finer sands, they grow roots of extraordinary size, with very little indulgence in the way of other manure and weeding. It is a lamentable fact that the finest manure that ever was applied to land, is only known in this part of Canada by the contemptuous name of "clay," manures that is provided at an expense of $60 per acre in the Old Country, and land possessing it would rent for $15 an acre, when land not near it would not rent for $5. For sand or mucky land there is no manure equal to it. Limestone can likewise be had in any quantity on these shores. This too is sadly neglected as a manure. When you mention it to any one he will tell you that there is too much lime in the soil already. Now although this may be the case, which I very much doubt, it will not do the crops much good. All raw materials must be prepared before it can be of any perceptible use. On top of this bank the soil varies between a stiff clay and sandy loam in different localities; the marl is within from a foot to eighteen inches of the surface, so that it may be said that it cannot be worn out with proper cultivation. But drained it must be, for the marl is so impervious that if the water cannot run off it, it lies there until the sun and wind dry it up. Between six and eight miles from the lake there is a strip of sandy land from about two miles in breadth. East of that it is a rich clay loam in some parts, and warm limestone gravel in others. All the back townships are of the latter description. On the whole it may be said that marl and lime can be had in abundance in any part of the county. And if every farmer were to underbrush his wild land, clean the surface so that he could rake the leaves every year just before the snow falls, he would have abundance of manure for the clay land. Old rotten logs broken fine, or even sound timber piled so as to rot, would benefit land that can only be ploughed at certain seasons, and there is a great deal of that kind in Canada.

Where the settlers in the County of Bruce are of a mixed kind, they are almost as prosperous as any in the province. Where they have come out from the old country in large numbers it has a very injurious tendency, not because of their indolence or extravagance, but their ignorance of every thing connected with the country. Let any person look at their situation in the country they come from; they are made to believe that if they can provide enough of the very coarsest food and clothing to keep body and soul together, that they should be very thankful. Thus they live from year to year, and day to day, not daring to have an opinion of their own about any thing—true they have but little to have an opinion about, depending on the lords of the soil for what they exist on—till they are sent out to Canada. These emigrants are told that there is every thing waiting for them here that can be desired; if once landed, they will know no more distress, full employment at the highest rate of wages they are sure to get. Now let us see what are the qualifications of these emigrants for high wages. One has never done any thing but fish, another is a shepherd, another has never done anything but dig, or thresh with a flail. Few, if any, can do more than one kind of work, and that at a very slow rate.

It is well known, however, that in the Old Country, where labourers are plenty, and farms are large, there is one or two men for every description of work, while in this country one man must do every description of work. Those people arrive in this country by hundreds, and keep together in one body, expecting the work and wages so lavishly promised them before leaving home. Instead of that, very few settlers suffer them in their houses, and in a general way they do not seem to be wanted in the country, except when public works are going on and men exceedingly scarce. Their only resourse is to go to some new country in the heart of the bush, of which they are totally ignorant. They take up a hundred acres of land each, with as much coolness as if they were the grandchildren of those that fought at "Bunker's Hill on the Royalists side," and there they remain, in distress themselves, and a burthen to those who are better acquainted with the nature and necessities of the country. The practice of allowing people fresh from the old country to go right into the bush cannot be too severely censured. Criminals are not allowed to go at large; it has been the complaint of philanthropists that convicts are better fed and clothed than thousands of poor people out of doors. Our penitentaries are held up as models of cleanliness and comfort and if I am rightly informed contribute to the revenue. Now, if an institution like this, that we are obliged to keep, pays its expenses, why should we not have some establishment of a different nature to prepare those destitute and helpless people that are thrown on our shores, in order to qualify and enable them to make a decent and independent living for themselves? There are thousands of acres of wild land in different parts of the provinces where there might be a portion set apart for the reception of such immigrants as choose to go and spend one year without wages, but merely to learn how to do every thing that is required to be done, in improving and working the land in this country. Able bodied men should be chosen as stewards or teacher, for it is only teaching at any rate. The men should be taught to chop, log, split rails, make shingles, build log houses, dig, trench and drain the land, and sow all kinds of seeds and vegetables. The ignorance of the use of vegetables is a sad misfortune to these people. One-fourth of an acre of carrots, parsnips, cabbage, potatoes, and onions, would keep a family of five or six for several months in the year. A stew made of equal quantities of these vegetables, properly seasoned with pepper and salt, and eaten with sweet milk, or butter, in the absence of meat, would make a very palatable and nourishing diet.

The women should be taught to wash, bake, knit, and sew, and all kinds of plain cookery. One year spent in this way with competent teachers, would enable the immigrants to go on land of their own, say, each man a piece of 25 or 50 acres, which should be granted to him, and which he should be compelled to till on the most approved principles, if he did not prefer going to work with a farmer in case he could get employment. Asylums of this kind are sadly wanted at the completion of public works, and the poor about large towns could be sent there in times of scarcity of both food and fuel, where they could be kept far cheaper and more comfortably than they are at the present time. Only by this, or some other system like it, will we ever be able to turn the class of emigrants that stop with us to any account For soldiers or sailors no finer men than these same

emigrants are to be found in the world, but they don't make either without being trained; and it takes infinitely more training to make a farmer than a soldier, although many do not think so. By this system a township could be settled at once. I do not mean the township set apart for training, but one settled by those that are trained, and able to go on land for themselves. As bad roads are the greatest obstacle the new settler has to contend with, I shall describe a very simple mode of making a very serviceable road, and one durable for a long time. Except 16 or 20 feet in the middle of the road allowance there should not be a stick chopped on it until it was going to be done altogether, then after chopping the width the road was to be, say 21 feet, collect all the brush that can be got within reach, and spread, and chop fine as possible, tread it down close, and cover from a ditch on either side of the road. If the land is very rolling or of a gravelly nature, I need not say the brush is not needed, but where it is of a level or a swampy nature you can't have too much of it. This prescription for road making may provoke the smile of an engineer, but I have seen pieces of roads made in this fashion that lasted for 10 years, and were good in fall when all the rest were impassable.

If our roads are drained, our farms must be drained, and if our farms are not drained neither can our roads, and once more I will say, that without draining, fencing, subsoiling, and manuring, we can never be the great people that orators would try to persuade us we are. To make a great nation, the individuals in it must be wise and industrious.

Miscellaneous.

GIGANTIC SERPENTS.—We have all been accustomed from childhood to regard with awe the enormous serpents of the hot and damp intertropical forests; though the specimens carried about in travelling menageries have but little contributed to nurture the sentiment. A couple of coils of variegated mosaic, looking like a tesselated pavement, about as thick as a lacquey's calf, rolled up in the folds of a blanket at the bottom of a deal box, we had difficulty in accepting as the impersonation of the demon which hung from the branches of an Indian tree, and, having pressed out the life of a buffalo in his mighty folds, and broken his bones, swallowed the body entire, all but the horns. Here again there is incertitude and disappointment; and the colossal dragon, which looms so large in the distance of time and space, grows 'small by degrees and beautifully less' in ratio of its approach to our own times and our own eyes. Yet enough of size and power remains, even when all legitimate deductions are made, to invest the great boa with romantic interest, and to make the inquiry into its real dimensions worthy of prosecution. * * * The old Roman historians report that the army of Attilius Regulus, while attacking Carthage, was assaulted by an enormous serpent, which was destroyed only by the aid of the military engines crushing it with huge stones. The skin of this monster, measuring 120 feet in length, was sent to Rome, and preserved as a trophy in a temple till the Numantine wars Several writers mention the fact, and Pliny speaks of its existence as well known. Diodorous Siculus mentions a serpent which was captured, not without loss of human life, in Egypt, and which was taken to Alexandria; it measured 30 cubits, or about 45 feet in length. Suetonius records that one was exhibited in front of the Comitium at Rome, which was 50 cubits, or 75 feet in length. It is probable that these measurements were all taken from the skin after having been detached from the body. I have had some experience in skinning serpents, and am therefore aware of the extent to which skin, when dragged off by force, is capable of stretching: one-fourth of the entire length may not unfairly be deducted on this account. But even with this allowance, we must admit, unless we regret the testimony of sober historians, who could hardly have been mistaken so grossly as to warrant such rejection, that serpents did exist in ancient times which far exceeded the limits that have fallen under the observation of modern naturalists. There is a well-known picture by Danniell, representing an enormous serpent attacking a boat's crew in of the creeks of the Ganges. It is a graphic scene, said to have been commemorative of a fact. The crew had moored their boat by the edge of the jungle, and, leaving one of the party in charge, had gone into the forest. He lay down under the thwarts, and was soon asleep. During his unconsciousness an enormous python emerged from the jungle, coiled itself around the sleeper, and was in the act of crushing him to death, when his comrades returned. They succeeded in killing the monster, "which was found to measure 62 feet and some inches in length." This seems precise enough; but we should like to know

whether the measu cment was made by the Lascars themselves, or by some trust worthy European. A correspondent of the Edinburgh Literary Gazettee has told, with every appearance of life-truth, a thrilling story of an encounter which he had with an enormous boa on the banks of a river in Guiana. Awaked, as he lay in his boat, by the cold touch of something at his feet, he found that the serpent's mouth was in contact with them, preparing, as he presumed, to swallow him feet foremost. In an instant he drew himself up, and, grasping his gun, discharged it full at the reptile's head, which reared into the air with a horrid hiss and terrible contortions, and then, with one stroke of his paddles, shot up the stream beyond reach. On arriving at his friend's house, it was determined to seek the wounded serpent, and several armed negroes were added to the party. They soon found the place where the crushed and bloody reeds told of the recent adventure, and proceeded cautiously to reconnitre. Advancing, thus about 30 yards, alarm was given that the serpent was visible. "We saw through the reeds part of its body coiled up, and part stretched out; but, from their density, the head was invisible. Disturbed, and apparently irritated by our approach, it appeared from its movements to be preparing to attack us. Just as we caught a glimpse of its head we fired, both of us almost at the same moment. It fell, hissing, and rolling in a variety of contortions." Here one of the negroes, taking a circuit, succeeded in hitting the creature a violent blow with a club, which stunned it, and a few more strokes decided the victory. "On measuring it, we found it to be nearly 40 feet in length, and of proportionable thickness." I do not know how far this story is to be relied on; but if it is given in good faith, the serpent was the longest dependable example I know of in modern times. Still, "*nearly* 40 feet" is somewhat indefinite.—*Gosse's*

Relations of the Vegetable and Animal Kingdom.

"There is a ceaseless round of force mutation throughout nature," says the *Cornhill Magazine*, "each one generating or changing into the other. So that force which enters the plant as heat and light, &c., is stored up in its tissues, making them organic. This force, transferred from the plant to the animal in digestion, is given out by its muscles in their decomposition, and produces motion, or by its nerves, and constitutes nervous force—force stored up in the body—resistance to chemical affinity; this force produces directly from the solar rays. The solar rays cause those operations in the vegetable world, by which trees and plants absorb the carbonic acid gas which is expired from the lungs of animals, and by which those very plants also inhale pure oxygen gas during light, to revive the contaminated atmosphere and supply the lungs of man with the breadth of life. Trees and plants are essential to the health of the animal creation, and there is a mutual relationship between the two kingdoms. Respecting these beautiful and mysterious operations of nature, a distinguished writer has given the following literary gem:

The carbonic acid gas with which our breathing fills the air, to-morrow will be speeding north and south, striving to make the tour of the world. The date trees that grow round the fountains of the Nile will drink it in by their leaves; the cedar of Lebanan will take of it to add to the stature; the cocoa nuts of Tahiti will grow riper on it; and the palms and bananas of Japan change it into flowers. The oxygen we are breathing was distilled for us as short time ago by the magnolias of the Susquehana, and the great trees that skirt the Orinoco and the Amazon; the giant rhododendrons of the Himalayas contribute to it, the roses and myrtles of Cashmere, the cinnamon trees of Ceylon, and forests older than the Flood, buried deep in the heart of Africa, far behind the Mountains of the Moon. The rain which we see descending was thawed for us out of icebergs which have watched the polar star for ages, and lotus-lilies sucked up from the Nile, and exhaled as vapor, the snows that are lying at the top of our hills. Thus we see that the two great kingdoms of nature are made to co-operate in the execution of the same design, each ministering to the other, and preserving that due balance in the constitution of the atmosphere which adapts it to the welfare and activity of every order of things, and which would soon be destroyed were the operations of any one of them to be suspended. And yet man, in his ignorance and his thirst for worldly gain, has done his utmost to destroy this beauetous and harmonious plan. It was evidently the intention of the Creator that animal and vegetable life should everywhere exist together, so that the baneful influence which the former is constantly exercising upon the air, whose purity is so essential to its maintenance, should be counteracted by the latter.

THE GLACIAL THEORY.—On a large scale, for fifty miles along the west coast of Sutherland and Ross, there is a range of isolated mountains, of from 3,000 to 3,500 feet in height, standing widely apart from each other, and yet it is evident they have all, at some time, been part of one continuous formation. The large interspaces having been subsequently formed, the the question is, by what destroying force? and the answer is ice. Ample memorials of its agency exist along the mountain sides, and on the platform of gneiss-rock whereon the mountains rest. These memorials consist of longitudinal hollows, containing lakes, all in the same

direction as the major axes of the hills; and also of smoothings, scratchings, and transported boulders. Hitherto denudations of this kind have been attributed to water in its ordinary state: but it is evident that here (and elsewhere, as we can personally testify) to denude so vastly and so massively, the increased mechanical powers which water derives from congelation are necessary. There is, too, a marked difference between the dilapidations effected by water and those produced by ice. Water leaves all shattered and rough, confusedly scattered, and widely devasted: ice cuts sharply through mountain sides, saws them down, as it were, with its keen-edged scimitar, or wearing and wasting by stone-gatherings, it makes clean work in opening mighty gaps. But an undoubted proof of glacidal agency is that blocks are carried up-hill, contrary to gravitation, lifted above their original seats, and left oftentimes, as may be seen in the Welsh Pass of Llanberis, almost toopling over ridged eminences, or standing alone, like huge ice-pins, as if they had been set up by sportive titans, and needed but one Titanic bowl to hurl them down. Water-currents would never effect such transportations upward; whole cataracts could not have moved some of those glacial blocks one yard towards their present position. —*Athenæum.*

Meteoric Stones.—A number of the *Institut* journal supplies us with some recent cases of the fall of these mysterious visitors. At Trenzano, near Brescia, in Lombardy, there fell on the 19th of November, 1856, one which weighed 17lb. At Fort Peter, in the territory of Nebraska, North America, a piece of "meteoric iron," was found in 1858, weighing 30lb.; it was sent to the Academy at St. Louis. The Museum at Austin, the capital of Texas, possesses a mass weighing 320lb., composed of 89.9 of iron and 10.1 nickel; it is an object of superstitious veneration to the Indians. The same museum has a fragment of another aerolite, weighing 2½lb., consisting of 64 parts of iron, 5½ nickel, with traces of cobalt. On the first of May 1860, there was in Ohio actually a shower of acrolites, which fell with violent detonations in the three counties of Guernsey, Harrison, and Belmont. One block weighed 103lb.; several weighed from 50lb. to 60lb., and the weight of the whole was estimated at 700lb. But the most extraordinary of these bodies is one which was found buried in the soil near Rognes River, in Oregon, by John Evans, a gold seeker. Its weight is not given; probably it is still embodied in the earth; but it is said to surpass in size the famous mass of meteoric iron discovered by Pallas in Siberia, which weighed 14,000lb. A fragment of the Oregon aerolite, sent to Boston, was found to contain 4 per cent. of nickel combined with the iron.

What is Coal?—What is coal in its general classification, composed of? Carbon, hydrogen, oxygen and a small portion of saline ingredients. What is a piece of wood, or a pine, or a fern composed of? Carbon, hydrogen, oxygen, with water and a small portion of saline ingredients. Thus, the transition from vegetable to coal appears to consist principally in the loss, in the former, of the water or juices which constitute the sap of the plant, and which no longer living, it requires no more. Borne down by the flood, buried under the coral reef it slumbers through ages and ages under the continually-increasing pressure, till its juices being exhausted, its membranes are united in one solid mass, and the gradual process of eremacausis has connected foliage, trunk, and roots into one homogeneous body, undistinguishable to an ordinary observer, from its brother shale, found both above and beneath it in the mine. The point at issue between the scientific arbiters of this question raises our interest and excites our curiosity to know more upon a subject so fraught with mysterious grandeur; and when the distinction between our shales and coals, and other formations of the carboniferous era are more clearly defined, there will still be eager inquiries with each succeeding generation, "What is coal?"—*Once a Week.*

Sagacity of a "Colly" Dog.—That species of the canine, called the sheep or colly dog, is well known for its sagacity, and the following, for which we can vouch, is perhaps without a parallel. One day last week, Mr. Shaw, Achgourish, Kincardine, Aberneth, with his favourite dog "Chance," left for the purpose of what is called "the sheep gathering"—that is, bringing them down to a convenient place to be shorn and washed. They had not proceeded far, when Mr. Shaw, from indisposition, or some other cause, did not feel inclined to go up to the glen, and he told his dog to go away and bring down all the sheep, and that he would await his return. "Chance" instantly obeyed his master's orders, went up the glen, gathered all the sheep together, and came away with them exactly in the direction of his master. We may mention that "Chance's" movements were observed from the top of Craigourie by the hill pundler. Mr. Shaw, who waited patiently the return of his faithful servant, now saw the sheep nearing him to the west of Craigourie, and at this moment observed a hare getting up amongst them, and looking very bewildered. "Chance," taking opportunity of this, left his charge for a little, and took to the chase, and after some stiff work, succeeded in catching the hare. Mr Shaw called out to the pundler to go and take the hare from the dog. "Chance," anticipating what was to follow, surveyed with suspicion the pundler, who was fast approaching him. Yet not liking to do battle with one with whom he was on intimate terms, instantly threw the hare over his back, as being the easiest mode of carrying, brought with him the sheep with all speed, and

laid the hare at the master's feet. N t lat r than Friday la t the same dog was a ked by Mr. Shaw to go and keep the crows out of the p ta to field. This he did, and in about half an hour returned to the hou e with a live crow. It is supposed he concealed himself below the stems, and in this w y had caught it. We can vouch for the truth of the above. A dog of this kind would certainly be valuable, not only to sh p herds, bu to agriculturists, and we hope Ab gouris ts will preserve the breed. — *Banffshire Journal.*

SALT FOR CABBAGE.—A correspondent of the *Farmer and Gardener* tested the value of salt on cabbages, and with satisfactory results:—After planting them out, he watered them some two or three times a week with a salt water, containing about fifteen grains of salt to the pint. The cabbages grew beautifully, and headed up very finely; while those which had no salt water given them produced loose, open heads, which were unfit for any other purpose than boiling. Rain water was given at the same time, and in the same quantities, as the salt water. He does not know how strong a solution of salt the cabbages would bear without injury, but is fully satisfied that a solution no stronger than that he used is highly beneficial.

CAMOMILE.—In the Irish *Gardener's Magazine*, it is stated not only that a decoction of the leaves of the camomile will destroy insects, but that nothing contributes so much to the health of a garden as a number of the plants dispersed through it. No green house or hot house should be without it in a green or dry state; either the stalks or flowers will answer. It is a singular fact that if a plant is drooping and apparently dying, in nine cases out of ten it will recover if you place a plant of camomile near it.

FORKING BORDER—This is far better than digging them with a spade, as it injures less the roots of shrubs.—Indeed the fork has nearly superseded that old emblem of the Gardner's occupation—the spade. A four pronged fork for stiff soils, and a five pronged fork for sandy soils work them quite as thoroughly as the spade, and with the expenditure of much less strength from the workman.

GREAT AGE OF A HORSE.—Wilkes' *Spirit of the Times* gives an account of a small black Galloway, eleven hands high, which attained to the greatest age of any horse of which we have any record. He was a resident of a small village near Haddington, in Scotland. He was foaled in 1720, and at the time of his death he 69 years old. A few weeks before his death he trotted for several hours at the rate of seven or eight miles an hour, and fed well on his oats and hay to the last.

GAS LIME AS A MANURE.—At the annual meeting of the Royal North Lancashire Agricultural Society, at Burnley, this subject was discussed by several gentlemen and Mr. Baxter stated the result of some experiments he had made with gas lime, and with which he said he was perfectly satisfied. He used from three to four tons per statute acre, and has produced a capital crop of grass with it. Mr. Hunt also expressed himself in favor of the use of gas lime. He believed it was one of the cheapest means they could possibly get, of eradicating the foul herbage, and its was als the means for developing the qualities of the soil.

GERMAN AGRICULTURAL SOCIETY.—An important agricultural movement has recently taken place in Germany, in the formation of a National Agricultural Society, after the plan of the Royal Agricultural Society of England. This is a project which has long been in contemplation, enlisting the support of the leading agriculturists of Austria, Bavaria, Hanover, Saxony Prussia, and of the other German nationalities. Among the means which it proposes to make use of for the attainment of its object—the improvement of German husbandry—are the publication of a journal or periodical; holding successfully in the larger cities of the German Confederation exhibitions, or shows of agricultural stock, produce, and machinery; offering of prizes for scientific, or technical works relating to agriculture, and discussions on special agricultural topics at the extraordinary meetings of the Society. Germany has thus followed the lead of England in this important matter."

BRITISH COOKING —John Bull has yet many secrets to learn in the *ars coquinaria*. In roasting no one can equal him; and as for broiling, it is positively not understood out of these isles; but he is weak at frying; and as for stewing, it is *purely beyond his competence*. *Boiling*, what of it? Much praise cannot be awarded to British cookery on that score. Boil, indeed, we do, but much too furiously. Strange, in the land where steam engines were discovered, where the economy of fuel and the philosophy of latent heat are so well understood and applied in matters mechanical, the widest possible departure is sanctioned —nay, enjoined—in our cookery. We don't want our female cooks to understand first principles; but it is strange that none of our philosopher cooks, or cook philosophers, should ever have taken heed of the obvious fact, that, when water—in an open or tightly closed vessel—boils it can be made no hotter, however great the consumption of fuel, and however furious the boiling. If this obvious fact had been impressed upon the makers of cooking ranges, it would have influenced the construction of the latter; and gradually our female cooks—without reasoning at all which we deprecate—would have boiled with less frightful expenditure of fuel. Nor is waste of fuel alone in question. Many *culinary processes*—all the varieties of stewing, for example—are best performed at temperatures considerably

below boiling. Of this class of operations British cooks have not the remotest idea. Reasoning beings, who contemplate the *ars coquinaria* from a philosophical point of view, will not do amiss to revolve in their minds the beautiful doctrine of equivalents of force.—*Dublin University Magazine.*

The Beautiful in a Tree.—Downing says—"It seems to us indisputable that no one who has perception of the beautiful in nature, could for a moment doubt, that a fine single elm like, such as we may find in the valley of the Connecticut or the Genesee, which has never been touched by the knife, is the most perfect standard of sylvan grace, symetry, dignity and finely balanced proportions, that it is possible to conceive. One would no more wish to touch it with the axe (unless to remove some branch that is fallen into decay) than to give a nicer curve to the rainbow, or add freshness to the dew drop. Many of our readers will give themselves up to the study of such trees as these—trees that have almost completely developed forms that nature stamps upon the species, they are certain to arrive at the same conclusions."

Humming Birds.—The Ruby Throat is very easily tamed, and is a most loving and trustful little creature. Mr. Webber has given a most interesting account of a number of Ruby Throats which he succeeded in taming. On several occasions he had enticed the living meteors into his room by placing vases of tempting flowers on the table and adriotly closing the sash as soon as they were engaged with the flowers, but he had had always lost them by their dashing on the window, and striking themselves against the glass. At last, however his attempts were crowned with success, and "this time I succeeded in securing an unwounded captive, which to my inexpressible delight, proved to be one of the Ruby Throated species, the most splendid and diminitive that comes north of Florida.

It immediately suggested itself to me that a mixture of two parts refined sugar with one of honey, in ten of water, would make about the nearest approach to the nectar of flowers. While my sister ran to prepare it, I gradually moved my hand to look at my prisoner, and saw with no little amusement as well as suspicion, that it was actually "playing possum," feigning to be dead most skilfully. It lay on my open hand motionless for some minutes, during which I watched it in breathless curiosity. I saw it gradually open its bright little eyes, and then close them slowly as it caught my eye upon it. And when the manufactured nectar came, and a drop was touched upon the top of its bill, it came to life very suddenly, and in a moment was sucking with eager gusto of the refreshing draught from a silver teaspoon. When satisfied it refused to take any more, and sat perched with the coolest self-composure on my finger, and plumed itself quite as artistically as if on its favorite spray. I was enchanted with the bold, innocent confidence with which it turned up its keen black eyes to survey us, as much as to say, "well good folks, who are you."—*Rutledge's Illustrated Natural History.*

Natural Barometer.—The spider, says an eminent naturalist, is almost universally regarded with disgust and ahh rrence; yet, after all, it is one of the most interesting, if not the most useful, of the insect tribe. Since the days of Robert Bruce, it has been celebrated as a model of perseverance, while in industry and ingenuity it has no rival among insects. But the most extraordinary fact in the natural history of this insect, is the remarkable presentiment it appears to have of an approaching change in the weather. Barometers, at best, only foretell the state of the weather with certainty for about twenty-four hours, and they are very frequently fallible guides particularly when they point to *settled fair.* But we may be sure that the weather will be fine twelve or fourteen days, when the spider makes the principal threads of its web very long. This insect, which is one of the most economical animals, does not commence a work requiring such a great length of threads, which it draws out of its body, unless the state of the atmosphere indicates with certainty that this great expenditure will not be made in vain. Let the weather be ever so bad, we may conclude with certainty that it will soon change to be settled fair when we see the spider repair the damages which his web has received. It is obvious how important this infallible indication of the state of the weather must be in many instances, particularly to the agriculturist.

Ocean Splendours.

When the sea is perfectly clear and transparent, it allows the eye to distinguish objects at a very great depth. Near Mindora, in the Indian Ocean, the spotted corals are plainly visible under twenty-five fathoms of water. The crystalline clearness of the Caribbean sea excited the admiration of Columbus, who, in the pursuit of his great discoveries, ever retained an open eye for the beauties of nature. "In passing over these splendid adorned grounds," says Schopt, where marine life shows itself in an endless variety of forms, the boat, suspended over the purest crystal, seems to float in the air, so that a person unaccustomed to the scene easily becomes giddy. On the clear sandy bottom appear thousands of sea stars, sea urchins, molusces, and fishes of a brilliancy of colour unknown in our temperate years. Burning red, intense blue, lively green, and golden yellow perpetually vary The spectator floats over groves of sea plants, gorgonias, corals, alcyoniums, flabellums, and

sponges, that afford no less delight to the eye, and are no less gently agitated by the heaving waters, than the most beautiful garden in earth when a gentle breeze passes through the waving boughs."—*The Sea and its Living Wonders.*

Order.—Never leave things lying about—a shawl here, a pair of slippers there, and a bonnet some where else—trusting to a servant to set things to rights. No matter how many servants you have, it is a miserable habit, and if its source is not in the intellectual and moral character, it will inevitable terminate there. If you have used the dipper, towel, tumbler, etc., put them back in their places, and you will know where to find them if you want them again. Or, if you set an example of carelessness, do not blame your servants for following it. Children should be taught to put things back in their places as soon as they are old enough to use them. If each member of the family were to observe this simple rule, the house would never get much out of order, and a large amount of vexation and useless labor would be avoided.

The End of Literary Discipline.—To attain a power of exact expression is the one end of true literary discipline. To put his whole thought and express his actual emotion in his words, not to interpolate clever embellishments, is the object even of the careful writer, when he takes pains to revise what he has written. It is true that men write feebly who write as they speak. Spoken language has eyes, hands, every movement of the face, every gesture, of the body every tone of the speaker's voice, to illustrate it as it flows. To written language all these aids are wanting, and the want of all must be supplied by care for the right use of words.—*London Quarterly Review.*

Cowbells.—It is said that a good cowbell of rolled sheet-iron, well made, with a mouth three by five inches, can be distinctly heard at a distance of from three to five miles. It is said that a farmer in England provides all his cows with bells tuned to different notes in the scale, and the whole running through several octaves. A visitor to this farm is charmed by the music, as well as by the sleek sides of the cattle. Sometimes he hears several notes in unison, then a slight discord, and then a sweet harmony, and all varied by the rising and falling of the breeze.

Editorial Notices, &c.

Report on the County of Bruce.

We give in the Transactions of this number, the conclusion of the Report on the County of Bruce. The Author has drawn a very dismal picture, we cannot help thinking too much e of some of the institutions of that rapidly pr gressing County; and some of his opinions o practical points appear to us to be rather th result of theorizing than of experience. Th report, however, contains much information of useful character, and many suggestions de serving the attention of the settler in a ne County. Some portions not quite suitable t the pages of the Agriculturist, we were obliged to omit.

Prizes for County and Township Agricultural Society Reports.—We regret tha owing to numerous circumstances which nee not be fully stated here, a long delay has take place in announcing the premiums for the bes Reports received from County and Township Agricultural Society's in the year 1860, sent i competition accordance with the programm previously published. The Committee hav now however made their report, which we ad join :—

The Committe appointed to examine th County and Township Agricultural Societies re ceived at the office of the Board of Agricultu in 1860, have now done so, and they report a follows;

The Dundas County Report is somewh more voluminous than desired, but as it co tains the largest and most carefully pr pared amount of information, they award it t first prize of $30. West Durham, West Mi dlesex, and West Brant, approach each oth nearly in order of merit, and the committee h some difficulty in deciding between them. O the whole, however, they have concluded award the

West Durham Report the 2nd prize of $2
West Middlesex " " 3rd " 1
and West Brant " " 4th " 1

Amongst the remaining reports those of N folk and Haldimand rank very nearly with th to which prizes have been awarded, and are deserving of attention; for the information suggestions they contain. The Commit would also notice the Reports from North South Simcoe, Victoria, Niagara, Kent, Br and Elgin. Several others also, although br contain statistics and other information o characte ruseful for reference.

In the Township Reports the Committee find those from Clarke, Adelaide, and the Seneca, Oneida and Cayuga Societies, to a great extent reproductions of the West Durham, West Middlesex and Haldimand Reports. As the Haldimand Report however does not get a prize as a County Report, and as the Committee consider the Seneca, Oneida, or Cayuga Report the best among the township Reports, except those from Clarke and Adelaide, with which it is about equal, they awardt the first prize of £9. It has not been published, the chief part of the information contained in it will be found in the Haldimand County Report. The Reports from Eramosa, Humberstone and Otonabee are nearly equal in merit, the Committee have, however awarded the

Eramosa Report the	2nd	prize of	$15
Humberstone "	3rd	"	10
Otonabee "	4th	"	5

The Report from Tilbury East is also an interesting one, being very nearly equal to some of those to which prizes are awarded. Amongst the remaining repoots the committee would notice favourably those from Mount Forest, Lisbon, Osgoode, Chatham, Camden, Guelph, and one or two others.

GEO. BUCKLAND,
Chairman.

Toronto, Sept. 15th, 1851.

ALLEN'S AMERICAN SHORT HORN HERD BOOK. We are indebted to Lewis F. Allen, Esq. Black Rock, Buffalo, N. Y. for a copy of the 3rd vol. of his Short Horn Herd Book. This contains pedigrees of Bulls from No. 3623, to No. 4537, and a proportionate number of cows, amongst which are a considerable number of pedigrees of animals bred or owned in Canada.—The value, indeed we may say the indispensable value of the Herd Book is well known to every breeder of Short Horn Cattle. We need only say that this volume is prepared with the same care and attention, and printed in the same style as previous volumes of the series.

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ANNALS OF THE BOTANICAL SOCIETY OF CANADA, VOL. I—PARTS 1st. & 2nd., KINGSTON, C.W., 1861.

There two parts, well printed and of most respectable appearance, contain a number of interesting and valuable papers read before the Society during the first year of its existence; and they bear most unmistakable signs of early vigour, and indicate a long and healthy career of progressive usefulness and improvement. The appearance of their Annals at so early a period are a credit to the managers of this new Society, and a pleasing evidence that the social atmosphere of Canada is not ungenial to the successful prosecution of scientific research. We shall doubtless find in several of the papers contained in these Annals, something directly interesting and useful to our readers. Professor Lawson, Queen's College, Kingston, is the Secretary of the Society, to whose scientific attainments and persevering industry, much of its success is to be attributed.

Contents of this Number.

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