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VOL. IV. No. 5.

TORONTO, UPPER CANADA, MARCH 1, 1867.

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The Field.

Plant Life.

ALL material substances may be divided into two great classes—those endowed with life, and those altogether destitute of this principle. This great distinction, life, we can study only in its effects, and are ignorant of its nature; we may discern its characteristics but cannot determine its essence, which ever remains a profound mystery, eluding all our thought and search. Among the leading peculiarities which distinguish those bodies that are, or have been once, endowed with life, we notice first, their *structure*. This is built up of an assemblage of subordinate parts, well defined and separate, but co-operating for some special end, and which we call organs, such as the roots, leaves and flowers of plants, and the limbs, the eye, ear, &c. of animals. Those larger members are themselves made up of more or less minute cells, tubes, and such like formations, which also physiologists call *organs*, and hence it is customary to designate the two great classes of which we have spoken, as *organic*, and *inorganic bodies*. The traces of this organization, often beautifully distinct, remain in those once living forms that after the principle of life was extinct, have been converted into rock, and enable the geologist to pronounce without hesitation upon their original vegetable or animal nature.

Another well marked distinction in living bodies is their *origin* from other living bodies similar to themselves—their *parentage*, in short—which has no analogy in the origin of mineral matter. The latter may be said to have been *formed*; whereas the former bodies were *produced*. Living bodies, again, pass through a process of *development*, altogether unknown in the other class of substances. They pass through successive stages from birth to maturity and death. Closely connected with this distinction is the mode of *growth*. Inorganic bodies may increase in size by the mere mechanical addition of matter externally; but living bodies grow, by the introduction and conversion into their own substance of new matter within them and throughout their own structure. This conversion of extraneous matter into their own living substance is technically called *assimilation*. And lastly, as the inevitable consequence of the foregoing changes, living bodies are limited in their *duration*, and become subject to decay and death: whereas inorganic formations, having within them no elements of waste or destruction may remain unaltered indefinitely, “and unless subjected to some foreign influence, a crystal or a rock would never change. The limestone and granite of our mountains remain just as they were formed in ancient geological epochs; while numberless generations of plants and animals have lived and perished on their surface.”

Amongst living bodies themselves, all of which possess the foregoing distinctive properties in common, there is again an apparently well marked division into two other classes—*plants* and *animals*—In the fully developed and higher forms of these two kingdoms, the differences are so striking that the difficulty would seem to be not to point out these, but to discover the features of resemblance between the two. Yet in the lower forms of each division, the lines of demarcation become apparently slight and sometimes equivocal. For example, while naturalists generally rank *sponges* amongst animals, the eminent zoologist Agassiz classes them with vegetables: and other instances may be adduced where it seems extremely difficult to assign the proper place to some among the simpler forms of organic being. The chief peculiarities that distinguish plants from animals may thus be briefly stated. Plants are fixed, while animals have the power of motion—Yet even here we may observe apparent anomalies and exceptions; some animals become fixed very soon after they are produced, and so remain as long as they live. The common sea anemone is an example of this—On the other hand, some plants, chiefly aquatic species, are continually floating about. The motion of plants, however, is never governed, like the voluntary movements of animals, by the will; plants again are entirely destitute of sensibility, or the sense of feeling. The apparent exception furnished by the so-called sensitive plant, the leaves of which, on being touched, instantly fold together and droop, must be referred in part to a mechanical contrivance at the base of each leaf, and in part to a high degree of the excitability which belongs to all living beings, and by which they answer to appropriate stimulants—plants to light and heat—animals to the influence of the will and other impressions on their nervous system: A remarkable peculiarity has been observed in the *dodder*, a twining parasitic plant, which it is said will only twine round living stems, a peculiarity which though it would be extremely unphilosophical to ascribe to any peculiar sensibility or any power of voluntary motion, looks so like choice that it may be mentioned as a curious instance in plants of apparent sensitiveness not yet, we believe, satisfactorily explained. The *digestive* apparatus of plants and their *breathing* organs, both co-existing in the leaves, afford other well-marked points of contrast to the stomach and lungs of animals. The *motion* of the *sap* in plants is excited chiefly by impressions, and forces acting from without, the light and heat of the sun, and never by a propelling organ within, as the heart of animals. One other difference ought to be mentioned, because it enables us to see what plants are made for. It is this:—vegetables are nourished by the animal kingdom, that is, by the ground and the air, which supply all they need, and which they are adapted to live upon; while animals are entirely nourished (directly or indirectly) by vegetables. The

great use of plants, therefore, is to take portions of earth and air, upon which animals cannot subsist at all, and to convert these into something upon which animals can subsist, that is, into food. All food is produced by plants. How this is done, it is the province of vegetable physiology to explain.

Ho! for the Sugar Bush!

THE time is near when the exclamation above-written will resound through the land, and make the welkin ring in a thousand settlements. Maple sugar-making used to be looked upon as a kind of pastime, though in truth it involved no small amount of hard work. It was felt to be the harbinger of spring, the first job of the season, and its luscious results gave it pleasing associations. Now it is falling very much into disuse, partly from the wholesale destruction of our forests, partly from the unskilful manner in which sugar bushes have been managed, and partly, perhaps, because the clumsy appliances too often used make the work rather uninviting, for somehow people do not pitch into rough work so bravely now as they used to do in other days.

We have not taken up the pen to write a treatise on maple sugar-making. For full information on the subject, we refer our readers to our issue of March 1, 1864, (Vol. I, No. 4.) We can supply that or any other back number of THE CANADIAN FARMER at five cents each, or the volumes at \$1 30 each. To any novice in the art of managing a sugar bush, the information contained in the number above referred to is well worth the postage of a letter, and the price of the number. Just now we have simply to drop two or three suggestions. The first is as to preserving the sugar bush. Let nobody who has one grudge it the space it occupies on the farm, or be tempted to convert it into cordwood. Woodman! spare those trees. Cut not a single one down. Next, we would drop a cautionary hint as to gashing and hacking the trees. A sugar bush will not last long on the old barbarous method of tapping. A gash four or six inches in length will soon girdle and kill a large tree. Nor is there the slightest need for this. An auger-hole from half to seven-eighths of an inch in size is as good an outlet for sap as a big, ugly gash. Plug up the auger-hole when the sap is done flowing, and it will soon be grown over, and the wound healed. A third suggestion is as to the use of labour-saving methods of sugar-making. It is well to substitute light pails of wood or tin, for the heavy troughs. Let the sugar-bush be underbrushed and cleaned up so that a horse or ox-team can get round it to gather the sap. Sheet-iron pans are cheaper, lighter, and better, than the clumsy, old-fashioned sugar-kettles for boiling the sap. These improvements not only save labour, but enable the maker to produce a much better quality of sugar.

By proper attention, the yield of maple sugar in this country might be largely increased. It is a great luxury to have plenty of it, and it is even a greater luxury to have a good supply of maple molasses, which is far before the best article of West India molasses, Golden syrup, or Sorghum syrup, ever produced. These articles are not only useful for home consumption, but they are in good demand, and sale for them at fair prices can be had to almost any extent. We close by quoting a few practical suggestions made by a correspondent of the *Country Gentleman*, in a recent number of that paper—

"Use the half-inch bit for tapping, but be sure to keep perfectly sharp, and no danger of splitting the wood. Bore from a half to five-eighths deep; that will give a quarter of an inch for freshing, without materially damaging the tree. I would use the alder spile in preference to any metal spile I have ever tried; and if properly cleaned every spring, with your pans or buckets, there will be no danger of soured sap. My plan is to hot lime juice them, with good rinsing. For cleansing your syrup after straining through double woolen cloth into a tub, let it stand two hours in order to settle; then draw off by a faucet, inserted in the side of tub one inch above the bottom; that will give you the clear stuff. Then place over the fire, and on coming to a boil, add a pint of new sweet milk to every 20 gallons, to slack it; and skim well as long as anything comes to the top. Stir your sugar for one hour, while it is cooling and graining, in large wooden trays or bowls, with a thin wooden paddle, and you will have as white, nice sugar as you could wish. If you would economize time and wood, by all means have a tight sugar-house over your furnace, for a cold gust of wind, blowing on the surface of water, will stop the boiling, as the watery vapour is thrown back by lids into the syrup. Try it for a moment with a lid; then raise your lid and see the water dripping back. The faster the evaporation, the more and better sugar."

Familiar Talks on Agricultural Principles.

BEANS.

The bean is a plant well worthy the attention of farmers, furnishing as it does a valuable article of diet for both man and beast, and a crop capable of playing a most useful part in a well managed rotation. The proportion of nutritive matter in beans, compared with other grain, is, according to Linhof, as follows:—

Wheat	By weight 74 per cent	Or in a bushel about 47 lbs.
Rye	70	39 "
Barley	65	33 "
Oats	58	23 "
Beans	68	45 "
Peas	5	49 "
French Beans	54	54 "

The same chemist obtained from 3-10 parts of marsh beans, of

Starch	1312
Albumen	31
Other matters, nutritive, gummy, starchy, sugary, analogous to animal matter	1204
And from kidney beans of starchy matter	1505
Albumen and matter approaching to animal matter in its nature	851
Mucilage	793

The *Mark Lane Express* says—"An acre of beans, averaging 30 bushels at 66 lbs per bushel, gives the following amount of nutritive matter in feeding material: nitrogenous or flesh-forming material, 460 lbs.; starch, 970 lbs.; woody fibre, 198 lbs.; mineral matter or ash, 67 lbs.; water, 285 lbs.

Beans are largely used in England and other countries as food for live stock, particularly for horses and hogs. For the former, they are considered more nutritious than the oat, and a better food on which to sustain hard and protracted labour. At first it is difficult to induce horses to eat them, but before long they come to like them.

Beans are valued by British agriculturists from the place they are fitted to take in a rotation of crops. They require a large quantity of potash and lime, and should be dressed with manures or composts containing these substances, or introduced in a course between crops that consume but small quantities of them. On rich clayey soils in England a course which has been much used is 1, oats; 2, rape, for oil; 3, beans; 4, wheat sown with clover; 5 and 6, clover; 7 wheat; 8 rape. In rich loams, 1, oats; 2,

turnips; 3, wheat or barley; 4, beans; 5, wheat; 6, fallow or turnips; 7 wheat or barley and grass seeds. It will be observed that in the last-mentioned course, a crop of beans is interposed between two white crops, and it was long the practice in the richest parts of the County of Kent to grow wheat and beans alternately for many years in succession, without change or fallow. Although the nutritious matter in a crop of beans is great—almost equal, indeed, to that of a crop of wheat—it exhausts the soil much less. Its succulent leaves and stems absorb much nourishment from the atmosphere, while the leaves, constantly falling off and decaying, restore carbon and mucilage to the soil. Few seed-bearing crops give so great a return with so small a drain on the soil, while none are more grateful for liberal manuring, or leave the land in better trim for a grain crop. We have expressed the opinion heretofore in this journal, that beans are too little cultivated in Canada, and we take occasion to repeat it in this place. The varieties of the bean are numerous, and it is cultivated both in the field and the garden. At present we shall speak only of those employed in field culture. The variety commonly called horse-beans are but little grown in Canada or the United States, from an impression that they will not do so well as in England and other European countries. This we believe to be a mistaken idea. Those who have given them a fair trial, report most favourably in reference to them, and we know of no good reason why they should not flourish and bear good crops here as well as in the Old World. The large amount of nutriment which they contain, renders them very desirable for stock-feeding. The variety most grown on this Continent is the white or cranberry bean. It is largely cultivated in New England, and is much prized all over the United States as an article of human food. "Pork and beans" constitute a favourite dish in all parts of the American Republic; indeed, it is so distinctively "Yankee," that it may be looked upon as being scarcely less national than the roast beef of Old England, or the "haggis" and "kail" of Scotland.

The field or horse-bean may be sown quite early in the season, as it is less tender than the garden or white varieties, and will bear a light spring frost without injury. It should be sown in drills wide enough apart to admit of being cultivated with the horse-hoe. The white bean should not be put in until all danger of spring frost is over. About the 1st of June will generally prove the best time. It is cultivated by our Yankee neighbours very much in the same way as corn, being planted in hills, and tilled both ways with the horse-hoe or cultivator. Bean-stalks are valuable as fodder for sheep and horses. Chopped or broken up, they are considered little inferior to ordinary hay.

Progress of the Potato.

The potato holds its own at home and abroad, and the cultivation and consumption seem to be larger than ever. Exclusive of our home-growth, we imported nearly 807,000 cwts. from the continent during last year; and the average imports of the past three years were 50,000 tons annually. Although in some former years the foreign imports were half as large again, the home production has probably extended. There is scarcely any doubt that the annual growth in Great Britain and Ireland equals what it was estimated at some fifteen years ago, namely, nine million tons.

Wherever the climate and soil are suitable, there the British settler carries with him and extends the culture of his favorite tuber. We find it in the southern African colonies, in parts of India, all over Australia, while in Tasmania and New Zealand it has long proved one of the most important crops. Even so far north on the great Australian continent as Queensland there are some five or six hundred acres already devoted to the potato. In the British North American colonies and Bermuda, potatoes are also much attended to. The Celestials have taken to

its culture in the northern parts of China; and potatoes sell there at five shillings the hundred weight and a quarter.

In Ireland, the extent of land under potatoes still keeps large, and has averaged in the last ten years with but slight fluctuations, 1,100,000 statute acres. The average yield has dropped off, however, one-half from what it was; for, while in many past years it exceeded six and seven tons to the acre, it scarcely reaches one-half that amount now. In 1817, the average was seven and a-quarter tons per acre, and the produce two million tons; in 1819, at five and a-half tons per acre, the yield was four million tons; in 1855, at six and a-half tons, the produce was six and a-quarter million tons; in 1863, at three and a-half tons, the yield was three and a-half millions.

With a rapidly-increasing population in Australia, whose breadstuff wants are considerable, the demand for potatoes is yearly becoming larger. Potatoes, being next in importance to wheat as the food of man, are especially important in a mining colony like Victoria. The extent to which potato-cropping has been carried in Victoria for some years past indicates the intention of the colonists to adopt it as a standard crop; and, looking at the requirements of a mining population, they are right. As the climate of Victoria has been found to ripen the crop at three periods of the year, that circumstance suggests the feasibility of double-cropping the field in potato-rotation between its wheat-harvest and its barley-seeding.

It is curious to trace the progress of potato-culture in Port Phillip. In 1810, there were but 300 tons of potatoes raised; in the next year, this increased to 3,734 tons; and in 1814, to 12,500 tons. Last year, there were 28,000 acres under culture; but the average produce in the past ten years was three tons to the acre, showing that much remains to be done to increase the produce. The import of potatoes to Melbourne from the adjoining island of Tasmania is very large; in 1842, it was but 384 tons; in 1853, it was 9,000 tons, valued at £170,000; and now it has risen to very much larger proportions.

In 1864, one-fifth more land was planted with potatoes in South Australia than in the previous years; but the season proving very unfavorable, the quantity dug only exceeded that of the previous year by 224 tons; 2,963 acres were sown, yielding 6,493 tons, or 44 cwts to the acre, being 11 cwts. below the previous year's average. This small acreage-yield contrasts strongly with England and Ireland. The importance of the potato in New Zealand we recently alluded to; and the very large yield per acre there, ranging from ten to twenty tons, will bear favourable comparison with any country, however high the cultivation.

In the United States, the produce of potatoes increased from 65½ million bushels in 1850 to 110½ million bushels in 1860. Of this quantity, New York produced fully one-fourth, the next largest producing States being Pennsylvania, 12 million bushels; Ohio, 8½ million bushels, Maine, 6½ million bushels; Vermont Michigan, Illinois, New Jersey, and New Hampshire, ranging from 4 to 5 million bushels. In the Southern States, sweet potatoes (*Batas edulis*) are also grown to the amount of 42 million bushels annually. In our own North American Provinces the quantity grown is large. In 1860, three million bushels were raised, being an increase of fifty per cent. over 1855. In New Brunswick, 37,667 acres produced over four million bushels, valued at "s. a bushel; in Nova Scotia, about the same quantity. In Upper Canada, the quantity of potatoes grown increased from five million bushels, in 1856, to fifteen and a-half million bushels in 1861.

These several facts and figures may prove useful to those interested in potato-culture here and elsewhere; more especially as they are not generally accessible to the public, but are the results of close research in various official channels.—*Farmers' Magazine*.

PREPARING FOR SPRING—Said a farmer who always takes time by the forelock, "In winter I prepare for spring: my plans for the crops for the coming season are all made and ready for execution so soon as the spring opens, be it early or late: my tools are all got in readiness, so that when the time comes to use them, I have not to go to the blacksmith to get chains mended, crowbars sharpened, and to the agricultural warehouse for ploughs or plough points, and so on to the end of the list of wants probable." Such a farmer never depends on his neighbor for what he can procure for himself: he never borrows tools, and would never lend, but for the incessant opportunity of neighbor Slack, Hardup & Co. His motto is,—

Neither to borrow nor to lend,
Ensures good neighbors and true friends.
Boston Cultivator.

The Surprise Oat.

Western farmers have of late, through various sources, heard very much of the Surprise Oat, grown by Mr. Van Olinda, of Do Kalb county. The history of the oat is briefly given. Six years ago Mr. V. O. found a single head of oats in his wheat field that struck him as differing from any grain of the kind he had ever seen. There were but seven grains upon the stalk. Five of these were planted at the proper time the succeeding season, and from them the crop of the present year, now offered for sale, descended. The yield this year is represented to have been 133 13-14 bushels per acre, and the truth of this statement is attested by men with whom we have long been personally acquainted, and whose word we have no reason to doubt.

That this variety is two or three weeks earlier than ordinary oats, is also certified by the same parties. In appearance the oat speaks for itself, it being very large and plump, and weighing about 40 lbs. to the bushel. The straw, as we have seen it, grows about five feet in length, is very strong, and is not liable to fall. The heads are of extraordinary length, frequently measuring eighteen or more inches, and bearing upon all sides.

Mr. Van Olinda showed us to-day a sample of these oats, ready labelled for the great Paris Exposition, where he expects to eclipse all competitors, as he no doubt will in quantity produced, at least, if not in quality.

Oats like these must have superior advantages in any market where oatmeal is an object. They are also pronounced by brewers in this city to be superior to any oats they have ever examined for malting purposes.

Farmers who desire to make the most money from their crops will not overlook the merits of this new candidate for public favor.—*Prairie Farmer.*

SOAP SUDS.—Save all the suds from the sink and the laundry. If you don't want it for purposes of irrigation, let it be conveyed to your manure heaps or mixed with materials for compost. No article of a liquid nature possesses greater fertilizing properties, and it will be found a source of considerable profit to every one who will properly use it.—*Prairie Farmer.*

PAN FOR BOILING SAP.—A correspondent of the *Rural New Yorker* suggests that, "for boiling the sap of maple trees, make a box 2½ feet wide and 10 feet long; use poplar plank 1 foot wide and 2 inches thick; insert the end pieces in grooves half inch deep in the sides of the box 4 inches from the ends. On this nail a sheet of No. 16 iron 2½ feet wide and 10 long. The furnace should have a door and grates, with a space of about 18 inches between the grates, and the bottom of the box; this space should taper up to about 5 inches. The chimney should be 8 or 10 feet high. This arrangement will lessen the amount of labor and fuel usually required in making maple sugar."

SALT AS A MANURE FOR WHEAT.—A correspondent some time since asked for information on this subject. Having no experience in the matter, we could only refer the writer to the authority of the parties who recommended it. We have since met with the following notice in one of our exchanges, and we publish it here for the guidance of any who may wish to test the question by experiment. In regard to salt—a writer in the *American Farmer*, says: "I prefer sowing wheat from the 10th to the 20th of September, but cannot tell how much high manure will hasten its ripening; very high manuring will retard the ripening, but the application of 250 to 300 pounds of salt will hasten the maturing at least four days, besides giving a brighter straw, more plump grain, and a finer sample every way; and I think 400 pounds per acre might pay still better. I use much salt, and think it prevents in a great measure rust and mildew. I sowed fourteen acres of wheat last September; it now surpasses any I have seen, and is much superior to eleven acres in the same field on which no salt was sown, both being sown on the same day, and fallowed in the same manner. I have no doubt it will mature at least four days previous to the eleven acres, and those four days may put it out of danger from the midge. I get better results from salt when dry weather prevails for some time after it is sown, and I sometimes sow 75 barrels in one season, buying it at wholesale at the manufactory. I generally sow it immediately after the wheat is sown; but, if I was to be guided by theory, I would sow it before and harrow in with the wheat. I have often thought about trying it in this manner, but have not done so."

The Dairy.

A Chat on Cheese.

Those who have been educated to believe, or taken the idea into their heads without being educated at all, that cheese is an unwholesome diet, are much in error. It is likely enough that a surfeit on cheese will sometimes kill, or come uncomfortably near it. So will beef a-la-mode, oysters or chicken pot-pie. But eaten regularly, and in moderation, at every meal, cheese is not only a wholesome diet as a promoter of digestion, but at twenty-five cents per pound even is more economical than meats. This has been satisfactorily proved by experiment and chemical analysis of the two materials, but more satisfactorily by the experience and every-day practice of the mechanic and field labourer in England, Scotland and Wales, and among the same classes in Holland and Belgium.

Bread, cheese and beer, constitute the dinner of the artisan, mechanic and ordinary labourer in all these countries. Cheese, bread and beer, make the breakfasts of themselves and families, and beer, cheese and bread, make in the main the suppers of the majority of the working classes in all these countries; and where else shall we find working men and women more hardy, healthful and vigorous? Certainly not in our own country of universal meat eaters.

There is another cheese error that a very great many—perhaps the majority of all American farmers have fallen into, and do not seem inclined to fall out of without a great deal of persuasion—i. e., the belief that cheese cannot be made so as to be profitable or good cheese during the winter, or without keeping ten or twelve cows at least. Let us see how some of our foreign cheese-makers manage that, taking first the

THURINGIA CHEESE.—In Saxony they manufacture very palatable cheese from the milk of a single cow and a patch of potatoes: The potatoes are boiled until perfectly cooked through; then mashed, and to four pounds of potatoes add one quart of thick, sour milk, with salt enough to season, and knead the mass thoroughly as you would a batch of bread dough. Let it stand in bulk four days. Then give it another vigorous kneading, divide into balls of three to five pounds weight, press these with the hand as compact as possible into small baskets, and dry in summer in the shade; in winter by the fire or stove. When thoroughly dry, put the cheese into tin cans, or any of the improved fruit cans, seal up, and set by for use in a cool, dry place, and they will keep in capital condition five years. Let us have a look next at

SKIM MILK CHEESE.—In all tropical countries cheese made of skim milk, and of small size, keep far better, and are always more in demand than the great now or whole milk monsters of from 50 to 100 pounds, that the hot weather melts into mush, and very few people care to purchase. Skim milk cheese, made small and thin, weighing from ten to twenty pounds, may be profitably manufactured by all our butter dairymen and women the year round, and as they require none of the bandaging and fussing over to keep them where and what they ought to be, it will pay largely those who conduct butter dairies, either large or small, to turn their skim milk into cheese. It will sell readily and rapidly, paying far better than "smear-kase."

EDAM CHEESE.—Thus far the Netherlanders have maintained the "call" of the market, supplying the civilized, and a good deal of the uncivilized world, with what is popularly known as "pine-apple" cheese. Very excellent cheese it is too—this Dutch pine-apple, keeping in all climates capitally, and always commanding ready sale at good prices. This is the Hollander's formula for making Edam cheese. It is simple enough, and the Holland "pine apples" may just as easily be made in the United States, wherever four or five cows are kept, as it is in the Netherlands.

The fresh sweet milk is curdled with muriatic acid or spirits of salt, and the curd cut and chopped and manipulated in the most thorough manner in order to expel every particle of whey. The curd is then soaked in a brine of sufficient strength to float an egg for an hour. The brine is then worked out, and the curd subjected to a heavy pressure in iron moulds, that give the pine-apple form to the cheese. After from four to five hours pressing, the cheese is taken from the form and anointed with soft butter, having as much fine salt worked into it as it will hold. Thus finished up, it is set singly in rows on shelves in a cool, airy place, and with a month's curing are in a fit condition to send abroad, and will keep for years in any climate.

The largest of these Dutch cheeses never exceed 4½ pounds in weight, to make one of which requires

about 6 gallons of milk. So at any farm-house where three or four cows only are kept, an Edam cheese may be made every day without interfering with other duties, and the aggregate for a year would make a very respectable increase of income.

PARMESAN CHEESE.—This cheese, celebrated for its delicious flavour, and beautiful elastic texture, is made in that Italian territory called the Lodense district lying between Lodi and Cremona, and comprising the richest grazing portion of the Milanese department. The cows from which the Parmesan cheese is made are always kept closely guarded and fed all the year round with green food. As the weight of these Italian cream cheeses range from 150 to 200 pounds, of course there are no individual dairies that afford sufficient milk to make one, and so a whole community of Parmesan farmers club together—putting in their milk and making a cheese first for one and then another, until every member of the company is supplied with a cheese weighing from 160 to 200 pounds, according to the quantity of milk contributed.

This Parmesan cheese combination is most likely the parent of our combination cheese companies in the United States. There are similar confederacies in two or three of the Provinces of France, and two at least in Switzerland at which the famous cheese of Neufchâtel and Gruyere is manufactured.—"Cosmo" in *Sat. Eve. Post.*

There are now in the State of New York more than five hundred cheese factories, using the milk of over 200,000 cows.

The extent of the dairy business in some parts of New York is shown by the fact that there were shipped from Herkimer Co., alone, last year, 18,172,913 lbs., of cheese, and 232,961 lbs., of butter.

The Chatham *Planet* states that Mr. Thomas McCrossan and Mr. A. G. Moss, of that town, have recently shipped to Europe direct,—the former over twelve tons, and the latter, in one lot, thirteen and a half tons of butter. Mr. Moss, during the past season, has purchased upwards of sixteen tons of butter, the produce of the industry of the good wives of the county of Kent.

TRAINING HEIFERS.—A Pennsylvania Farmer, who has trained and milked heifers for more than 50 years, and never has any trouble about their jumping, kicking or running, gives the *Rural American* the following as the secret. When I intend to raise a heifer calf for a milch cow, I always "raise it by hand," and when feeding, frequently handle it by rubbing it gently over the head and neck until it becomes tame and gentle. The rubbing is begun at the first feeding with milk, and continued until I quit feeding it; I never afterward have any trouble about milking them.

DRYING COWS.—The editor of *The New England Farmer* recently visited the farm of Mr. Chenery, near Boston, where he saw some of the Dutch cattle imported by Mr. C. He gives the following account of what he saw in the stables. "Entering the stalls we found a man milking one of the Dutch cows. She had been milked twice before during the day, and while we stood by he filled a common water pail and commenced upon another, the milk still flowing as freely as it did into the first pail! A cow stood near that had dropped a calf a few days before, which weighed at birth 113 pounds. And another brought twins which weighed at birth 163 pounds! A three or four-year-old heifer stood by, for which Mr. C. had been offered \$1,200, and declined it. All were as splendid specimens of cows as we ever saw. Two noble bulls of the same breed, large and of most exact symmetry, were also present. Their weight must be some 1,700 pounds each."

AN AMERICAN MILK ESTABLISHMENT IN SWITZERLAND.—A. L. Wolf, United States Consul at Basle, Switzerland, in a recent letter states that a company of Americans are about establishing a milk condensing factory on the lake of Zug, in Switzerland. Machinery has already arrived, and a new building is to be finished during the year. Milk, it is said, can be bought cheaper there than in any other country, and it is expected that a profitable business will be made. While in England, we learned that efforts were being made to establish the factory system of cheese making in Northern Europe. Milk can be produced very cheaply in Norway and the adjacent States. Several parties from Norway had recently been to England for the purpose of investigating the process of English cheese making, with a view of introducing Dairy Husbandry in their own country. English dealers in cheese advised the adoption of the American system, and it is quite probable that the day is not distant when cheese factories will be in operation in Northern Europe. Some enterprising Yankee will yet carry the art abroad, and reap a fortune by teaching this system on the other side of the Atlantic.—*Utica Weekly Herald.*

Stock Department.

The Lincoln Sheep.

Among the characteristic breeds of long woolled sheep, the Lincoln has occupied a prominent place from a very early period of English husbandry. The long wools are essentially the sheep of the rich alluvial plains, or marshes, that cover extensive areas along the eastern wastes of England. Accordingly we find that the low grounds of Lincolnshire and adjacent counties have been distinguished, from a very remote period, for a remarkable race of coarse and massive sheep. An old writer described them as "the largest legged and largest carcassed sheep of all others; and although their legs and bellies were for the most part void of wool, yet they carried more wool than any sheep whatsoever." These animals were of immense size, slow feeders, bones coarse, and the mutton of inferior quality. Their chief merit was their fleece which would weigh from 10 to 15 lbs., with a staple 12 to 20 inches long; the wool in some instances literally reaching to the ground.* For many years there was a keen rivalry kept up between the most distinguished breeders of the Lincoln and Leicester sheep. Subsequently, however, when the new Leicester or Dishley breed of Bakewell attained a fixed popularity, the Lincolnshire breeders resorted to this stock as the means of communicating to their own the property of early fattening and better symmetry, for which the new breed had become highly distinguished. This system of crossing was carried on with most distinguished success, until the close of the last century, and it has been more or less continued ever since, with marked success, till the original type of the old Lincoln may be pronounced extinct.

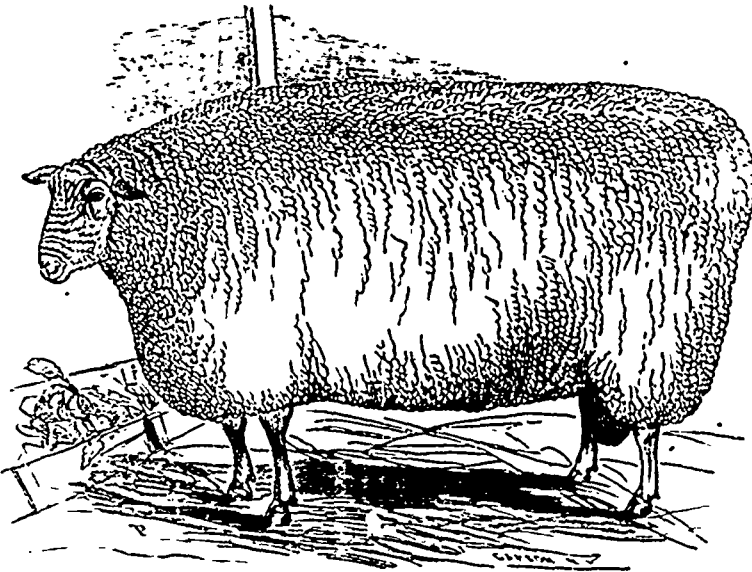
It is to be observed that the crossing of the old Lincoln with the Dishley (new Leicester) blood, met at first very formidable opposition, as often happens to all great and earnest attempts at improvement, and a long controversy was kept up between the supporters of the respective breeds. The harshness and immense carcass of the old breed, and their peculiar adaptation to rich, low-lying pastures, with their unrivalled fleece, were stoutly contested against the claims put forward of earlier maturity, and adaptation to fatten of the new breed. In the end, however, it was found that, as regards the fleece even, though the weight of individual fleeces was diminished by the cross, the wool produced out of the one was increased, from the greater number of animals affording a superior quality of meat that would be maintained on the same space. Thus, by degrees, the remarkable old race of the fens was displaced, or mixed largely in blood with the new variety.

A few remarks of Professor Low, in this connection, are well deserving of attention: "The breeders of Lincolnshire doubtless consulted their immediate interests, in availing themselves of the improved stock of Bakewell, to give at once those qualities to their own in which it was deficient; but at the same time, great regret may now be entertained, that the native breed had not rather been improved by an application of the principle of *selection*, than destroyed in its distinctive characters by indiscriminate crossing. The wool of the true old Lincoln breed was altogether

peculiar, and such as no country in Europe produced. That of the new Leicester breed is shorter and finer; but it wants the toughness, softness and length of fibre which distinguished the others, and which, could it now be obtained, could be used with great advantage in various worsted manufactures. It cannot be doubted, that the same principles of breeding which enabled Mr. Bakewell to form a new breed, could have been applied by the Lincolnshire breeders to remove the defects of the native race, and call forth its useful purposes."

Since the above extract was written, further improvements have been made on the Lincoln sheep that go to enhance the value both of the carcass and the fleece, and to give them more of a fixed character as a large and long-wooled breed, so that it has become a matter not merely of private concern, but of national importance even, that the modern Lincoln should not only be mentioned as a *breed*, but as far as practicable it should be still further improved. Its flock now ranks at least on an equality with that of any of the larger breeds; and its wool continues unrivalled for combing purposes, possessing a bright silky appearance of staple, peculiarly adapted for what are termed "lustre" goods, in imitation of alpacas and mohair fabrics, and thus its value of late has been considerably advanced.

With respect to the present state of this valuable



breed, Mr. J. Algernon Clarke, a distinguished sheep breeder, remarks: "The present improved Lincoln sheep partakes largely of the peculiarities of both Cotswold and Leicesters, having the expansion of frame and nobility of appearance of the one, with the quality of flesh, compactness of form, beauty of countenance and propensity to fatten of the other; but they far exceed either in the weight of the fleece. Under good management their wool is of a quality which rarely fails of obtaining a price equal to that of the lighter long wools, and there is, therefore, no breed, perhaps, that can equal this in rapidity of growth and propensity to fatten under a skin so weighty and so valuable."

In looking over recent reports on British sheep, we have been struck by a number of remarkable facts in relation to the modern Lincoln. So long ago as 1826, Mr. Dawson, of Withcote, killed a three shear sheep, weighing 96½ lbs. per quarter; a two shear, weighing 91 lbs. per quarter, and a shearling, 71 lbs. per quarter. Mr. Robert Smith, in his report of the Royal Show at Warwick, some half dozen years ago, states that "he has known 14th months old lamb-hoggs slaughtered at Lincoln April fair, thirty together, averaging 37 lbs. per quarter, and one hundred together, clipping 14 lbs. of washed wool each." It is not the common practice of the breeders of Lincolns to have them fit for the butchers at 14 or 15 months old; but they are generally kept until they are 22 to

28 months old, when their weight will be, on ordinary feeding, from 30 to 40 lbs. per quarter, and cut a second fleece, weighing from 10 to 14 lbs. Mr. John Clarke's Lincoln prize ram clipped 51½ lbs. of wool in three years, an average of 17½ lbs. each year; while a neighbour of his, in 1859, clipped 327 hogget fleeces, which weighed altogether 130 tons, an average of over 11 lbs. per fleece. The Lincoln breeders consider the mutton of admirable quality, having less fat and a greater portion of fine-grained, lean flesh, than the Leicester. The ewes are good breeders, but are said, like the Cotswolds and Leicesters, not to be good sucklers. Mr. Clarke further observes that "it is certain that neither Cotswold nor Leicester sheep, in cases where they have been tried in the same district, have excelled the Lincolns in the value of wool and mutton together produced per acre; and no other breed can furnish such big and heavy-skinned lamb hoggs as those which are the graziers' attraction at Lincoln, Caistor, and Boston spring fairs."

Our engraving represents a shearling ram imported last year from a well-known Lincoln flock, by Mr. Kirby, of Milton, county of Hants, tenant of John White, Esq., M.P.P. We had the pleasure of seeing the importation, consisting of nine rams, which taken as a whole, for size, fineness of breeding, symmetry, constitution, weight and quality of wool could hardly be surpassed. This breed is richly deserving a fair trial in Canada, and the public is much indebted to Mr. Kirby, and his enterprising landlord, and we shall be pleased to hear that they will import some ewes of the pure Lincoln blood the present year. The rams, which have already been dispersed, will, no doubt, do good service among a number of our flocks.

LARGE SALE OF MULES.—Mr. J. Buckalew, of Jamesburg, N. J., recently sold a lot of 500 mules to the Delaware & Baritan Canal Company, receiving a cheque for \$90,000 in payment therefor. The *Country Gentleman* rather intimates a doubt whether any sale of equal amount has been made by Western farmers. We hope some of our readers will enable us to gratify the anxiety of that paper to chronicle such an event in the West. Mr. B. is finishing a cranberry bog of 150 acres. We can gratify the desire of our cotemporary to know of anything in the West equalling this by referring it to a farm of 100,000 acres in Barry county, Mich., which is being prepared for the culture of cranberries.—*Western Rural*.

Breeding Horses vs. Breeding Pigs.

Mr. Thomas Robertson, of Narragmore, Kildare, Ireland, discusses in the *Irish Farmers' Gazette* the relative profits derived from breeding horses as compared with breeding pigs, and gives the preference very decidedly to the latter. With regard to the former, he remarks on the length of time the farmer has to keep the animal before he can make a sale, the expense of the keep of both mare and foal, the risk to which they are exposed, and the uncertainty attending the price at last obtained, pointing out that in many instances, as the trade is carried on in Ireland, the dealer, and not the breeder, makes all the profit in the transaction. So uncertain is the business there, that he even goes so far as to characterize it by the name of "gambling." In contrast with this denunciation, he pronounces a brood sow to be a much more profitable animal to the farmer than even a first class brood mare. The original cost of the stock is less, the return is much more speedy, can be secured, if desired, as often as twice in the year, and is altogether, in his opinion, attended with much

* Mr. Colley, an eminent breeder, thus describes the old Lincoln: "They are without horns, have white faces, and long, thin, weak carcasses; the ewes weighing from 14 to 20 lbs. the quarter. They have thick, ugly, white legs, large bones, thick fells, and long wool, averaging from 10 to 18 inches, weighing from 10 to 16 lbs. per fleece, and being a slow feeding and coarse-grained carcass of mutton."

less risk, expense and trouble. Without endorsing Mr. Robertson's views against the rearing of the nobler animal, for we believe that properly managed this branch of business can be profitably pursued in Canada, we heartily approve of his recommendations in favor of the pig, which we believe to be one of the most profitable kinds of stock that a farmer can keep. It may pay some men to devote almost exclusive attention to one kind of stock, but with the majority of persons, a variety of stock as well as a diversified agriculture will, we think, ensure the best returns.

The statement is made that 200,030 Vermont sheep were killed for mutton last year.

PRICES OF WOOL.—The following figures are given by the New York *Economist*: The average price of domestic fleeces wool in the United States from 1827 to 1861, was, for fine, 50 3-10c.; for medium, 42 8-10c. and for coarse, 35 5-10c. Average price for four years, from 1861 to 1865, (during the war) for fleeces 63 to 83c.: for pulled, 56 to 61c. Average price for the year 1866: Fleeces, 45 to 72c.; pulled, 29 to 61c.

A GOOD WORK-HORSE.—The California Agricultural Society requires that a first-premium work-horse shall be between fifteen and sixteen hands; quick, lively ears; broad between the eyes; round barrel; short loins; well up in the shoulder; deep chested; square quarters; flat legs; short between the knee and pastern, and hock and pastern; hind legs well under him; speed equal to eight miles an hour on the road, and at least three miles at the plough; with sufficient blood to insure spirit and endurance.

RYE FOR FATTENING.—A correspondent of the *New England Farmer* says: "Many people consider rye good for nothing except for making whiskey, but having used it several years for horse feed, and knowing its value for that purpose, I concluded to try it for feeding my pig. I took a small cask with one head out, and filled it about half full of dish-water, say two to three pailsful, and put rye meal enough into it to make it as thick as would dip easily, replenishing it from day to day, and throwing in what sour milk we had from one cow, after using all the milk we needed for a large family. Of course the pig had but little. I fed with this until the pig was more than six months old, when I gave some corn meal, but mostly small ears of corn. Killed at 8 months old, and it weighed 241 pounds—the cheapest pork I ever raised. I kept the pig in a close pen. She ate well all the time—never lost a meal, I think."

BED YOUR STABLES.—A horse, remarks the *Rural World*, will get tired of standing and treading on a hard floor; so will a cow, a sheep, a man. A soft bed feels easy—gives rest. And yet we neglect the bedding of our stables to a great extent. Injured limbs and other ailments, especially of the hoof, are the result often of a neglect here, as has been clearly enough shown, and as every man can clearly enough see, if he gives the subject a moment's thought. Bed with straw, which is plenty, or saw-dust, or tan-bark or shavings. The dryer these materials are the better. Every day remove the moistened bedding and replace with new. Such a floor, well-bedded, adds greatly to the warmth of a stable, and thus becomes a fodder-saver. The small holes and crevices in a floor, with a good bedding upon them, will let little or no cold through, and will drain the stable. Rather have a ground floor than hard, naked plank.

FLESH IN GRASS.—Animals can do nothing (says a writer in *All the Year Round*) with inorganic materials, unless these have been previously prepared by the vegetable. The vegetable kingdom, therefore, as Jean Macé says, is the vast kitchen in which are cooked the dinners of the animal kingdom. When we eat the ox, it is the grass which he has eaten that actually nourishes us. For us, he is a mere intermediary, who transfers to us intact the albumen extracted by his stomach from the juices supplied to him by his pasture grounds. He is only a waiter in the grand eating-house of nature. The dishes he brings us have been put into his hands ready prepared. Only, to appreciate his services properly, we must remember that the nutritious portions furnished by grass are very small indeed in their weight and dimensions, and that it would be a weary task for our digestion to have to elaborate them one by one. We might be starved to death with our stomachs full, as happened to some unfortunate Australian explorers, who found plenty of nardoo to eat, but nothing else. The ox presents us with these little portions concentrated in a heaped-up plateful; and our stomachs are the gainers by his complaisance.

The Household.

Domestic Spinner.

We hail with pleasure any inventions that tend to diminish the amount of toil that, in this country especially, falls to the lot of women. The implement of which we give an illustration and brief explanation, seems to furnish a desirable adjunct to the knitting machine and sewing machine that have already, the latter especially, become almost a necessity in every household.

The accompanying cut represents a spinning ma-



chine invented by John Lazier. The girl stands in a position to work the machine. She walks backwards, gently turning the driving wheel, No. 6, until she gets back 6½ feet; then turning faster, she gets a signal to stop from a register of twist. This signal is changed to twist hard or soft, by displacing a pin. In returning the operator winds the yarn on the spindle or bobbins: in drawing back, the machine lets off the desired amount of roll or roping. There are nine changes to spin fine or coarse yarn: the changes can be made in a few seconds, by the following process—the rolls are placed on the apron No. 4, one for each spindle; as the apron revolves the rolls are carried to the guides, and thence through rollers to the spindles. As they pass through, a small girl can substitute others. The yarn is placed on the reel from the twelve spindles at once. To double and twist, the yarn is taken from the reel, two ends together, and passed under a rod to the spindles: the line is loosed from the driving wheel post: the line with weight from the ratchet cone No. 3, is hung over the pulley on the reel: this gives sufficient friction to the reel to keep the yarn from snarling. The remaining steps of the operation are the same as in spinning, with a reverse motion. To spin roping, the apron is removed, and a drum substituted. The twelve ropings are placed on a large spool by the carding machine, each roping being perhaps 200 yards long. This spool is placed on the drum, with which it revolves and lets off the roping, the latter passing through the guides to the spindles. The operation is the same as in spinning rolls, less the placing them on the apron. The roping is preferable, as it will draw more even, and make a far better thread, since all the fibres, when laid straight in the yarn and well bound with the twist, must do their share of the work.

The manufacturer claims for this domestic spinner the following advantages.—

1. It has twelve or more spindles.
2. It repeats the same amount of roll and twist, and thus prevents cockling in falling.
3. It will spin roping, reel double and twist, and place the yarn on the bobbin ready for the shuttle.
4. It will spin from 30 to 40 knots in an hour.

Cracked Wheat, or Wheaten Grits.

I have been an interested reader of your paper for years, but do not recollect to have seen anything written on the subject of wheat as a culinary vegetable. I have met with it among your countrymen, and should like to know how this grain is prepared for cooking. I think the grain is run through machinery and broken. If so, please inform me where such can be had. M. W. Versailles, Ky.

Wheat, prepared for this purpose, can be procured at the principal family groceries at the east; but a friend of ours, who prepares it for his own use, furnishes us the following, from which it will be seen that it is a very easy matter for every family to furnish itself with a cheap and abundant supply:

Any one can be supplied with this wholesome and palatable food, by getting good white wheat and washing and thoroughly drying it. Then grind it in a coffee mill, kept for the purpose, setting it to grind as coarse as possible. Place it in a six-quart tin pail, and pour cold water to cover it; set this pail into a kettle containing six or eight inches depth of hot water. Set it to cook for four hours, stirring occasionally, and adding more water as the wheat swells. Before taking up, stir in salt to your taste. Have ready your moulds or dishes, (having first wet them,) and pour the wheat into them. When cool, they should turn out like jelly, and be eaten with cream.—*Country Gentleman*.

DISINFECTANTS.—Mr. W. Crookes, F. R. S., of London a distinguished chemist, in a report on the application of disinfectants, quoted in the August No. of this Journal, "gives the preference to tar acids (carbolic and cresylic) as, under all circumstances, the most powerful in arresting all kinds of fermentative and putrefactive changes." Carbolic acid is now used by the New York Board of Health, as a cholera disinfectant; and the Medical Health Officers of this city strongly recommend this acid, and carbolate of lime—a powder prepared by Lyman & Elliot, similar to but stronger and cheaper than Mr. Dougald's Disinfecting Powder.—*Journal of Arts*.

FARM CLOTHING.—The editor of the *Maine Farmer*, who joins practice to theory in farming operations, commends to the fraternity a field dress which he uses when at work, and of his own invention. It is a sleeve vest, closed in front, and trowsers in one piece, with only one fastening, with a strap behind the neck. The sleeves were made large enough to wear over a coat, and the trowsers over another pair, if desirable. The material is of blue drilling, and may be made into a farm garment of the kind mentioned by any handy housewife in a short time and at small cost. It should be made quite loose, and in very hot weather the laborer will need no other garment, while laboring in the field, but this, with the exception of a shirt. It is easily put on and off, and will be found an excellent thing for farming operations.

SOAP MAKING—COLD PROCESS.—In Virginia there is a mode of making soap, adopted by the country people, which they call the cold process, that deserves to be made generally known. It is thus described by a farmer's wife: "I put my barrel—a common fish barrel—in the cellar where it is intended to stand, and fill it nearly full of strong lye; then add as much grease without melting it as I think sufficient, stirring it once every day or two. In a few days I can tell whether I have put too much or too little grease, and add lye or grease as the case may require. In two or three weeks it becomes excellent soap. We call it the cold process. In this way we make a better soap, get rid of the trouble and risk of boiling, and can make it as suits our convenience, or occasion requires."—*Iowa Homestead*.

HOW TO BEAT WHITES OF EGGS.—On breaking eggs, take care that none of the yolk becomes mingled with the whites. A single particle will sometimes prevent their foaming well. Put the whites into a large flat dish, and beat them with an egg beater made of double wire, with a tin handle, or with a cork stuck crosswise upon the prongs of a fork. Strike a sharp, quick stroke through the whole length of the dish. Beat them in the cellar or some other cool place, till they look like snow, and you can turn the dish over without their slipping off. Never suspend the process nor let them stand, even for one minute, as they will begin to turn to a liquid state, and cannot be restored, and thus will make heavy cake.—*Maryland Farmer*

Poultry Yard.

Poultry and Their General Management.

AN ADDRESS DELIVERED BY COL. HASSARD, BEFORE THE CANADA POULTRY ASSOCIATION.

In furtherance of the objects of the Association, to promote social intercourse, to elicit discussion, and to disseminate practical information on poultry subjects more effectually than such knowledge can be acquired merely from books, Colonel Hassard selected for the topic of his address, thus early in the season the subject of poultry generally a subject on which much ignorance prevails amongst both farmers and amateurs. He has kindly favoured us with the substance of his remarks, which were to the following effect:—Our Society has no wish to intrude our fancies, or I should say (for we must stick to poultry terms) "cram" them on the public, but we merely invite them to assist us in supporting a movement which we think will benefit not only individuals, but our markets, and therefore the public generally.

The Society hope also to be able to furnish judges to the agricultural as well as local shows, and thus prevent, if possible, any dissatisfaction with the awards of prizes; and *à propos* to this, I think we should induce all societies to give up the plan now in vogue, of allowing exhibitors' names to accompany the specimens prior to the awards. Simple numbers should be substituted, so that, as far as possible, the judge may be in ignorance respecting the ownership of the birds.

The adjudication of prizes naturally leads us to the subject of poultry points, and I see that the editor of THE CANADA FARMER has adopted a suggestion of mine, and published a print from Mrs. Blair's valuable work, with explanatory references. Some books ("Poultry for the Many") have also been ordered from England, and can be procured at the very small cost of 15 cents each. These will enable those who wish to get up their poultry knowledge.

In almost any locality it is possible to keep a few fowl. With regard to the sorts to be kept, I am not an advocate for any one kind above another. I can tell you why I have stuck to Cochins for twelve years; but I think that in the first instance the fowls best adapted to the locality they are to be kept in should be selected before those that are the keeper's particular fancy. If he can combine both, he is a lucky man. If he cannot, something must be given up; for instance, if he has a large range he can keep any, or many kinds, if not, he must confine himself to sorts that will bear confinement, as well as be content with a few; for no birds thrive when the yards are over stocked.

I am not an advocate for crossing different breeds; though I admit that valuable table birds are obtained in this way; but if fresh blood of the same race can be introduced into the yards, the draftings from these yards will be found equally good for the market. This will be another benefit which our Society will confer. We can exchange or purchase birds, or, at any rate, help one another in some way.

Fowls require a great deal more attention when confined, than if belonging to a farm, where they have a large range. Regularity of feeding must be attended to; and in this severe climate especially, care must be taken that they obtain water. I believe that more than half the deaths are caused in winter by inattention to this want. It will have to be seen to at least three times a day, in frosty weather. Another great point is never to give them more food than they care about at one time. They are very like horses in this respect, and do not like to return to eat what they have left, when soft food is served to them, if more than can be consumed at one time

be given, it will soon be frozen and useless. They should also be fed early and late. In the winter, when the nights are long and cold, nothing imparts warmth more than a late meal. Do not be afraid of cold, it will not do them half the harm that want of water and food will. From my experience of four years in Canada, three of which were at Quebec, (when we constantly had the thermometer 20° below zero, sometimes 35°, and even as low as 12°), I consider the best place for poultry to be a large barn, if it could be had. Litter the fowls well, and have always a box of dry ashes for them to busk in, and you will be astonished to see how well they will thrive. The convenience of a barn is not often to be had, but some approach to it, such as a shed, may generally be obtained. If not, a house that is well ventilated is very important: straw, and ashes, and light, can always be provided. Some kinds (of course pullets only) will lay all winter with this treatment. A small quantity of unfrozen raw meat, as a substitute for worms, may be given, but very seldom. I have never given any to my birds, and I think it should be very sparingly done, as it gives a morbid taste for blood, which they indulge in by eating each others heads. Store heat is an abomination. I will tell you why I think so. Possibly, if we could heat by hot air flues or hot water, it might be different; but I will relate one or two facts. A gentleman at Quebec has, I believe, the finest and most expensive arrangements for poultry I have ever seen in any country. In the winter he brings all his best stock into a two story house, heated by a stove below, and the pipe running through the upper floor, so that both upper and lower stories were frost proof. There were a large number of fowls of all sorts, and gold and silver pheasants. The heat did not agree with them, at least not with their lungs. Many of them, and some pheasants also, died before the end of the winter. In another house the same gentleman had birds, extra stock, that he did not consider worth much, but did not like to kill. I thought them, many of them at least, far better than the others; their health and condition were perfect. I was not informed that one had died during the winter, although the thermometer reached 35° below zero. They were only fed on oats and other grain; and further than having a good house to shelter them, they had no artificial heat whatever. My own birds at Quebec were in a very exposed shed. Sometimes, on very cold days, they had the benefit of the harness room stove pipe. The stove was only lighted now and then. They did fairly for two winters; but in the course of the third, on a soft day, as they call it there, exactly similar to the days we have lately experienced here, the groom having lighted the stove, I went into the fowl house found it full of steam from the heat of the pipe, and the next morning all the combs were more or less frozen. The moisture had settled on the combs. The stove, and not frost, had done the damage. Again, here this winter I have a house in which birds are fairly protected, the sides and roof being made of inch lumber, and battens nailed over the joints. I can see daylight through in many places. At one end, in the roosting house, I have a table boarded, and filled in with sawdust. In this part, on one night, not the most severe, but most damp, nearly all the cocks' combs were more or less frozen. I have in another large shed a dozen spare cockerels. In this shed day-light is visible between every plank. Here the birds are as well as can be; and not until a few nights since, when it blew hard, was there any appearance of black combs, and I doubt, if you were to visit them to-morrow, you would see any. These facts convince me that dryness and ventilation are more necessary than heat, and that the reason so many combs are frozen is that, in stables and elsewhere where fowls are kept, the damp condenses on the combs, ice is formed, and of course frozen combs are the result. If fowls were kept in the rooms we ourselves live in, they would lay well, I have no doubt, but I believe

every one would die in a very short time of disease of the lungs. If we could give heat and fresh air at the same time, then it would be a different matter. I consider light essential to their health in winter. Dry ashes are also of great service; and if a small quantity of flowers of sulphur be added, no vermin will be found among the poultry.

Fowls in this country, in winter, have an unpleasant habit of eating their eggs. In most books various directions, generally useless, are given for its cure. I have found the best plan, if you are not able to watch them, is to get a number of sham eggs, (the best are made of plaster of Paris) and keep them in the nest. The birds peck at these, and finding they will not break, give up the attempt. I believe thirst drives them to it. Mine at Quebec, were sadly addicted to the practice. This year I have not observed the same propensity. I heard that the Americans have a box with a canvass nest, provided with a hole, through which the egg drops into bran or some soft substance below. The hen looks around, but finding no egg, cannot eat it. I did hear that one hen was so astonished that she set to work, and laid another egg, but never finding any, ascribed the whole affair to her imagination, and gave up laying in disgust. Prevention is better than cure. When you suspect eggs are eaten, watch for them; lock the hen up by herself, and take away the eggs when laid: this is always necessary in winter, or the frost will spoil them. In many cases the cock and other hens eat them. I believe a hen seldom eats her own eggs, but I have known them do it: and, as I before stated, thirst and want of green food are the probable inducements to the practice. Some sort of green food, I should have mentioned before, should always be given, *ad libitum*, when it can be had.

I have stated how best to preserve eggs from the hens themselves. The next thing is to get them hatched. I think nine eggs the best number to put under a hen in most parts of the year. In winter, fewer, say six, would be safer; in very warm weather more may be tried. But many of you will say, "I have a hen that will cover fifteen." I do not doubt it. Can you warrant that one even out of the fifteen will not be sometimes outside? or can you say that it will always be the same egg? I think not. Thus gradually all get spoiled. It is just the same with the chickens. Thirteen are hatched: at three weeks old; or on to five weeks, half the number are dead. Several die in the fifth week. The reason is this. The hen cannot cover them all; one gets in the cold; he squeezes in, and lets another out: he gets cold, and rendered desperate, repeats the operation; and thus all get chilled; lung disease follows, and death. If I know the eggs are to be relied on, I never give more than nine. If you are in doubt, set two hens on eighteen; examine them by the light of the sun or a candle, on the 10th or 11th day; all those that are clear will do to boil for the chickens' food; and if there be bad luck in the hatch, one hen can take them all, and the other return to duty.

The nests should be on the ground—if possible, on the earth—and not in the same place where laying hens have access to them. An exception must be made to the ground, if farmers set eggs while hard frost is still in the earth. In this case you must be more careful not to forget to moisten the eggs with water when the hens come off to feed. I prefer in cold weather to lift the hen off, wet the eggs, and put her on again. There is less risk of a chill. Many complaints are made of eggs not hatching, though there are birds in each. This is entirely caused by their being too dry. Unless moistened, the inner membrane of the egg becomes so hard and dry that the chick cannot break through. This is especially the case with Cochins, and I have often had to hatch half the eggs myself (by breaking the shell with my finger, not by sitting *à la poule*) and let them out.

When a hen steals her nest, she goes out early in the morning for food, before the dew is off the grass, and returns with wet feathers; so that by dampening the eggs we imitate this natural process. The eggs of ducks and geese still more require this attention.

I have found the most convenient way to set hens was to get a common tea-chest or box; put a portable sloping roof to it, made of a few pieces of board. Cut a hole at one end, like that for a dog kennel. In front of this put a wire pen or a frame made of laths. Provide the hen with food and water daily, and you need not be under any anxiety about your hen leaving her eggs; she cannot get out, and will return on the eggs, if really broody, in a very short time. In this way you have them entirely under your command. When the chickens are hatched, I find these same boxes answer every purpose; only in wet weather, if a shed cannot be had, they must have the frame covered with canvass or boards.

Entomology.

Grub in Spring Wheat.

To the Editor of THE CANADA FARMER :

Sir, As far as my experience went in this, and two neighbouring counties, during 1865, sod land ploughed in the spring, and sown with wheat, was an excellent crop, averaging I would say from 25 to 35 bushels an acre, and no appearance of grub. But in 1866 the case was very different. The greater part of sod which was ploughed in the spring and sown with spring wheat, was in many cases a total failure, and I neither saw nor heard of a field but was more or less affected with it. For months past I have been expecting to see something in the "FARMER" regarding it, but as I have not seen any notice taken of it, I have myself put hand to paper to enquire if any satisfactory explanation can be given. I have had but little experience in wheat growing, and should feel much obliged if you, or any of your readers who have had long experience in growing wheat, can explain how it should be so bad one year and none of it another, and if there is a likelihood of its being bad this year. I have 8 or 10 acres of old sod, the stumps coming out of it, which I would put in wheat if I had no apprehension of grub. The grub did not touch any fields that had not been sod the previous year, as far as I know.

INQUIRER.

Turnberry, Co. of Huron, 8th February, 1867.

NOTE BY ED. C. F.—We regret very much that our correspondent has not given us any particulars respecting the "grub" of whose ravages he complains, by which we might be enabled to identify it, and probably suggest a remedy. He leaves us in profound ignorance as to whether the "grub" attacks the root, the stem, or the ear of the wheat-plant; whether it is the orange larva of the midge, eating the grain, that of the Hessian fly at the lower joints of the stalk, the army-worm, which consumes the young plants entirely, and attacks the leaves and heads of those that are most mature, or the wire-worm, that cuts off the plants at the root. If he will be so kind as to give us some further information respecting this grub, a few particulars about its habits, the time it appears, and the part of the plant it attacks, or, better still, if he will send us in a small tin box some specimens of the grub itself, we shall be most happy to give him all the information in our power respecting the insect, and the best means of treating it. In vol. II, No. 13, of THE CANADA FARMER, (July 1, 1865), he will find in the meantime an illustrated article on several of our wheat insects, which will assist him in determining the class to which his enemy belongs.

Noxious Insects Naturalized in America.

No. 12, (September 1866), of the "Practical Entomologist," (Philadelphia), contains an interesting article by Mr. B. D. Walsh, on this subject. From it we learn that fully one half of the worst American insect-foes have been imported from Europe. Thus the Hessian fly (*Cecidomyia destructor*), was introduced nearly ninety years since; the wheat midge (*Diplosis tritici*), about forty-five; the bee-moth (*Galleria cereana*), at the commencement of the nineteenth century; the apple moth (*Carpocapsa pomonella*), the currant clear wing (*Trochilium lipuliforme*), the meal worm (*Tenebrio molitor*), the cockroach (*Blatta orientalis*), &c., &c., at indefinite periods; and within the last few years the asparagus beetle (*Crioceris asparagi*), has made its appearance in the State of New York; finally, the gooseberry saw-fly (*Nematus ventricosus*), has since 1862 showed itself in several places, and has already proved very destructive. Mr. Walsh doubts if even the so-called American cockroach (*Blatta Americana*) be really indigenous, and suspects its importation from Asia. Probably with justice, he states that the injury inflicted on America by European insects is only reciprocated to a very slight extent; the chief insect pests for which we have to thank America being the pea-weevil (*Bruchus pisi*), and the now too-well known house ant (*Myrmica molesta*). He argues, therefore,

that (though popularly known as the "New World,") the American continent being the older, its plants and animals mostly belong to an old-fashioned creation, and can no more stand their ground against their more vigorous imported European competitors, than the Red Indian can hold his own against the Caucasian race. Mr. Walsh's theoretical speculations always deserve earnest consideration, and in this case the facts appear to bear him out. One of our common white butterflies has already obtained a footing in Canada, and perhaps eventually may prove more destructive there than the indigenous *Pieris oleracea*. Nor is America the only land so situated, inasmuch as it seems ordained that the European race, wherever it may locate itself, shall take with it some of its natural pests. Thus it is well known that many of our common weeds flourish in Australia and New Zealand, with far greater luxuriance than in Europe.—R. M'LACHLAN, in the (English) *Entomologist's Monthly Magazine*.

STATE ENTOMOLOGIST IN ILLINOIS.—We are much pleased to learn that a bill has passed the Lower House at Springfield, appointing a State Entomologist, with a salary of two thousand dollars per annum, and that there is another before it providing for an Ornithologist. This is as it should be.

The Apiary.

The Drone or Male Bee.

The drone is considerably larger than the worker bee, and is easily distinguished by his thick abdomen, his loud humming sound, and heavy motion in flight. His wings are somewhat longer than his body; the eyes are particularly prominent. The proboscis is shorter than that of the worker bee, and not designed for gathering honey; the hind legs are not provided with a cavity or basket for carrying pollen, and he has no sting. The cavity of the abdomen contains no honey bag, but is wholly occupied with the digestive and reproductive organs. The drones generally make their appearance in the hive about the middle of May, in this country, though in some instances they may be found much earlier. They are indolent and stupid. They never gather honey or food of any kind, but live upon that gathered by the workers, which they consume in large quantities. Their sole purpose is to impregnate the young queens. Although not one in a thousand performs the duty assigned them, yet the necessity of their existing in large number is easily understood, when it is known that the Queen is always impregnated on the wing; hence, if but few drones existed, she would not be likely to meet them. The drone that cohabits with a queen dies in a few hours afterwards. They are all short-lived. Coming into existence, as above stated, about the middle of May, or just at the time when the young queens are hatching, they continue until the swarming season and the honey harvest are over, when they are destroyed by the worker bees, being of no further use to the colony, but a damage, by consuming what has been stored for winter use.

By the use of properly constructed moveable-comb hives, the skillful bee-keeper may prevent a useless number of drones from being reared, by simply shaving off the caps of the drone brood with a sharp knife, or, if they are allowed to hatch, by shutting them out of the hives in the afternoon, when they will gather on the outside, and may be brushed off and destroyed. The workers are thus saved the time and labour of destroying them; and the bee-keeper will obtain several pounds of honey for his trouble.

Italian Bees.

This variety of honey bee appears to be the native bee of the Alpine regions of Switzerland and Northern Italy, and especially near the Lakes Como and Maggiore. Their graceful forms and attractive colour induced the enthusiastic German apiarian, Dzierson, to import them into Germany in the year 1853. It was found that they stored larger quantities of honey during the honey season than the common black bee; and others, stimulated by the prospect of gain, began to introduce them into every part of the European continent, and into the United States in the year 1860.

After an experience of nearly eight years, partly in Germany and partly in this country, the following

points of superiority of the Italian bees over the common black bees have been thoroughly tested by me, and the opinion formed is verified by numerous testimonials from other persons keeping the same and by articles contributed to our journals by our best bee-keepers:

First, They are more constant workers, coming out sooner in the morning and continuing later in the evening, and are less inclined to rob than the common bee; on the contrary, they defend their hives against robber bees, whether black or Italian, more successfully.

Second, They gather much larger stores of honey, a fact proven by every person that has given them a trial.

Third, They swarm earlier, owing to the fact that the queens are more prolific, breeding earlier in the season and continuing later, and sometimes swarming in seasons when the common bees do not.

Fourth, In any operation with them, the pure Italians are less inclined to sting.

Fifth, They protect the combs against the depredations of the moth more effectually than the black bee.

Sixth, Their flight is more swift, by which they overcome the high winds on our western prairies more effectually.

Seventh, They roam over a larger amount of space, going almost a double number of miles, and, where forage is scarce in the immediate vicinity, only Italians would prove profitable.

Eighth, Their beauty of colour and graceful form render them attractive to every person of taste.

The queens, in their native country, are of a beautiful, bright, golden colour, which they retain until they die of old age, but if removed from their native country, they frequently change to a brown, and often to a still darker colour. All queens raised in any other than their native country are of a darker hue. The brightest queen I have seen was a bright orange-yellow, but generally they are a shade darker.

Although the Italians differ from the black bees in many characteristics, they are yet so closely allied to them as a class, that they readily mingle, and, by coition, produce a hybrid species. An Italian queen, if impregnated by a black drone, will produce pure Italian drones, but the workers are a mixture, not all alike, some are almost Italians, some almost of the black species, and some others more or less of either species. The assertion, however, that some will be pure Italians and some pure black workers is not correct. If examined more closely, it will be found that they are not quite pure; in such cases the young and just hatching should be examined, as bees sometimes join from other colonies. The difference of workers, hatching from the eggs of such bastardized queens, is probably caused by the amount of spermatozoa each egg receives. The egg receiving more spermatozoa than another, would probably produce a worker resembling nearer the bee by which the queen was impregnated; whilst those resembling more the species of the queen, probably received less spermatozoa.

E. KRETCHEMER.

Pleasant Grove, Iowa.—*Western Rural*.

THE EGYPTIAN BEE.—The *American Bee Journal* says that through the agency of the "Society of Acclimatization," at Berlin in Prussia, the variety of the honey bee prevalent in Egypt, has been imported and introduced in Germany. Mr. Vogel, of Custrin, in whose charge the imported colony was placed by the Society, has been successful in multiplying stock and preserving its purity, and several young queens have already been sent to England. It is stated that arrangements have been made to bring this variety to this country at an early day. It differs from both the common and the Italian bee in size and marking, and is stated to be quite as gentle in temperament as the latter, while the breed is more easily kept pure.

PROFIT IN BEE-KEEPING.—As a proof that bee-keeping, as a business, pays as well as or better than any branch of horticulture, I would state that I am now offered for my bees, \$1,500 cash. It is not yet six years since I paid \$20 for the four stands with which I commenced the business. I have never bought a hive since. So this is the increase of my capital in five seasons, saying nothing of the bees, honey and wax sold in the meantime, or the pleasure derived from 'ho business. Now that I have 30 many hives, I find the profit increasing every year without requiring more time and labour than I bestowed on a few. So far from there being any danger of over stocking, I find that 17 bees have done better the two past poor seasons than many have done where there were but a few hives kept in one place, and I am convinced that where they are managed rightly, hundreds of colonies will do well where one will. To accomplish this, however, it is indispensable to have them strong and vigorous in Spring that they may take advantage of the whole honey harvest.—Mrs. Ellen S. Tupper, in *Iowa Agricultural Report*.



Transplanting Evergreens.

To the Editor of THE CANADA FARMER.

SIR.—Some little time ago I bought a small farm, and in my new-born zeal for sylvan beauty, planted the front with trees, a maple and a spruce alternately. I did them, as I supposed, every justice, and during the summer watched their progress with increased interest, and you may judge my mortification as the evergreens, one after another, began to assume a jaundiced look, and before harvest, all became brown and dead. The maples, however, are, I believe, all alive. I need hardly add that I did them every justice that my inexperience could do them, and aided by the very wet summer we had in this quarter, I felt greatly disappointed with the result of my care and labour. If there is anything on this subject in the former numbers of your periodical will you be good enough to refer me to it; otherwise, I hope you or some of your correspondents will furnish a minute description of the mode, and period of the year, most suitable for successfully planting these cheap and handsome ornaments of a rural home. M. W.

ANS.—Our correspondent will find some hints on this subject by referring to pages 28 and 270 of Vol. III. of THE CANADA FARMER. He does not tell us what plan he himself pursued, and we cannot, therefore, point out the cause of his failure. That there is no very great difficulty in transplanting evergreens is shown by the numerous examples of successful practice in this department of arboriculture exhibited in the public grounds and private homesteads throughout the country. Some years ago, a number of evergreens were planted along with other trees, under the superintendence of Professor Buckland, in the University Park, Toronto. In order to make allowance for an average failure of a certain proportion of the number planted, more were set than were required; but the instances of failure proved so few, that they stand now almost too thickly grouped together. In this case the ground was carefully prepared for the trees by trenching. We may revert to the subject more fully another time. Meanwhile we would throw out a few hints by way of reminder. Evergreens transplanted from swamps are very apt to die in their new location. They are more likely to grow when procured from an upland situation or a reliable nursery. In taking up trees for transplanting, it is seldom that a sufficient number of the small roots are preserved. The roots are generally so mutilated, that it is a wonder the trees survive such barbarous handling. Preserve as much of the root as possible, carefully taking up the surrounding earth, and removing with no more shaking than is absolutely unavoidable. Let the ground be previously well prepared by trenching, or draining, or both. In planting, make the hole sufficiently wide to admit of the roots being spread out after their natural manner, and not squeezed together, as if you were planting a post. Preparing a bed for the roots of the tree would better express the requisite treatment than the phrase *digging a hole*, which exactly describes the method too commonly practised. The tree should be set in the ground at the same level as it originally occupied. The fresh soil, immediately under and about the roots, should be as finely powdered as possible; should be slightly moist, but not too wet, which is apt to make it too cold also; and should come everywhere into close contact with the rootlets, but should not be rammed and packed down, after the manner of post-setting. The young roots, the most essential part, upon the preservation of which the whole success of the process depends, are extremely delicate, and cannot be too carefully treated. With regard to the best time for transplanting, a correspondent in the article referred to, on page 270 of Vol. III., thinks any time between May and August is suitable. For ourselves, we decidedly prefer the earlier planting. In addition to the foregoing suggestions, we would recommend mulching, especially in a hot, dry season, as the covering thus provided keeps the soil about the newly-planted roots much moister than it would otherwise be.

Canvassing for an Agricultural Paper.

To the Editor of THE CANADA FARMER.

SIR.—I have to-day completed my list of one hundred and twenty-nine subscribers for the CANADA FARMER. Late as it is, I hope to add many more yet; and another year, I trust that the list from here will be more than doubled. To my mind it is a matter for regret that the FARMER does not find a welcome in the home of every agriculturist in Canada West, and until its circulation is trebled, neither the proprietor nor the farming community can have just cause for congratulation.

Have you, Mr. Editor, ever canvassed for subscribers for an agricultural paper? If not, you have something yet to learn. My experience in this line extends over a period of eleven years, and I am happy to say that the old antipathy to "book farming" is slowly but surely dying out. I still meet with a few who tell me they "know all about farming.—I don't want none o' your books or papers to show I how to farm." This is the class that really need the most instruction, if they were only willing to learn. If you pass their premises about 7 A.M., it is quite probable you will see "the boys" forking hay or pea straw into fence corners for the sheep, and wheat straw on the other side of the fence for the cattle. They don't believe in "penning up critters in a stinking stable" or in "making the sheep eat out of a bothering rack." If you return after breakfast, one of the boys may be seen using a spade and the other an axe. If you cannot guess what they are doing, go a little nearer and you will see that the spade is hacking the soft turnips and the axe splitting the frozen ones. The cattle, in the meantime, are driving each other round to get warm, before they begin their task of thawing out the chunks. Their father "don't believe in them machines for grinding roots." If you pass their homes in the spring months, no graceful shrub or ornamental tree meets your eye. You fail to detect by the sense of smell, the delicious perfume of the apple, pear, peach, or cherry blossom. A few currant bushes, planted by the "ole 'oman," and some unpretending flowers, tended by the young ones, greet the eye, and there their luxuries end. They know too much to take up room with fruit trees and vegetable gardens, and couldn't spare time to tend them if they had them; besides, berries grow in the fence corners without labour. Another class, and quite a large one, excuse themselves by saying they take the *Leader*, or the *Globe*, and there is more reading in either than they can get through. Their having half a dozen children, who care nothing about politics, makes no difference to their selfish hearts. Several have told me that they "get it all in the *Globe*." This is an error. Though both the *Globe* and CANADA FARMER are printed in the same office, they are as distinct as any two papers can be. I will mention only one other class we have to contend with, and in my mind the least excusable, because the most intelligent: one refuses to continue it because there are too many selections from foreign publications and not enough original matter; another reverses the last sentence, and complains that there are not selections enough; both evidently forgetting that the paper is not "got up" specially for their use, that it is intended for thousands of readers who differ in opinions, as well as themselves. Some object to agricultural papers in general, because experimental farmers, who publish their experience, differ in their opinions and disagree in the results of their experiments. This childish argument needs no comment.

There is another side to the picture, sir—a "sunny side," and it is this: the CANADA FARMER is gradually making its way and extending its influence in farming communities, and the arduous labours of its Editor and his corps of assistants are properly appreciated by nine-tenths of its readers. I am frequently told by subscribers that one particular

article has more than paid for a year's subscription; and one gentleman said that he had actually saved fifteen dollars by the advice and instructions given in one single article. Another merit it possesses, which we appreciate highly, it proves a valuable assistant in procuring members to agricultural societies. There is less trouble in getting men who read the CANADA FARMER to unite in an agricultural association, than those who do not. This picture should more than counterbalance the "shady" one first presented. R. W. S.

Woodstock, Feb., 9th, 1867.

Barren Grape Vines, and Orchard Planting.

"R. G. P." sends us from Aldborough, the following communication:—"I wish to enquire through your paper the proper treatment of grape vines of 12 or 14 years' standing, which have never borne any fruit. The treatment received heretofore was cutting out some of the oldest timber. Also, I wish to set out an orchard of 50 trees. Please state the most profitable kinds—also the distance they should be set apart—the soil most suitable, and the time of year best calculated to set them out."

ANS.—In regard to the first enquiry, we should be disposed to abandon all hope of vines that had been so long unproductive; and believe the only effective treatment in the case would be to dig up the old stocks, and replace with young vines of approved sorts. For information on the next subject of his letter, we refer our correspondent to the Fourth Number of THE CANADA FARMER, Vol. III., February 15th, where he will find a list of fruits recommended by the Upper Canada Fruit Growers' Association. From this he will be able to select the kinds most suitable for his purpose. In making his selections, he should take care to have some early sorts, and a large proportion of good keeping winter apples.

The proper distance apart for setting apple trees in an orchard depends somewhat upon the kinds selected; but for an orchard of mixed sorts we believe a good plan is to set the rows 30 feet apart, and the trees in the rows at twenty feet apart. The wider space between the rows gives more room for the waggon. The soil best adapted for apple trees is a deep gravelly strong loam, alike removed from mere sand, gravel or clay, and if calcareous, all the better. It will flourish on a variety of soils, but it is essential that the ground should be dry, and artificial draining should be had recourse to if necessary. The proper time for transplanting fruit trees in this climate, we believe to be as early in the spring as possible.

White Durham Cattle.

To the Editor of THE CANADA FARMER.

SIR.—Perhaps you will be kind enough to insert, in an early number of your journal, your opinion regarding white cattle, and if the colour only is any fault in the animal, provided the other points are good. St. Foy's, C.E. MATTHEW DAVIDSON.

ANS.—By "White Cattle," we presume our correspondent means white Durhams, or Shorthorns. If so, the question of colour is a matter of taste. Some of the purest and best bred Shorthorns are perfectly white; a circumstance more common formerly than at present. Modern breeders seem to prefer a roan, or red, spotted with white. A Shorthorn animal having its most important points well and harmoniously developed, colour is a matter of very secondary importance. The old saying that "a good horse can never be of a bad colour," will also apply, in a great measure, to more than one breed of cattle.

CROP OF MANGOLDS.—Dr. Stinson, of St. George, Brant Co., informs us that from a piece of land measuring 131 feet by 58 feet, he last fall harvested 10,750 pounds of yellow mangolds. They were well cleaned and carefully weighed.

STONE FOR STABLE FLOORS.—On this subject "Briar" says:—"I have used stone for my stable floor for the past ten years with perfect satisfaction, and to it I attribute, in no small degree, the improved condition of my horses' feet. To my mind it is most unreasonable to expect a horse's foot to remain healthy, when it is suspended on three points, and the frog never allowed to come in contact with the ground, as must be the case on a plank floor."

THE TILDEN TOMATO AGAIN.—"Tomato Raiser" writes:—"Mr. Editor, you lately gave a flattering notice of the Tilden Tomato, respecting which my own experience has been unfavourable. I procured seed of that variety last year from a reliable source in the United States, and although it is all that is claimed for it in size, smoothness and quality, I found it too late a variety for profit, as it was at least three weeks later in ripening than the smooth red, planted at the same time."

POSTAGE ON PRINTER'S MANUSCRIPT.—A correspondent, who sends us his name as a voucher for his testimony to the fact, states that the Postmaster at Niagara refuses to pass manuscript intended for the press at one cent the ounce, alleging that the regulations do not allow it. There must be surely some mistake about this. If a communication or article be marked "Manuscript for the printer," left unsealed, and open at the ends, no Postmaster has a right to refuse to mail it at the above-mentioned rate. Either the requisite conditions were not complied with, or the Niagara Postmaster has broken the "regulations."

THE BEST SUBSTITUTE FOR TEA AND COFFEE.—On this point, a correspondent expresses himself after a fashion that we fear will find but few imitators. Nevertheless we suspect he is "more than half right."

"I am somewhat astonished that "Briar" is not aware that pure cold water is the best substitute for tea and coffee. I am never troubled with those numerous complaints which are sure to follow the use of colored tea or coffee. Sour stomach, indigestion, dyspepsia, biliousness, liver complaint, laziness, and gout, never form any acquaintance with me. Rising early and sitting up late, seldom retiring to bed before twelve o'clock, I know nothing of headache, or real weariness. I use cold water as a substitute, and desire no better. I suppose, however, that "Briar" would hardly consider water a "substitute" for tea and coffee.

DRENCHING HORSES THROUGH THE NOSTRILS.—A Subscriber sends us the following:—"Some time ago a friend of mine wished me to assist him to drench a horse which he supposed was troubled with worms, from his frequently having attacks of belly ache. I complied: we first gave him new milk and molasses, and one hour after we gave him tanners' oil. The horse was had to drench down the mouth, so we poured the oil down his nostrils. Directly after, he was taken with short breathing, and in a few hours died. Will some of our Veterinary authorities inform me in the next issue whether the oil poured down his nostrils killed him or not?"

ANS.—We have no hesitation in expressing an opinion that the cause of death was the result of pouring the liquid down the nostrils. Part of it had entered the (trachea) windpipe, and passed down and caused death, either by setting up congestion of the lungs, or by suffocation. It is a common practice with many amateur horse doctors to administer medicines through the nostrils, but it is a very absurd and dangerous one; we have known scores of horses killed from that cause.

SCREW STUMPING MACHINE WANTED.—We have received from "Thomas Burnham, Sandford, P. O.," a letter of enquiry respecting a good Screw Stumping Machine. We would suggest to parties engaged in the manufacture of farm implements, or who may be able to furnish the desired information, that they should communicate with Mr. Burnham, who writes as follows:—"My object in writing to you is to know where I could procure a *Screw Stumping Machine*, warranted to take out the largest pine stumps, the machine to be placed on wheels sufficiently strong to bear the pressure during the lifting of the stumps, the wheels to be 3 feet in diameter, 10 inches thick; screw to be 4 inches thick and 12 feet long. I would ask further, what would be the price of such a machine, complete, laid down at either Whitby, C. W., or Newmarket, C. W.? Now, Sir, I think that if such a machine can be got up to work satisfactorily, there

will be as much demand for it in the Township of Scott as there is for a Thrashing Machine, as we are labouring under a great disadvantage by not being able to use either Reaper or Mower, and I think that if Mr. Patterson, of Richmond Hill, or some other gentleman who manufactures either reapers or mowers, would make these *Screw Stumping Machines*, there would be a great demand for them. I have seen several *Stumping Machines*, and I consider the *Screw* the best. I would like to know what the machine would cost complete, or what the nut and screw could be bought for separately."

THE BEST NURSERY IN CANADA.—A correspondent enquires which is the best nursery in Canada whence to obtain fruit trees for spring planting. In regard to this question we feel very much as a certain theological student did who was asked at an examination, "who were the minor prophets?" He replied that he did not like to make invidious distinctions. *Nor do we.* We have planted fruit trees from the nurseries of Messrs. Leslie, Toronto; Dougall, Windsor; Arnold, Paris; and Stevenson, Guelph; all of which have done well, especially those obtained from the Paris nurseries, owing probably to a similarity of soil and exposure between that locality and our own grounds. We have also had opportunity to inspect orchards stocked from nearly, if not quite all, the leading nurseries in Canada, and our belief is that we are blest with a competent, trustworthy class of nurserymen, and that our readers will not be likely to go astray in dealing with any of them. Generally speaking, the nursery nearest your own locality, if it be a respectable one, is the best to go to. The conditions of growth are more nearly alike,—you can select such trees as you wish,—and can more quickly transfer them to your own ground. But above all things we would say, avoid travelling and irresponsible tree-peddlers. Most of all avoid them when they offer great bargains. Too many people reason "a tree is a tree," and are easily persuaded to buy anything that looks thrifty; but every thrifty-looking tree is not worth orchard room by any means. Deal with a respectable, responsible nurseryman, is our earnest advice to all intending tree-planters.

The Canada Farmer.

TORONTO, UPPER CANADA, MARCH 1, 1867.

Study of Natural Science by Farmers.

In the ranks of our rural population and among our farmers, if nowhere else, considering the nature of their work and the scenes amidst which their calling places them, we might expect to find intelligent and earnest students of Nature. The volume of her handiwork is ever open before them, and countless examples of her marvellous and beautiful operations are constantly going on within the sphere of their daily observation, and in some measure under their direction and control. To no department of Natural Science, therefore, should the farmer be an absolute stranger. The mysteries of plant life, if he would but diligently observe, are continually unfolding before him; and surely he will prosecute his work with a more rational pleasure, if not with greater success, when he carries with him an intelligent appreciation of the character of the materials and processes with which his daily toils are associated, and that minister so largely to his comfort, his wealth, and his very being. Surely, again, an acquaintance with animal structure and economy will be no useless and unpractical appendage to the stores of his mind, but rather an essential condition of a merciful, wise, and profitable care of stock: while every one will admit that even a limited knowledge of chemical forces and laws, as they operate spontaneously in the great laboratory of Nature, or as art employs them for man's advantage and convenience, cannot fail to be of immense service to the farmer, and render his calling an intellectual exercise of thought and judgment in the application of principles, in-

stead of a blind adherence to old traditions and routine. It must be allowed at the same time, that however desirable this kind of knowledge may be, the means of acquiring it are often beyond the reach of the practical agriculturist; and that it is the student in the schools and not the worker in the field, to whom nature discloses her limitless beauty and inexhaustible wealth. Extensive libraries are seldom accessible to the farmer. The leisure or the inclination to read anything more abstruse than the newspaper, or the periodical is often wanting; or should a scientific book be put into his hands, he is deterred from its perusal by the occurrence of technical terms, and the assumption on the part of the author of a preliminary knowledge in the reader which the latter does not possess,—causes which render the volume to him a sealed book. Many such, nevertheless, will read with interest an agricultural paper; and it appears, therefore, quite within the province of a journal of this kind to supply in a briefer and more popular form, perhaps not less acceptable for being unavoidably somewhat desultory, various items of information on such topics in Natural Science as may bear directly or indirectly on the work of the farmer, or are connected with his domestic comfort and daily wants. With this view, we give in the present number, under the heading of "The Field," a few observations on "Plant Life," and propose to follow them up hereafter by brief notices of kindred subjects embraced in that department of Natural Science called in scientific language "Vegetable Physiology." The phenomena of animal life may also be similarly treated in future issues.

Riga Flax Seed.

WE beg to call the attention of our readers to the advertisement of J. Fleming & Co. in the present number. The large importation of flax-seed made by Government last season, arrived too late for the whole to be disposed of. The remainder of the stock was carefully cleaned and kept, and has been put up in barrels, each containing about 3 bushels; and it is now offered to farmers for \$8 per barrel, a sum below one half the original cost of importation. Such an opportunity can seldom occur of obtaining pure seed direct from Riga, and it is to be hoped that the whole of it will be sown under advantageous circumstances the approaching season, so that an abundance of superior seed of this important and yearly increasing crop may be secured to the Province for some time to come.

Manufacture of Beet Root Sugar in Canada.

In reference to the communication on this subject in our last, from "Denizen," our attention has been called to the fact, that in parts of Germany, the climate of which very much resembles ours, there are extensive manufactories of Beet-root sugar. In these localities, we are informed, at the harvesting of the crop, the roots are regularly stored in pits, and removed thence to the factory in the course of the winter. Now if this practice is found to answer in Germany, we see no reason why it should fail in Canada. It is to be hoped that the President of the Board of Trade of Toronto, in visiting the various establishments of the kind in Europe, will have an opportunity of inspecting the extensive Beet-root sugar manufactory at Stuttgard, in Germany, at which 65,000 tons of beets are annually converted into sugar.

La Minerve states that experiments are now being made in Montreal, to test the practicability of making sugar from the beet in this country. Mr. John Redpath has determined to make the trial, and feels very sanguine that he will succeed. He is in treaty with several agriculturists in the neighbourhood of Mon-

treat for the purchase of 1,000 tons of beets, deliverable next fall, at \$4 per ton. The *Trade Review* is very confident as to Mr. Redpath's success. We sincerely hope that his anticipations may be fulfilled. An acre of land, properly tilled, will yield from 12 to 15 tons of the sugar beet, and though there is considerable hand labour involved in the culture of root crops, yet by the use of the seed-drill and the horse hoe, it may be greatly lessened, so as to have it, at the above price, much more profitable than ordinary grain crops. Though, like our correspondent "Denizen," we have had many doubts as to the practicability and profitableness of making sugar in Canada, from the beet, we shall be only too glad if actual experiment proves that it can be done.

New Cheese Factories.

We learn from various exchanges that quite a number of new Cheese Factories are about to be established this spring; amongst others, there is one in course of erection in Augusta, by Mr. Samuel Throop, on his farm at Charlesville. The *Stratford Beacon* states that a company under the name of "The Thames Road Cheese Factory," is gathering material for the erection of an extensive factory on the farm of Mr. Andrew Malcolm, in the Township of Hibbert. It is thought that the milk of three hundred cows can be procured at the commencement, enabling the firm to make a successful start. The *Prescott Telegraph* mentions that several farmers in the adjacent counties are entering on this business, and from the *Cornwall Freeholder* we learn that Mr. Duncan Macdonald, of Gray's Creek, is making extensive preparations for the manufacture of cheese, on a large scale, during the coming summer. The *Napanee Express* also gives the report of a meeting held at Newburgh, on Saturday, Jan. 26th, to take into consideration the propriety of erecting a Cheese Factory in that part of the country. It was resolved that a joint stock company be formed to erect buildings, &c., and that a list be opened to receive the names of persons willing to take stock in the same. The following gentlemen were appointed directors for the present year; C. H. Miller, Robert Madden, P. Miller, J. B. Aylsworth, and J. D. Ham. Before the close of the meeting several of the shares were taken up.

Poultry Association.

A MEETING of the Poultry Association was held in their rooms in the Agricultural Hall, Toronto, on Thursday, Feb. 14th, at which there was a large attendance of members and much interest taken. Several new members were proposed. There was also on exhibition during the evening a number of fowls of the Cochin China and Game breeds, also a number of Powder and Carrier pigeons and a pair of Sebright bantams. A very interesting paper on the general management of fowls was read by the Hon. Secretary, Lt.-Col. Hassard, which we give in full elsewhere. The thanks of the meeting were conveyed to Col. Hassard for his valuable paper. A resolution was passed to the effect that all members not paying their subscriptions by the first of April next, be struck off the roll of the association. An exhibition of fowl will be held under the auspices of the association on the 10th and 11th days of April next, in the Agricultural Hall, corner of Yonge and Queen Streets, at which an entrance fee of 50 cents will be charged to non-members of the society. The admission fee to the Exhibition show to be 10 cents. A communication was read from the society of the Ipswich (England) Poultry Club, offering to supply fowl to members of the association. Several members agreed to avail themselves of the opportunity.

SEEDS RECEIVED.—We have to acknowledge the receipt of a package of garden seeds from Mr. James J. H. Gregory, of Marblehead, Mass. Amongst them are the Marblehead Cabbage, the Hubbard and Turban Squashes, the Tilden Tomato, extra early varieties of the bean, pea, celery and sweet corn, &c. We shall have pleasure in testing the seeds, and do not

doubt, from Mr. Gregory's long experience and high reputation as a seedsman, that they will all prove "A No. 1."

SIMMERS' CULTIVATORS' GUIDE FOR 1867.—Judging from the annually enlarged and improved pictorial appearance of his catalogue, Mr. Simmers' motto as a seedsman is "Excelsior." We also infer that his business is enlarging, from the variety and extent of the seed stock advertised by him. All descriptions of Garden, Agricultural and Flower Seeds may be had from this well-known dealer. Farmers, in getting your grass and turnip seed, your cabbage and onion seed, invest a little in flowers; they will fringe your homes with beauty, yield you a simple but fresh pleasure all through the summer season, and gratify your wives and daughters beyond measure. This Catalogue not only give lists and prices of the seeds kept on sale, but contains brief directions for their culture. It is sent to all intending purchasers on receipt of a prepaid letter, containing with address two cents in postage stamps. As seeds can be sent by mail at one cent per ounce to any post office in Canada, distance need be no hindrance to obtaining a supply. Address, J. A. Simmers, Toronto.

CHAS. DAWBARN & CO.'S ANNUAL DESCRIPTIVE CATALOGUE.—This firm deals in seeds of all sorts, and also keeps on hand a variety of useful agricultural and horticultural implements, all of which are enumerated with their prices in this Catalogue. The title-page is backed by a letter from Hon. David Christie, commending very highly the seeds obtained by him from this firm last year. Mr. C. writes, "They all turned out well, especially the turnips." The Grey Stones grown by Mr. C. took the first prize at the Provincial Exhibition. They were sown June 14, and pulked September 24. One of them weighed 14 lbs., and thirteen of them filled a flour barrel. For copies of Catalogue address Chas. Dawbarn & Co., Toronto.

INFORMATION WANTED ABOUT CHEESE FACTORIES.—We have received, from various quarters, enquiries respecting the best kind of buildings and apparatus for cheese factories, and also their cost and mode of management. We would refer our correspondents for full particulars on these heads to articles on the subject in the CANADA FARMER, for August 1st and 15th, 1866, (Vol. III.), which numbers we can supply to order. Having so recently given the desired information, we do not think it necessary to repeat it here. It is, in our view, highly desirable that any parties who contemplate the manufacturing of cheese on this method should visit some of the establishments already in operation in this country or in the United States, where they will be able to learn, far better than from any written description, the practical working of the system. Reliable persons to superintend such a concern would, perhaps, be best procured from some of the districts in New York, where these factories have already been for some time established.

Agricultural Intelligence.

A Fortnight in Simcoe.

To the Editor of THE CANADA FARMER:

SIR, I spent the last week of the old year, and the first week of the new, in the large and interesting county of Simcoe. Notwithstanding some occasional rough weather which was unfavourable for holding public meetings in several places, I had good opportunities of a great deal of pleasant intercourse with the farmers and others, who take an interest in promoting agricultural pursuits.

At Bradford we had a meeting in the Town Hall, a new and capacious building, that is highly creditable to this rising village; Dr. Morton the respected and energetic President of the South Simcoe Society,

occupied the chair. The principal subject that came up for conversational discussion after the lecture was flax culture, which was only introduced into this section of the country during the past year. About 700,000 lbs. of flax were grown the past season, generally of good quality; some indeed, that I saw, was excellent, three feet long, fibre fine, with abundance of seed, which in some cases was a little too ripe before the plant was pulled, thereby producing a coarser fibre: a result obtained in other instances by too thin sowing. A beautiful sheaf of flax was procured by Mr. Donaldson, for the Paris Exhibition, grown in this vicinity from Canadian seed, which several persons at the meeting seemed to prefer to the imported Riga seed; though it was admitted that the latter produced taller plants. In Ireland, and from what I have hitherto learnt in this country, Russian seed is generally considered to produce a longer and finer fibre than any other, and commands a higher price. A scutching mill has just been got into operation in this village by a joint stock company, with encouraging prospects. The price paid for flax straw with seed on, varies from \$11 to \$14 per ton, according to quality; and the yield has been most abundant; the average is said to have exceeded two tons an acre. In other parts of the county flax has, as yet, been only very partially tried.

I have regretted to observe in some parts of the Province, an increasing scepticism as regards the profitableness of raising flax. The price given, \$12 to \$14 per ton, is not considered sufficient, especially as the whole of the produce, straw, roots and seed, are wholly taken from the soil, which is believed to be greatly exhausted by a crop of flax, particularly when the seed is allowed to ripen. Undoubtedly a heavy crop of flax extracts from the soil a large amount of plant food, so does a large crop of wheat or any other grain; the principal difference being that the straw of the latter, in some form or other, is mostly returned to the soil; whereas flax culture makes a clean sweep, and leaves nothing behind. With regard to the continuation of the latter, almost everything must depend upon the price which the farmer can obtain for the raw material and his facilities for cultivating and harvesting the crop. The manufacturer should give as liberal a price for a good quality of flax as he can possibly afford, in order to encourage the farmers to grow and carefully harvest it. Some farmers have told me that the seed alone was worth as much as they got for the entire article. Last season, too, was particularly unfavourable and expensive for harvesting the ordinary cereal crops, and those who grew flax had additional difficulties to encounter, both from the state of the weather, and the impossibility of getting adequate and suitable labour. However, last year was in a great degree exceptional, and it is much to be desired on every account that a fair trial, which must involve several years and much care and perseverance, should be given to the raising of this necessary article as one of our farm crops.

In consequence of the inclemency of the weather the meeting in the township of Innisfil was not held; but I had the pleasure of spending an agreeable hour with several farmers at the residence of Mr. Davidson, of Leroy, and also of calling on others in different parts of the township. Innisfil, like West Gwillimbury and Tecumseh, possesses much excellent land, well adapted to agricultural purposes generally, and the state of cultivation is, in many places, highly creditable. I saw throughout this district many excellent samples of both winter and spring wheat, which was a good and profitable yield last season, and much better harvested than was the case in most sections of the Province. I called on Mr. Barclay, who grew the Canada Company's prize wheat at the last Provincial Exhibition, a barrel of which has been sent with other grains collected by the Board of Agriculture, to the great World's Show at Paris.

The meeting at Barrio was pretty well attended, considering the stormy state of the weather. It took

place in the Town Hall, a new and capacious building, with considerable architectural expression; Walter Raikes, Esq., President of the North Simcoe Agricultural Society, in the chair. A prolonged and familiar discussion took place on subjects referred to in the address; comprising manures, means of preventing exhaustion of the soil, and restoring it; flax culture and dairying; and the improvement of farm stock. Messrs. Drury, Thomas, Sessions, and other leading farmers, took an active part; and, as on all occasions of this kind, I gathered some useful information. In considering the kinds of manure applicable to this section of country, it was stated that burnt lime could not be obtained in Barrie for less than 16 or 20 cents a bushel; a price that placed this valuable and, in many places, much needed fertilizer, beyond the reach of the farmer. It was thought, however, that as excellent limestone abounded at Orillia, from whence it might be transported by water, the article could be obtained at a much lower rate by parties agreeing to take, at stated periods, large quantities. In many of our old cultivated lands the application of lime would be highly beneficial to crops in general. I was much pleased with the great improvements made in Barrie since my last visit seven or eight years ago. It is now quite a stirring place of business, delightfully situated on one of the prettiest bays in this land of ours, so eminently distinguished both for the number and beauty of its lakes. The railway now runs into the heart of the town, and is a great convenience and advantage; and it is evident that Barrie will continue to improve as the fine and extensive country by which it is surrounded becomes settled, and its agriculture advanced.

I had an opportunity of hurriedly viewing the stock and homestead of Mr. Raikes, whose comfortable and picturesque residence is delightfully situated on the bay. Mr. Raikes has an excellent little herd of pure bred Shorthorns; some good specimens of Leicester and Cotswold sheep, and of improved Berkshire pigs, and a fine collection of poultry. The whole of his animals are comfortably housed and liberally fed, but by no means pampered. Roots, and a small quantity of oil cake, are regularly given with cut hay and straw. Warmth accompanied by sufficient ventilation, cleanliness with systematic feeding, apart from expensive buildings, show their beneficial effects in the comfort and thrifty appearance of the animals. Mr. Raikes must be conferring no inconsiderable advantages on his country, in proportion as farmers avail themselves of such a convenient opportunity of improving their general stock. The apathy, however, which too extensively prevails in relation to this great question, is a serious discouragement to enterprising individuals, who are anxious to promote this very important branch of agricultural industry. I very much regret that I had not an opportunity of seeing Mr. Mair's stock, as he has for many years been favourably known as an improving breeder.

At Orillia we had a very good meeting, the chair being occupied by J. H. S. Drinkwater, Esq., President of the township Society, and one of the earlier settlers of this district. Several of the usual subjects came up for consideration after the address, and a very pleasant hour was spent in a free and easy interchange of opinions and experiences. It was stated that lime was required by some of the old worked land, and although limestone of excellent quality abounds in the neighbourhood, yet burnt lime could not be purchased for less than 15 cents a bushel! Surely, something might be done to remedy this state of things, if farmers would combine, and order large quantities, so as to make lime-burning a regular business. There can be no doubt that this article, if procurable at 10 cents a bushel, could be profitably applied to a greater number of soils than is generally imagined. Orillia is a very pretty and improving village, and already attracts many visitors during the summer, it being easy of access by steamboat. I cannot help thinking that Lake Simcoe, whenever it shall be connected with Lindsay by the completion of the railway from Beaverton, will open up a most attractive route for pleasure travel through the various picturesque lakes that stretch towards Peterborough.

I am indebted to Mr. Raikes for one of the pleasantest sleigh rides from Barrie to Orillia and back, through the township of Oro, upwards of fifty miles, that I ever enjoyed. The sleighing was excellent, with warm, bright sunshine, and clear blue sky, and the air perfectly calm; all combining to produce pleasurable sensations of no mean degree—heightened every now and then by the successful efforts of man, in subduing the lofty forest, and making for himself and family a comfortable and independent home. We called on the way on Mr. Thomas, Secretary of the county Society, and spent an agreeable hour in looking at his stock, which are carefully housed and conveniently arranged, and, with good feeding, are consequently in a very thrifty state. Mr. Thomas has

no pure breeds, but excellent crosses. With an exemplary care and protection, not commonly seen in newer settlements, he would find, I think, the introduction of pure male animals, both of cattle and sheep attended by much greater advantages.

From Barrie I proceeded by rail to Nottawasaga; but as the notices of a public meeting for the township had by some means failed in reaching the proper authorities, I had only the opportunity of addressing a few farmers that could be got together at Bowmore. I had the pleasure, however, of forming an acquaintance with Mr. Russell and Mr. Stephens, and some others of that neighbourhood, and of considerable personal intercourse with agriculturists and commercial men in and about Stayner, a new but rapidly rising village on the Northern Railway. The wheat crop in this section was very large last season. Fields were pointed out to me that yielded forty bushels and upwards per acre. The grain, both winter and spring, was well grown, and generally well harvested, when the peculiar character of the season is considered. The fact is we shall have to look more to these newer and northern districts, where sufficient protection of the forest exists, and where the snow is more uniform and enduring, reaching fully into the spring, for our principal supplies of at least winter wheat. Better cultivation, an extended rotation, and artificial planting both of deciduous and evergreen trees for shelter, must, in all probability, be had recourse to, ere the old and exposed lands of the front can again be profitably brought to produce winter wheat.

Yours respectfully,
GEO BUCKLAND.

Toronto, Jan. 19, 1867

Root Competition.

We have received a very full report of the judges appointed by the joint Societies of North and South Wentworth and the City of Hamilton Agricultural Societies, to adjudicate on the root crop of 1866, in said counties. It is too lengthy for insertion entire, we therefore, give a brief summary of it. The judges were Messrs. Geo. Buckland, of Toronto, George Laing, of Hamilton, and John Renton, of Glanford. They state that, in accordance with the practice of their predecessors, they, in case of turnips, measured off a space of 25 feet square, being within a fractional part of the 70th part of an acre, in such portion of the field as presented a fair average of the whole, carefully weighing the produce. The area taken for mangels and carrots was 12½ x 25 feet, or about 140th part of an acre. In computing the measurement of all the crops, the bushel was assumed to weigh 60 lbs. The following were the results arrived at:—

SECTION FIRST.

SWEDE TURNIPS, NOT LESS THAN FOUR ACRES.

	Tons.	cwt.	lbs.
Ford & Hay.....	18	14	50
Thos. Stock.....	26	5	0
John Boyer.....	17	5	0
John Weir.....	22	19	00
George Leith.....	14	14	35

First prize awarded to Thos. Stock, East Flamboro; 2nd, John Weir, West Flamboro; and 3rd, Ford & Hay, East Flamboro.

SECTION SECOND.

SWEDE TURNIPS, NOT LESS THAN ONE ACRE.

	Tons.	bush.	lbs.
George Stock.....	24	8	0
Edward Markle.....	16	15	0
James Black.....	21	18	72
Joseph Webster.....	23	10	32
George Barnes.....	17	7	20

The first prize in this section was awarded to Joseph Webster, West Flamboro; the second to George Stock, East Flamboro, and the third to James Black, West Flamboro.

SECTION THIRD.

MANGEL WURTZEL, NOT LESS THAN A QUARTER OF AN ACRE.

	Tons.	cwt.	lbs.
Thomas Stock.....	52	1	20
Edward Markle.....	35	2	50
James Webster.....	32	17	10
George Barnes.....	22	13	80

The judges awarded the first prize in this section to Edward Markle, East Flamboro and the second to George Barnes, Barton.

SECTION FOURTH.

CARROTS, NOT LESS THAN A QUARTER OF AN ACRE.

	Tons.	cwt.	lbs.
Thomas Stock.....	27	1	10
Edward Markle.....	22	19	20
John Boyer.....	23	10	40
Joseph Webster.....	25	9	60
William Thompson.....	28	0	70
John Weir.....	26	5	70
Geo Barnes, Barton.....	29	2	40

The first prize fell to George Barnes, Barton, and the second to William Thompson, Beverly.

The report concludes with the following remarks:

"We would, in conclusion, express the conviction that the competition in root crops, maintained in the county for several years past, has been attended with the most beneficial results. The extent and style of culture have alike been steadily enlarged and improved, results which have also obtained in other sections of the Province where competition in growing roots has been encouraged. The season, in some respects, has been unfavourable to root crops, particularly turnips, which in cold wet land, with inferior culture, have proved almost a failure. The preceding analysis of our examination in the county of Wentworth, Will, however, show that, by properly preparing the soil, and skilful treatment, the turnip crop of this year has not failed to make a profitable return. The same may be remarked of mangel wurtzel; and field carrots have in most cases proved highly productive. The various crops that we have inspected were remarkably pure, and when the character of farm is considered, in general, particularly clean—indicating the exertion of both skill and attention, in root growing especially. It is not the extent so much as the quality of culture that should be considered. It is now becoming generally acknowledged that the raising of turnips and other root crops, and the improved stock now in the country, are indications of the highest and best hope for the future."

Officers of Agricultural Societies for 1867.

* Since our last issue we have received the following additional lists of officers of Agricultural Societies.

NIAGARA ELECTORAL DIVISION SOCIETY.—President, David Thorburn; 1st. Vice President, R. Shearer; 2nd. Vice President, W. Kirby; Secretary, G. C. Secord; Treasurer, G. A. Clement; Directors, H. J. Brown, F. M. Whitelaw, H. Pafford, H. Woodruff, G. Flinn, J. Shaw, J. M. Clement.

ALBION COUNTY.—Albert Humphrey, President; R. C. Fleming, Vice President; Richd. Coates, Sec. & Treasurer. Directors, John Ferguson, Norman Ford, Walter Dunn, Isaac Freeman, John McLaren, William Rose, James Young, Alex. McCall, E. A., Dugald Lamont.

BROOK AGRICULTURAL SOCIETY.—President, Dugal Sinclair; Vice President, John Dolbier; Secretary & Treasurer, Edward Boulby; Directors, James Tate, John Sinclair, James Lovell, Hiram Croft, Joseph Weed, William Nelson, Henry Slater, William Hick, and James Munroe.

CITY OF HAMILTON ELECTORAL DIVISION AGRICULTURAL SOCIETY.—President, John A. Bruce; 1st. Vice President, J. Lary; 2nd. Vice President, William Henry; Secretary and Treasurer, George Laing; Directors, John Mitchell, Peter Grant, J. F. Nettle, Hon. H. P. Bull, Thomas Lary, H. H. Hurd, and Jasper Hill.

SIDNEY BRANCH AGRICULTURAL SOCIETY.—S. T. Willmot, President; S. D. Farley, Vice President; P. C. Ketcheson, Secretary; Directors: K. Graham, M. Boardman, T. D. Farley, Jas. Bird, John Row, Jas. Zwick, B. Mallory, J. S. Huffinan, Jas. A. Chisholm.

ADDINGTON COUNTY AGRICULTURAL SOCIETY.—President, Robert Madden, Newburgh; 1st. Vice President, John Sharp, Bath; Second Vice President, Sidney Warner, Wilton; Secretary and Treasurer, John B. Aylsworth, Newburgh; Directors, John Hitchins, Am. Islands, Donald Fraser, John Percy and Ira S. Daly, for Emestown; J. N. Lapman and Miles Stormes, for Camden; R. F. Hoop, for Newburgh.

OWNERSHIP OF LAND IN GREAT BRITAIN.—Mr. Bright, in one of his late speeches, is reported to have said that one-half of Scotland is owned by twelve persons, and one-half of England by one hundred and fifty.

THE COMING SUMMER.—French scientific men predict that the summer of 1867 will be cold and wet, like that of 1866, and they base the prediction on the fact that immense masses of ice have broken, or are about to break, away from the extreme north, and will drift to warmer seas, where they will melt, producing cold and vapour. *The Farmer* (Scottish).

Canadian Natural History.

Artificial Propagation of Salmon.

Our attention has been lately called to a subject of no small interest and importance, by a gentleman who brought to our office a number of very lively little animals, which he exhibited in a glass jar partially filled with water, where they sported themselves after a most frolicsome manner, and were evidently in the enjoyment of abundance of vitality and vigour. These little creatures were nothing else than young salmon—not lake trout, but genuine salmon—which had been artificially hatched by Mr. S. Wilmot, of Newcastle, who has for some time been devoting considerable attention to the propagation of fish, and has at length, after much perseverance and many carefully conducted experiments, met with very gratifying success. The specimens he brought to this office were produced from ova taken in the fall, from salmon in a small stream in the township of Clarke, known as Wilmot's Creek, which runs through that gentleman's land and falls into Lake Ontario. Having obtained from the proper authority permission to capture the salmon, which at that period of the year are out of season, Mr. Wilmot

succeeded in hatching the ova of four female salmon. A number of others, which he had also captured and confined in a small house erected for the purpose, were wantonly destroyed by ill-disposed neighbours; but from these four he has obtained between 20,000 and 30,000 young salmon, all of which were hatched in small boxes in Mr. Wilmot's dwelling house. In the present stage of their growth (about 12 days old) they exhibit a very singular appearance. They are about an inch long, having the general outline of a fish, with the curious addition of an appendage to the under part of their bodies, consisting of a bag filled with an oily-looking fluid, which is, in fact, the store of food for the little creature during the first six or seven weeks of their existence. This fluid is analogous in some respects to the yolk in a bird's egg. The contents of the sac, as the young fish grow, become gradually absorbed, and when the age above mentioned has been attained, it has altogether disappeared. For some time after being hatched, the young salmon have a transparent jelly-like appearance, and the whole of their organization is extremely beautiful and delicate. So transparent is their structure that the heart and blood-vessels can be distinctly seen. Their budding gills and fins are of the most delicate and fragile texture, yet their motions are extremely quick. Altogether, they present a very curious and interesting study to the naturalist.

The accompanying wood-cut will give our readers an idea of the appearance presented by these in-

teresting little creatures at the period of their growth above-mentioned. It is hardly necessary to say that it is a magnified representation of them which our artist has given, the sketch being taken with the aid of a microscope.

The figure in the lower corner shows the natural size of the young salmon at this stage of their history.

admirable results. Some success has also been attained in one or two places in Lower Canada; but in the Upper Province the work has yet to be begun. There is no reason why the same results should not follow the introduction of the system here. The fact that salmon can be propagated one thousand miles inland from the sea, has been established by Mr. Wilmot, and we may yet see many of our lake streams swarming with them, and the same process can be

applied to the propagation of any other fish which it might be desirable to multiply. In this way white fish, bass, trout, or any other species, might be obtained in abundance.

The salmon, after attaining a certain age in its fresh water birth-place, makes its way to the open sea, where alone it can attain its full development. But when the proper season of the year returns, the fish retraces its course to the same stream where it was born, there in turn to deposit its spawn, and in the natural course of things replenishes the waters with an abundant population. Where civilized man, however, takes up his abode, a variety of causes tend very materially to interfere with the natural increase of fish, especially of the large and valuable kinds. The wholesale slaughter at all seasons of the year, which is often pursued, exterminates a large proportion of the fish in our lakes and rivers. The

clearing of the land, and cutting down of the forest growth, along the course of those streams where fish have been accustomed to deposit their ova, is another source of depopulation amongst these inhabitants of the water. The logs of trees and other accidental obstructions to the course of the stream, behind the shelter of which the eggs were deposited, being in great measure removed, the unrestrained force of the current washes away the eggs, and they become unproductive; and again, the effect of mills and factories in disturbing the streams and rendering them foul and turbid, deters the fish entirely from resorting to their old haunts for the purpose of propagation.

From these and other causes, our lakes and rivers, once crowded with fish, are in many parts becoming yearly less productive; and, unless some measures are taken to re-stock them, we shall be deprived, ere long, of one of our most important means of subsistence and most valuable sources of wealth.

Mr. Wilmot believes, and the success that has attended his own researches and experiments justifies the belief, that we have the remedy within our reach, and that the business of replenishing our lakes and rivers can be carried on to almost any extent. The prolific capacity of fish is marvellous. It has been estimated that if all the ova of one fe-

male salmon were hatched, the progeny would equal the whole number of salmon in the river Tay in Scotland. But, in the natural process of propagation, perhaps not more than one in 5,000 ova are hatched or come to maturity. By the artificial method, how-

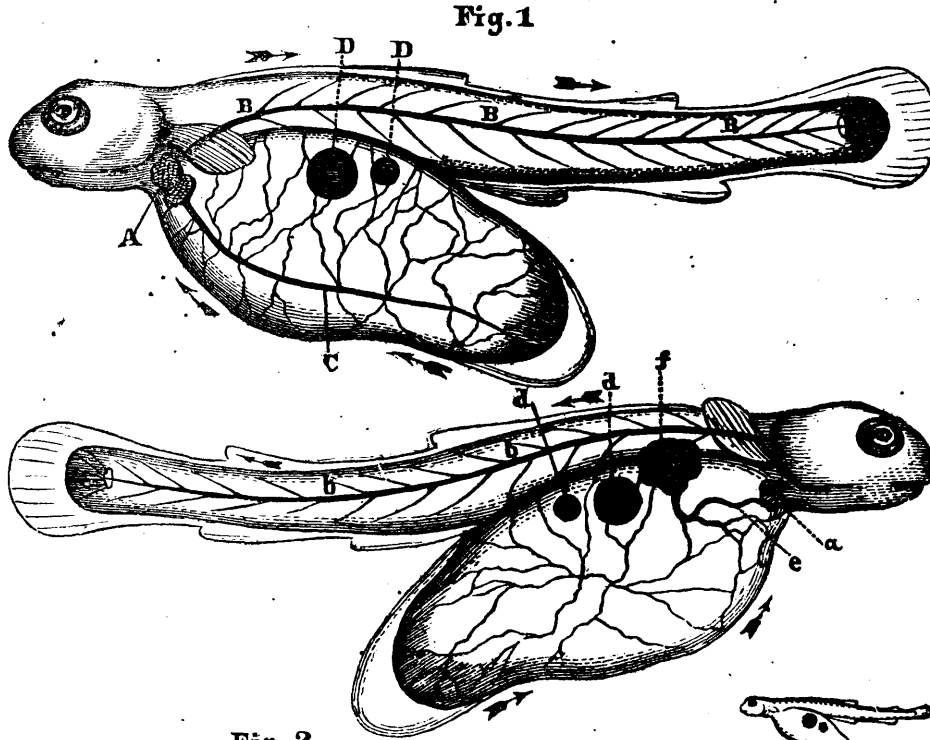


Fig. 1
Fig. 2
YOUNG SALMON ABOUT TWO WEEKS OLD.

- FIG. 1.
Shows the left side of the fish, magnified.
A. The heart.
B. Main trunk artery.
C. Large vein.
D. Oil globules, only two of which are introduced, for the sake of distinctness.
- FIG. 2.
Showing the right side of the fish.
a. The heart.
b. Main trunk artery.
c. The liver.
d. Oil globules.
e. Large vein from liver to heart.
f. Branch from main artery to liver.

NOTE.—The bag attached to the fish contains the nourishment, which is gradually absorbed into its body. As the fish gets larger the bag gets smaller, and the fish does not feed till the bag is quite gone, which is about six weeks or two months after it is hatched.



OUT-DOOR APPARATUS.

The success which has attended Mr. Wilmot's experiments bids fair to open up a new and important field of enterprise. The artificial propagation of fish has received great attention in Europe, where the plan has been in extensive operation, and with very

ever, nearly all the ova can be rendered available. Mr. Wilmot tells us that, even with his limited experience, he has no doubt he can succeed in hatching at least 80 per cent. of the eggs produced, and in this way the fish in our waters might be multiplied almost indefinitely.

The subject is one of great importance, and one to which the attention of the Government should be directed, either in taking up the matter themselves or in affording every encouragement and facility to enterprising individuals who, like Mr. Wilmot, are prepared to turn their skill and experience in this direction, and thus render their countrymen a very important service. In Mr. Wilmot's interesting and successful experiments, we trust we have the commencement of a new husbandry, so to speak, which will make our waters teem with delicious food, and add materially to the resources of the country.

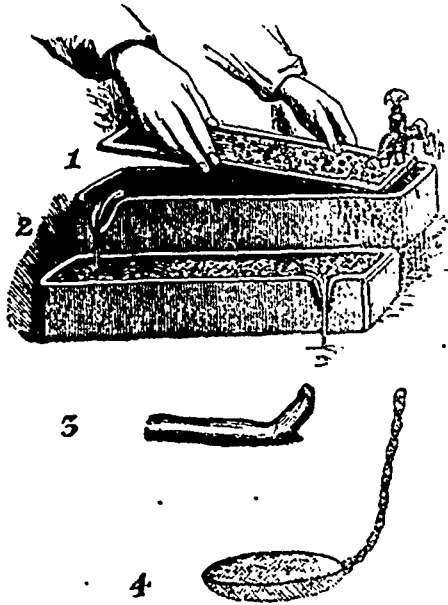
In France, through the liberality of the Government in fostering pisciculture, a wonderful change has been effected during the past few years. Active efforts began in 1854, and since that time large quantities of young fish, artificially hatched, have been introduced into the rivers of that country. In the year 1861, no less than 16,244,050 vivified eggs or young fish were sent to upwards of 233 different places in 63 French departments and 11 foreign countries. The annual cost of maintaining the fish-hatching establishment whence these supplies are obtained, is about 55,000 francs, or \$10,000. In England, though so far as we are aware no government patronage has been extended to fish-culture, private enterprise has accomplished much in various parts of the country. A number of the nobility and gentry have been re-stocking the streams that flow through their estates, and several associations have been formed for the multiplication and protection of fish in the British waters. One of these associations, "The Thames Angling Preservation Society" has been busily engaged in hatching and turning out young fish into the Thames. In the year 1863, salmon, trout, charr, and grayling, to the number of 35,000 were introduced into the Thames by this Society.

We have no record within reach of its operations since that period, but already, through the exertions of private individuals and associations, many British rivers, in which fish had become scarce, exhibit a marked increase in their finny population. The same can be done in Canada. Even if our Government neglect the matter, there is no reason why private individuals should not imitate the example set by Mr. Wilmot. Local associations might also be formed for the purpose of re-stocking our streams. Salmon require access to the salt water, and therefore, what is done for the multiplication of this noble fish must be "pro bono publico," but in the case of trout, perch, bass, &c., private ponds and streams can easily be stocked, and it would be quite easy for any farmer having even a small creek flowing through his land to secure a supply of fish, not only for the use of his own family, but for the market. We have long purposed calling attention to this matter, and the actual demonstration of what can be done, will, we hope, stir up effort all over the country, to provide at once an abundant source of wholesome food, and an opportunity for sport to such as are fond of angling.

As many of our readers will be curious to know the *modus operandi* of artificial fish-hatching, we add a brief explanation concerning it. In the first place

it is necessary to provide, either out-of-doors or in-doors, a suitable apparatus for the purpose. The accompanying illustrations will help to explain what this must be.

The out-door apparatus represented at the bottom of the opposite page, is one which has been successfully used in England and Scotland, and consists of a series of boxes, 6 feet long, 12 inches



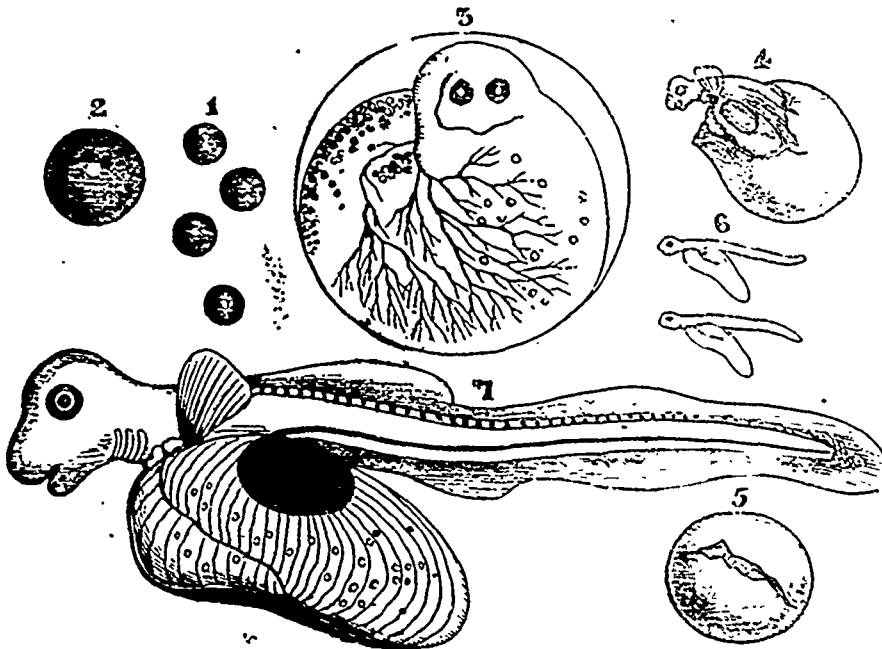
IN-DOOR APPARATUS.

wide, and 7 inches deep, placed one above another, so that the water shall fall from the outflow of the one into the inflow of the next. The inflow from the main stream must of course be regulated by a hatchway at the point where a man is seen working in the engraving, and must be guarded by perforated zinc, or something of the sort. The water, if not naturally clear, may be filtered through gravel, charcoal, &c..

bilical bag is gone. The pond should not be above three or four feet deep, or if it be deeper, there should be shallow margins for the fish to bask, feed, and play upon. They must be fed for a time when in the pond. The boxes should have covers either of perforated zinc, or boards with holes in them, hinged and padlocked to prevent their being meddled with by intruders.

The in-door apparatus is considered preferable to the out-door, especially for experimenting in a small way. The accompanying cut shows the troughs used and recommended by Mr. Frank Buckland, who has done very much to promote fish-culture in England, and to whose work on "Fish-Hatching" we are indebted for a large proportion of the information given in this article. The upper trough (No. 1) is furnished with a framework of glass rods, which the operator is just putting into its place on projections in the inside of the trough. These glass rods are not essential to the process; a bed of gravel answers every purpose; but the glass rods afford a better opportunity of observing the eggs at the various stages of their development. The lower trough shown in the cut (No. 2) has gravel only on the bottom. Boards should be fitted to the top of the troughs to exclude the light while the hatching is going forward, and there must be the incessant flow of a gentle, but not rapid stream. The troughs or tanks are of zinc, 2 feet long, 5 inches wide, and 4 inches deep, with one side of glass. No. 3. is a "catcher" for moving the eggs without touching them. "Place the finger on the end of the straight part of the tube, immerse it in the water, and bring the lower end opposite the egg or impurity you wish to remove. When the finger is withdrawn the water rushes instantly into the tube, and with it the object, fish, eggs or weed, you wish to withdraw." No. 4. is a net or spoon made of common wire, and the material known by ladies as "net." It is used for catching the young fish.

The accompanying engraving taken from Mr. Buckland's "Fish-Hatching," will more fully explain the gradual development of the young salmon.



SALMON OVA AND NEWLY HATCHED FISH.

No. 1. Egg of Salmon, natural size, taken from the parent fish.
No. 2. The same, with the eyes of the young fish just becoming apparent; this takes place about the thirtieth or thirty-fifth day, according to the temperature.

No. 3. The young fish coiled up in the egg and just ready to be hatched.

No. 4. The young fish emerging from the shell.

No. 5. The empty egg-shell, showing longitudinal rent made by the young fish.

No. 6. Young salmon, about two days old, natural size.

No. 7. The young salmon, about two days old, magnified.

The umbilical vesicle, containing the yolk and the oil globules, with blood-vessels ramified on its surface; the head—the huge eyes—the badly developed mouth—the fins—and the thin, transparent body, should be observed.

and the top box may be used as a filter. There is no necessity for placing the boxes on a hill-side as represented in the illustration, but if there be a series of them, they must be placed in such a manner that there will be a fall from one to the other. Of course, if the plan is tried on a smaller scale, a less number of boxes, or even a single one, may be used. The pond at the end of the boxes will receive the fish, but they are not to be let into it until the un-

We conclude by giving the substance of Mr. Buckland's directions how to proceed in the business of fish-hatching. These directions will apply both to salmon and trout.

1st. Have your hatching apparatus in perfect order to receive the eggs, when you bring them home from the river side.

2nd. Be on the look-out for several weeks beforehand for information where and when the fish will

be "at bill," i.e., spawning on their natural beds in the river, and be sure have proper written authority from the owner of the fisheries to allow you to proceed with your operations.

3rd. When you know the fish are "at bill," proceed to the river-side with the nets and a large shallow tub or bucket, or other convenient vessel to contain for a few minutes the fish as caught, also bring with you a vessel, such as a small washing tub, in which to impregnate the ova. It should be flat-bottomed, to prevent the eggs being crowded one upon the other; and, also, do not forget the bottles, tin (milk or fish bait) cans, in which you are about to carry home the eggs.

4th. When the fish are caught, examine them one by one. If the ova of the female are ripe, they will pour out from the abdomen at the slightest pressure of the hand. Handle the fish gently. If the milt of the male be ripe, it will also, upon slight pressure, be observed to flow out like thin milk.

5th. Place your captured fish in the large tubs or buckets that you may select for them till you are quite ready to take the spawn. It is not a bad plan to catch your fish some few days before they go to bill and confine them in some suitable and healthy, roomy place (but not boxes or baskets), whence you can take them out from time to time with a landing net, and, if ripe, proceed to operate on them immediately.

6th. Fill your small tub (or tin bowl) three parts full with clean cold water.

7th. Examine the fish in the tub one by one, and return the unripe fish to the river or reservoir.

8th. Take a female fish that is ripe; hold her head with your left hand; get an assistant to steady the tail; gently submerge the lower part of the body into your small bowl; then gently and carefully pass your right hand downwards from the head to the tail, the thumb and forefinger gently compressing the abdomen, the other fingers following behind as assistants. You should also slightly bend the fish backwards, in a bow-shaped form. If the eggs are quite ripe, you will see in an instant that they all pour out into the water, following each other in a most rapid succession, reminding us exactly of shot running out of a shot belt, when loading a gun. Continue your downward pressure as long as the eggs continue to come out. If you find the eggs do not come out quite easily, give the tail of the fish a gentle shake, to loosen those eggs that still remain in the abdomen, but recollect, if you use force, you will spoil the experiment. The eggs must run out quite freely.

9th. The eggs being collected at the bottom of the vessel, take a male fish. Make pressure on the abdomen, in the same way as has been done to the female. If the milt is ripe, it will instantly discolour the water, making it of a cream, or rather milk-white appearance. Stir the eggs and milt gently together, and leave them quiet for three or four minutes, pour off the milk-coloured water, and gently add fresh water, till the eggs appear quite clear again. Return the fish you have spawned to the river; if you have been neat-handed they will be none the worse for the operation. If this has been properly and carefully done, the eggs have been thoroughly impregnated. Place the eggs in the vessel by means of which you intend to take them to the hatching apparatus, and carry them in your hand, without shaking. If you remain out a night, stand the bottle or can with the eggs in a tub of cold water.

As regards the number of males to females, be sure to obtain sufficient males before you begin to operate. The milt of one male will impregnate the ova of many females; but it is not wise to get the eggs from a female, and then have no milt to place with them. You can impregnate one lot of eggs with a male, place him back into the temporary reservoir, and use him for a few lots of eggs.

TO PREVENT RATS DAMAGING LEATHER BELTING.—It is not an uncommon occurrence in factories where steam power is used, that during the night, or periods that the machinery is stationary and the shop abandoned, the rats will eat the leather belting, where it is accessible to them; for instance, where it passes through openings in the floor; cases have even happened that they gnawed holes in the floor just over the place where a belt was running horizontally in order to reach and eat pieces of it.

Now, it is a singular fact that rats will not touch anything containing castor oil, or even only covered with it, and, therefore, to guard belting against the voracity of these animals, all we have to do is to touch it at every place where belting is exposed to their attacks, with a brush previously dipped in castor oil.

The antipathy of the rats against this useful oil is really strange. Probably instinct teaches them that it is injurious to them, but it is useful for men to know this in order to guard many substances against their voracious appetite.—*Scientific American*



Annual Meeting of the Toronto Horticultural Society.

The annual meeting of this Society was held in the Agricultural Hall, Toronto, on the 7th of February. The president, Hon. G. W. Allan, occupied the chair, and in his address congratulated the Society on the progress made in diminishing the debt which had hitherto so seriously crippled its efforts. This result was due mainly to the success of the concerts which had been given during the past summer in the Horticultural Gardens. He trusted the remaining portion of the debt would soon be wiped off, and that then the Society would turn its attention to the erection of a winter garden, which would be a delightful place of resort for the inhabitants of the city, and enable them to enjoy the mild temperature and beauties of summer, in the midst of surrounding snow. He hoped also that the improved financial position of the Society, and the friendly co-operation of the Electoral Division Society, would enable them to carry out efficiently one of the principal objects of all such institutions—the holding of competitive exhibitions—which had been very successfully accomplished during the past year. The annual Report entered more particularly into the details of the several subjects referred to in the President's address; and urged very strongly, besides, the claims of the Society on the city corporation.

"The directors claim for the members of the Horticultural Society the credit of having in their gardens provided for the citizens of Toronto a very beautiful place of resort, such as is not possessed by any other city in Upper Canada, if indeed in the whole Province. This has been done at a very heavy cost to the Society, and by the expenditure of much time, labour and expense on the part of individual members.

By throwing open their grounds to the public, the society at once sacrifice all their former sources of income, as well as the distinctive rights and privileges of the fellows, and other members of their own body.

These sacrifices, however, were cheerfully made for the sake of securing in perpetuity, for the use of the citizens, the whole of the grounds surrounding the gardens, and in the firm expectation that they would be met in a liberal spirit by those who represented the citizens in the City Council. The directors do not entertain a doubt that if the community were fairly canvassed there would be an immense majority in favour of a liberal grant towards the support of gardens which have been a source of so much pleasure and rational enjoyment to all classes."

After the reading of the Report, the officers for the coming year were elected:—

President—The Hon. G. W. Allan.
1st Vice-President—Geo. Leslie, Esq., sen.
2nd Vice-President—Jas Fleming, Esq.
Treasurer—J. E. Ellis, Esq.
Recording Secretary—Geo. Leslie, Esq., jr.
Corresponding Secretary—Walter Lee, Esq.

The following gentlemen to be directors, viz:—Messrs W. Ince, J. C. Small, Rev. Mr. Baldwin, Hugh Miller, John Gray, Alex. McNab, F. W. Coate, Prof. Buckland, P. Armstrong, T. D. Harris, J. A. Simmers, John Patterson, Sir Henry Parker, James Forsyth, Geo. Vair, W. Gibson, Alderman G. T. Beard, Alderman Sheard, Samuel Platt.

Auditors—William Edwards and Hugh C. Thompson.

The thanks of the meeting were given to the President and office bearers of the Society for their valuable services during the past year.

Mr. Fleming presented a bunch of finely preserved grapes as a specimen of what could be done in the way of preserving Canadian grapes through the severity of a Canadian winter. The bunch had been preserved in bran.

The meeting then broke up, and those present returned to partake of a repast provided by the President.

Nova Scotia Fruit Growers' Association.

From the report of the Secretary of this Association, we learn that the Annual meeting was held at Wolfville on the 16th January, and was attended by representatives from King's, Annapolis, and Halifax counties. Colchester county was represented by a very important communication from Rev. Dr. Forrester, of Truro, who has given great attention to the orchard capabilities of Nova Scotia, with a view to publishing a work on the subject.

The subject of monthly exhibitions of the small and summer fruits was discussed, and it was resolved to continue them for another year. A communication was read from Hon. M. P. Wilder, President of the Massachusetts Horticultural Society, accompanying specimens of forty-three varieties of apples, from the late exhibition at Somerset, sent for identification, and the opinion of the society in regard to their classification and general qualities.

"The President also submitted a list of apples which had been put up in plaster, and forwarded to the Paris Exhibition; half a dozen to a dozen of each kind were sent, and Dr. Honeyman has been requested to exhibit them in sets only; one or two of each sort will be unpacked, placed in nearly airtight glass cases, and as one set wilts it will be replaced by another taken fresh from the plaster, and thus the Nova Scotia fruit will be seen in all its freshness for a succession of weeks. It was resolved that the Challenge Silver Medal become the property of the person taking it three times, not necessarily consecutive; three persons, Dr. Hamilton, DeLancy Harris, and Richard Starr, having each taken it once, are to have the benefit thereof in the final competition. It was also resolved—That the Gold Medal taken by this association last year in London, be retained as the property of the association, and produced at all its meetings and exhibitions. A sum of money was placed at the disposal of the Council to be expended in procuring periodical and other Horticultural works for the use of members of the association. It was resolved—That the next general Exhibition be held at Somerset, in October next."

The following officers were appointed for the ensuing year:—

President, C. C. Hamilton, M.D. and M.P.P.; Vice-President for Annapolis County, Thomas W. Chesley, Esq.; Hants County, J. Brown, Esq., Falmouth; Halifax County, G. A. S. Creighton, Esq.; Colchester County, Rev. A. Forrester; Secretary and Treasurer, J. R. Hea, D.C.L.; Auditor, George V. Rand, Esq.; Council for Halifax County, Professor Lawson, Herbert Harris, A. J. Ritchie, Esq., Hants County, A. J. Rickards, Esq.; Annapolis County, James E. Fellows, Oliver Foster, DeLancy Harris; King's County, D. R. Eaton, J. G. Bryne, Robert W. Starr, Leander Rand, Isaac Shaw, Andrew H. Johnson.

Liquid Manure for Pot Plants.

The extensive cultivator of pot plants, and especially of soft-wooded pot plants, usually finds a continuous supply of mild liquid manure of the utmost service; and rightly applied, it is a great aid. Many plants fill their pots with roots, and exhaust their stock of nutriment just about the time of flowering, and when it is unwise or perhaps impossible to supply them with more solid food. In such cases the application of gentle doses of clear liquid manure acts with the highest benefit. Indeed, its use is not generally desirable before that time. The good Pelargonium grower keeps his plants well in hand during the winter—dry, firm, and stubby, making regular and cautious growth, but without luxuriance, and thus in spring the shoots are set with abundant flowers; and when once that stage is arrived at, the mild dose of liquid manure supplies food and glistening health and vigour just when it is wanted. The well-grown young specimen *Fuchsia* that begins to flower in early summer, does not continue to do so for a very long time, unless it is supplied with the liquid; while *Chrysanthemum* and *Sirawberry*, *Calceolaria* and *pot Vinc*, *Cineraria* and *Cucumber*, as well as numerous other inmates of the garden, are equally well affected by the virtues of properly diluted liquid manure.

Most gardeners have made some preparation for a supply of it—a sunk barrel or cemented tank, or such like, into which the manure is put, and then the reservoir filled up with water. This is an inconvenient and a bad way, as most people should know by this time. The cakes of slime which we too often see on pots, to which liquid manure has been applied, are

one bad result—alike nasty and disagreeable to the eye, suggestive in fact of baked crowding. But that is not all, for the supply gets low, and the dregs are fished up, and then the supply is perhaps altogether stopped to allow of the tank being cleared, and a day or so is required for the mixture to settle; the result of all which is, that the liquid manure-tank in many gardens, like the patent fumigators and other garden inventions which one may see hung up in sheds, but never used, becomes a neglected and half-forgotten receptacle. But all this may be easily remedied by having a properly constructed liquid manure-tank, made as follows:—

The best material is slate, and of that an oblong tank should be made, proportioned in size to the wants of the garden. About 6 feet by 3 is a fit size for a pretty full plant collection, and it may be 4 feet deep, or more. This should be sunk half way in the ground, placed against a wall in some convenient spot in the frame ground, or near the houses where its contents are most required. It should be divided by a partition of slate across the centre. The lower part of this partition, say the lower foot, should be perforated with holes about half an inch in diameter, or a little less, and then, in one side should be placed about 15 inches of rough gravel, with a few inches of fine gravel on the top of it. On that, whatever manure is preferred, is to be placed, and then the water poured in. Of course the other side will contain nicely filtered liquid-manure at all times, and there need be no cessation at any time, but a constant supply of nutriment in the best form. Always ready, there will be no hesitation or irregularity in using it.

Generally, gardeners prefer sheep-droppings for liquid-manure, and it is probably the best material that can be used, and the safest and most agreeable to plants generally. It need hardly be added that it should be well diluted, and applied in a clear and weak state. Strong undiluted liquid-manure, especially stable or dunghill liquid-manure, is death to many plants. W. in *Gardeners' Chronicle*.

Fruit Growers' Association of Western New York.

The winter meeting of the above association was held in Rochester, Jan. 23. and 24. We learn from our exchanges that the attendance was much larger than usual, and that the discussions were animated, interesting and instructive. The four sessions that were held were almost wholly taken up with the grape, and the experience of the fruit-growers present with the different varieties was very freely and fully given. After an exhaustive discussion of the question "what single variety is the best for garden culture" the vote of a large majority awarded the palm to the Delaware. Much diversity of opinion showed itself as to the second best variety for garden culture, so much so, that no vote appears to have been taken on that point. Diana Isabella, Creveling, Concord, Adirondac, Rogers' Hybrids No. 4, and 15, Iona, Israella, and other sorts, all found earnest advocates, and it is pretty clear that we have already a good list of garden grapes suited to the latitude of Western New York and Western Canada.

It was difficult to draw the attention of the meeting to the discussion of anything else but grapes. However, on the second day, two or three other topics received some attention. A movement having been set on foot to repeal the law fixing the size of apple barrels, the Association expressed itself strongly and unanimously in favour of the existing statute, deeming it very important that there should be a legal standard of measurement, to which all sellers and dealers must conform.

A discussion also arose on the question of bird preservation. It was urged by some that indiscriminate protection of birds was as indefensible as indiscriminate slaughter of them, that there were kinds whose depredations were intolerable, and ought to be checked. The robin was particularly instanced, as preying most unremittingly on fruit, from strawberry to plum time, and it was contended that to shoot one now and then would abate the evil, and hold the feathered thieves in check. It was the general opinion that a middle course ought to be taken, and it appeared to be considered advisable to have the law so modified as to make parties masters of the birds on their own premises, to leave them unmolested or to destroy them as they deemed best.

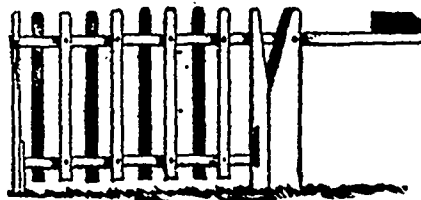
Some talk was also had about pears, more especially in reference to the failure of this fruit from that mysterious visitant, the blight. It was thought this evil was attributable, in some degree, to over-manuring. Replanting, and more careful culture, were urged, the fruit being too valuable to be abandoned because of difficulties in growing it.

Bulbs that are yearly moved and flowered in the open ground rarely seed; but if left in the same place three or more years, without having been taken up, the main or centre flower stock will generally produce seed. Plants, however, that are grown in pots in the house nearly always produce seed; hence such plants are advised for operating on.—Horticulturist.

ROGER'S HYBRID No. 4 GRAPE.—F. R. Elliott, of Cleveland, Ohio, speaks in high terms of this new and promising variety. He finds it to ripen with or a little before the Concord, which it excels in size and quality, while it is equally handsome, and is scarcely, if any, inferior in hardness and vigor.

A LADY HORTICULTURIST.—The *Newburgh Journal* has the following notice:—Miss J. L. Waring, of Amenia, Dutchess County, N. Y., a lady of intelligence and culture, has gone quite extensively into the culture of fruits and vines. She has invested upwards of forty thousand dollars. She cultivates only the choicest varieties, and has several large and well constructed houses for the propagation of foreign and delicate vines. She has a large number of vigorous and thrifty out-of-door growth. Miss Waring is the most extensively engaged of any lady, so far as we are aware, in an occupation which is a favourite one with the women.

Advertisements.



THE FARMER'S GATE!

CHEAP, LIGHT, AND DURABLE; with no hinges to get out of order, cannot sag and stick in the ground, out of the way of vehicles, cannot be left half open, never blocked up with snow, and So Simple of Construction that every Farmer can make it, if supplied with the plans.

"We consider this, on the whole, the best farm gate we know of. It is made without mortice or tenon, and is perfectly adapted to all gate purposes; it is exceedingly simple in its construction, and can be built by the most ordinary workman. It opens and shuts with the greatest ease, and when shut is securely fastened, both top and bottom; when open it is entirely out of the way. It is free from any tendency to sag, and cannot be blown open or shut, can be readily attached to any post, round or square, and its cost is so small that every farmer can afford to use it wherever an entrance is required. For simplicity, convenience, neatness, cheapness, durability and general utility, it cannot well be surpassed. We have had two of these gates in use for a year past, and find them perfectly satisfactory. To all that still large class of farmers who allow themselves to be tormented with 'bars,' we commend this gate."—CANADA FARMER.

Plans and Specifications for all sizes, from a 3 foot wicket gate to an 11 foot wagon gate, will be sent prepaid to all parties remitting ONE DOLLAR, with address, post-paid, to v4-5-11 BOX 96, GUELPH P.O.

WANTED.

TWENTY good energetic men to canvass for the **LAND and BOOK, or TWENTY YEARS IN PALESTINE**, by Rev. Dr. Thompson, also for the **NURSE and SPY**, and the **BOY'S FRIEND**. For further information send stamp for a circular.

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SEED GROWERS AND SEED MERCHANTS,
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Will be glad to send, on application, special quotations of **FARM AND GARDEN SEEDS**, of their own growth, from choice Transplanted Stocks. v3-11-24

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A n energetic man in each Township to attend to sale of **Canadian Super-Phosphate**. With responsible and efficient parties, the subscriber will enter into arrangements for a term of years, on liberal terms.

Address, E. L. SNOW, Manufacturer Canadian Super-Phosphate, Montreal. v4-5-11

BEE HIVES!
BEE HIVES!

BEE KEEPERS, and persons intending to keep bees, will find it to their advantage to use

J. H. THOMAS'S

First Prize Movable-Comb Hives,
Manufactured by J. H. THOMAS and BROTHERS, BROOKLIN, C.W.

They are acknowledged to be the best hive in use, and are too well known to require further recommendation. Send in your orders early and they will be filled promptly. Bee-keepers would save freight by clubbing together, and ordering in lots of three, six or more, as three hives may be sent to one address for the same freight as one hive.

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The second edition of the "Guide" being exhausted, parties ordering just now will wait patiently, a few days, until the third edition, now in the printer's hands, is published, when their orders will be filled without delay. No bee-keeper should be without this practical little work. Price, post-paid, 28 cents v4-5-31

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Imported Riga Flax Seed.

THE UNDERSIGNED have received instructions to sell the balance of the

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at a greatly reduced price. The stock now on hand has been well cleaned.

PRICE, \$8.00 PER BARREL.

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Goodrich's Seedling Potatoes.

Early Goodrich.....\$4 00 per barrel.
Gleason's.....\$5 00 "
Cuzcos.....\$2 50 "
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The four varieties in one barrel \$4. All warranted true to name. Address, ADOLPHUS C. CASE, Hamilton, (King Street East.) v4-5-11

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THE subscribers will pay 45 cents per pound for good

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SHEEP DIPPING COMPOUND

Pronounced Superior to all Others!

It has now been used in Europe for many years with great success, and for the past six years in the counties of Elgin, Middlesex, Kent and Norfolk. It will free your sheep from ticks, produce you more wool, and the sheep will thrive much better on the same food.

Price 35 cents per tin; will dip 20 sheep.
" 70 " will dip 40 sheep.

For sale wholesale and retail by

CHARLES DAWBARN & CO.,
124 King St. East, Toronto.

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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.

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BAUGH & SONS, Sole Proprietors & Manufacturers, Delaware River Chemical Works, PHILADELPHIA, U.S.A.

For Wheat, Rye, Barley, Corn, Oats, Potatoes, Tobacco, Buckwheat, Sorghum, Turnips, Hops, Garden Vegetables, and every Crop and Plant.

Especially recommended to the growers of STRAWBERRIES, RASPBERRIES, BLACKBERRIES, AND ALL SMALL FRUITS.

MORE than 13 years of regular use upon all description of Crops grown in the Middle and Southern States, has given a high degree of popularity to this MANURE, which places its application, now, entirely beyond a mere experiment.

BAUGH'S RAW BONE SUPER-PHOSPHATE OF LIME,

Is eminently a success as a Substitute for Peruvian Guano and Stable Manure—and is offered to the Agriculturists of the Northern and Eastern States and British Provinces, as a fertilizer that will cheaply restore to the Soil those essentials which have been drained from it by constant cropping and light manuring.

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Farmers are recommended to purchase of the dealer located in their neighbourhood. In sections where no dealer is yet established, the Phosphate may be procured directly from the undersigned. A Priced Circular will be sent to all who apply.

Our NEW PAMPHLET, "How to Maintain the Fertility of American Farms"—90 pages, giving full information in regard to the use of manure, &c., will be furnished gratis on application.

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ELLWANGER & BARRY have the pleasure of offering for Spring planting, their usual large and well grown Stock of Standard and Dwarf Fruit Trees, Ornamental Trees, Shrubs and Plants, Greenhouse and Hothouse Plants, Bedding Plants,

Including the splendid large leaved Cannas, Calceolias, &c. Each of these departments contains all of real value, old and new.

The following Catalogues, which give full particulars, will be sent pre-paid upon the receipt of postage stamps, as follows: No. 1.—A Descriptive and Illustrated Catalogue of Fruits, 10 cents. No. 2.—A Descriptive and Illustrated Catalogue of Ornamental Trees, Shrubs, Hoses, &c., 10 cents. No. 3.—A Catalogue of Dahlias, Verbenas, Petunias, and select new Green House and Bedding Plants, published every Spring, 5 cents. No. 4.—A Wholesale Catalogue or Trade List, 3 cents. ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, N. Y.

NOW READY!

J. A. SIMMERS' CULTIVATORS' GUIDE,

OR, descriptive Illustrated CATALOGUE OF SEEDS, for 1867. Intending purchasers of Seeds may have a copy on application, and to parties at a distance, it will be mailed on pre-paid receipt of their address, enclosing two cents in postage stamps.

J. A. SIMMERS, SEED MERCHANT, v4-5-21 Toronto, C. W.

Markets.

Toronto Markets.

"CANADA FARMER" Office, Feb. 29, 1867.

The thaw of the past week has left the streets nearly bare; in the neighbourhood of the city, however, the sleighing is still good. The produce markets have been dull, and but few transactions have been reported since our last issue. The tendency of prices is decidedly upward.

Flour.—Transactions have been limited. There is but little flour offered for sale. More disposition to take hold has been noticeable during the last two days. No. 1 superfine is firmly held at from \$8 90 to \$7; buyers offering \$6 75.

Wheat.—The market for spring wheat has been more animated, and lots offering found ready sale with a marked advance on choice samples, which are very scarce and held for higher figures. Prices ran from \$1 45 to \$1 60, for good spring. Several very choice lots brought as high as \$1 60. The stock in the warehouses in Toronto is 63,000 bushels. Street prices have ranged from \$1 40 to \$1 41. Fall wheat is quiet, with a stock in the warehouses here of 54,000 bushels, including mildew proof. Few lots changed hands during the week. Street market prices have ranged from \$1 60 to \$1 70.

Oats.—The market remains steady at from 30c to 32c.

Barley.—Small lots changing hands, principally for local use. Prices on the street ranged from 60c to 69c, the latter price being only for extra bright for brewing purposes.

Peas.—Market has been more active, and several round lots have changed hands for present and future delivery at easier prices. The stock in the warehouses here is now 111,000 bushels, all of superior quality. Prices on the street ranged from 65c to 70c, with only light receipts.

Seeds.—Clover sells at from \$6 to \$6 50. Timothy \$1 60 to \$2 50. Hungarian grass unsalable. Flax seed, \$1 60 to \$1 65.

The Cattle Market.—The following are the prices current in this market for 100 lbs dressed weight.—First class cattle, \$8; second class do, \$5; inferior do, \$4 to \$4 50. Sheep, each, \$5 to \$7. Lambs scarce, \$3 to \$3 50. Calves, \$5 to \$7.

Hides, Skins and Wool.—Green, from butchers, \$0 50; green salted, \$8 25 to \$8 60, calskins, 12c; green salted, 15c to 16c; sheepskins, \$1 to \$1 50. Wool selling at 30c.

Poultry.—Chickens, 30c to 40c; turkeys, 70c to 80c; geese, 60c to 60c; ducks, 60c to 60c per pair.

Hay and Straw.—Hay \$11 to \$14. Straw, \$5 to \$6 60.

Dressed Hogs.—The receipts are light, and prices remain steady at from \$5 to \$5 25.

Hamilton Markets.—Wheat—Red winter sold at \$1 30 to \$1 45, spring do, \$1 35 to \$1 40. Peas readily disposed of at 65c to 72c per bushel. Oats bought for the local trade at 32c to 33c. Barley, selling at 60c to 55c. Corn, enquired for at 70c per bushel. Clover Seed, coming in slowly, sells at \$5 50 to \$6 per bushel. Timothy Seed, \$1 60 to \$2 25, very little offering.

London Markets.—Fall Wheat, \$1 50 to \$1 70; spring wheat, \$1 40 to \$1 62. Barley, 40c to 45c. Peas, 64c to 70c. Oats, 30c. Corn, 58c to 60c. Rye, 60c. Seeds—clover, \$8 to \$7 per 60 lbs; timothy, \$1 75 to \$2 25 per 60 lbs. Dressed Hogs, \$4 50 to \$5 25. Wool, 27c to 28c per lb. Butter—prime dairy-packed, 13c to 14c per lb; No. 2, 11c to 12 1/2c per lb; fresh, in rolls, by the basket, 15c to 16c per lb. Eggs, 18c to 20c per dozen.

Galt Markets.—F. W. flour per 100 lbs, \$4 25; spring wheat flour, do, \$3 50. Fall Wheat, per bushel, \$1 80 to \$1 82; amber do, do, \$1 37 1/2 to \$1 60; spring do, do, \$1 25 to \$1 42. Barley, do, 40c to 45c. Oats do, 30c to 31c. Butter per lb, 15c to 17c. Eggs per doz, 16c.

Quebec Markets.—Fall Wheat per bushel, \$1 60 to \$1 80; spring wheat do, \$1 30 to \$1 45. Oats do, 30c to 32c. Peas do, 65c to 60c. Barley do, 40c to 50c. Wool, per lb, 34c. Eggs, per dozen, 16c to 17c. Butter, per lb, 12c to 13c.

Montreal Markets.—Feb. 25.—Flour—Superfine extra nominal; fancy, \$7 75; superfine No. 1 Canadian wheat, \$7 25 to \$7 40; bag flour, \$3 40 to \$3 45; wheat, Canadian, \$1 46 to \$1 53; Oats, per 32 lbs, 31c to 33c; Barley, per 48 lbs, 52c to 57c; Butter, dairy and storepacked, nominal. Ashes, pots, \$5 60 to \$5 65 for firsts, pearls, \$6 70 to \$7, for firsts; Flour, receipts, 2,400 barrels, market steady. Sales ordinary superfine \$7 25 to \$7 27 1/2, extra choice brands, \$7 40, common grades, nominal, bags dull, Rye Flour, \$4 60 to \$4 70, Oatmeal, \$3 to \$3 15, Peas, 90c to 91c, on the spot, sales for delivery in May, at 92 1/2c; Dressed Hogs, steady at \$5 25 to \$5 45.

New York Produce Market.—Feb. 25.—Flour.—Receipts, 10,625 bbls, market a shade firmer, but scarcely so active, sales, 6,800 barrels at \$8 50 to \$10 10 for super State; \$10 15 to \$11 for extra State, \$11 10 to \$11 50 for choice do.; \$8 85 to \$10 10 for super Western; \$10 10 to \$11 for common to medium extra Western. Rye Flour firm; sales 350 barrels at \$7 to \$9. Wheat—Dull and without decided change; sales 7,300 bushels white Canada at \$2 15. Rye—Dull and declining, sales 5,500 bushels, Western at \$1 10 to \$1 12. Barley—Dull, sales, 900 bushels Canada West, free, at \$1 18. Corn—Receipts, 9,550 bushels, market about 1c. better, sales, 68,000 bushels at \$1 07 to \$1 08 for mixed Western in store; \$1 08 to \$1 09 for do afloat, and \$1 08 to \$1 09 for New Yellow. Oats—Receipts, 2,000 bushels; market a shade firmer; sales, 28,000 bushels at 68c to 60c. for Western and 67c to 68c. for State.

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