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The Field.

"Finger and Toe" in Turnips.

We learn from *The Farmer* that the above disease has become very prevalent in some parts of North Britain. Occasionally it shows itself in this country, though we are not aware that it has ever come to be a very troublesome or wide-spread affection. On the principle, however, that prevention is better than cure, it may be useful to give the gist of what our able contemporary says in reference to this evil, and the modes of guarding against it.

There would seem to be some reason to think that "finger and toe" and "clover sickness" are parallel in their nature. Soils which yield good crops of red clover are but little liable to produce "finger and toe;" while soils that are charged with the oxides of iron, or that have a great redundancy of vegetable matter, are not favourable either for clover or turnips. Too frequent repetition of these crops is unfavourable to their success. Lands fertilized with barn-yard manure in moderate quantity are more likely to throw healthy crops than those lands which have been over-dosed with either natural or artificial manures. Swede turnips are more liable to attacks of this disease than any other sorts, and it chiefly prevails on dry and light soils. It is highly probable that this affection is caused by a deficiency of alkalies and alkaline earth within the plant itself, and that, therefore, some deficient or unfavourable condition of the soil usually occasions the trouble.

Cure of this disease, when once it has fastened on the plant, is out of the question; therefore preventive measures only are practicable. Among these, liming the land well is strongly recommended. *The Farmer* is inclined to think that disuse of lime in sections where it was freely used formerly is one great cause of "finger and toe," and states that having had experience in land so badly affected with this ailment that it was considered almost hopeless to attempt to grow root crops, "a sufficient application of hot lime never failed to effect a cure." Lime should not, however, be applied to a limestone soil, as bad effects have resulted from so doing. Lime when applied to land requires a certain time to act, as it does not operate by furnishing food for the plant so much as by decomposing and otherwise chemically changing vegetable matter already in the soil.

Deep ploughing is also urged, especially if the land has previously been subjected to only shallow tillage. Drainage is very necessary; indeed it is remarkable how many troubles that afflict the tiller of the soil, may be prevented or removed by these two last named prescriptions: deep tillage, and thorough drainage. Add to these a fair supply of barn-yard dung, and not much remains to be said about the prevention or cure of evils connected with the culture of the soil.

It should be observed that only general rules are given above in regard to the affection in question. To all general rules there are exceptions. Thus on some soils clover is produced with constantly recurring frequency without sign of sickness, and Mr. Lawes has grown turnips for several years in succession on the same ground. Still there is no denying the general rule, notwithstanding these exceptions to it. So of other rules.

We have sometimes heard this and other plant affections ascribed to defective seed, and there can be no doubt that both seedsmen and their customers would do well to take the greatest pains in procuring the very best samples of seeds that can be had. To this point it is impossible to attach too much importance, whether in regard to root or grain crops.

Wearing Out Land.

To the Editor of THE CANADA FARMER:

SIR,—There is too much reason to believe that, instead of growing richer, as proper cultivation would make it, much of the cultivated soil of Canada is growing annually poorer. The same is the case in the United States. As far as Canada is concerned, if you will allow me the use of your columns, I will say something as to the cause, and suggest a remedy.

To keep land in heart, it should be taken care of at first. Much of it is irreparably injured by trying to work it before the stumps are out, when the plough cannot get down deep enough to mix the soil. The top only is used, and the crop carries away, in one season, those chemical constituents which are needed to unite with the lower strata.

The root of the evil was, that ignorant men got hold of the land—soldiers, sailors, blacksmiths, masons, carpenters, tailors and shoemakers, with European farm labourers. These last, generally, mindful of the expensive appliances of Europe, think themselves too poor to farm well. Those unskilful parties got hold of our unfortunate soil. Now, ask one of the above tradesmen, if a batch of farmers came into his shop and started business for themselves, how much stuff and tools would they spoil before they made it pay. He will say, they would never make it pay—they would break down. So it is when one goes to learn farming on his own land. He should learn that trade, like any other, on another's work.

The system of farming which an untaught man pursues, is generally to crop land unremittingly as long as it pays—the time of paying depending on the original richness of the land. In a few years it don't pay, he sells and moves back; tries it on new land again till it don't pay; moves back once more, and if he lived long enough he would do it *ad infinitum*.

A good deal of our land has been gone over by such men. Then, again, more of it has been worked by farmers who are well aware of better methods,

but who maintain that in the circumstances in which they were placed they were compelled, in common parlance, to "run" their lands, in order to live at all.

Now for the remedy. It is, I think, to be found in deeper cultivation. Our land, if underdrained and subsoiled, would, I believe, yield an average of double the amount per acre. More work would be spent on the land per acre. Less land on each farm would, consequently, be put into wheat. More grass land would be available, more cattle kept, more roots grown, more manure made on the farm. Last, but not least, more farm labourers would be needed, and could be paid, and we should no longer see what I regard as a bad sign, namely, a great demand for harvest hands, but a small demand for men the rest of the year. All this is just what we want, and it could be obtained.

But, some may say, farmers are gradually doing all this—they are, in many instances, carrying on scientific farming, in good style. It is true, but I have two objections. First, too few are doing it; at the present rate we should not see it a general thing in a lifetime. Second—and it cannot be too strongly impressed—the land now deeply cultivated should have been so dealt with at first. The top soil is gone. What is wanted is something to encourage men in new townships to deepen their cultivation before they "run" the land. As soon as the stumps allow ploughing, the land should be underdrained and subsoiled.

What is wanted is some sweeping measure, some general stimulus to deeper work. If the thing were being done throughout the whole country, a class of skilled workmen would be brought into existence who could do it at one-third its present cost. But our farmers, as a whole, have not the means, to drain without borrowing; money costs them ten per cent. now, and if everybody was borrowing, it would cost them a good deal more. And I am afraid it is doubtful if money would pay at such a price.

There is but one way, Sir, in which the thing can be done so as to give the present generation any benefit; and that is for the Government to advance the money. This has been done in England to save rich squires from paying high interest (some of their land was entailed, some not). Let it be done here to save farmers from the same, and to give the whole farming population of Ontario the help they so much need. Our Local Government has, it is said, a surplus of half-a-million on hand. Now, instead of putting this into Dominion stock or any other stock, let them lend it for a term of years (for underdraining solely) to our farmers, at low interest, or better, at no interest, and you would hear no more of our young farmers leaving the farm, or of our young men going to the States. The land the money was lent on would furnish good security for re-payment, and a farmer who could not pay back money so expended, in a few years, had better be sold out. For my own part, I have eighty acres lying ready for the operation. It will be many a year before I can drain and work this properly myself, but I would do so at once, had I the chance of such assistance as I speak of.

RUSTICUS.

Register of Farm Crops

To the Editor of THE CANADA FARMER:

Sir.—It is frequently asked—What is an average crop? As some help to answer the question, the annexed tables for twenty-seven years, of the four principal crops raised in the country, namely, wheat, barley, oats, and peas, may be acceptable. The wheat and barley are, I believe, as exact and correct as such tables can be made; and though every care has been taken with the oats and peas, yet every farmer knows that they are often, or at least occasionally, fed unthreshed, and therefore may not be so correct.

The farm on which the crops were grown is a good one, but has been all the time farmed under some special disadvantages. During the early part of the time it was wrought without sufficient means or suitable help to manage it to advantage; then, there was always a degree of uncertainty of having it more than the current year, and further, there was never anything like sufficient or suitable buildings on the farm; so that a large part of the crop had to be stacked out, thus incurring waste and loss to the crop, increasing the amount and cost of labour, and preventing stock being kept with much advantage; much of the farm cannot be wrought to the best advantage for want of under-draining, so that a wet spring followed by a dry summer had a very injurious effect on the products of the farm.

Of the prices given, the highest named was often only obtained for what was sold for seed; and in the case of peas, the highest prices were only for early Kents, or some other fancy variety. They are, however, the prices actually obtained. The crop was sold always nearly as it was threshed, as there was no place where grain could be kept for any length of time after it was threshed. In the cases where there is no price given in the table, it will be understood that none of that crop had been sold for those years that are left blank.

The dates given for beginning to plough and sow are the correct dates for this farm; but owing to a large part of the farm being low, damp land, ploughing and sowing were often done in the neighborhood some time before the dates given. The same may be said of the dates for commencing and finishing harvest: though correct for the farm, there was mostly harvesting done before, and also after, the dates given for beginning and finishing harvest. The dates, however, may be looked upon as a fair average for the section of country. Some years, it will be observed, that sowing was begun in the spring before any ploughing was done. That was, of course, on land that had been fall-ploughed, and in years when there was no green sod to plough in the spring.

STATISTICS OF FARM CROPS FOR TWENTY-SEVEN YEARS.

Crops	AVERAGE BUSHELS PER ACRE	PRICE PER BUSHEL		BEGAN TO PLOUGH	BEGAN TO SOW	BEGAN HARVEST	FINISHED HARVEST	FROZEN BY FROST
		From	To					
1841	15	\$ 45						
Spring Wheat	15	35		April 17th	April 25th	Aug 7th	Sep 9th	Dec 15th
Barley	20	35						
Oats	463	20	25					
Peas	13	50						
1842	12	70		April 5th	April 19th	Aug 11th	Sep 10th	Nov 18th
Fall Wheat	12	40						
Spring Wheat	173	26	20					
Barley	25	16						
Oats	54	50						
Peas	123							
1843	29	77	90	April 20th	April 26th	Aug 16th	Sep 8th	Nov 25th
Spring Wheat	29	40						
Barley	13	40						
Oats	46	20	20					
Peas	12							
1844	20	77		April 13th	April 19th	Aug 8th	Sep 13th	Nov 23rd
Spring Wheat	20	55						
Barley	18	30						
Oats	47							
Peas	15							
1845	183	65	1 00	Mar 31st	April 2nd	July 31st	Aug 27th	Nov 22nd
Spring Wheat	183	60	70					
Barley	60							
Oats	32							
Peas	20							
1846	22	85	95	April 4th	April 7th	July 23rd	Aug 11th	Nov 23rd
Spring Wheat	22	55						
Barley	39	25						
Oats	25							
Peas	12	50						

Crops	AVERAGE BUSHELS PER ACRE	PRICE PER BUSHEL		BEGAN TO PLOUGH	BEGAN TO SOW	BEGAN HARVEST	FINISHED HARVEST	FROZEN BY FROST
		From	To					
1847	15	\$ 65		April 26th	April 26th	July 30th	Aug 27th	Nov 20th
Fall Wheat	15	50						
Spring Wheat	15	25						
Oats	33	50						
Peas	24							
1848	123	80	1 00	Mar 30th	April 13th	July 24th	Aug 18th	Dec 20th
Fall Wheat	123	60	65					
Spring Wheat	38	43						
Barley	45	25						
Oats	45	50						
Peas	27							
1849	38	75	90	Mar 20th	April 21st	July 23rd	Aug 25th	Nov 29th
Fall Wheat	38	70						
Spring Wheat	18	80						
Barley	130	45	50					
Oats	45	25						
Peas	30	40						
1850	24	70	90	April 15th	April 12th	July 5th	Aug 23rd	Dec 6th
Fall Wheat	24	70	80					Finish ed
Spring Wheat	34	60	65					
Barley	124	45	50					
Oats	45	25						
Peas	19	50						
1851	153	58	90	April 17th	April 21st	July 26th	Aug 30th	Nov 14th
Fall Wheat	153	50						Finish ed
Spring Wheat	153	60						
Barley	26	25						
Oats	43							
Peas	43							
1852	29	71	90	April 27th	April 29th	July 29th	Sep 8th	Dec 1st
Fall Wheat	29	69	90					Finish ed
Spring Wheat	32	60						
Barley	33	40						
Oats	45	40						
Peas	30	40	1 27					Finish ed
1853	45	1 00	1 20	April 16th	April 11th	July 27th	Aug 29th	Nov 24th
Fall Wheat	45	1 20						
Spring Wheat	32	1 00	1 20					
Barley	33	60						
Oats	40	40	60					
Peas	50	80						
1854	16	1 20	2 00	April 17th	April 20th	July 27th	Aug 29th	Nov 29th
Fall Wheat	16	1 15	2 00					
Spring Wheat	17	80	1 00					
Barley	19	50						
Oats	40	50						
Peas	36	1 00						
1855	28	1 66	2 00	April 17th	April 24th	July 30th	Sep 15th	Nov 16th
Fall Wheat	28	1 85	2 00					
Spring Wheat	27	1 50	1 50					
Barley	21	1 00	1 50					
Oats	41	50						
Peas	16	80	1 25					
1856	20	1 35	1 25	April 16th	April 28th	July 28th	Aug 30th	Nov 27th
Fall Wheat	20	1 25	1 25					
Spring Wheat	23	1 05	1 25					
Barley	37	50	80					
Oats	40	50						
Peas	10	1 00						
1857	24	90	1 60	April 14th	April 30th	Aug 6th	Sep 8th	Nov 19th
Fall Wheat	24	60	60					Finish ed
Spring Wheat	22	60	30					
Barley	12	60						
Oats	43	25	30					
Peas	12	60	2 25					Finish ed
1858	21	1 10	1 25	April 8th	April 26th	July 28th	Sep 3rd	Nov 13th
Fall Wheat	21	1 00	1 25					Finish ed
Spring Wheat	19	40	50					
Barley	12	1 00						
Oats	25	40	50					
Peas	11	80	2 00					
1859	20	95	1 12	April 2nd	April 27th	July 30th	Aug 25th	Nov 30th
Fall Wheat	20	85	1 25					
Spring Wheat	23	65	65					
Barley	28	60	50					
Oats	40	35	50					
Peas	23	60	80					
1860	16	1 25	1 10	April 7th	April 11th	July 27th	Sep 4th	Nov 24th
Fall Wheat	16	1 00	1 10					
Spring Wheat	24	65						
Barley	32	50	25					
Oats	50	25						
Peas	23	60	75					
1861	18	87	85	April 17th	April 22nd	Aug 6th	Sep 14th	Dec 20th
Spring Wheat	18	45	70					
Barley	28	25	30					
Oats	42	45						
Peas	19	45						
1862	22	80	85	April 24th	April 29th	Aug 2nd	Sep 11th	Nov 14th
Spring Wheat	22	60	65					Finish ed
Barley	27	50						
Oats	35	60						
Peas	24							
1863	15	75	85	April 13th	April 22nd	July 27th	Sep 3rd	Nov 27th
Spring Wheat	15	66	60					Finish ed
Barley	32	44	20					
Oats	44	60	65					
Peas	22							
1864	13	80	1 00	April 6th	April 16th	July 25th	Aug 31st	Nov 23th
Spring Wheat	13	80	1 00					Finish ed
Barley	58	40	50					
Oats	52	40	60					
Peas	12	80	2 25					
1865	13	1 15	1 40	April 24th	April 3rd	July 26th	Aug 29th	Dec 1st
Spring Wheat	13	70	75					
Barley	30	48	30					
Oats	48	30	49					
Peas	24	60	2 50					
1866	19	1 35	1 60	April 18th	April 14th	July 28th	Aug 24th	Nov 27th
Spring Wheat	19	60	45					
Barley	33	30	70					
Oats	45	30	40					
Peas	25	60						
1867	24	1 40	1 45	April 13th	April 18th	July 29th	Aug 27th	Nov 22nd
Fall Wheat	24	1 40	1 55					
Spring Wheat	13	78	1 25					
Barley	22	40	60					
Oats	40	40	60					
Peas	20	50	1 00					

Computing from these tables the average yield and prices of each crop, for the whole period, the result will be found as follows:

The *Wheat* crop for the whole twenty-seven years gave an average of nineteen and a-half bushels per acre; and the average price for all the wheat sold during that time was within a small fraction of one dollar per bushel. Of *Barley*, the crop for the twenty-seven years yielded an average of twenty-seven and three-quarter bushels per acre, and the average price for all that was sold was a little over sixty-seven cents per bushel. *Peas* yielded on an average during that time twenty bushels to the acre, and the price for which they were sold gave an average of seventy-two cents per bushel. *Oats* gave an average for the same time, of forty-two bushels per acre, and the price for the total quantity sold gave an average of thirty-two cents per bushel.

WALTER RIDDELL.

Cobourg, March, 1868.

A Rotation of Crops.

To the Editor of THE CANADA FARMER:

Sir,—After reading all the articles that you have given us through the columns of THE CANADA FARMER, about growing turnips for manure, the rotation of crops, &c., with great interest, I am induced to give you my ideas on the subject. I do not pretend that my method is original, but I have proved its practical utility, and think it right to communicate the result of my experience to my brother farmers, as well as to hear theirs. My order of rotation is as follows:

First, peas; second, fall wheat; third, roots; fourth, oats, barley and fall wheat; fifth, meadow; sixth, pasture. My method of cultivation is briefly this: First, plough up clover sod with a jointure plough, to skim off the grass and bury it under the furrow

Potato-Growing.

To the Editor of THE CANADA FARMER:

SIR,—Under the above heading, in a recent number of the CANADA FARMER is a communication from Napanee, which I do not altogether agree with, as I generally follow a different course from that described by your correspondent. Few farmers can afford to summer fallow land for potatoes. I think I can name a better plan, as I find I can clean a foul piece of land better with planting it to potatoes than almost any other crop. My plan is this. I select my land in the fall that I intend to plant the next spring. If I intend to manure, I draw out in the fall, spread, and plough under in the spring, as soon as grass or weeds begin to start. I use either a harrow or cultivator once or twice to keep the weeds down until other crops are in. I then plough again, and harrow fine, and roll; and when ready to plant I take my plough, run a light furrow lengthwise the piece of ground I intend to plant, up one side and back the other; have some one to come after me with the seed to drop in the furrow; follow right after with the plough and cover up the seed. Then plough another furrow, and drop the seed again, and so on until I have finished. The furrow in which the potatoes are planted should be ploughed almost as shallow as possible, so as not to get the potatoes too deep, while the furrow you cover with should be very deep, so as to form a ridge. As soon as I can perceive any potatoes breaking through the ground, I harrow thoroughly, as by this time whatever seeds of weeds there are in the ground will have germinated and begun to come up. The harrowing seems to kill all weeds and grass most effectually; while the potatoe grows with astonishing rapidity. As soon as the potatoes are high enough for hilling up, I take my shovel plough, (which every farmer who raises potatoes ought to have), and go through between the drills, and the work is done, until the potatoes are ready for digging. I am very seldom troubled with weeds amongst my potatoes. Two or three little boys to drop the seed, and a man with the team will plant an acre per day. Last year I planted, I think, scarcely one acre. They were planted in one day, the harrowing only occupied a short time, and the shovel ploughing scarcely one day for a man and horse. I might also state that I always dig them with the shovel plough, this time taking two horses, one walking on each side of the drill, and taking every other drill; otherwise you will cover up the potatoes in the first drill by ploughing out the second. Have little boys to follow after and pick all they can see, and a man to follow them with a hoe and scratch the dirt over a little, and you have your potatoes all up clean. I can raise potatoes on the above plan for about twelve and a half cents per bushel. I did not measure my crop last year, but consider I had about 150 bushels.

A SUBSCRIBER.

Dorchester, April 2nd, 1868.

Cranberry Culture in a Nut-shell.

The American Agriculturist, in answer to "many inquiries," gives the following "multum in parvo" treatise on cranberry growing:—

"1. We have no evidence that the cultivation of cranberries on upland has been successful on a large scale, though small garden plots have done well. 2. A peat bog or meadow, that can be drained and can be flooded at will, is the most suitable place for a plantation. The bog is drained by deep ditches, and an embankment is made to keep the water out, with flood-gates for letting it on when necessary. The land is cleared of brush and tussocks, levelled, and covered with four to six inches of sand, free from loam or clay. In some localities the ground is naturally sandy, and this is not required. When the land can be ploughed and harrowed it is so treated. Some prefer to prepare the land thoroughly one season and plant the next; the object being to get rid of all the native weeds and grass as thoroughly as possible. 3. Planting is done in the spring, the plants being set from eighteen inches to three feet apart. 4. Plants may be had of dealers who advertise them, or they may be taken from wild beds if they are known to be productive. 5. Cultivation is needed through the summer until the plants cover the ground and choke out the weeds. 6. Fuller's Small Fruit Culturist has a chapter on the cranberry, and there is a special treatise on the subject by Eastwood."

The Thistle.

To the Editor of THE CANADA FARMER:

SIR,—We want an amendment to the Act passed two or three years ago to compel all occupiers of land to cut the Canada thistle before it runs to seed; I allude to Stirton's Bill. It is a good Bill, as far as it goes, but it does not go far enough, simply because no man likes to become an informer. About three-fourths of the farmers cut their thistles before they run to seed, and the other fourth part never cut them at all. They are to be seen in July and August, high above the crops of grain loaded with seed, ready to be carried away by the first favourable wind that blows. In some fields I have seen a large patch of Canadian thistles to every acre in the field. Last summer I was travelling through the country with a salt water sailor, and telling him what a pest those Canada thistles were to us Canadian farmers. He said he had caught the seed sailing in the air, one hundred miles from land, on the Atlantic ocean. It is an utter impossibility to keep them in check as long as any is left to go to seed. What we want is an Act to authorize all Municipal Councils to appoint an Inspector to notify all "afternoon farmers" to cut their thistles according to law; and should they neglect the intimation, to prosecute them forthwith. The same stringent proceedings should be taken with Pathmasters who neglect to cut them on their road division.

W. C. S.

Camp's House, Wilmet, Ont.

White Clover.

I did not know it, but it seems to me that one reason of the superiority of Herkimer Co., N. Y., pastures, is their tendency to grow clovers. The more white clover the dairymen can get in their pastures, the more highly they esteem them. I can readily see why this is so. The clovers all contain about twice as much nitrogen as the grasses, and it is equally certain that milch cows require more nitrogen in their food than fattening animals. And it must be quite an object to increase the proportion of clover in their pastures.

I think I told you of a remark the Deacon made last summer. On the west side of my house is a poor sandy slope. It is so light that the west winds drive the sand in clouds into, and almost over, the house. At the bottom of the slope was a quagmire. A couple of underdrains running up the slope, remedied this. They tapped several springs, and carry off large quantities of water. The land was very foul, and poorer than poverty. I cultivated it for two years with root crops, for the purpose of killing the weeds. Having no manure, I dressed the land liberally with raw-bone superphosphate and phosphatic guanos.

A finer crop of turnips than this land produced I have rarely seen. I then sowed it with barley, and seeded it down with red top, Kentucky blue grass and timothy. The barley was a light crop, and the grass did not "catch," except on the low land. Last spring I sowed more grass seed, but the season was so dry it did not thrive. But there was an occasional root of white clover, say two or three feet apart. By the middle of summer it had nearly covered the ground, and I am satisfied that by next summer the whole slope will be covered by a thick sward.

"Well," said the Deacon, as he rode past, "I would like to know what you have done to that land. It's the first time I've seen white clover there for thirty years." "I have killed the weeds, and put on plenty of phosphates." Now, the Deacon has no faith in artificial manures, though he believes in plaster, ashes and hen-dung, and spends as much time in gathering, pounding them up, mixing them together, and dropping them on the hills of corn as would pay for a full equivalent of a good artificial manure, and so it would not do to let the matter rest in this shape. "There seems to be a good deal of white clover everywhere this season," he said, as he touched up old Prince with the whip, and drove off.

There can be no doubt that enriching the land, either by hoeing or manuring, causes it to grow richer grass. And it would be well for the dairymen, as well as the rest of us, to inquire whether our pasture may not be greatly improved by top-dressing; and that not so much in the yield per acre as in the quality of the grass. We have a clear apprehension of the importance of getting a good bit of grass, but many of us seem to forget that a hundred weight of one grass may be worth, for keeping up the flow of milk and the vigor of the cow, as much again as a hundred weight of other grass.—J. Harris, in American Agriculturist.

Around each post used in fencing, a small mound of earth should be raised, to throw off the water of heavy rains. This keeps the water from entering the post-holes from the surface. In every place where this simple plan has been tried the posts have lasted much longer than those set in the ordinary way.

THE BARBERRY FOR HEDGES.—A Correspondent of the Wisconsin Farmer says:—"I have four stands of the Barberry hedge, eight years old—each stand originally from a single seed. The canes of each stand now number seventy to one hundred, thrown from a single centre, just as the twenty to thirty rye straws proceed from a single grain. These canes proceed in a curve at first, then assume a perpendicular, the top of the common stand rising each year, till a height of eight to ten feet is attained, after which there appears no further increase of the height. In breadth, each stand of canes reaches about two feet at eight years old. I think the plants should be set about fourteen inches apart. There is no difficulty in growing plants from the seed, by planting either in fall or spring, and keeping clear of weeds the first year. As to the Barberry for a strong, enduring and every way sufficient live fence, I am unable to think of any cause of failure. I have often pointed out to farmers my several Barberry stands, and asked their opinions as to whether they would turn stock. In every case they have said it would be impossible for any animal to go through, unless by violence compelled; and in such case an animal would prefer to attempt breaking down the strongest fence. The prickles, though small and slender, are exceedingly hard and sharp, and at right angles with the cane—each thus presenting a defence, or fixed bayonets."

MUCK ON SANDY SOILS.—Professor Dana, in his excellent treatise on muck, speaking of the value of swamp muck in bringing light sandy soils into a state of the highest fertility, says:

The power of fertility which exists in the silicates of soil is unlimited. An improved agriculture must depend upon the skill with which this power is brought into action. It can be done only by the conjunction of salts, gelin, muck and plants. Barren sands are worthless, a peat bog is little better; but a practical illustration of the principles which have been maintained, is afforded by every sandy knoll made fertile by spreading swamp muck upon it. This is giving gelin to silicates. The very act of exposure of this swamp muck, has caused an evolution of carbonic acid gas; that decomposes the silicates of potash in the sand; the potash converts the insoluble into soluble manure, and lo! a crop. The growing crop adds its power to the gelin. If all the long series of experiments under Von Voght, in Germany, are to be believed, confirmed as they are by repeated trials by our own agriculturists, it is not to be doubted, that every inch of every small knoll, on every farm, may be changed into a soil in thirteen years, of half that number of inches of good mould.

That the cause of fertility is derived from the decomposing power of the gelin and plants, is evident from the fact that mere atmospheric exposure of rocks, enriches all soil lying near and around them. It has been thought among the inexplicable mysteries, that the soil under an old stone wall is richer than that a little distance from it. Independent of its roller action which has compressed the soil and prevented the aerial escape of its gelin, consider that the potash washed out of the wall has done this, and the mystery disappears. The agents to hasten this natural production of alkali, are salts and gelin. The abundance of these has already been pointed out in peat manure.

Next to this, dry crops ploughed in; no matter how scanty, their volume constantly will increase, and can supply the place of swamp muck. Of all soils to be cultivated, or to be restored, none are preferable to the sandy light soils. By their porousness, free access is given to the powerful effects of the air. They are naturally in that state to which trenching, draining and subsoil ploughing are reducing the stiffer lands of England. Manure may as well be thrown into water, as on land underlaid by water. Drain this, and no matter if the upper soil be almost quicksand, manure will convert it into fertile, arable land. The thin covering of mould, scarcely an inch in thickness, the product of a century, may be imitated by studying the laws of its formation. This is the work of "Nature's prentice hand;" man has long been her journeyman, and now guided by science, the farmer becomes the master workman, and may produce in one year quite as much as the apprentice made in seven.

Stock Department.

The Suffolk Horse "Bounce."

The accompanying illustration represents the imported Suffolk Punch Stallion "Bounce," winner of the diploma as the best agricultural horse at the last Provincial Exhibition, and owned by M. H. Cochrane, Esq., of Compton, Quebec, by whom he was imported from England last summer. This noble animal belongs to a class of horses that deserves more attention from Canadian breeders, being well adapted alike to the field and the road. Having thoroughly inspected "Bounce" as to build and action, we cannot speak too highly of his symmetry, life, and gracefulness. He is a creature of good substance, weighing some 1,700 lbs., yet remarkably quick in motion, stepping as light and free as a carriage horse. His frame is

close and compact; he stands on short, clean legs, is of uncommonly stylish appearance, and evidently possesses great constitutional vigour. He cannot fail to leave his mark in the sections where he may travel, and may be confidently commended as a good model of what an agricultural horse ought to be. We congratulate his owner on the possession of so valuable an animal, and hope he may have before him a long and useful career.

The following account of this horse has been furnished by his proprietor: "The Suffolk Punch entire horse named 'Bounce' was bred by Henry E. Surtees Esq., M.P., of Dane End, Herts: got by the noted horse 'Honest Tom,' winner of the silver cup at Itching in 1854, and a number of other first prizes,

and considered one of the best Suffolk horses in the kingdom. His dam, 'Bragg,' was a good Suffolk mare, and won the silver cup at Itching for best mare and foal, open to all comers, in 1864. 'Bounce' gained the silver cup at Hertford in 1866, open to all England, was highly commended at the Royal Agricultural Show, Bury St. Edmunds, and is pronounced by all horse men a perfect type of an agricultural horse."

Stock and Crops.

To the Editor of THE CANADA FARMER:

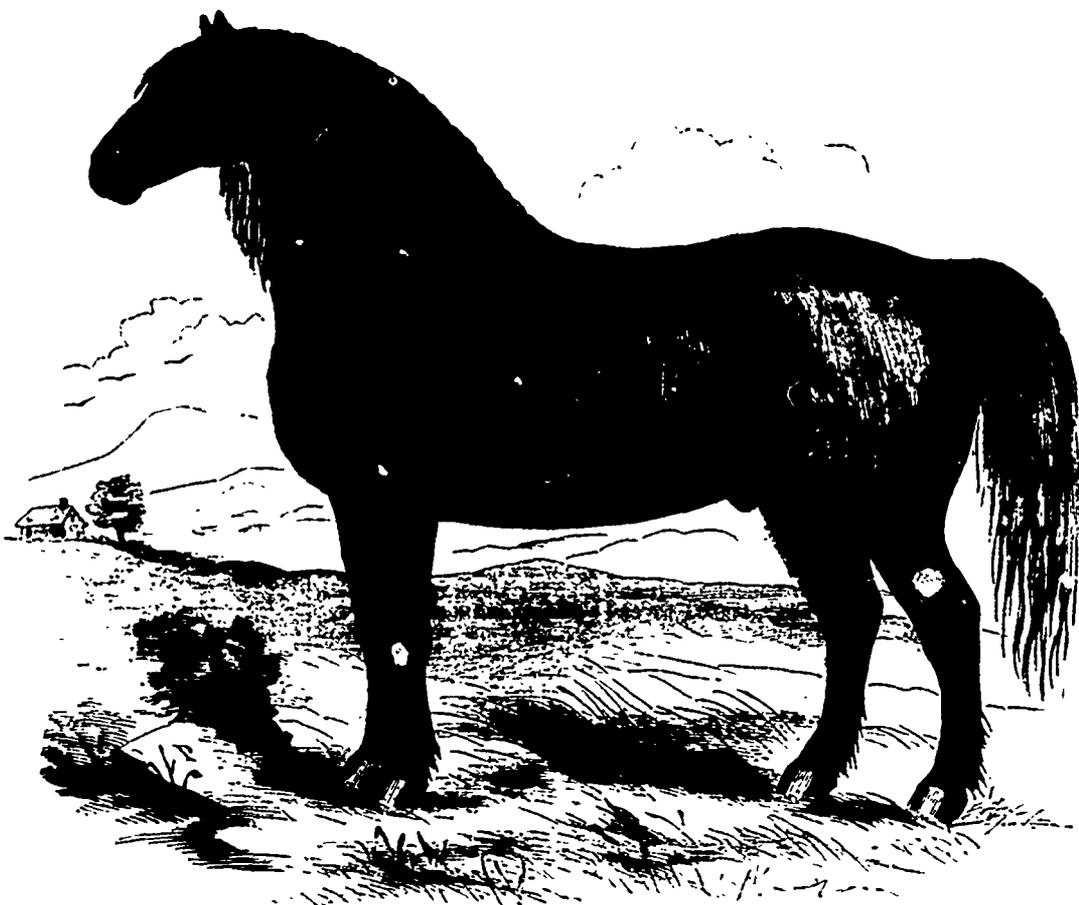
SIR,—That a large number of Canadian farmers are not enjoying that measure of material prosperity to which their unwearied industry and frugal habits would seem to entitle them, few will deny. Many enlightened persons, while deploring this state of things, attribute it chiefly to the exhaustion of the soil by incessant cropping, without an adequate supply of manure. Doubtless this is the root of the evil, and

no reform can be thorough which does not begin here. Much, but nothing like enough, has been written upon the subject; for the truth, that it is dishonest as well as impolitic to withhold from the land an equivalent (in manure) for what is taken from it (in crops), cannot be too often or too strongly enforced. It is not, however, my intention to attempt an essay on Agricultural Chemistry; I merely wish to draw attention to the fact that a great change for the better might be effected by a more judicious use of the produce even now obtained. Now that the cultivation of wheat has ceased to be as remunerative as formerly, many who heretofore relied chiefly on it for support have, naturally, given more attention their stock, with the view of thereby making up the deficiency in their incomes. Some have increased the number of their cattle, some have directed their efforts towards improving the breed, while others have done both. Now, as regards number, it should be borne in mind

throws all its predecessors into the shade. At this season of the year, when the young animals are appearing, the farmer should himself take the reins of this department, and should hold them with a firm hand. He must not hesitate to say "no," even to the wife of his bosom, when solicited to keep an animal which he knows he cannot properly maintain. When he has decided upon the number to be reared, the young calves and pigs should have his special personal attention. He need not think it beneath his dignity to see carefully to their getting the right kind of food at the right times, and in sufficient quantity; he will find his account in it.

With respect to thorough-bred stock as a source of wealth, though there can be no question that a well-bred animal will give a far better return for the food it consumes than an ill-bred one, the aspiring farmer should well consider, before he invests a large sum in the purchase of superior stock, whether he

BEST AGRICULTURAL HORSE AT THE LAST PROVINCIAL SHOW



"BOUNCE,"—THE PROPERTY OF M. H. COCHRANE, ESQ., COMPTON, QUEBEC.

that cows, sheep and pigs, are incapable of deriving nourishment directly from earth, air or water—they are neither more nor less than the means or instruments by which vegetable products are converted into meat, milk, wool, &c.; that to accommodate and attend them are a trouble and expense; that there is a constant and certain waste from the body of every living animal; and that the smaller the number employed to convert vegetable into animal matter, the less will be the waste. In fact, the number of animals kept upon a farm should be strictly proportioned to its ability to feed every one of them fully; and it would be well for every farmer who contemplates increasing the number of his cattle, to try whether those he already possesses cannot be coaxed to swallow a little more of his produce. It is, however, very difficult for a farmer to carry his rule of "proportion" into "practice." Women and children seem to be possessed with an innate desire to raise every calf and pig that is born upon the farm, seeing—or imagining they see—some excellence in each which

be sure that poor feeding and exposure will cause them to degenerate very quickly.

The caution I have ventured to give with regard to increasing stock may be thought unnecessary. It is by no means unnecessary to many residents in the district from which I write. Our circumstances, and our conduct in them, are these:—Year after year our wheat crop is ravaged by "the fly." A yield of from five to ten bushels to the acre gives barely enough for home consumption, and leaves none to sell. But we must have something for the market, or how shall we pay for our boots and hats, our coats and shirts, our tea and sugar? We find that milk, butter, cheese, meat, maintain good prices, so we "guess we'll keep more cows." Instead of raising three calves per annum, we decide to raise six—upon the food of three; and we do certainly possess six heads, six tails, twenty-four legs, etc., etc.; but six calves? no, nor the equivalent of two decent ones. However, this is getting on bravely; we shall soon have a much larger stock, and need not fret about the failure of the

has the means of providing abundant food and good lodging for it. Without both, his investment will assuredly prove unremunerative. There is nothing supernatural about a Durham bull or an Ayrshire cow. Whatever may be their superiority, they are not "superior" to the pangs of hunger and "the persecutions of the sky;" nor do they carry a talisman which will enable them to lie in wet and filthy places with impunity. The excellence of the most valuable herds of the present day was not obtained by judicious crossing only. Liberal feeding—especially when the animals were young—in dry, warm, and otherwise comfortable quarters, has been largely instrumental in developing their good qualities; and we may

wheat. The six little objects get the run of the pasture, with the cows, in summer, and spend the winter in circumnavigating the barn in search of that. to them, *terra incognita*, a warm spot, and in picking up, as they move, any coarse straws which the older and stronger animals may have left uncut. At two years old, if they live so long, they are allowed to be "in calf," and in process of time—the productive powers of the farm remaining unimpaired—there are twenty-four more heads, (each with a month in it), ninety-six legs, and so on. A large stock is thus soon acquired; but increased resources for the farmer. Alas! no. Every mouth that cannot be kept full is a hole in his pocket. Believe me, Mr. Editor, some such advice as this is urgently needed by not a few: raise as large a crop as you can, and get it eaten, without waste, in thoroughly warm and dry houses, by as few animals as can accomplish the task. It is vanity for farmers to expect to wear kid gloves and stove-pipe hats, to drive "great travellers" in Concord buggies, or to enjoy any of the luxuries of life, until they bestow some of its comforts upon their cattle.

F. FARMER, JEN'R.

Nepean, Co. Carleton, March 20, 1868.

Group of Oxford Down Ewes.

THE Oxford Downs are a recent and beautiful variety of sheep, obtained by judicious crossing and improvements among members of the long-established and highly-prized Down family. Their many good qualities render them among the most desirable and profitable of the breeds of sheep at present in vogue. They are noted for docility, prolificness, early maturity, aptitude to fatten, great size and weight of fleece, purity and quality of wool. Their wool scours perfectly white, and is of remarkably soft, flexible texture not having any of that harsh, dry badness or any of the short dark hair at the bottom of the fleece of which wool tappers are apt to be suspicious in Down sheep. The three animals herewith illustrated, were imported last summer by M. H. Cochrane, Esq., of Hillhurst, Compton, Quebec. They are part of a pen of five ewes that gained the first prize at the Bath and West of England Show last year, and subsequently took the first, second and third prizes at our own Provincial Exhibition in Kingston. The fleeces of the five averaged last spring 10 lbs. 6 oz. The average weight of the five ewes at the date of our visit to Compton (end of February) was 265 lbs., and they were all in lamb. They and their progeny will doubtless figure at future shows, and win some of the highest honours. We sincerely wish their enterprising proprietor all the prosperity as a sheep-breeder which he so justly deserves.

CHESTER WHITE HOGS.—E. H. Edkin, of Williamsport, sends the *American Agriculturist* the weight of six pet pigs of his, fourteen months old, the property of A. G. Shiffer, as follows:—No. 1, 655 lbs. live, 590 lbs. dressed; No. 2, 595 lbs. live, 550 dressed; No. 3, 685—522; No. 4, 523—493; No. 5, 436—300; No. 6, 406—376.

Care of Horses.

AFTER about twenty-two years' experience as a horse owner, I undertake to set down a little of my experience concerning the management of that noble animal.

Commencing when the foal is a day or two old, I go to it, and pass my hands down its face, along its back, and down its legs to the hoofs, hind and fore, not to mesmerise or charm the animal, but to accustom it to being handled, a thing which can not be commenced too soon. Foals are animals that, when quite young, have more sagacity, and are more tractable and easily taught than any other animal, so whatever you want them to learn, commence before they are old enough to make resistance, and depend upon it, they will never forget it. Put a halter on it, and lead it about, but be careful not to let it break away from you. Be very kind and gentle to it, but show that you are its master.

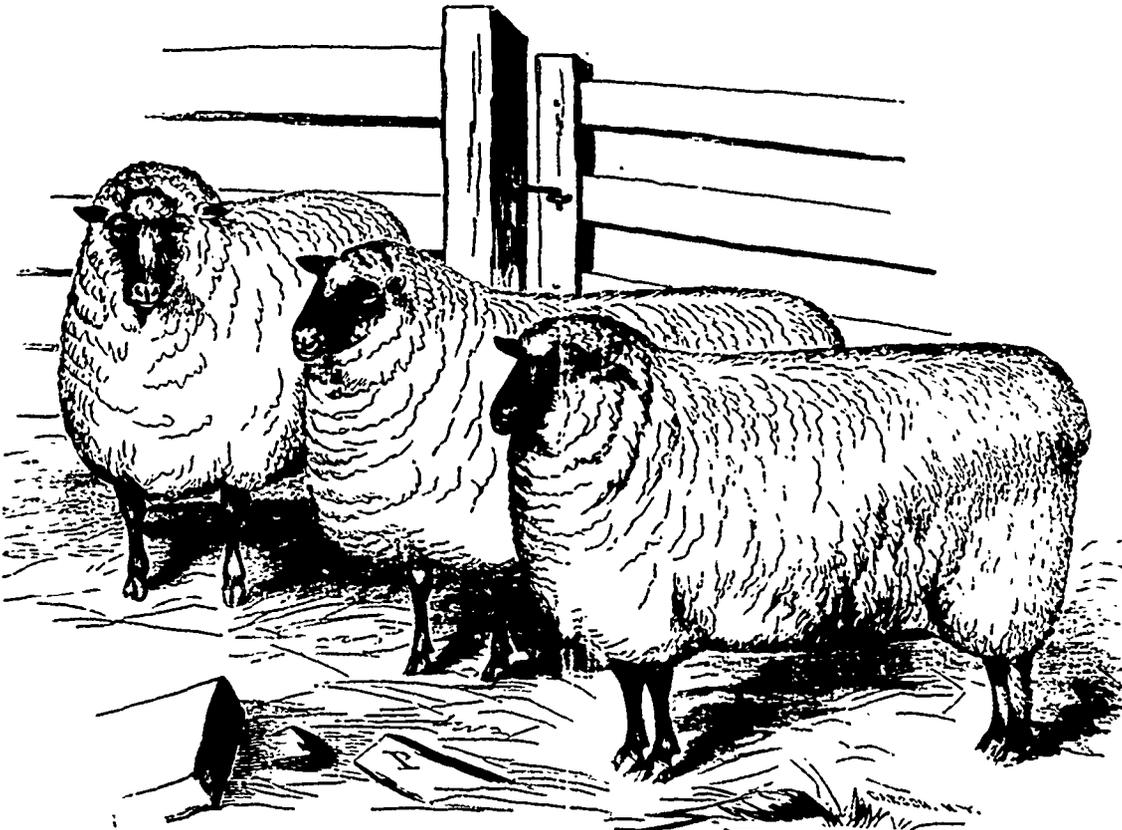
I next proceed to the horse's feet. Horses' hoofs are things of the greatest importance; for who would want to follow a lame horse at either work or pleasure. Many things ruin the feet of horses, which I

hoof, and often causes contraction and many other evils, when nailed too far to the heel, left on too long, or when the hoof is not sufficiently pared down between shooings. See that the shoe is not nailed too far to the heel. Any intelligent man can see when a shoe has been on long enough, and take it off, when it may be left off a day or two, or longer, as the case may be. A drive over soft snow, a few days ploughing or harrowing, or the like, would spread the foot and help to counteract the effects of shoeing. Always see that the hoof is properly pared down before the shoe is again put on. I have often seen the hoofs of old horses greatly improved by being left bare a few weeks in pasture. There are many other things that hurt horses' feet, as too poor feed, too high feed, too hard driving.

The most natural feed for the horse is what he can pick for himself, but as we cannot let him run and pick his own living, let his feed be as near natural as possible. Too high or too low feed have both a bad effect, but as different individuals will form very different notions of what high and low feed are, I will try and point out what I consider the middle course to be. Hay alone, be it ever so good, is not fit feed

for horses, whether working or idle. They need grain, with an occasional feed of roots, bran mash, or something to keep their bowels open. Horses need regular feed. The feed I generally find best for horses is about twelve pounds of hay and from nine to twelve quarts of oats, given in three regular feeds, with a feed of raw potatoes once a week, when idle, or at gentle work; and a small increase when at hard work.

The practice of feeding horses all the hay they can eat when idle, has many bad effects; whereas if they get three small feeds, they will stamp about in the stall, and take exercise between feeds, which will keep their legs from swelling,



THE PROPERTY OF M. H. COCHRANE, ESQ., COMPTON, QUEBEC.

cannot pretend to touch or. but I will try to point out a few errors which any man can see and correct, the greatest of which is leaving their shoes on too long. This hurts the hoof, strains the legs, and causes lameness in every shape. In the winter this has a worse effect than in summer, as then the feet are more dry and clean, whereas in summer they are wet, and the mud and heat of summer will rot the hoofs and cause the shoe to fall off. I have known horses' shoes nailed on in the fall, and not taken off until the next summer, when they would fall off in the pasture, a practice which seldom fails to bring on lameness. A horse's shoe should never be on longer than three months, and two months are very often too long. Horses' hoofs were meant by nature to go bare, and run on the earth in their natural state, and as long as we drive them on such, they need no shoeing; but when we drive them on paved streets, hard roads, &c., we have to shoe them, and stop the wear that nature meant should be on their hoofs. The consequence is that the shoe binds the

ling, &c. But remember, I do not advocate small feeds of hay without grain. A very cheap way of feeding horses, and not a bad way, is on straw, with a fair allowance of oats. I have tried a great many experiments, and have found horses always do better on straw, than horned cattle. Horses will do better on straw, provided it be good, than they will on hay only, without grain in both cases; but of course they must not be stinted. The main point with a farmer who keeps horses, is to use them in such a way as will give them all the strength and agility the animal is capable of, and to work them all they can stand without injuring either. The poor, half-starved horse is an animal any man ought to be ashamed of; but on the other hand, the pampered and over-fed and half-worked horse, though he may look very nice to some, is an animal I would advise the farmer not to keep, as such animals are more liable to loss than any other.—J. D., of Nackawick, in *Colonial Farmer*.

Any animal that is worth keeping at all is worth taking care of.

Veterinary Department.

Bone Spavin in Horses.

IN a former number of the CANADA FARMER we noticed some of the diseases of the hock joint, as hog spavin, thorough-pin, &c., but perhaps the most common disease affecting this important joint is the disease known as bone spavin. By bone spavin is understood a bony enlargement (*exostosis*), usually situated upon the antero-internal part of the joint. This is generally known "in common parlance" as a jack spavin. Of bone spavin there may be said to be two kinds, the difference consisting in the part or parts which are principally involved. One kind of spavin is the result of inflammation being set up in the periosteum, and this is confined mostly to the external part of the joint, and in fact is somewhat analogous to splint. In the other description, the disease is confined to the internal structures of the joint, and accompanied with ulcerations. This is the more serious of the two, and may exist with very little external deposition of osseous matter. In the first kind of spavin, which is trivial in comparison with the other, the small cuneiform bone and inner splint bone are the parts mainly implicated, and this has been so plainly accounted for by Blaine, in one of his first editions, that we cannot do better than give his words on this particular kind of spavin. He remarks that "the bones of the leg, the shank bone, and the two little splint bones behind, support the lower layer of the bones of the hock, the cuboid rests principally upon the shank bone, and in a very slight degree on the outer splint bone, the middle wedge bone rests entirely upon the shank bone, and the smaller wedge bone rests only in a slight degree on the shank bone, but is principally situated upon the inner splint bone, therefore the inner splint bone sustains a very unequal degree of concussion and weight," and is liable to receive injury on any violent exertion, as in leaping, galloping, or backing. It also frequently happens that a bony deposit is thrown out and extends around the greater part of the joint, and very often between the various articulations, and the cuneiform or wedge bones become firmly united by the ossific process, and the joint betwixt the wedge and shank bones will also be completely destroyed, and in severe cases the true hock joint articulation will also be encrusted with bony substance of abnormal growth. When spavin is confined chiefly to the inner splint bone, it is seldom productive of harm, and it is not an uncommon occurrence to observe horses with a very large bony enlargement on that part, and yet go perfectly sound. Therefore, in a well formed hock this kind of spavin is not a very serious detriment to a horse; but if occurring in a narrow weakly formed hock, it is very likely to terminate in disease of the inner structures. The enlargement in some instances may be very small, and the animal exceedingly lame; and this lameness may continue for months, or even years. In those cases there is ulceration going on within the joint, and this continues until the bones become either partially or completely ankylosed. The causes of spavin may be arranged under two heads, predisposing and exciting; the former may be either constitutional or local, by the conformation of the joint, or by the breed. Experience tells us that certain breeds are very liable to spavins, ringbones, &c., and these are frequently transmitted from the sire or dam to the progeny. The exciting causes of spavin are hard work and injuries.

Concussion.

DERANGEMENT of the nervous functions may be a remote result of concussion, occasioning disease, the progress of which is so insidious that it may escape detection for a considerable period after the date of the original injury. The effects of concussion, however, are not confined to the nervous system; bones, cartilages and tendons are frequently implicated, both directly and secondarily, in the shock received in consequence of the application of violent force—not necessarily to the structures which suffer most, but probably to a part at some distance from them

In this way a blow, which first impinges upon the terminal portion of one of the extremities, may cause injury to the bones, or cartilages, or ligaments of a joint at the upper part of the limb; or a sudden shock, which seems to be confined to the upper part of the head, may produce derangement of joint structures in the middle or lower portion of the spine. In fact, it is impossible, from the mere observation of the direct action of a concussive force, to determine what may be the nature and extent of injury to various parts of the body.

Upon the hard textures concussion exercises an influence which may be direct and temporary, or remote and permanent. To make this obvious, it may be supposed that a horse during a journey steps suddenly upon an elevated surface, or into a hollow, of the existence of which he was at the time unaware. The immediate and direct consequence of this unconscious movement may be a sprain of the ligaments or tendons of the extremity, and after a certain (generally short) period the injury may be repaired, and the effects entirely cease. But it is also possible that, instead of a sprain, there may be an extension of the shock upwards, and concussion to the articular surfaces of the shoulder joint. The horse may give little indication at the time of having suffered harm; perhaps after a few struggles he escapes from his position, and performs the rest of his journey without difficulty. Weeks or months may elapse before it is observed that the action of one limb is defective. By and by the defective action becomes decided lameness. An examination is made, but no palpable disease is discovered to account for the symptoms. Much difference of opinion may exist as to the actual seat of the mischief. Remedies are, however, applied to some part of the extremity, rest is enjoined, and considerable improvement takes place. On returning to his work, after long idleness, the horse again fails; and this may be said of him over and over again.

Ultimately he is destroyed as incurable, or dies from some disease unconnected with the injury. Dissection reveals caries of the cup-like cavity of the shoulder blade, or of the rounded head of the arm bone. From certain appearances it will be evident that the disease has been going on for some time, and also that it commenced in the internal structure of the bone, as disease of articulations often does, instead of on the articular surface. That such has been the case may be safely inferred whenever there is a large cavity or a number of cavities in the bone, while only a few spots of caries are to be seen on the articular cartilage; or when the latter, still preserving its healthy appearance, is found to be crushed in, having given way in consequence of the removal of support from beneath it. Instances such as we have described are not unfrequent, although it seldom happens that the discovery of extensive disease in the shoulder or hip joint leads to reflections upon its probable cause. The owner, in whose possession the horse may have been for a long time, will hardly think of looking back some months for the origin of the disease which has deprived him of the animal's services.

Treatment cannot be directed to the prevention of the probable consequences of concussion, nor to the cure of effects which are not yet apparent. Symptoms which immediately present themselves may be met by appropriate remedies; but contingencies must in such cases be left unprovided for, in the absence of means of ascertaining their position in the future. The immediate effects of concussion, which may be recognized and treated, are varied according to the seat of injury. Concussion to the head causes, in many instances, loss of consciousness more or less complete, and this is sometimes accompanied with stertorous breathing, suggestive of pain, which, however, if we may trust the experience of persons who have themselves recovered from such a state, the animal does not feel. Insensibility, however alarming, does not necessarily presuppose very severe injury, unless it is prolonged, as in cases of fracture and depression of the cranial bones, or rupture of the superficial vessels or sinuses and extravasation of blood. Application of cold water to the head will assist the recovery, and the animal should be placed in a comfortable position, with the head slightly elevated. Bleeding is unnecessary in most instances, and in some it would be highly objectionable. No attempt, under any circumstances, should be made to administer fluids to an animal until he has recovered his consciousness. There is no objection to sponging the nose and lips, and allowing a little water to run into the mouth; indeed, the attempt to swallow the small quantity thus introduced will be the first sign of recovery.—*London Field.*

WEAKNESS AND TREMBLING IN HORSES.—George F. Williamson, of Princeton, sends the following statement and enquiry:—"I have just lost a valuable colt, from a very peculiar disease, and two more horses are just taken with similar symptoms. The complaint is one which has puzzled the best skilled in this neighbourhood to cure, or even know what the disease is. The animals are first taken with weakness and trembling in the hind parts, but eat tolerably well for two or three days after they are taken. Can you, or any of your readers give me any information as to what the disease is, and if it can be cured?"

ANSWER.—Weakness and trembling of the hind quarters are symptoms of several diseases, and from that symptom alone it is impossible for us to arrive at a correct opinion as to the cases above related. Weakness of the loins, as evinced by a staggering action when the horse is made to walk, is a symptom often attendant on Influenza, which has been prevalent this winter in different parts of Canada.

The Dairy.

The Cheese Factory System in England.

CHEESE factories, now so common on this side of the Atlantic, are still novelties in England, and like all novelties, are viewed by John Bull with a degree of suspicion and distrust. Yet the conviction is beginning to force itself upon not a few intelligent British agriculturists, that there must be something in a system which yields results in the market of so satisfactory a character. The perusal of a circular like that issued by Messrs. Morrell & Co., of Liverpool, the first week in March, containing the following quotations, cannot fail to produce an impression in the dairy districts of England:—

FACTORIES.	per cwt.	FARM DAIRIES.	per cwt.
Fine factory.....	52s. to 55s.	Very good.....	42s. to 44s.
Very good do.....	47s. to 50s.	Good.....	38s. to 40s.
Good do.....	42s. to 46s.	Medium.....	30s. to 35s.
Medium.....	38s. to 42s.		

At a meeting of the Central Farmers' Club, March 2nd, the cheese factory question was the subject of discussion, but though previously announced, the attendance was not large, showing both want of interest and want of faith. Those present, however, entered with much spirit into the matter. The topic was introduced by Mr. George Jackson, of Tattenhall, Chester, who has become a thorough convert to the factory system, thanks to a visit from Mr. X. A. Willard during his tour in Britain. Mr. Jackson's view of the matter is thus expressed: "My scepticism as to the inapplicability of the cheese factory system to English dairy districts has been exchanged for a deep and increasing conviction that there is every reason for believing, with our advantages of climate, the contiguity of farms, better roads and shorter distances for moving milk, with good home markets, that English factories must ultimately triumph. They will secure a great improvement in the make of our cheese—be a boon to the producer, and so become a national blessing, by preventing an enormous waste of good milk from being made into bad cheese, and set free our dairy slaves. No doubt cheese factors will here, as they had in America, have to contend with obstacles arising from inexperience, prejudice and jealousy; but the prejudice with us against American cheese is fast breaking down, if it has not already done so; and the secret why there is no market for common English cheese is, that the public prefer paying a reasonable price for good American; and unless we are content to be beaten in our own markets, there appears for us only Hobson's choice—fight America with her own weapon, cheese factories."

We observe that the admission is freely made by English dairymen, that there, as here, fine cheese is everywhere the exception, and inferior cheese the

rule, and that the inferior article is absolutely driven out of the market by American factory cheese. Mr. Etches, the oldest Derbyshire factor, states, "for inferior cheese he really could not find a market with such competition from America." On this point Mr. Jackson observed, "Well might the late cheese-factor, Williams, exclaim of those that made bad cheese, 'what a pity they did not give the milk to the pigs! they would then have had sweet pork.' It would have been wise if we had done so last year with the milk from our seven cows; for although made by an experienced, anxious, careful, old servant, the cheese came back from Chester fair, no offer having been made for them. Some of the best I picked out and sent to Manchester, some our servants and workmen ate, some I gave them to take home for their wives and children; the rest the pigs would not eat, but the poultry amused me by being less dainty."

Great complaints are made of the difficulty of obtaining good dairymaids, of the toilsome, continuous drudgery, and the impossibility of getting as faithful, diligent service now out of work-people as formerly, when wages were lower. Dr. Voelcker advocated dispensing with dairymaids and substituting dairymen in their place, but another speaker had tried this with but poor success. Efficient men do not like to be so employed. There is a dislike to do woman's work; it puts a kind of stigma on those who are set at it. These and other difficulties point to the factory system for solution, and seem to indicate that something will ere long be done toward its adoption in England. But it is astonishing how slowly innovations make their way in the father-land.

The chairman of the club above referred to, in closing the discussion, remarked: "Gentlemen, we have been told this evening that we owe to the Americans the introduction of cheese factories. But we have also been told that the Americans have learnt from us the art of making good cheese. Well, they are cute fellows. We invented the reaping-machine, and they brought it out. With them, I suppose, 'necessity is the mother of invention.'" Endorsing what had been said about the desirableness of improvement in the quality of cheese, he said, "We in Norfolk have never attempted to make anything but skim milk cheese; and you all know that whenever you get any of that in your mouth, supposing, that is, that you are such fools as to put it there, you find the bit too big to swallow and too hard to bite."

The Use of Whey.

To the Editor of THE CANADA FARMER:

SIR,—I see a communication in a recent number of the CANADA FARMER respecting the use of whey. Now, in my opinion, there are objections to the feeding of whey to cows. That the feed which the cow consumes will affect the flavour of milk, I think no one will doubt; as in the case of turnips and many other things. Will not the feeding of sour whey, in like manner, affect the flavour of the milk? I must admit I have never tried it, but I very much doubt its utility. The next objection is the difficulty of getting the whey back from the factory to the patrons to feed it to the cows. And in case the whey is carted back, can it not be made more profitable in feeding something else, say pigs, or calves? Pork we must have, and while I agree with you that they are a nuisance around a factory, still there can be a few kept on each farm without much trouble. But, I believe, whey can be the most profitably used in feeding calves; and I would suggest that the proprietors and patrons of some factory try the experiment; get a nice pasture lot close to the factory, and let the patrons send their calves there to be fed on whey. I think a pig will consume as much whey as a calf, and I think the calf worth most in the fall. We often hear the farmers complain they cannot raise calves when sending their milk to the factory. The above plan would remove that objection. I know some doubt about the use of whey for raising calves, but after five years of experience in raising calves on whey, I do not hesitate to say they can be success-

fully raised on it; and my plan is this: I select my cows from which I intend to raise the calves, put them to the bull so that they will come in in the month of March, and as cheese-making does not commence till the 1st May, my calves get a good start by the time I commence to feed whey. I might say I never allow the calf to suck the cow if I can help it. I milk the cow and feed it to the calf, as I think there is less trouble in teaching a calf to drink that never sucks the cow. I feed it with new milk until the milk is good for home use, and then put it on skim milk until I commence cheese-making, and then feed whey with a little corn meal, always feeding the whey before it gets very sour. By following the above plan I have succeeded in raising very good calves, and I do not see why they could not be as successfully raised at the factories as at a private dairy.

PRIVATE DAIRY.

Dorchester, April 2nd, 1868.

Poultry Yard.

English and French Fowls.

To the Editor of THE CANADA FARMER:

SIR,—Having seen in your journal an extract from the *Times*, relating to French and English poultry, we beg to forward you a copy of an article which that paper called forth, and which appeared in the *Exeter Flying Post*, and was copied into many influential journals here. The writer of this reply is far more conversant with the subject than the writer in the *Times*, and to your own climate the remarks he makes are even more applicable than to ours, so that we think its insertion may possibly prevent some disappointing mistakes.

CASSELL, PETTER & GALPIN.

London, Eng., Jan. 1868.

Our readers will find in our issue of Feb. 15th, a notice of Mr. Wright's valuable work. The following is the extract above referred to, from the *Exeter Flying Post*:

In an article upon the poultry at the Paris Exhibition, the *Times* made some remarks in reference to the comparative merits of French and English poultry, to which we have thought it our duty to draw attention, as calculated to do considerable harm, if passed unnoticed, and none the less because to a certain extent the remarks are just. The *Times* expressed a most sweeping condemnation of English poultry breeders and exhibitors, because by them "the animals are prized in proportion to their approach to certain standards of form and coloration; whilst in France," it is said, "they were esteemed solely in reference to their economic value as table birds, and as abundant layers of eggs of large size." In speaking more particularly of the French breeds, it again remarked that "the smallness of the bone is a point on which the French rearers justly pride themselves, whilst, 'by some strange infatuation,' we do just the reverse;" and, finally, it affirms "that as table fowls, the only English breed that can compete with these (La Flèche, Houdan, and Crevecoeur) is the colored Dorking, and this has the disadvantage of being rather delicate in constitution—an evil which is common to it and La Flèche, and, though to a smaller degree, the Crevecoeur, but from which the Houdan is exempt." Now, as we have not the slightest doubt that the high price of butchers' meat will induce many of our readers to attempt redressing the domestic balance-sheet by keeping poultry, and as the tendency of such remarks is to make the inexperienced suppose that keeping the French breeds and discarding all English notions of pure breeds is the sure high way to success—a supposition which will lead to certain loss—some caution will not be out of place. That we may not be accused of speaking from prejudice, we will fall back upon "The Practical Poultry Keeper" of Mr. L. Wright—confessedly the highest and most practical authority on poultry which has ever yet appeared—not copied more or less from other works as is usually the case, but full throughout of instruction the fruit of experience. It is not, however, on these accounts solely we should choose it for reference, but because Mr. Wright himself has laid far more stress than any previous writer upon those very practical points which the *Times* professes to advocate, and has given the best practical estimate ever published of the French breeds, as was noted the other day by the *Saturday Review*, in a carefully written article on the same subject. Thus, we find Mr. Wright remarking, with the *Times*, that "our poultry shows have to

some extent, by the character of the judging, hindered the improvement of many breeds," and, again, that the French have taught us a lesson of some value in this respect," having "within a comparatively recent period produced by crossing and selection four new varieties, which, though inferior in some points, are all eminently valuable as table fowls." This, he remarks, "is really useful and scientific breeding brought to bear upon one definite object, and we do trust," he adds, "the result will prove suggestive with regard to others," proceeding himself to point out, in his able and scientific essay upon poultry breeding, the means by which he considers first-class fowls might in a few years be produced, "of which the cock should weigh 20lbs. and the hens 15lbs. each. But when we come to the French breeds in detail, we find that the much-vaunted Crevecoeur "is very delicate in this country," and not to be recommended for general purposes, whilst the eggs though large are not numerous, and often barren. The same may be said of La Flèche; and the Houdan alone Mr. Wright considers well adapted to the English climate. Of the merits of this breed he speaks most emphatically, but they are already well appreciated, and the breed is being multiplied as fast as stock can be obtained; though even they cannot be kept everywhere, as the hen refuses to incubate. But it will at once be obvious that first-class quality on the table is not the only thing to be considered in determining the value of a race of fowls. It is indeed the only thing to the opulent or the epicure; but in a country like England there are thousands to whom it is of far more importance to ascertain the comparative amount of meat a fowl will yield—not meat of the very choicest quality, perhaps, but good, palatable, useful meat nevertheless. From this point of view we have breeds with which the French bear no comparison. There is the Brahma, for instance, which Mr. Wright considers the most useful fowl "all round" of any, being a first-class layer, only a moderate eater, of the very largest size, and the hardest of all races known, whilst it is well adapted to confinement. The cockerels of this breed will weigh 40lbs. at three months old, costing thus about four-pence per pound, and the meat is good and juicy. Then there is the Hamburg, which though small for the table, yields, in a good run, more weight of eggs for the same amount of food than any fowl in the world. So, again, Mr. Wright most justly enforces the necessity of long-continued careful breeding before any strain of fowls can be depended on to maintain its qualities. We would impress upon all our readers that the much-vaunted French breeds have been mainly brought to perfection by good feeding through many generations, a process which would make English barn-door fowls similarly valuable, with the additional advantage of the fine French climate. But they have little intrinsic merit as breeds, and hence it follows, as has been proved again and again by the disgraced proprietors, that under a somewhat poorer regimen and our colder and more variable climate, all but the Houdan degenerate, dwindle away, and eventually perish; whilst the hardy Brahma or Cochin will thrive and grow fat. The Houdan Mr. Wright strongly recommends, when other hens can be kept to hatch the eggs. In fine, we would remark that a race of fowls well adapted for a uniformly dry and warm climate, like that of France, may be utterly wanting in that stamina required for such an atmosphere as we have in England. We need not only a fowl whose flesh is white and delicate, but which can stand our wet and cold, which can be reared in spite of them without loss, whose large growth will make meat at a cheap rate, and which will return an ample supply of eggs. For these objects we need a good proportion of that very "bone" which the *Times* so despises, just as the Scotchman in his Northern home has more bone than his Southern neighbor. In all these respects scarcely any fowl will equal the Brahma, whilst if finer quality of flesh be desired, a cross with a large Houdan or Dorking cock, as Mr. Wright recommends, will produce immense fowls for the table of quite unexceptional quality. It will be seen that we do not object to the *Times'* opinions in themselves, but to the unqualified manner in which they are expressed. We have referred to Mr. Wright's work as far the best with which we are acquainted; and we would recommend its perusal to all who may be contemplating the keeping of poultry for the first time. It is published by Messrs. Cassell & Co. at five shillings. With this in their hands, and either Brahma, Houdans, or good common fowls to stock their yards, they will go on and prosper; but let them eschew Crevecoeurs and La Flèche until they have more experience and a first-rate dry run for them. And though our breeders and shows have their faults and mistakes, which no one has so ably opposed as Mr. Wright himself, it is still no slight service to have maintained in their purity the different races to which our "tight little island" owes its possession—despite bad climate—of the finest fowls in the world.



The Midge Nuisance.

To the Editor of THE CANADA FARMER:

SIR,—There have been a great many speculations offered to the public with reference to the mitigation of this great evil. The latest of these is, I believe, the idea of importing the parasite destructive of midge. Were it practicable to effect any benefit by such an endeavour, in behalf of this great interest of our country, namely, the wheat-growing interest, there is no doubt but the enterprising and liberal local Government we have would, on application, give it their earnest consideration. I think, however, it would be doubtful if success would result from the experiment, taking into account the difference of climate and other things, in transferring insects from one hemisphere to another. Still it might be attended with great results, like many other experiments that have been made with equally unpromising prospects. In the meantime we have to utilise the resources at hand to meet this great evil, which Nature in one of her strange freaks has brought into existence.

It is often found in the economy of Nature, and I am not quite sure that we may not apply it as a general principle, that one evil is brought to counteract another; and it may be found that there are influences now in process of consummation to bring about the result we so much desire, in the gradual extinction of the midge.

I am of opinion that this baneful pest is on the decrease, as far as my limited observation goes. In the great fall wheat-growing sections, the facts may not bear out this impression, but here, where spring wheat is almost exclusively grown on old land, the results are in accordance with the assertion.

It is the general opinion that overcropping with wheat is one great cause of midge, and the natural result of an increased production of barley, stimulated by the high price that has lately prevailed, may have, and I have not the least doubt is having, the effect of decidedly lessening the midge product. The system of sowing Fife wheat late in spring, adopted by farmers formerly to retard its development until after the time of the larvæ-depositing season of the insect, a wise and necessary precaution, is becoming obsolete. For one I have followed that mode, being determined to cut off the means of their subsistence and production, and I hoped the rule would be made general. But many farmers think they get better crops by sowing early, even if the midge does eat a portion. Of course they have a perfect right to pursue that course, but in view of the general interests, and even their own, I have often thought they stood in their own light. I must say, however, that I have found the plan a very advantageous one. Although farming on a very limited scale, I might be pardoned the liberty of furnishing a few examples in support of the theory.

The season of 1860 was one of the most propitious that ever shed its benign favours over Upper Canada. The spring was very early, and although I had my lands ready for wheat seeding on the 20th April, I preferred to defer sowing, as the midge contagion was at its height, until the 10th of May. I then put in my little crop of about fifty-five acres, and harvested and threshed from the same 1,400 bushels, of a sample and quality for milling purposes quite equal to any fall wheat, and I presume there was not over two per cent. destroyed by midge. Since the first appearance of the midge, I have not known a season without great destruction to early sown spring, and a loss of from ten to fifty, and even seventy-five per cent., in fall wheat.

But last year we departed a little from the rule of late sowing of Fife wheat, sowing about the beginning of May, our product being about twenty bushels per acre and free from midge, which I consider a very favourable augury.

The adoption of the midge-proof variety for fall sowing, and the most advantageous methods at hand in reference to spring sowing, are matters worthy the consideration of parties desirous of securing and furnishing this staff of life, the great staple of our country.

I have noticed a phase in connection with midge-eaten wheat fields of late that I do not recollect to have seen in the earlier stages of their history. It is very easy to tell now, in passing wheat that is about ripe, if midge is prevalent, for the heads are literally picked to pieces by birds. There is no doubt that they are in pursuit of the maggots, for the grain is left in the heads. Perhaps the midge parasite has begun its operations. Where this has taken place you will observe the maggots have disappeared. What bird it is that is coming to the aid of the plundered husbandman, I have not seen, but they are doubtless some small birds; still I have no doubt but the ordinary little gray birds would feed upon them, having discerned their whereabouts. I am quite satisfied the evil is not so great in this section as formerly. Whether it has occurred from accidental causes, such as the prevalence of high winds about the time of the depositing season, or from general influences working out their gradual extinction, or an abatement of overcropping, I am not prepared to say. Perhaps the birds are doing the work. We know that all the family of little feathered choristers are insectivora, and we may yet acknowledge them to be classed among the benefactors of the human race.

Our local Parliament, at their last sitting, passed an amendment to an old law for the preservation of game, and I regret there was not a provision included for the protection of small birds, with a penalty against their being killed, and to protect their increase. Of course we except hawks, crows, woodpeckers, wood pigeons, &c. In fact I should have regarded a clause of this kind of equal importance with the entire Bill, for we know that the birds destroy a vast array of insects that are hurtful to husbandry and horticulture.

Should the midge nuisance subside, or even abate, the farming interests of this Province would materially revive, under the auspices of good markets for wheat and other grains. Dairying, too, being on the increase, will have the effect of enhancing the development of our agriculture, by improving the fertility of our better arable lands, and rendering lands of indifferent quality comparatively remunerative at a trifling outlay. The latter might be improved, too, by a liberal application of clover and plaster, and by stocking them with cows. This method would be particularly beneficial to sandy lands. I am fully satisfied that there might be double the quantity of plaster used with good results.

But should the nuisance continue, I know of no other means than those to which I have referred to stay its progress. I offer these views with some hesitation, knowing what an enterprising, practical body of men our farmers are; but I believe them to be safe in practice. J. H.

Hope, March, 1868.

Homely Hints.

To the Editor of THE CANADA FARMER:

SIR,—We find many people, especially among our rural population, who do not recognize "order" as being "heaven's first law," while the merchant and the mechanic, generally, are systematic. If farmers only knew how much they lose by the careless manner in which many things are managed about the farm, they would be more systematic in business. Have a place for everything, and then keep everything in its place, and always in good working condition.

Not long ago I saw a plough where it was last used in the fall, while the reaping and mowing machines were allowed to remain in the fields in which they were last used. It could not be expected that, when these costly implements are left out all winter, the minor ones, such as spades, hoes, horse-rakes, &c., should be properly housed. These, of course, are also scattered over the farm where last used. The wood shrinks, cracks and decays, the iron-work rusts, and implements thus neglected are disagreeable to work with. They will, moreover, depreciate in value from five to ten per cent. in addition to the ordinary wear; and again, the time and trouble lost in looking for and getting them repaired is considerable.

Every farmer should have a box for old iron. How convenient it would often be to get such things

as we wanted out of this receptacle, instead of having to look all round the buildings for something which we require, and often fail in getting; and then, after all our time is lost, we have to go to the smith's shop. Much also is lost to a farmer by not taking care of pieces of timber fit for such purposes as axe-handles, repairing hay-rakes, or any trifling but necessary repairs, which his implements from time to time may require. Instead of having suitable material at hand, he has to go to his more provident neighbour or to the waggon-maker for every little piece of wood he may want, while very likely piles of timber, once suitable for such repairs, are lying about the farm decaying. How easy it would have been to have laid a piece of wood in some dry place for future use. Besides, such timber is becoming scarce and valuable, and cannot always be obtained from a neighbour for nothing. Such an extravagant manner of living has, moreover, a bad effect on one's family and on the whole neighbourhood in which a man lives. But there should also be a time for doing everything. The farmer attending to this would save a considerable amount in a year. By the neglect of putting the fences in proper order before the seeding time in the spring, much precious time is lost in putting up the fences while we ought to be getting our seed in early, and consequently our crops are likely to be a little lighter. In passing a place lately, I saw the barn-door swinging on one hinge, the gate broken, and some of the out-buildings out of repair: very likely some of the cattle have been in the barn and destroyed much grain, with a risk of killing themselves, while some of the stock may have strayed off the place, causing much loss of time and expense in recovering them. If a nail had been driven, or any other little repair done at the right time, much of this time, trouble, and expense would have been saved.

Let not the reader suppose that only the lazy farmer is here alluded to. Though this undoubtedly applies to him, it also has reference to some of our hard-working and industrious farmers, who have not learned to do things in the right time and proper manner, or rather, have not perceived the advantage of this rule. Now, just try it for one year, and you will save money, not have to work so hard, and it will be better for your children than if you had given them some extra hundreds of dollars.

CULTIVATEUR.

March, 1868.

A Trio of Queries.

JOHN DODDS, of Beverly, wishes to know in reference to what formerly was a black ash swamp, but is now drained, if apple or pear trees would be suitable to plant—if so, what kinds? Also, what method should be taken to put an old hive of bees into a patent hive, similar to the Thomas hive? Further, if bone dust or phosphate of lime would be sufficient for turnips or corn, without barn-yard manure?

ANS.—We cannot recommend a reclaimed swamp as a good place for an orchard. However well drained, such a locality is low, apt to be moist, and is not nearly so well adapted for fruit-growing as a higher situation. It is always best to plant an orchard on high ground. We know of no kinds of apples or pears adapted to such a place.

To transfer a stock of bees from a common box hive to a moveable frame hive, first smoke the bees a little, then turn the old hive up-side down and take a box of some sort, about the size of the old hive, place it over the inverted hive and commence rapping on the sides of the old hive. The bees will leave the old hive and cluster in the previously empty box. When all, or nearly all the bees have changed their quarters, carefully take the old box-hive apart. Fix the combs by means of pins in the frames of the new hive, fitting them as neatly as possible. When this is done, and the hive is ready for the reception of the bees, hive them just as you would a new swarm. If it be a Thomas hive put it on a table, drop the bottom board, empty the bees in front of the opening, and they will soon take possession of the new hive.

Bone dust or super-phosphate would, doubtless, be beneficial to a crop of turnips or corn applied alone, but their beneficial effects are increased if applied along with barn-yard manure.

Sowing According to the Age of the Moon.

To the Editor of THE CANADA FARMER:

SIR,—I am only a young farmer—my opinions lack the authority of experience. Yesterday I had a dispute with my next neighbour and my man, who both maintained that the state of the moon was of the greatest consequence in sowing peas or planting onions. I showed my ignorance by laughing at them; so we decided on appealing to you. My man declares that if peas are sown during the first two quarters they will never ripen; that they must be planted when the moon is on the wane. What extraordinary influence she exercises over onions I forget just now. I know many who think like this, and it would be well for you to dispel a delusion that often causes inconvenience to those who believe in it. Do you know anything about a new grass called *Bromus Schraderii*? When should it be sown, and how much to the acre, and is it good for anything? I got a little at Bruce's, in Hamilton, the other day, to try, but though his catalogue makes it out to be something wonderful, it does not tell what to do with it. I fear your answer will come too late, but still I should like to know.

NOTE BY ED. C.F.—But for the fact that the superstition above alluded to is credited by some, even in this enlightened age, we should not have thought it necessary seriously to state that seed will germinate, under favourable conditions of temperature and moisture, without being influenced in the slightest degree by the moon. It is the height of folly to lose the precious opportunity of sowing seed, whenever ground and season are ready, in waiting for any fancied lunar influence. Such belief ought long since to have ceased altogether.

In reference to the second question, our correspondent will find a short notice of the grass in the CANADA FARMER for Jan. 15th, 1867. Its value, like that of most new candidates for public favour, has perhaps been rather over-estimated; but its reputation justifies a trial. We cannot say what quantity should be used to the acre.

The Divining Rod.

To the Editor of THE CANADA FARMER:

SIR,—I might have been tempted to offer a few remarks in reply to Mr. George Doidge's strictures on my communication anent the Divining Rod; but when a person, embarking in controversy, is unphilosophical enough to make use of the word "ridiculous" in his attempt to controvert the opinions of another, I call to mind

"The starry Galileo and his woes,"
and abstain from further comment.

As regards Mr. York's letter, I may be permitted to observe that it is just possible that the nameless "tin pedler" was an imposter. At all events, I venture to suggest that the case specified by Mr. York can scarcely, in fairness, be placed in the same category with the cases furnished in my communication.

It should be borne in mind that no one ever pretended that the power of effectually using the Divining Rod is inherent in every man:

"Non cuivis homini contingit," &c.

V. C.

Lakefield, Ontario, April 6, 1868.

An Early Green Manure Crop.

MR. A. KIRKWOOD, of this city, sends the following communication in reference to one which we published lately on the subject of "White Mustard" as a green manure:

"In the number of the CANADA FARMER for the 16th March, of the current year, your correspondent, 'An Improver' says, 'We all feel the want of some inexpensive quick-growing green crop, that can be sown (on land ploughed in the fall) very early in the spring, to be matured sufficiently by the 1st of July to be ploughed under,' &c.

"I would suggest to try *Melilotus alba* or white melilot, known also as Bockara clover, which can be sown very early in the spring, grows very rapidly, and in great quantity, and will be ready to be ploughed under by the first of July. But I would advise him to plough it under before then, as at that date there may be more of it than he can get well under."

MIDGE-PROOF WHEAT WANTED.—Michael Roddy, of Sand Point, wishes to know where he can procure a few bushels of midge-proof wheat.

SEEDING CLOVER WITH PEAS.—"A Subscriber" enquires whether "it would be advisable to sow clover with peas." We should think the peas would be very apt to smother the clover.

CANADIAN PATENTS.—D. P., of Lancaster, asks us to give "a full description how, where, and the cost of procuring a patent right for an original new invention in the Dominion."

ANS.—Letters Patent for Inventions are not yet granted for the Dominion, and cannot be, until a new patent law is passed by the Legislature; but patents continue to be issued, as heretofore, at Ottawa, for the Provinces of Ontario and Quebec. The Government fee is \$20. The fees for preparing the necessary papers and drawings, range from \$10 to \$15, or \$20, according to the work involved. It is expected that patents previously granted for any of the Confederated Provinces will be extended to the whole Dominion by the new law; but nothing certain is known on this point. At present, only a British subject residing in either of the two provinces, being the actual inventor, can obtain a patent for the Provinces of Ontario and Quebec. If our correspondent has a new invention which he desires to protect, he should communicate with some reliable Patent Agent, sending him a model and full description of the invention, that the case may be prepared for the Patent Office. For such a service, we can recommend Mr. Alex. Christie, Patent Agent, No. 34, King Street East, two doors from the CANADA FARMER office. He has had considerable experience in the business, and can give more information on the subject than we have room for in this place.

The Canada Farmer.

TORONTO, CANADA, APRIL 15, 1868.

"The Ashes of a Slice of Bread."

DURING a recent visit to Montreal we had the pleasure of attending the Annual Conversazione of the Natural History Society, at which, among other interesting proceedings, Principal Dawson delivered a capital address on the topic which heads this article. At the close of the address, the President of the Society regretted that all the farmers of Canada were not present to hear the address. So did we. As the next best thing to their being present, we propose to give them a brief recollection of what was said. Unfortunately we took no notes, and hence must draw for our report on a rather treacherous and leaky memory.

The Principal observed that many persons were inclined to regard the investigations of the Society as more curious than useful. But its attention is often taken up with subjects of a very utilitarian character. There is one, for example, which is of the highest practical importance. It is the art of making two blades of grass, or two kernels of wheat, grow where only one grew before. I shall endeavour to illustrate this by discussing, for a few minutes, the ashes of a slice of bread as related to national wealth, population, and emigration. Now, our slice of bread consists of the following things: gluten and starch, with perhaps some sugar, mucilage or oil, woody matter, water and ashes. We will pass over all the rest, and confine attention to the last-named—the ashes. These form only about two per cent. of the

whole substance, yet in them are found a variety of elements. On the wall is a table of them, and it would be easy to show that all the things named are more or less important and necessary to the plant, and to the animals that feed on it; but I will just refer to one only, second to none in importance—Phosphoric Acid. Every adult human being has, in his body, several pounds of phosphate of lime or bone earth, and this is obtained from the food he eats; and whether it be from his slice of bread, or from animal food, it is derived originally from plants. If we subsist mainly on bread it comes from wheat. The wheat obtains it from the soil. So essential is this phosphate, that unless a certain quantity of it be found in the soil, it will be impossible to grow wheat. A fertile soil contains about four-tenths ($\frac{4}{10}$) of one per cent. of this material, and how interesting it is to reflect that the Creator has placed a small supply of this ingredient in every fertile soil. The phosphates are distributed through all productive soils, in a state of nature, in about the proportion above stated. In worn-out, or exhausted land, only one-tenth of one per cent., or even less, will be found. Trifling as this difference may appear to the uninformed, it implies a great deal. If wheat could be grown on such a soil, it would lack one essential quality. The flour made from it would contain no bony matter, and the feeders on such bread would become rickety, and have no frame on which flesh could hang. Now, on many farms once rich in phosphate, and consequently yielding fine crops of wheat, it is found that wheat will grow no longer. What is the matter? The ignorant farmer blames the climate, thinks the seasons have changed, lays the evil to insects, to blights, and various mysterious causes; but the fact is, that perhaps twenty crops of wheat have been taken from the soil without restoring to it the valuable material that has been removed from it. The land is impoverished, and cannot yield its wonted increase. But the farmer does not know this. He could easily remedy the evil if he understood the philosophy of his business. But he goes blindly on, his crops growing less and less, until he falls into debt and poverty, becomes discouraged, sells his farm, emigrates to the West, or to some new country—or he remains to struggle on, while his sons, finding farming a poor business, go to the city to seek their fortunes by crowding into the professions, or trying to get into mercantile pursuits. Moreover, sections of country acquire a bad name, farming doesn't pay there, and emigration passes them by for more inviting neighbourhoods. This is no fancy sketch, and what has been referred to is only one of many branches of agricultural science which, if our farmers and their sons would study, would lighten their toils, put money in their pockets, and send the tide of prosperity all over the country. These things are taught in our schools and universities, in our agricultural periodicals, and in the most elementary treatises on scientific farming. It is cheering to know that attention is being turned to these matters, that our legislature is becoming alive to their importance, and that steps are being taken to promote the interests of agriculture. This is the foundation interest. Agriculture is the King of arts; by it all men live; "even the King himself is served by the field." It is the duty of every lover of his country to promote agricultural improvement, and our legislatures are well employed, in devising measures for obtaining agricultural surveys and reports, and in securing efficient instruction in practical science, especially agricultural science, in our schools and colleges.

The above is but an imperfect outline of a most interesting address; yet meagre as it is, we hope it will help to put not a few of our readers on a line of thought and investigation that will make them better and more prosperous farmers.

CHANGE OF OWNER.—Mr. John Snell, of Edmon- ton, has, we are informed, as the result of the advertisement in our columns, sold the yearling Durham Bull, "Darling Duke," sired by "Duke of Bourbon," dam "Grace Darling" by "Baron Solway," to Mr. Richard Brown, of the Township of Clarke, for \$200.

Abolition of the "National Seed Shop" at Washington.

Our American exchanges are in ecstasies over the extinction of what has long been a serious matter of complaint with them, viz.: the seed distributing department of the Bureau of Agriculture at Washington. From all accounts there has been much abuse connected with this department in times past. One of our United States contemporaries in eulogizing the new Commissioner for his action in this direction, says, he has "abolished one of the most unfair, corrupt and useless parasites that ever sucked blood from the treasury." This may be all true. Our American confreres are better judges than we are as to the way this thing has been worked, yet we venture a doubt whether the policy of "reforming it altogether," might not have been wiser than that of abolishing it altogether. If Government, as such, is to keep up an Agricultural Bureau with a view to promoting the great foundation interest of a country, then it seems to us that the trial and introduction of new seeds or foreign varieties of old, familiar seeds, is a most important part of its work, and one of the most useful directions in which it can exert itself for the general good. To test and distribute new seeds is costly, and attended with risk. Hence it is not likely to be done at private expense. The gain of a single new plant, such as the sorghum, which, if we mistake not, was introduced by the seed department of the U.S. Agricultural Bureau, is of immense value to a country. Out of this a new industrial interest has grown, and a valuable article of commerce has been added to the marketable commodities of the land. Reform in the way of abolishing institutions is cheap and easy; not so the correction of abuses that may have crept in. It is a noteworthy fact, that while our American neighbours are congratulating themselves, and praising their new Commissioner because he has, to use the classic language of the *American Agriculturist*, "bust up the great National Seed Shop," we in this country are urging our Bureau of Agriculture to make itself useful, among other ways, in obtaining and distributing new and valuable seeds. While freely admitting that such a line of operation may be so pursued as to be of no practical benefit, we cannot help thinking that, well managed, it may be extremely beneficial. Perhaps it is less needful in the United States for Government to do anything of the sort, from the fact that the country is a very extensive one, while the people are always on the *qui vive* for novelties. Private enterprise can, under such circumstances, more safely engage in ventures of importation. But even in this direction our neighbours do not escape from imposition. Novelties of the most worthless description are constantly being introduced by editorial puffery and skilful advertising, so that in many instances little fortunes are made before the test of a single season has been brought to bear. Interested parties generally hold back their novelty until they have a sufficiently large stock to make it a paying affair, whether the public is benefited or no. But it would be very foolish on this account to abolish all seed stores and nurseries. And even so, we venture to think, it is hardly wise to sing pæans of joy over the extinction of a concern, which, however, badly managed heretofore, might have been made, if in skilful, conscientious, and competent hands, a wide-spread public blessing.

Implement Catalogue.

We have received from R. H. Allen & Co., of New York, their newly-published Catalogue of Implements, Machinery and Hardware: a voluminous and copiously illustrated publication of 272 pages. It is a perfect *vade mecum* of farm requisites, and also contains a great variety of things not specially pertaining to agricultural use. Not only are all the staple and familiar farming tools enumerated in this

goodly volume, but recent inventions and novelties are also to be found in it. A price list is forwarded along with the catalogue, so that purchasers have all needful information supplied them in print, thereby rendering letters of enquiry needless.

We shall mention a few out of the multiplicity of articles comprised in this trade list, advertizing chiefly to such things as we suppose our readers may possibly like to know of. Among a great variety of ploughs, we observe sub-soilers of different sizes and prices, from a light one-horse kind, working from six to ten inches deep, at \$8, to a heavy article for four oxen, working from fourteen to eighteen inches deep. Every farmer who has a third horse or an extra team should keep a subsoil plough following the surface plough. We note also, under this head, side-hill ploughs of a good pattern, shovel-ploughs and prairie ploughs.

Cultivators in great variety are here represented. Let horticulturists make a memorandum of "Harrington's Hand Cultivator," price \$9, a nice little implement for going between rows of garden vegetables, strawberries, &c.; and let farmers who would like to mingle ease and dignity with hard work, dot down as a farm luxury the "Sulky Cultivator," price \$75.

Hand seed sowers of several makes are advertised: the best among them, the "Wethersfield Seed Sower," is for sale in this city, by J. Fleming & Co. A novelty under this head is worthy the attention of the farming public, "Cahoon's Broadcast Sower," price \$10. It sows with regularity so much seed per acre, as graduated, is suspended from the neck, and worked with a crank. Horse-power seed sowers are also offered, some with guano attachment, others with grass seed attachment, and one sowing grass seed and plaster at one operation.

The Hay Tedder, price \$100, is an implement concerning which too much cannot be said in commendation. It shakes up the newly cut grass, and weathers it evenly in double quick time. It is the fitting companion of the mowing machine.

Potato harvesters are offered from the cheap potato plough, price \$10, to the "Empire Harvester" price \$125.

Wind-mills with self-regulating attachment; horse-powers for from one to eight horses; dog or sheep powers, by which useless canines and pet lambs may be made to do the churning themselves; cleaners, hullers, corn shellers, smut machines, bark and cob crushers; fan, farm, and flour mills; cotton gins, saw mills, mortising, boring, and shingle-making machines; sugar evaporators, farm boilers, sausage meat cutters and fillers, graters, fodder and vegetable cutters, apple and grape mills for cider and wine making, apple parers, jack screws, hay presses, cheese pressers, churns, brick-making machines, mangles, scales, refrigerators, freezers, grindstones, belting, packing, vanes, draining tools, ice tools, garden implements; are among the contents of these well-filled pages.

Among vehicles here offered, a dumping farm wagon is a great convenience, and one that ought to come into general use, as one of the best labor-saving contrivances a farmer can have about him. The Patent Cow Milker, not long since illustrated and described in our columns, is for sale by this firm. A capital dynamometer, for testing the draft of ploughs and harvesting machines, is here offered at \$25, a great reduction on the cost of the old country article.

In thus running over a few points in this catalogue, while we may be doing the house that issues it a service, we conceive that we are rendering a greater service to our readers, and the country at large. We are much indebted to American inventors and manufacturers for labor-saving contrivances, of which it is our wisdom to procure and use as many as possible.

It only remains to add, that parties wishing a copy of this Catalogue must remit one dollar, American currency, to R. H. Allen & Co., 189 and 191 Water Street, New York. The figures we have quoted from the price list, are of course, all in United States currency.

Manufacture of Beet-root Sugar in England.

The feasibility of manufacturing sugar from the beet in England, is likely to be put to the test very shortly. An enterprising London sugar refiner, Mr. James Duncan, has engaged to put up a factory on condition that the adjacent farmers grow a certain quantity of the beets. The condition has been complied with, the Lavenham Farmers' Club having engaged to cultivate 200 acres. The *Mark Lane Express* appears to be sanguine as to the result. In reporting the action of the above-mentioned club, that respectable journal shows that in France the yield of beet-root sugar has increased from 4,800 tons in 1827, to 132,000 tons in 1860, with a further increase since; that large quantities of this product are sent to England, and compete in the market with the West India article; that the climate of England is every way favorable to beet culture; that twenty tons of sugar-beet, a moderate average yield, will bring £18, while thirty tons of mangolds, also a fair average yield, are only worth from ten to thirteen guineas, and that in addition to this gain there is considerable value about the refuse after it has gone through the press, for feeding purposes. On these and like grounds, our able contemporary augurs the success of the experiment.

One fact stated in connection with the matter, would seem to encourage the belief that the Canadian climate is eminently adapted to the cultivation of the sugar-beet, and that in this country a large percentage of saccharine substance would be contained in the crop; it is, that below forty-five degrees of latitude the plant does not yield enough saccharine to answer the purpose of sugar-making, and that the higher the latitude above forty-five, the larger the proportion of saccharine, so that in Russia as high an average as fourteen per cent. is obtained. We have had our doubts as to beet-root sugar being a profitable manufacture in this country, but various facts have led us to look somewhat more hopefully upon it, and we should very much like to see the question subjected to the ordeal of thorough experiment.

The Marsh Harvester

Our readers may remember that we last year gave a brief notice of a new reaping machine, called the "Marsh Harvester," which was coming into great favor amongst our neighbours, more particularly in the Western States. Besides several subordinate advantages which this reaper appears to possess, its chief distinctive feature is the provision made for facilitating the binding of the grain. The machine is provided with a platform, on which one, or if necessary, two men can stand, and receiving the grain as it passes from the sickle on an endless apron, bind it at once, thus saving themselves all the labor of walking, and to a great extent the fatigue of stooping. It is obvious, also, that by this arrangement, not only is labor saved to a considerable extent, but much of the unavoidable scattering of the grain attendant on the usual method of binding is avoided. The advantages which this reaper claims are indeed so obvious, that it only requires to be shown that it actually does its work well to secure for it a preference over any other reaper now in use. The increasing number that have been sold in the United States is, we think, satisfactory evidence on this head. Our previous account of this invention will be found in the August number of the CANADA FARMER for 1867, Page 227, Vol. 4. We have repeatedly received enquiries where this machine could be procured, and have hitherto been obliged to refer our correspondents to the American makers or agents. We are now, however, able to direct them to a Canadian manufacturing firm for all necessary information, and for a supply of this new reaper. The Messrs. Paxton, Tate & Co.,

of Port Perry, as will be seen by their advertisement in this issue, are now prepared to fill all orders for the Marsh Harvester, in reference to which they make the following statement:

"The history of this invention is confined to the last three years. From 250 machines built in 1866 the number has increased to over 2,000 for 1868. The advantages of this machine over the old styles are very marked and prominent, and in part consist of the following, viz:—*In Light Draft*, two horses being sufficient to draw it. *2nd, In saving hands*, two men being able to bind as much riding on this machine as four or five following the old styles. *3rd. In saving shattered grain*; the difference in favour of the harvester being from half to one bushel per acre. Now, these advantages are real, and very obvious; they have insured large sales wherever the machine has been tried, and mark the 'Marsh Harvester' as the reaper which can show at the end of each season a decided saving of money to the farmer. We ask a candid consideration of what we claim, and a fair trial for this new candidate for public favour. The practical farmer admits the very great advantage in saving half the labor of binding, enabling him to save his crops without hiring a housefull of extra hands. We know and are ready to warrant that this machine will perform all that we claim for it, and will make all sales conditional that it performs in the field as we represent. We ask for these statements a candid consideration, and hold ourselves in readiness to answer promptly and fully all enquiries."

We believe the introduction of the Marsh Harvester will prove a valuable boon to the Canadian farmer, and will mark an important era of progress in the history of the reaping machine.

The Taste of Horseflesh.

That eminent naturalist and sportsman, Frank Buckland, gives an amusing account in the *Mark Lane Express* of his attendance at the Langham Hotel horse banquet. First he states his own deliberate opinion as to the merits of the new article of animal food, thus,—"the meat is nasty." He says he went to the dinner "without fear or prejudice," tasted all the dishes from the soup to the jelly, and in every form an unwonted and peculiar taste could be recognized. This taste he likens to the peculiar odour emitted by a horse that has been hard galloped, and it is so inveterate, that he does not believe any kind or amount of cooking can possibly conceal or do away with it.

So much for himself. In regard to his fellow-guests, he says,—"In the middle of the dinner at the Langham Hotel I stood up to watch the countenances of the people eating, and I devoutly wished I had had the talent of a Hogarth to be able to record the various expressions. Instead of men's beards wagging, there seemed to be a dubious and inquisitive cast spread over the features of most who were present; many, indeed, reminded me of the attitude of a person about to take a pill and draught; not a rush at the food, but a "one-two-three" expression about them, coupled not infrequently by calling in the aid of the olfactory powers, reminding one of the short and doubtful sniffs that a domestic puss (not over-hungry) takes of a bit of bread-and-butter. The bolder experimenters gulped down the meat and instantly followed it with a draught of champagne; then came another mouthful, and then, as we doctors say, "*Fiat haustus ut antea.*" And if after the feast an average had been taken, I fancy there would have been more empty bottles than empty dishes for the waiters to clear away."

Mr. Buckland thinks "hippophagy," as the eating of horseflesh is termed, has not the slightest chance of success in England. Even the poor cannot, he believes, be induced to use it. He has talked with many people of this class on the point. The greatest abhorrence is expressed, especially among the women, who, he says, would as soon think of cooking cats'

meat for their husbands as horseflesh. He is of opinion that if this meat contained in it the elements of good and cheap food, the poor people would have found it out of themse' long ago, and it would not be needful for a lot of gentlemen to meet together to show them the way to eat it. Among the better classes he believes the flesh of the horse will never become popular, for these reasons: *first*, the cooks will not prepare it unless under compulsion; *secondly*, the ladies will object to it; and *thirdly*, the master of the house will find it vastly inferior to beef and mutton.

By all accounts "hippophagy" is making progress in France, notably in the country of skilled cooks and connoisseurs of food, but the phlegmatic English do not espouse novelties so readily as the mercenary French.

GOLDSMITH'S CATALOGUE OF SEEDS.—We have received a copy of Mr. Goldsmith's Annual Catalogue of Garden, Agricultural, and Flower Seeds, which, together with the advertisement in reference thereto in our present issue, we commend to the notice of farmers and horticulturists. The catalogue contains a very complete list of seeds adapted for this climate, with brief and simple directions in regard to their culture. Mr. Goldsmith also advertises a large assortment of bedding-out and other plants, &c. We can confidently and cordially recommend Mr. Goldsmith to those who may find it convenient to obtain their supplies of seed and plants from him. Address, St. Catharines, Ontario.

COST OF THE DOG LUXURY.—We happened to glance, the other day, at the published account of the Treasurer for the Township of Puslinch, as it appeared in a local paper. Observing that "paid destruction of sheep" came very often, we had the curiosity to foot up these items. The result was that out of \$119 44c. of township expenditure, \$351.25 were paid for destruction of sheep. We don't suppose the Puslinch dogs are any worse than other, and the inference is clear that the dog luxury (luxury?) is a very expensive affair. The fondness of many human beings for dogs is very inexplicable to us. We are patriotic enough to wish that the crows had at least nine-tenths of the canine race as it exists in Canada.

Agricultural Intelligence.

Crop Reports in England.

A RECENT number of the *Mark Lane Express* gives the condensed substance of five hundred and fifty letters received from all parts of England in reference to the cereal crops of the harvest of 1867. These letters appear to have been elicited by printed questions for carded to the writers by the proprietors of the journal in question. It is, we believe, their custom to seek information about the crops annually in this way. The following are the chief results of the enquiry, thrown into tabular form:—

	Wheat.	Barley.	Oats.	Beans.	Peas.
Fallow	—	—	—	—	15
Two-thirds under average	—	—	—	—	31
Half under average	—	—	—	—	—
One-third under average	—	—	—	—	—
One-fourth under average	—	—	—	—	—
One-fifth under average	—	—	—	—	—
One-sixth under average	—	—	—	—	—
Under average	—	—	—	—	—
AVERAGE	51	50	50	140	142
Over average	—	—	—	—	15
One-sixth over average	—	—	—	—	—
One-fifth over average	—	—	—	—	—
One-fourth over average	—	—	—	—	—
One-third over average	—	—	—	—	—
One-half over average	—	—	—	—	—
Totals	550	522	515	375	405

As compared with the year 1866, the yields of all the cereals were below the mark, with the exception of oats, which were far in advance of the previous

year, as will be seen by the following comparative statement:—

Years.	Wheat.		Barley.		Oats.		Beans.		Peas.	
	Under average.	Over average.								
1867	452	92	214	303	132	382	221	151	237	163
1866	325	246	171	365	183	330	101	136	67	162

From this table it appears that the number of reports of a deficient crop in 1867 exceeds those of 1866 in the following proportions, viz., wheat 121, barley 13, beans 120, peas 174; while the returns of oats are in favor of the last crop to the extent of 51.

This unfavourable condition of things was balanced to some extent by the excellent order in which the grain was harvested, and by the good price it commanded when sent to market.

The *Mark Lane Express* estimates the actual deficiency in last year's wheat crop at fully one fourth of an average, or four million quarters; and from the fact that the wheat crop was begun upon as quickly as it was housed, there being no old wheat in the country, it is estimated that at the present time there is a much smaller stock on hand than in any season since 1851. "It is, therefore, probable," says our contemporary, "that by next harvest we shall find ourselves as short of stock as at the last."

This is a very different exhibit from what appearances indicated at the time of harvest. From the look of the fields a plentiful yield was anticipated and proclaimed. During harvest, the lightness of the handfuls in the reaper's hands, led to suspicion that the crop was not so good as it looked to the eye, and soon the flail and threshing machine confirmed the suspicion. But only since the returns have come in from all parts of the island has it been ascertained how general and serious the deficiency has been. There, as here, the want of some plan of securing trustworthy crop returns is greatly felt. All parties concerned need to know as promptly as possible the character of the harvest. Ignorance converts legitimate business into mere speculation, which, though it may sometimes bring large gain, oftener leads to disastrous losses. There is, it would appear, no immediate prospect of cheap bread on either side the Atlantic.

Officers of Agricultural Societies for 1868.

CANAN.—President, Thomas McCamus, Esq., Bailieboro P.O.; Vice-President, Thomas Morrow, Springville P.O.; Secretary and Treasurer, J. W. Sootheran, Millbrook P.O. Directors:—Ward Thexton, George Thorn, W. H. Lowes, Anthony Garnet, Richard Howden, Wm. Richmond, James Sissons, Thomas Williamson, James S. Jan.

SPRING HORSE SHOW.—The annual spring show of the *Canan Agricultural Society*, for stallions, will be held at Millbrook, on Monday, the 4th May, 1868. Prizes are offered for Draught, Carriage and thorough-bred blood horses.

CANADA SHORT-HORN HERD BOOK.—We beg to acknowledge the receipt, just as we go to press, of a sample copy of this long looked-for publication from Mr. Secretary Thomson. We can only at present announce the issue of this work from the press, and say of its external appearance, that it is a very respectable-looking volume. Of its contents we may have somewhat to say hereafter.

DAIRY MEETING.—A public meeting of the patrons of the Cedar Grove (Markham) Cheese Factory, will be held at the factory, on Saturday, April 18, 1868, commencing at 1 o'clock, p.m., for the purpose of making arrangements and appointing a committee for the coming season, after which the following subjects will be brought forward for discussion:—1st. The prospects of Cheese-making in this part of Canada. 2nd. The best kind of stock for dairy purposes. 3rd. The best kind of grass for dairy stock. 4th. The best manner of soiling cows, and keeping up the flow of milk during the dry part of the summer. 5th. The use and value of whey. Practical and experienced persons will be invited to attend and give their views on the above subjects. Farmers are requested to attend.



Budding and Grafting.

A CORRESPONDENT asks for information in regard to budding peach trees, and several request an article on the process of grafting. It is difficult to explain these operations to beginners, except by the aid of illustrations; with these, however, all becomes very clear and intelligible. Not having at hand the requisites to enable our artist to produce pictures of these processes from life, we have been obliged to search for suitable engravings of which to make copies, in publications on fruit culture. Those which follow, are taken, with the accompanying directions and explanations, from "The Fruit Garden," by P. Barry, of the firm of Elwanger and Barry, nurserymen, of Rochester, N. Y. While acknowledging our indebtedness to the work just named, we would take the opportunity of commending it as, on the whole, the best adapted to the circumstances and requirements of Canadian fruit-growers, of any publication within our knowledge. It is very simple, eminently practical, and gives the results of long experience in a climate and latitude very similar to our own. Those of our readers who desire a good manual of fruit culture, cannot do better than to procure this work. It treats first of general principles, and then of their practical application in the nursery, orchard, and garden. All needful information about the apple, pear, peach, plum, cherry, grape, and small fruits, will be found among its pages:

Budding.

This operation is performed during the growing season, and usually on young trees from one to five years old, with a smooth, soft bark. It consists in separating a bud with a portion of bark attached, from a shoot of the current season's growth of one tree, and inserting it below the bark of another. When this bud begins to grow, all that part of the stock above it is cut away, the bud grows on, and eventually forms a tree of the same variety as that from which it was taken. Buds may be inserted in June, and make considerable growth the same season, but as a general thing this is not desirable in the propagation of fruit trees. The ordinary season in the Northern States is from the middle of July till the middle of September, and the earliness or lateness at which a species is budded depends, other things being equal, on the condition of its growth.

Those accomplishing their growth early in the season are budded early, and those that grow until the autumn are budded late—thus the season extends over a period exceeding two months. In all cases, the following conditions are necessary:

1st. *The buds must be perfectly developed in the axils of the leaves on the young shoots intended to bud from.* This is seldom the case until the shoot has temporarily ceased to lengthen, as indicated by the perfect formation of its terminal bud.

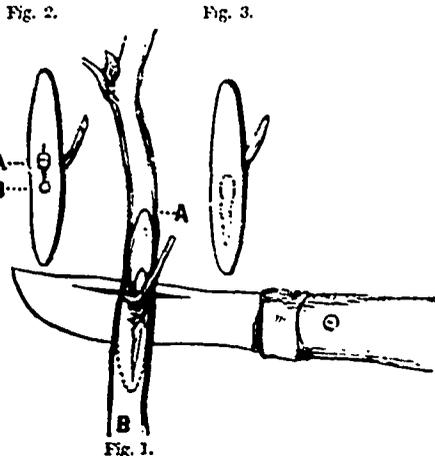
If buds are wanted before this condition naturally arrives, their maturity may be hastened very much by pinching the tips of the shoots. In ten or twelve days after the pinching of a very soft shoot, its buds are fit for working.

2d. *The bark must rise freely from the stocks to be budded.* This only happens when the stocks are in a thrifty and growing state. Where only a few stocks are to be worked, they can be easily watered, if necessary, a week or so before it is desirable to bud them. Trees that accomplish most of their growth

early in the season, must be watched and budded before they cease to grow; those that grow very late must not be budded early, or the formation of new wood will surround and cover the buds; in gardener's language, they will be "drowned by the sap."

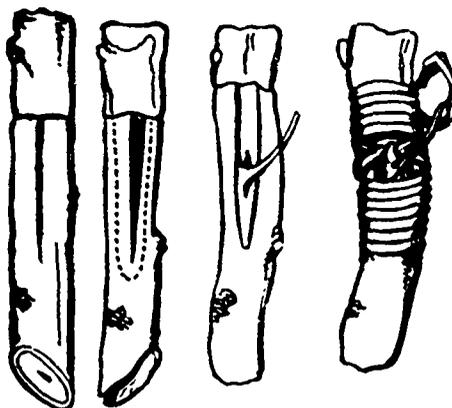
The implements needed are a pruning knife to dress the stocks, by removing any branches that may be in the way of inserting the bud; and a budding knife to take off the buds and make the incisions in the stock. The latter should have a very thin, smooth, and keen edge.

Strings for tying in the buds are either taken from bass mats, or they are prepared from the bark of the bass-wood. We always prepare our own; we send to the woods and strip the bark off the trees in June; we then put it in water from two to three weeks, according to the age of the bark, until its tissue is decomposed, and the fibrous paper-like inner bark is easily separated from the outer, when it is torn into strips, dried, and put away for use. Before using, it should always be moistened, to make it tough and pliable.



Cutting and preparing the buds.—Young shoots in the condition described, are cut below the lowest plump bud; an inch or two of the base of every shoot, where the buds are very close together, and quite small, should be left. The leaves are then stripped off, leaving half of each leaf stalk to handle the bud by.

Preserving the buds. When a considerable quantity is cut at once, they should be wrapped in a damp cloth as soon as cut and stripped of the leaves, and they may be preserved in good order for ten days, by keeping them in a cool cellar among damp saw-dust, or closely enveloped in damp cloths, matting, or moss. We often send buds a week's journey, packed in moss slightly moistened, the leaves being off, the evaporation is trifling, none in fact when packed up, consequently very little moisture is needed.



Having the stocks, buds, and implements in the condition described, the operation is performed in this way:

The shoot to bud from is taken in one hand, and the budding-knife in the other, the lower part of the edge of the knife is placed on the shoot half an inch above the bud to be removed (A, fig 1), the thumb of the

knife-hand rests on the shoot below the bud (B), a drawing cut is then made, parallel with the shoot, removing the bud and the bark to which it is attached half an inch above, and three quarters below it. This is the usual length, but it may in many cases be shorter. The cut is made just deep enough to be below the bark, a small portion of the wood is always taken off with it, and if this adheres firmly it should be allowed to remain; if it parts freely, it should be taken out, but in doing so the root of the bud must be carefully preserved, for if it comes out with the wood, the bud is useless. The root of the bud, as it is termed, is a small portion of wood in the hollow part of the inside of the bud. Fig. 2 is a good bud, A, root of bud, B, root of leaf. Fig. 3 is imperfect, the roots of leaf and bud both out. A smooth place on the stock, clear of branches, is then chosen, where two incisions are made to the depth of the bark, one across the end of the other, so as to form a T, fig. 4; the bark on the two edges of the perpendicular cut is raised (fig. 5) with the smooth ivory handle of the budding-knife, and the bud is inserted between them (fig. 6); the upper end of the bark attached to the bud is cut square, to fit to the horizontal cut on the stock, the bass string is then wound around tightly, commencing at the bottom, and covering every part of the incision, leaving the bud itself, and the leaf-stalk, uncovered (fig. 7), the string is fastened above the horizontal cut, and the work is done. The success of the operation, as far as its execution is concerned, depends, in a great measure, on smooth cuts, an exact fit of the bud to the incision made for it, secure close lying, that will completely exclude air and rain water, and the quick performance of the whole. The insertion of a bud should not, in any case, occupy more than a minute; ordinary practised budders will set two in that time, and often two hundred in an hour with a person to tie. Where the stocks and buds work well, two thousand is not an uncommon day's work in our nurseries, especially of cherries, peaches, and apples.

Where only a few buds are to be set, a cool, moist day or evening should be selected, as they will be more certain of success than if inserted during the middle of a hot, dry day.

The chief difficulty experienced by beginners in budding, is the proper removal of the bud. When it happens that the knife passes exactly between the bark and wood, the bud cannot fail to be good; but this rarely happens—more or less wood is attached, and the removal of this is the nice point. Where the buds are flat, the difficulty is less than when they have large prominent shoulders, as the plum and pear have in many cases. When all the wood is taken out of these, a cavity remains, which does not come in contact with the wood on which the bud is placed, and therefore, although the bark unites well, the bud will not grow. Sometimes, such as these are separated by making an incision through the bark; lift the edge of the bark attached to the bud with the knife, and push it off with the fingers. A safer way will be to cut around the bud and draw a strong silk thread between the bark and wood, thus removing the bud in perfection.

GRAFTING.

The methods described below are those universally adopted, with slight modifications, by the best practical propagators everywhere at the present day.

Stocks are of all ages from a yearling seedling to a tree forty or fifty years old; but of whatever age, they must be sound and healthy.

Scions are generally shoots of the previous year's growth. Rarely those bearing fruit buds are used for the purpose of experiment, but in such cases only. They should be cut in the autumn after the fall of the leaf, or in the winter, and be preserved carefully in earth till wanted for use. If intended for root-grafting early in the spring in the house, it will be sufficient to bury their lower ends in earth, in a cool, dry cellar; but if wanted for out-door grafting, they should be buried in dry sandy soil, in a pit on the north side of a wall or fence, and deeply covered with earth drawn

up in a mound to throw off the water. They are thus kept perfectly dormant until used, and not so dry as to shrivel the bark. They should always be taken from healthy, vigorous trees, *exclusively*, and be of firm, well-ripened wood. A moderate-sized shoot or scion, if well matured and sound, is much better than one as thick as a man's finger, *pithy* and unripe. People are by no means so careful and discriminating in this respect as they ought to be. Half of the maladies of trees originate in negligent and vicious systems of propagation. The implements used in grafting are the *grafting-knife*, *saw* and *chisel*. In whip-grafting or splice-grafting, the stocks being small require the knife only, or not more than the knife and chisel. It is always better to have two knives—one to prune and do the rough work, and the other to prepare the scion. *Grafting composition* is prepared in various ways. *Rosin*, *beeswax* and *tallow*, in about equal parts, answer very well. Lately, however, we have found it better to use more rosin and less beeswax and tallow; thus, to two pounds of rosin we add one and one-fourth pounds of beeswax, and three-fourths of a pound of tallow. For whip-grafting on the root, and small trees in the nursery, we use cloth saturated with this composition, instead of the composition itself, and find it more convenient and expeditious. If we have no old calico, we buy a very thin article, at about four cents per yard. This we tear into narrow strips, roll into balls, and then soak in the liquid composition until every pore of the cloth is filled with it. The person who applies it to the grafts takes it from these balls, tears it in pieces the length and breadth required by the size of the stock, and two or three turns of it around the graft secure it completely. This thin cloth soon decays, and yields to the enlargement of the parts it encloses. We have tried tow, paper, and other materials, but find this the best. Having the scions, implements, and composition in readiness, the work is performed as follows:

Whip-grafting on the Root.—For this purpose, seedling stocks are generally used, one or two years old, varying from *one-fourth* to *three-eighths* of an inch in diameter. The graft is always made at the collar, and, therefore, the stems of the plants are cut off at that point; the small tap-roots and any cumbrous fibres are removed, leaving them about four inches in length (fig. 8); they are then washed clean, and are ready for the operation. The grafter then makes a smooth, even, sloping cut, an inch long, upwards on the collar of the root, *A*, and in the centre of this cut he makes a slit or tongue, *B*, downwards. The scion, which should be three or four inches long (fig. 9), is cut on the lower end with a sloping cut downwards, and similar in all respects to that made on the stock; a slit, or tongue, is made in it upwards, *B*, corresponding, also, with that on the stock; and they are then neatly fitted together, the tongue of the one within the other (*A*, fig. 10), and the inner barks of both placed in close and perfect contact, at least on one side. The fit should be so complete as to sit close and firm in all parts. The person who applies the wax, takes a narrow strip of the cloth described, and wraps it firmly around, covering the parts united. A man and boy can graft of these twelve to fifteen hundred per day, and by a special effort two thousand. When the grafting is thus performed, the grafted plants are put away as closely as they can be packed in small boxes, with sandy earth among the roots, and deposited either in a cold cellar or in a dry place out of doors, where frost cannot penetrate to the roots, until planting time in spring.

Whip Grafting on small trees, standing in the open ground, is performed in precisely the same manner, the oblique or sloping cut and tongue, corresponding in stock and graft, fitting into each other with precision, and the inner bark of both, at least on one side, placed in close contact. Stocks an inch in diameter can be grafted in this way. Either the cloth or the liquid composition may be applied, the

latter put on with a brush. For all moderate sized stocks the cloth is preferable. In cold weather, a small furnace can be kept at hand to keep the composition in working order.

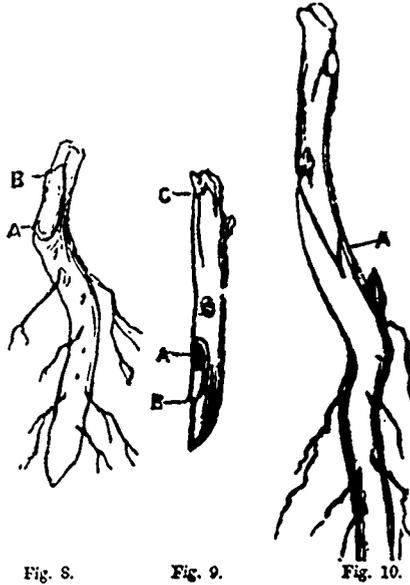


Fig. 8. Fig. 9. Fig. 10.
Cleft Grafting is practised on trees or branches too large for whip grafting, say from an inch in diameter upwards. In this case, the scion is cut precisely in

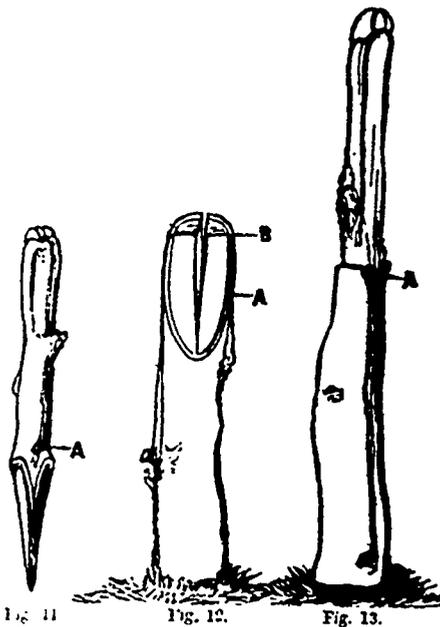


Fig. 11. Fig. 12. Fig. 13.
the form of a wedge (fig. 11). The part cut for insertion in the stock, should be about an inch or an inch and a half long, with a bud (A) at the shoulder, where

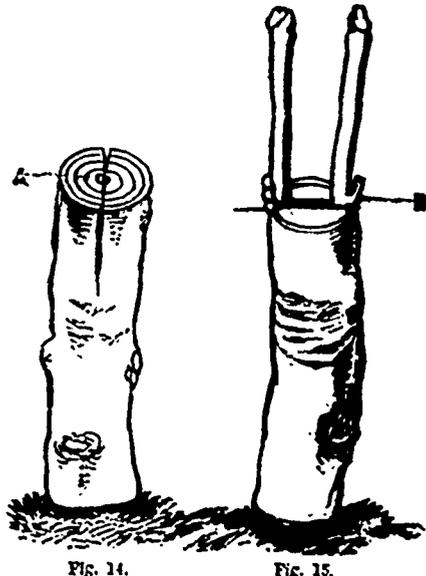


Fig. 14. Fig. 15.

it is to rest on the stock; this bud hastens the union of the parts, in the same way as a bud at the base of a cutting, set in the earth, hastens and facilitates the emission of roots: the outer edge should also be somewhat thicker than the inner. A sloping cut (*A*, fig. 12) is then made on the stock, an inch and a half long, another cut (*B*) is made *across* this cut, about half way down, as at point *B*, the stock is split on one side of the pith, by laying the chisel on the horizontal surface, and striking lightly with a mallet; the split is kept open with the knife or chisel till the scion is inserted, with the thick side out (*A*, fig. 13). Grafts of this kind heal much more rapidly than when cut at once horizontally. Very large branches are sawed horizontally off at the point to be grafted (*A*, fig. 14); the surface is then pared smooth with the knife, a split is made with the chisel, nearly in the centre, and *two* wedge-like scions inserted (*A*, *B*, fig. 15); if both grow, and they are afterwards too close, one can be cut away. Another mode of grafting such large stocks, or branches, is to cut them off horizontally, as above, and pare them smooth with the knife; then cut the scion on *one* side, about an inch and a half long, making a shoulder at the top, then raise the bark from the stock with the handle of a budding-knife, and insert the scion between the bark and wood, and apply the composition the same as in the others, all over the cut part. Two or three scions may be put in each. The principal objection to this mode is, that the grafts, if they grow rapidly, are apt to be blown off before they have united strongly to the stock.

The great points to observe *always* are, to have sharp instruments that will make smooth, clean cuts, to have placed in perfect contact the inner barks of scion and stock, and the whole cut surface, and every portion of the split perfectly covered with the composition, to exclude air and water. The scion should always be cut close to a bud at the point (*c*, fig. 9), and have a bud at the shoulder, or point of union with the stock (*A*, fig. 10).

In grafting the heads of large trees, it is not convenient to use the composition in a melted state, to be put on with the brush, and the large cut surfaces cannot well be covered with the cloth; it is, therefore, better to use the composition in such a state that it can be put on with the hands. A very small quantity of brick dust may be advantageously mixed with it, when intended for this purpose, to prevent its being melted by the sun.

Which is the Best Winter Apple?

To the Editor of the CANADA FARMER.

SIR,—I this day forward to your address two Apples, numbered 1 and 2, the names of which I would like if you could let me know, in the next issue of the CANADA FARMER.

Your correspondent, B. L., of Cobourg, in a late number of your paper, highly recommends the King of Tompkins Co. Apple for Canada. So far good; but Mr. George Leslie, of Toronto, in his Catalogue, and Mr. James Dougall, of Windsor, in the "Canadian Fruit Culturist," say it will only keep till March. If such is the case, we require another or other varieties of winter apples to come in after Tompkins Co. King is out of season, in order to have fruit through the year. If B. L., or some other person of experience in Fruit Culture, would be kind enough to say through the CANADA FARMER, which in their opinion is the next best winter apple for Canada that would keep, say till June or July, he would oblige your humble servant, and I have no doubt many more of your subscribers. In deciding upon the merits of a variety, I, of course, mean that hardiness, thriftiness, and fruitfulness, as well as quality of fruit and keeping properties, be taken into consideration. JOHN CLARK.

Burnbrae, March 27th, 1868.

The larger of the two specimens sent is, we believe, Detroit Red, and the smaller Spitzenberg.

Entomology.

Insects of Early Spring.

During the unusually warm balmy days of March this year, a few insects were tempted to come out of their snug winter-quarters for a little while, thinking perhaps that grim winter had done its work, and that the joyous spring was at hand. But if such were their thoughts, they were doomed to a speedy and grievous disappointment; the return of frost and snow must soon have made them hurry back to the holes they had left, and cower away till the biting wind and cold should be passed, and genuine spring be come again. Among those tempted out thus early, we found specimens of one of the fire-fly tribe of beetles (*Ellychnia corusca*); several of the large lazy-looking beetles that live under bark (*Ipthenus Pensylvanicus*); a squash-bug (*Coreus tristis*); quantities of house-flies, a few honey-bees, one or two smoky-winged wasps, and—earlier than all—swarms of the common snow-fly, that usually comes out during the first mild days in the end of February, but this year did not appear till March the 8th: these are Neuropterous insects, apparently the *Perla Nivicola* of Fitch (*Capnia pygmaea*, Burn).

While we are writing it is still cold weather, but before this reaches the eyes of our readers it will probably be warm and genial again; then we shall expect to find the insect world beginning to bestir itself in earnest. When the willow catkins come out the big humble-bees and their lesser cousins, various species of wild-bees, will come out; wasps will begin their spring work; the Tiger-beetles will forage briskly over warm sunny knolls and dry sand; many insect-eating ground-beetles will be found under stones waiting for nightfall to begin their useful work; and a few gay butterflies may here and there be seen opening and shutting their broad wings to the warm rays of the sun.

Now is the time for the gardener to look sharply after his fruit-trees; all loose bark should be scraped off and the scabs that cover the eggs of the bark-lice rubbed away. Search should be made for the eggs of the tent caterpillar, which form rings or bracelets round the twigs, and all withered leaves that remain on the tree should be examined, for they generally contain the empty cocoon of the *Orgyia* apple-moth, on which the wingless female lays her mass of froth-covered eggs. Any straw or matting, loose boards or other rubbish at the base of fruit-trees, should be turned over and examined; such places often shelter the cocoons of the codling-moth, and caterpillars, and insects of various kinds. Any insects that seem strange, or about which information is desired, we trust will be sent to us for inspection.

The Head of an Insect.

In the higher orders of animals, while the internal anatomy is wonderfully complicated, the outward appearance is comparatively simple and plain; all the works of the intricately constructed machine are concealed from view, a few primary organs only being apparent to the sight. In insects the case is just the reverse. The internal organs are few in number and simple in construction; while the external parts are particularly numerous, and marvellously varied to suit the special ends of the almost infinite number of differing species. To the student of Entomology this is a magnificent advantage, as with the aid of a magnifier he is enabled to observe and note most of the various parts, or trace out their special uses, without having to resort to the dissection of the object. The great majority are on the surface, and if we give them a little careful examination and patient study we shall soon learn a great deal about them.

When we look at the head of a quadruped, we see that it is very small compared with the rest of the body, and that it exhibits only a pair of eyes and nostrils, a mouth, ears, and sometimes horns or tusks. A bird's head, again, displays still less, little more being seen than a pair of eyes and a beak. But take up an insect and examine its head with a lens, or if a large specimen, even with the naked eye, and what a complicated structure do you behold! Eyes there are, big and little; antennæ or horns, mouth with jaws above and jaws below, pairs of feelers or palpi, perhaps a sucker, or possibly a set of lancets;

instruments for observation, instruments of defence, instruments for taking food, all grouped together in a very small space, and constructed in the most wonderful variety of ways. Compare a few insects of different orders together, and the wonder is still greater. Look at the head of the large Pine-borer beetle, with its powerful jaws and antennæ twice the length of its body, then at the Dragon-fly with its scarcely perceptible antennæ, but with eyes that almost surround it; look again at a large Hawk-moth, with its beautiful feather-like antennæ, and its coiled up sucker that will unroll to more than the length of its great body; now turn to a grasshopper, a fly, or a bug, and see what a change—what a variation of organs is to be seen! To recount all these differences of form, structure, size, colour, clothing, etc., would occupy volumes, without even saying a word about their objects and offices. We must be content, then, with considering the organs as they are common to all, and only observe, for the present, the variations that distinguish the several grand orders of insects, leaving out of sight the minor differences that are peculiar to species, genera, or even families.

The Head of an insect—to come to particulars—is a hard, somewhat rounded skull; having an opening in front for the mouth and its group of organs. On each side it has a fixed, immovable eye, of large size and complex structure, between which are sometimes two, or often three, tiny little eyes, each consisting of a single lens. Close to the large eyes are two moveable jointed organs, called antennæ, of endless variety of form, size and structure, and whose exact uses have long been a puzzle to naturalists. The front part of the head is often separated by a seam from the rest of the skull (especially in Beetles), and is then called the *Clypeus* or shield; this part often bears a horn or knobs. The under surface of the head is called the throat, and is divided into various parts, each with its particular name, in the different orders of insects. The head is connected behind with the thorax, sometimes by a very slender neck, sometimes by a barely perceptible division.

The organs of the mouth, though varying very much in form, are yet constructed on one principle. They consist of six principal organs, two on each side of the opening, one above, and one below. The upper one is the upper lip (*labrum*); the lower the under lip; the upper pair of side organs are the upper jaws or *mandibles*; the lower pair the *maxillæ* or lower jaws. Each of the lower jaws has attached to it one, or two, jointed organs or feelers, called *palpi*, and the under lip has also a pair of these feelers. The jaws, it should be noticed, move sideways, not up and down. There are two principal modes in which the food-obtaining organs are employed, the operation of which is vastly different, and causes an enormous change in form and structure. When the side pieces of the mouth are short, apart from each other, and have a horizontal motion, the action produced is *biting*, as in a beetle; but when these side pieces are elongated, close to each other, and have a longitudinal motion, the action produced is *sucking*, as in a butterfly. According to these modes of action, insects are divided into two grand classes, called in English, *Biting Insects* and *Suctorial Insects*; any classification based upon this difference, must, however, be confined to insects in their perfect form, since caterpillars, for instance, have jaws for biting, which are transformed into a spiral sucking-tube when the insect becomes a moth or butterfly.

In *Biting Insects* the upper lip is a flat plate closing the mouth above; the upper pair of jaws or mandibles are of a hard, horny consistency, and are furnished with teeth for biting and gnawing the food; these teeth are portions of the jaw itself, not separate in any way. The lower pair of jaws, or maxillæ, are modified in many ways which it would be tedious to particularize here; and the lower lip is still more complicated, and subject to great variations. In bees, the lower jaws and lip form together a sucking apparatus, while the form of the upper biting jaws causes them to be included among the biting insects.

In *Suctorial Insects* there is a wonderful diversity of structure. Bugs, for instance, have the two pairs of side-pieces lengthened out into slender lancet-like organs for piercing, the whole being enclosed in the fleshy elongated lower lip, which acts as a sucker. In Flies, also, the five upper organs are turned into lancets sheathed in the fleshy sucker of the lower lip; this structure is especially seen in the fierce, blood-thirsty Horse-fly (*Tabanus*); in the common House-flies the lancets are wanting. In Butterflies and Moths the lower jaws are greatly elongated into a delicate instrument for sucking, which is coiled up and hidden from sight when the insect is at rest, but is thrust out and extended to the bottom of long-throated flowers when in action. In all these cases the palpi, or mouth-feelers, also are variously modified. The other organs of the mouth about which we desire to speak in particular are the antennæ, and the different kinds of eyes; these, however, we must defer for another occasion.

The Household.

BURNING COAL OIL IN BED-ROOMS.—The practice of burning coal oil in lamps in bed-rooms, through the night, is a very pernicious and dangerous one. The gas generated by the lamp is of a poisonous nature, and exceedingly detrimental to health, affecting the lungs very seriously. If the lamp is allowed to burn as when in common use, the gas is nearly all consumed in the chimney, but when the wick is turned down so as to give a dim light in the room, the gas generated is not consumed, but escapes into the room. If the windows and doors of the apartment are tightly closed, as is generally the case in the winter season, the occupants cannot escape the injurious effects. If it is necessary to keep a light burning, let the wick be kept fully up.

PRESERVING MEAT FRESH.—Professor Gamgee has invented and tested a new method of preserving meat, which promises to be efficacious, and to be the means of increasing the supply of cheap animal food for the dense populations of the larger cities. The process is as follows:—A close bag containing carbonic oxide gas is thrown over the head of the animal to be slaughtered, when partial asphyxia quickly ensues. The animal is then bled to death. The body is immediately afterwards hastily dressed; and while still warm, the parts to be preserved are placed in an air-tight iron case, and treated with carbonic oxide and sulphurous acid, which penetrate the flesh, and arrest fermentation and decomposition. It is said that the meat is thus preserved perfectly fresh and contracts no unpleasant flavour. The method is adapted to warm climates.

CURIOUS EFFECT OF THE COST OF FUEL ON THE PRICE OF MEAT IN FRANCE.—The following scrap is obligingly furnished by a frequent contributor. A correspondent from the French Exhibition writes:—“When I was at the Paris Exhibition the other day, I asked a well-known and very good *restaurateur* what was the relative price, in the Paris market, of the different joints of mutton. I asked ‘What is the prime joint?’ He said, ‘The prime joint, beyond all comparison, is the neck.’ I asked, ‘What is the next joint?’ and he said, ‘The loin.’ I said, ‘What is your lowest priced joint?’ He said, ‘The leg,’—adding that when the leg of mutton was priced at six pence per lb. the neck was priced at from one shilling to one shilling and two pence per lb. I said, ‘You are clearing my sight very much—you are opening a new vista to me.’ The fact is, the small outlet and the large outlet, that is to say, the neck and the loin, require very little fuel to cook them, whereas the leg of mutton requires a great deal of fuel. On the continent of Europe fuel is very dear, and therefore the joints vary in price according to the value of the fuel, consequently you will there find necks and loins dear, and legs cheap.”

This, if true, is very curious. We all know that economy both in meat and fuel is in France carried to extremes; they reckon both meat and fuel by the ounce; and if they can get their “*pot au feu*” (that is to say—a hot dish) cooked three times a week, it is as much as the ordinary artisan can hope to afford. We in Canada have great cause to be thankful that both meat and fuel are attainable in our families on a more liberal scale.

ORIGIN OF THE TERM PERFUME.—The first perfumes were obtained by a combustion of aromatic woods and gums (hence the name *per fumum*, “through smoke”) and the first use primitive nations made of them was to offer them on the altars erected to their gods, perhaps with the mystic idea that their prayers would reach them sooner wafted on the blue wreaths of smoke, or for the less poetic purpose of counteracting the smell of the flesh burned in their sacrifices. Modern incense derives its sweet balsamic smell from benzoin (*Styrax benzoin*), which also forms one of the chief ingredients in pastiles and fumigating powders.—*Rimmel on Flowers and their Uses.*

Miscellaneous.

An Agricultural Problem (Given in Rhyme.)

I am constrained to plant a grove,
To please the lady that I love.
This ample grove is to compose
Nineteen trees in nine straight rows;
Five trees in each row I must place,
Or I shall never see her face."

WASHING HARNESS.—A contributor to the *Shoe and Leather Reporter* says: "The practice of washing harness in warm water is very damaging. If a coat of oil is put on immediately after washing, the damage is repaired. No harness is ever so soiled that a damp sponge will not remove the dirt; but even when the sponge is applied, it is always useful to add a slight coat of oil by the use of another sponge. All varnishes, and all blacking containing the properties of varnish, should be avoided.

A RELIC.—A lady in the first society was recently obliged to dismiss her nurse on account of an excess of firemen and private soldiers too often repeated. After choosing as a successor to this criminal a very pretty girl, the lady, explaining why the first was sent away, enjoined on the second not to do likewise. She admitted that she shouldn't. "I can endure a great deal," said the lady, "but soldiers about the kitchen I won't endure." After a week or eight days the lady came one morning into the kitchen, opened a cupboard, and discovered a youthful military character. "Oh, ma'am," cried the girl, frightened. "I give you my word I never saw that soldier before in my life: he must have been one of the old ones left over by the other girl."—*New York World*.

A MODEL OBITUARY.—J. Bands, we are sorry to say, is dead, and a Western obituary thus pays tribute to his memory: "Jem was generally considered a good fellow. He went forth without a struggle, and such is life. To-day we are as peppergrass—mighty smart—to-morrow we are cut down like cowcucumbers to the ground. Jem kept a nice store, which his wife now waits on. His verchews were numerous to behold. Many is the things that we bot at his grocery, and we are happy to state to the admiring world that he never cheated, especially in the weight of mackerel, which was nice and smelled sweet. His surviving wife was the same way. We never knew him to put sand in sugar, though he had a big sand-bar in front of his house, nor water his liquors, though the Ohio river runs past his door. Peace to his remains. He leaves 1 wife, 7 children, 1 cow, a grocery store, and other quadrupeds to mourn his loss, but, in the language of the poet, his loss was their eternal gain."

CURIOSITIES OF ADVERTISING.—We clip from an exchange the following instances of grammatical inaccuracies in advertising:—

"Wanted a steady young man to look after a horse of the Methodist persuasion."

"To Let.—A cottage in Newport, containing eight rooms and an acre of ground."

"FOR SALE.—A piano by a lady about to cross the Channel in an oak case with carved legs."

"Lost!—A small lady's watch with a white face; also, two ivory young ladies' work-boxes. A mahogany gentleman's dressing-case, and a small pony belonging to a young lady with a silver mane and tail."

A lady recently advertised in a city paper that she wanted a "gentleman for breakfast and tea," while another in the same journal asks for "a husband having a Roman nose with strong religious tendencies;" and a third party seeks to recover "a lost wallet belonging to a gentleman made of calf skin."

TRAINED RATS.—The most popular of the shows of the season at St. Cloud fair has been *l'homme aux rats*. The name of this Rarey of the rat race is Antoine Leonard. His sole theatre is a sort of perch, which he sticks into the ground, and then he takes his *corps de ballet* out of his pocket. At his word of command the rats run up and down the perch, hang on three legs, then on two, stand on their heads, and, in fact, go through a series of gymnastic exercises that would put Blondin himself to the blush. His crack actor is a grey rat he has had in his troupe for eleven years; this old fellow not only obeys Leonard, but is personally attached to him. It is a curious sight to see Leonard put him on the ground, and then walk away. The creature runs after him, and invariably catches him, however many turns he may make to avoid him. An Englishman offered 50f. for him about two years ago, but Leonard would not separate from his "old and attached friend."—*Farmer* (Scottish).

Advertisements.

CANADA WEST
FARMERS' MUTUAL & STOCK
INSURANCE COMPANY,

Incorporated by Act of Parliament, 1852
PRESIDENT:
THOMAS STOKES, President of the Prov. Agricultural Association.
INSPECTOR:
W. A. COULT, Superintendent Prov. Agricultural Association.
12,700 Policies in Force.
AMOUNT INSURED, - - - \$8,700,400 00
AVAILABLE ASSETS, - - - \$ 60,300 00
CASH IN BANK OF MONTREAL, \$ 14,600 00
A three years risk on Frame Barns and Dwelling Houses and contents, taken at One per cent. Premium, and no Premium Note required. Losses paid in full without deduction.
RICHD. P. STREET,
Secy & Treas.
v5 6-61.

JONES & FAULKNER,
(Late J. Jones & Co.)
Dairymen's Furnishing Store!
—AND—
DEALERS IN BUTTER AND CHEESE,
No. 111 Genesee Street, Utica, N. Y.

DAIRY necessities of every description always on hand, particularly Pure Annatto, an article in much request among dairymen.
No Duty on Annatto purchased in the United States.
Special attention given to Canadian orders. v4-12-11

TORONTO, DOVER COURT.
One Thorough bred DURHAM BULL,
One HEREFORD,
One GALLOWAY, and
Two GALLOWAY COWS, FOR SALE by
R. L. DENISON.
v5 3-61

Duncan's Improved Hay Elevator.
PATENTED April 13th, 1867

THE cheapest and simplest constructed Fork in use in the Dominion of Canada. County or Township Rights for the manufacture of the above Fork may be obtained from the undersigned.
JAMES W. MANN,
v4 20-11 Port Dover, Ont.

THE BEST SHEEP MARK YET INVENTED.
It is made of tin, stamped with name and number. Is cheap, does not wear out, and looks well. Price three cents each.
ARCHIBALD YOUNG, jr.
Sarnia, Ont. v5 3-71
N.B.—AGENTS WANTED.

TO AGENTS!
GRAPE VINES AT TEN CENTS.

DELAWARES, Concord, Diana, Oporos, and Hartford Prolifics, with good roots, at \$10 per 100. If cash accompanies the order. Address,
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WARRANTED IMPORTED FIELD, GARDEN AND FLOWER SEEDS, are now ready. Descriptive Catalogues free on application.
25 Packages of Choice Flower Seeds by mail for One Dollar.
Also a fine stock of the celebrated Goodrich, Gleason and Harrison Potatoes. Address,
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TO SHEEP BREEDERS.
By resolution of the Board of Agriculture, sheep admitted to competition at the Provincial Exhibition in September next, must be shorn on or after the 25th April next.
HUGH C. THOMPSON, Sec. Bd. of Ag.
Toronto, March 28, 1868. v5 7-21

FARM, SCHOOL AND CHURCH BELLS.



THE STEEL COMPOSITION BELLS made by Hymer, Norton & Co., of Cincinnati, rival the Copper and Tin Bells in purity, richness, and volume of tone, are equally durable, and cost less than one-third as much. Hundreds are now in use in various parts of the United States and Canada. None have failed to give satisfaction. They are made of the best quality of metal; and the mountings are of the best material and finish.

PRICE LIST:
They are delivered on board Cars or Boat at Chicago, for the following prices in American money:—
Diameter Weight Price.
14 inches 60 lbs. \$ 8 00
16 " 90 " 12 00
18 " 120 " 14 00
20 " 150 " 18 00
22 " 200 " 25 00
24 " 250 " 35 00
26 " 300 " 45 00
28 " 350 " 60 00
30 " 400 " 75 00
32 " 500 " 100 00
34 " 600 " 125 00
36 " 700 " 150 00
38 " 800 " 175 00
Orders, enclosing the money, may be addressed to
A. T. BATES & CO.,
193 Washington Street, Chicago.
Or, Editor CANADA FARMER, Box 498, P.O., Toronto.
v5 7-21

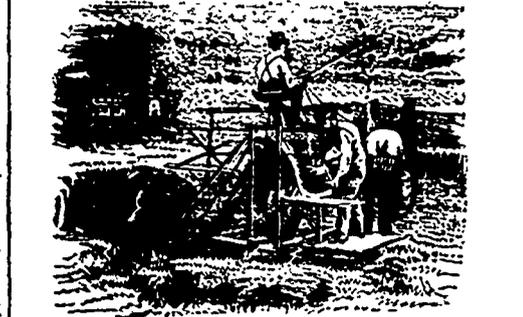
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INFALLIBLE

TICK DESTROYER FOR SHEEP!

DESTROYS the TICKS; cleanses the skin; strengthens and promotes the growth of the wool, and improves the condition of the animal.
It is put up in boxes at 7c, 70c, and \$1, with full directions on each package. A 35c. box will clean twenty sheep.
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Apply to C. J. BLOMFIELD, Sec.
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MANUFACTURERS OF THE
MARSH HARVESTER!
AGRICULTURAL IMPLEMENTS
OF ALL KINDS,
STAVE & SHINGLE MACHINERY,
OSCILLATING MULLEY SAWS,
TURBINE WATER WHEELS,
MILL CASTINGS, etc., etc.,
MADE TO ORDER.
Repairing of all kinds promptly attended to.

WARRANTY.
We warrant the Marsh Harvester to be well made, of good material, and when properly used, not liable to get out of repair; to be a good grain-cutter, and to combine up a which two experienced binders can bind in average grain, on suitable ground, from eight to twelve acres in twelve hours; and that it will work on as rough ground as any other Reaper.
PAXTON, TATE & CO.
Port Perry, March 23, 1868. v5 7-11

IMPORTANT TO DAIRYMEN AND CHEESEFACTORS.



TRADE MARK.

R. J. FULLWOOD & Co.'s

(Late R. J. Fullwood & Bland's)

HIGHLY CELEBRATED

EXTRACT OF ANNATTO

FOR COLOURING CHEESE AND BUTTER.

THE superiority of this truly excellent, pure, and unadulterated Annatto, consists in its producing in Cheese and Butter, that permanent bright colour which is not at all so much desired by all Cheese and Butter Factors, and the great celebrity and increasing demand has induced Messrs. R. J. F. & Co. to protect the consumers from fraud, by stamping all their preparations with their Trade Mark, as above. A Stag with Olive Branch, - to counterfeit which is felony.

IN COLOURING BUTTER it will be found by far superior and much cheaper than any other article in use for that purpose, and their Lake Annatto has stood unrivalled for the last 50 years.

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SOMERSET PLACE, HOXTON, LONDON, Established 1785.

Exported to all parts of Great Britain and the Colonies, by Chemists and Druggists. Put up in got "R. J. Fullwood's," with a Stag with Olive Branch.



Price Reduced to 58 Dollars.

IT sets up its own work, knits all sizes, narrows and widens, knits the heel into the stocking, and narrows off the toe complete - producing all varieties of knit goods. It is simple, durable, easily operated, and guaranteed to succeed in the hands of every person. Send Stamp for Circular and sample stocking of every size.

JAMES D. ORNE, Gen. Agent, 176 State Street, Rochester, N. Y.

DURHAM BULLS FOR SALE.

"CHIEF OF ATHA," from A.H.B. Vol. 8, (6538), calved April 26, 1867, got by East of Chester, (9767), dam, Duchess of Oxford, by "President," (2049), gr. dam, "Duchess of Oxford," by "Duke of Oxford," (12765), &c., &c., as in Herd Book. Also, two high grade Durham Bulls, one year old.

Apply to WILLIAM MILLER, Jun., Atha Post Office, Pickering, Ont.

J. H. THOMAS'

FIRST PRIZE BEE HIVES!

THE FIRST PRIZE has been awarded these Hives at the Provincial Fairs, and many County Fairs, for the last four years. They also obtained the first prize at the Michigan State Fair, held at Detroit last year. In fact they have always been awarded the first prize wherever they have been entered. During the last four years they have acquired a reputation unequalled by any hive before offered to the public. They are now manufactured by steam power, which will enable me to supply the increasing demand at the following rates, which include a right to make and use both double and single boarded Hives.

- Single-boarded Hive..... \$5 00
Single-boarded Observing Hive - Glass in two sides..... 7 00
Double-boarded Hive..... 6 00
Double-boarded Observing Hive - Glass in one side..... 7 00
Single-boarded Observing Hive - Glass in one side..... 6 00
Double-boarded Observing Hive - Glass in two sides..... 8 00

All persons purchasing a Hive at the above rates, (which always includes the right to make) and preferring to order Hives of me, rather than make, will be supplied at the following prices: - D. B. \$3 50, S. B. \$2 50, or if ordered in lots of three to ten, address D. B. \$3 25, S. B. \$2 25, in lots of six, D. B. \$3 S. B. \$2. Hives sent safely by freight by rail to any part of Canada. If no lines to one address for the same freight one have. Bee keepers would do well to form clubs and order three or more hives sent to one address, and thereby save freight.

ITALIAN QUEENS AND BEES!

Having secured the services of H. M. Thomas, one of the best practical apiculturists in Canada, to assist me in breeding Italian queens, I shall be able to furnish any number at the proper season, from the very best importations. PRICE \$5 each. I will also furnish a limited number of Italian Stocks in the fall, at the following prices: - a the D. B. \$1.20, in the S. B. \$1.35, sent by express at the expense and risk of purchaser. The Canadian Bee Keeper's Guide sent to any address post paid for 25 cents in copies for \$1. The same supplied at a liberal discount.

Onto - to be addressed, J. H. THOMAS, APICARIAN, Brooklin, Ontar.o.

N. B. - Parties residing in the Counties of Carleton, Russell, Ottawa, Pontiac, Beauport, Lanark, Leeds, Dundas, Stormont, Glenora, and Prescott, and desiring to purchase my hives, must in all cases address their orders to JOHN HENDERSON, New Edinburgh, Ont.

GOLD MEDAL, Paris, 1867.

PRIZE CUPS two successive years, Limerick and Cork; also many prizes from a Society of Ireland, and the Dublin Society's Shows.

T. C. Cooper can supply EGGS of Dorking, Spanish, Brahma (dark), Cochin (white, buff, or partridge colour), Houdan, Croye Cour, La Fliche, Gold Poland, Malay, Game, Sultan, Aylesbury and Buren Ducks, at nine shillings the single dozen and twenty one shillings for three dozen. Toulouse Goose, thirteen shillings per dozen; Cambridge and Norfolk Turkey, twenty one shillings per dozen; also selected BIRDS of the several species, can be carefully purchased by steamer to Montreal.

Address, COOPER HILL, Limerick, Ireland.

Markets.

Toronto Markets.

"CANADA FARMER" Office, April 14th, 1868.

The produce market continues very dull and inactive, with nothing of interest to chronicle. Prices of grain remain nominally unchanged, though the tendency is downwards. In provisions a firmer feeling is manifest, and there is a better demand.

Flour - The market continues dull. There is little or no enquiry for any grade. Holders are asking from \$7 10 for No. 1 super in car lots.

Wheat - There has been little or no animation in the market during the past week. Prices are nominally unchanged. Spring wheat is dull of sale. Holders are asking \$1 64 to \$1 65. Fall wheat is also dull and nominal. We heard of no sales. Holders ask \$1 50 for choice. Street prices - Spring medium grade, \$1 55 to \$1 58; Fall, \$1 75 to \$1 80.

Oats - The market has been rather dull. Small lots have sold as high as 60c, and car loads at 55c - on the street market 60c is the price paid.

Barley - The market is quiet. Stocks are nearly exhausted, worth \$1 50 to \$1 35 on the street market.

Peas - There has been nothing doing since our last report, and prices remain nominal. Street prices \$2 to \$5c.

Seeds - The market is dull and prices are lower. We quote timothy, \$1 90 to \$2 25, clover \$3 90 to \$4 50.

Pork - Unchanged, head firm at \$19 50 for mess, prime mess, nominally, \$15.

Bacon - Stocks very much reduced, market firm for home trade. We quote Cumberland \$1 1/2c; Canadian cut 8c.

Cut Meats - Scarce and higher, smoked hams 11 1/2c to 12c, rolls, 11 1/2c; smoked shoulders 8c to 9c.

Lard - Heavy shipments have cleared the market, and the small quantity retained is held at 12 1/2c for the retail trade.

Butter - Market continues dull, only choice finds sale at our quotations, new arriving very sparingly, and has not yet affected the market; sales of No. 1 dairy have been made at 19c to 21c; common dull at 14c to 16c.

Eggs - A lively business has been maintained through the past week, the Easter demand has run up prices to 15c, at which the market closes steady; a decline seems likely to follow, and shippers cannot rely upon realizing this figure.

Montreal Markets. - Flour - Superior extra, \$8 to \$8 25; Extra, \$7 50 to \$8; fancy \$7 60 to \$7 70; Welland Canal superfine, \$7 45 to \$7 50, Superfine No. 1 Canada wheat \$7 45 to \$7 60 superfine No. 1 Western wheat, \$7 45 to \$7 50, Superfine No. 2 Western Wheat, \$7 15 to \$7 25, Bag flour, per 100 lbs. \$3 60 to \$3 70. Wheat - Canada Fall, none, Spring \$1 60 to \$1 70, Western none. Oats - Per 22 lbs. 45c, to 50c. Barley - Per 49 lbs \$1 15 to \$1 20. Butter - Dairy, 15c to 22c. Store packed 15c to 22c. Ashes - Pots, \$5 70 to \$5 75. Pearls, \$6 00. Pork - Mess, \$20 to \$20 50; Prime Mess, \$16. Prime, \$15. Dressed Hogs - None. Peas - \$1 to 95c. Rye Flour - \$6 05 to \$6 10.

REMARKS - Flour - Large receipts, trading local demand; market dull and weak, scarce at all points. Grain - Wheat nominal. Peas - Good demand at former rates. Provisions - Pork in better demand, and higher at all points. Butter - Neglected. Ashes - Pots firm, pearls neglected.

New York Markets. - April 13 - Flour - Better, receipts 106,115. State - 10 20 1/2 to \$9 1/2 for superfine State and Western, \$10 to \$10 80 for common to choice extra State, \$9 90 to \$11 for common to choice extra Western, \$10 to \$14 for common to choice from the West. Rye Flour - Steady at \$7 50 to \$9 00. Wheat - Receipts, 19,500 bushels, sales, 8,000 bushels at \$2 45 for No. 2 Spring delivered, \$2 47 for mixed Chicago. Rye - Farmer, receipts, 7,950 bushels, sales, 4,000 bushels State at \$1 92. Corn - Better, receipts, 4,753 bushels, sales, 48,000 bushels at \$1 22 to \$1 25 for new mixed Western about \$1 20 for inferior old do in store; \$1 18 to \$1 20 for white southern, \$1 26 to \$1 27 1/2 for Southern yellow. Barley - Dull, receipts, 22,900 bushels. Oats - Quiet, sales, 86,000 bushels at \$6 1/2 to \$6 1/2 for Western in store. Provisions - Pork firm but quiet, sales, 1,500 barrels at \$27 to \$27 1/2 for new mess, \$25 57 to \$26 for old mess. Lard - Dull, at 17 1/2 to 18c.

Milwaukee Markets. April 13, noon - William Young & Co's report - Wheat - Receipts, 10,000 bushels, shipments, 5,000 bushels. No. 1 west, heavy and firm at \$2 01, No. 2 wheat, buoyant and firm at \$1 91. Flour - Quiet, at \$9 12 1/2. Pork - Dull and unchanged.

Chicago Markets. April 13, noon - William Young & Co's report - Wheat - Receipts not given; No. 2, firm and active at \$1 90 1/2. Corn - Steady at 75 1/2. Receipts not given. Pork - Unchanged.

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