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THE CANADA FARMER.

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The Field.

Average Production of Wheat in Great Britain.

As the English market rules the price of wheat all over the world, anything bearing on the probabilities of the yield there, or anything showing how the averages may be correctly estimated, is as important to Canadian, whose surplus finds its market in England, as to British farmers.

The average number of acres under wheat in the United Kingdom is found to be 3,600,000; and this average has not varied more than four per cent for many years—in fact a variation of 1 to 3 per cent is about the usual figure. This shows that the encroachment on the arable land by the growth of the large towns is just counterbalanced by the addition of new land, by the reclamation of waste, the abolition of fences, the stratening of roads, etc.

The average production of wheat per acre in Great Britain is, as we shall show below, 29½ bushels to the acre. It will be noticed that the greatest variation in the number of acres under wheat—four per cent—will only affect the total production to the extent of about four million and a half of bushels—which is not enough to affect the price seriously. It follows that the question of the probable yield is the vital point upon which prices hinge; and here we get at some astonishing figures when we compare the yield of a good year and of a bad year. The Board of Trade returns show that the average produce per acre may range from twenty-three bushels, which was the yield in 1872, to thirty-four bushels, the yield of 1868—an immense range and one which explains the violent fluctuations of the price of this cereal. As stated, the total produce is only affected to the extent of four per cent, either way, by the difference in the average amount of land under wheat. But the influence of the seasons may diminish or increase the yield by one-third.

The result of the examination of a vast array of statistics seems to prove that twenty-nine and a half bushels to the acre is the average wheat yield of Great Britain. This average has been variously estimated by different authorities, from time to time, at amounts varying from each other by five or six bushels.

In 1850, Mr. Caird concluded that it was not more than 26½ bushels. In 1868 he raised his estimate to 28 bushels, which was also Mr. McCulloch's estimate in 1853. Messrs. Lawes and Gilbert, in 1868, quoted estimates of various authorities, ranging from 28 to 32 bushels, and remarked that "perhaps the most generally assumed average is 29 bushels." According to the Rothamsted computation, the average yield of wheat per acre over the 16 years 1852-67 is, for England and Wales, 28½ bushels; for Scotland, 27½ bushels; for Great Britain, 28½ bushels; for Ireland, 23½ bushels; and for the United Kingdom, 28½ bushels. In the year 1861 the *Mark Lane Express* collected from more than 500 correspondents in England estimates of the yield in bushels per acre of wheat, barley, oats, beans, and peas, taking an average for the ten years, 1852-61. These averages varied considerably between one county and another, wheat ranging from 22½ bushels to 34½ bushels per acre, the general average for England being 29 bushels. In 1870 the *Chamber of Agriculture Journal and Farmers Chronicle* collected a very large number of estimates. The county averages varied 22 bushels in Devonshire to 33½ bushels in Kent; the six counties giving the lowest yields are Devonshire, Cornwall, Shropshire, Durham, Northumberland, and Herefordshire; and the six counties giving the highest yields are Kent, Essex, Cambridgeshire, Lincolnshire, Huntingdonshire, and Northamptonshire. The general average yield per acre for England is 29.9-10 bushels; and nearly following Messrs. Lawes and Gilbert for the other divisions of the kingdom, we have for Wales 27 bushels, Scotland 29 bushels, Great Britain 29.9-10 bush-

els, Ireland 25 bushels, the Islands 28 bushels, and the standard average for the United Kingdom 29½ bushels.

Last year, in Great Britain, the area under wheat was 3,833,000 acres, which is above the average. Elaborate returns of the yield go to show that the average crop of 1874 was 31 bushels per acre—a bushel and a half above the average. The total production was 118,824,000 bushels, which is six per cent. over the average total yield.

The average price of wheat in England, during the last eight years, has ranged from 51s 8d per quarter (\$1 52 per bushel) in 1868, to 69s. 3d per quarter (\$2 08 per bushel) in 1867, and 61s 3d. per quarter (\$1 84 per bushel) in 1873-4. As we write, the price of wheat in London is about 43s. per quarter (\$1 29 per bushel). This time last year, it was 61s per quarter (\$1 83 per bushel). There is much food for thought in these figures.

Injury to Drains by Roots of Trees.

THE CANADA FARMER lately published an article advocating the cutting down of isolated and useless trees in fields and fence corners, giving, as one of the principal reasons for such measures, the damage done to drains by the far-reaching roots. This same trouble is noted in Great Britain as becoming unendurable, since the introduction of tiles and pipes for drainage purposes. It would be as much as an English farmer's head was worth to cut down a tree without the consent of his landlord, and in many cases, even the landlord, being only a tenant for life, has no power to give such consent. It is no matter how carefully or efficiently a drain is put down. If there be a tree within hauling distance, the roots will creep stealthily along, and, as if endowed with the keenest intelligence, will find a crevice or joint. Through this a rootlet will insert itself and in a short time will increase to a fibrous mass, choking the pipe, cutting off the flow of water and completely bewildering the unhappy owner of the drain.

The subject was recently brought before the Edinburgh Botanical Society by Thomas Greig of Glencarse, who has had some costly experience of the ability of trees to become nuisances. In one case, in conveying water from the fountain-head through an orchard to his entrance lodge, he had a 2-inch pipe with sockets, but in two years the supply of water ceased, the pipes not being beyond 1 foot deep in the ground, the water rose to the surface where the stoppage occurred, and the green color of the grass at once shewing where the drain should be opened, the pipes were found filled with rootlets from the apple trees.

Again, the lead pipe that supplied the water to the mansion from the fountain-head ceased to do so; and, thinking that a frog had got into the pipe, he had it uncovered and cut into 10-yard lengths. The third cutting revealed the cause—not a frog, but a bunch of rootlets, extending for a considerable distance inside the pipe, proceeding from a small fibrous rootlet that had entered the pipe by a small crack almost invisible.

"Having laid down, continues Mr. Greig, a leaden drain upwards of 1,100 yards length with 8-inch pipes for a considerable portion of the distance, followed with 6 inches and 4 inches as they proceed: I with the drain, also laying a number of side drains into it, which brought off a large supply of water from a considerable area of flat land, at the end of two years I was in no small degree surprised to find that no water issued from the pipes, but remained on the surface of the land. I sent for the person who had executed the work to meet me on the ground; and, on receiving his assurance that he had himself put in the whole of the pipes most carefully and superintended his men filling in the drains, so that he felt confident none of the pipes could be disturbed, we came to the conclusion that the roots of the willows must be the cause; and on digging down to the pipes found them completely choked by rootlets, so hard pressed together that it was with

difficulty they could be removed. What appears remarkably strange is that the willows had been planted within 2 yards of a dam, and had grown there for at least fifty years. They sent their roots to a distance of 20 feet to 25 feet, passing under the cart road, and entered the pipes at the depth of 7 feet from the surface. I had, however, no alternative but to cut down this beautiful row of tall, handsome willow trees, which were greatly admired by visitors to the glen. Had I used spigot and faucet pipes, having them well cemented at the joints, this might have been prevented, but the distance of the drain from the trees did not lead me to suspect danger from the roots. Eight or ten weeks ago, I observed water again lodging on the surface of the land, and the farmer having seen it for a few days, was quite unable to account for it. I went to the outlet of the drain and found little or no water issuing from it; and although I had cut down the willow trees adjacent, the bark was not removed from the trunk, consequently twigs soon grew and had a connexion with the roots. I immediately set men to open the drain, and on getting to the pipes found them filled with rootlets; the first taken out was a splendid specimen, but my gardener threw it a distance from him, on hard ground, and it was so squarish that I did not bring it. The portion of the bunch of rootlets now on the table was next to it; having been six weeks in a dry place it has lost the round appearance it had when taken from the pipe. I must now call your attention to the small twig from which that huge mass has proceeded, which leads me to think that the aim of the rootlets is to support themselves, and not to convey nutriment to the parent tree, for there is not sufficient passage for the sap to rise."

"A Poor Farm."

"Will those houses pay interest on the money invested?" queried neighbour N., with a knowing kind of look.

"I think they will," I replied; "they cost me \$800 each, exclusive of work done by the men engaged on the farm. The interest would amount to \$56 yearly at 7 per cent. That is a small amount in comparison with the trouble and annoyance of having men boarding in the house, especially as some of them are not very pleasant associates. Not only that, but you can always rely on securing the best workmen if you have good and comfortable quarters provided for them.

The best men, as a rule, have a family to provide for, and wish to make them as comfortable as circumstances will permit. They do not come to you or me to enquire what their services are worth. They know that they can command the highest wages, and we ought to know that it is to our interest to accede to their demand if not too exorbitant."

"That is all very true," continued neighbour N.; "still, that is not to the point."

"Very well; I will give you the benefit of my last month's experience, and think it ought to satisfy you. One of the best men receives \$35 per month, including interest. Another receives \$27. Now we will see what the latter has cost me:—Wages, \$27; damaged cart, \$5; damaged gate and harness, \$2; lost time, \$6.50; total, \$40.50. You see the good man cost me \$35, and the poor one \$40.50." "Not a bad showing," continued neighbor N., "but you know accidents will happen."

"When a man cannot drive a team through a twelve foot gate he must either be drunk or something worse."

"I will tell you what I would do with such a man," said neighbor N., in rather an excited tone; "I would kick him out on the road." "There is just where you put your foot in it. You know that neighbor S., who had his bars and several head of cattle burned a short time ago, had done just what you said you would do; and see the consequences. The man at once set fire to his buildings, for which he is now in prison; but that will not replace

the property. I have heard your name mentioned by the farm hands in conversation. One said you could not get men to remain with you. "Why," asked another. The reply was, that you expected too much work for too little money, and that you were continually blackguarding your men. By such a course, you gain nothing, and lose a great deal with good men. My plan is this. If a man does not do the work assigned to him properly, I speak to him kindly, at the same time giving him to understand that I am paying him to work, and that it must be done, and that if he will not do it some person else will. If he still persists in not doing it, I at once tell him his services are no longer required. Do not stop to bandy words with him. By doing so, you place yourself on an equal footing with him, and nothing pleases him better. Above all, do not let the other men see that it gives you any annoyance. They will respect you the less, and your prestige as a farm manager is gone."

"That is all very well," continued neighbour N, "but, if you had the trouble that I sometimes have, you would not talk so favorably."

"I am surprised to hear you talk in that way," I replied, "you that have your brother and nephew to assist you. I have no person to give me a helping hand on any more at the mercy of a poor class of men. Every day's work I have to pay sweetly for, but withal I hope to yet see my poor farm deserve a better name."

FARMER

How He Raised Roots.

I raised two acres of ruta-bagas as follows. I had half the ground from my corn-stubble, and hauled out twenty loads of short barn-yard manure, spread it over two acres, ploughed beam deep, harrowed it, and let it lie till the middle of May, and in the interval scraped the barn-yard after every rain, and mixed the hog manure (six loads) among that, and had twenty-five loads more short manure, which I spread as before, and ploughed beam deep again, harrowed, and let it lie till the 1st of June; ploughed again beam deep. I now had a soil fifteen inches deep, with the manure well incorporated through the soil.

On the 5th day of June I lack-furrowed the ground, leaving room between the rows, so to speak, for a horse to walk. The rows or drills stood up about a foot high. I then took a stick, an old broom-handle, and made a crease on the top of the drill about one and a half inches deep. I got three pounds of ruta-baga seed of that year's raising (there is no safety in sowing older seed); I then took one peck of wood ashes, sifted and put the three pounds of seed with the ashes, sifted the seed and ashes two or three times so as to have them well mixed; then, with two boys and myself and a small tin pail, we took a pinch of the ashes and seed—about as large as a pinch of snuff—between the forefinger and thumb, and dropped each pinch in the crease on the top of the drill—say about one inch deep and six to eight inches apart. In each pinch there were two to three seeds.

A small insect about the size of a flea, and resembling it very much, as it jumps like the flea, does its work of mischief the first twenty-four hours after the plants are up. For a remedy I took fresh hardwood charcoal put it in a tin, sized fine, and sifted it through a timothy seed sieve, and put the sifted charcoal in a tin grater with a handle such as painters use for shaking sand on fresh paint. I had three of these made at the tinners', they hold about a pint and a half; and just as soon as we could see the leaves emerging through the ground, we went down the drill shaking or dusting the charcoal on the young plants, and the fleas flew in every direction. This we repeated every morning, while the dew was on, till the second leaf was well developed, when the plant is out of danger. With two corn-ploughs every morning, while the dew was on, but never while the dew was off, we went through them and kept the ground raw. We then went to work thinning them out, and had a mess for seventeen cows and ten hogs every morning for three weeks.

We harvested the two acres the middle of November, just before being frost-bound, and have 1,670 bushels, or, in other words, 100,200 pounds. Some of them weigh 20 pounds. We harvested them, leaving the tops on, and cut them up, tops and all, with a cutting-machine; fed seventeen head of cattle on them all winter, and sold 100 barrels of the smallest at \$1.50 per barrel. *Cor. New York Times.*

DANGER TO STOCK FROM GYPSUM.—Most farmers know enough not to turn stock upon newly-plastered grass-land, but it is not so generally known that fatal results may follow such turning out. A correspondent of the U. S. Department of Agriculture mentions a case where some stock was turned upon a field on the same day on which it was plastered, and they all died in a few hours. There were no indications of "hoven," the stock being in good condition, and the sudden death was believed to be solely the effect of the sulphate of lime.

Burning Lime without a Kiln.

The beneficial effects of lime upon all sorts of land and crops are now admitted. The use of lime is now known to conduce greatly to the increase of the yield of cereal crops, giving strength and brightness to the straw and food to the plant. Added to this, its property of attracting to itself all the moisture that may be present in the air renders land to which it has been applied able to stand drought to a much greater extent than can land not so treated. The only place where lime can easily be misapplied is to land where water lies constantly. It should never be put on such land until the same has been thoroughly drained.

Every farmer to whom limestone is accessible can burn his own lime, be he so minded, without a kiln. A Pennsylvania farmer gives through the *New York Tribune*, the following description of the way to do it:—Lime may be burned without a kiln, by laying a foundation of blocks of stone, covered in such a manner as to make draft passages to the centre of a round heap of say 12 feet in diameter. The form of the foundation is shown in fig. 1, and the

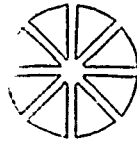


Fig. 1.

manner of making the draft-flue is shown in fig. 2. The draft-flues are filled with dry kindling-wood, a layer of coal slack 3 inches thick spread over the foundation, and a layer of limestone 12 inches thick placed upon the slack; then a layer of slack, then limestone, and so on alternately, until a heap is made like that shown in fig. 2. This is covered with leaves, soda, or coarse manure and litter 12 inches thick, and then with earth for 6 or 8 inches. In the centre of the heap, as it is built up, a chimney about a foot in diameter is left, and this is filled with kindling wood and slack.

When all is ready, the top of the chimney being left open, the fuel is kindled. When well on fire, the chimney is closed by throwing limestone in it until filled, and then covering it with leaves or litter and earth. The fire is made to burn gently by regulating the draft-holes, which should be closed with pieces of limestone covered with earth, and only one or two kept partially open to draw the fire to the side where it is wanted. In short, the fire



Fig 2

should be managed exactly as that of a charcoal pit, except that a greater heat is needed. As the pit sinks down, earth and leaves, or litter should be thrown over the cracks, lest the fire become too strong.

In about a week the lime will be burned, when the draft-holes may be closed and the heap left too cool. Then the earth is raked off, and the partly-burned stone from the outside laid on one side for another pit, and the lime may be removed. By this method forty loads of lime (1,000 bushels) may be burned with six loads of coal-slack and one cord of wood. The lime thus obtained should not cost over 5 or 6 cents a bushel.

Growing Rutabagas Cheaply

J R Hendryx of Van Buren Co, Mich, writes to the *Michigan Farmer*, giving his way of raising rutabagas. The chief feature of his plan is the cheapness with which he claims it can be carried out. He annually raises from one to three thousand bushels, and no crop has yet cost him for labor more than three cents per bushel. He chooses a high, dry, sandy loam—old soil—or next best, corn ground, or potato ground, which had been well cultivated the year before. If he had neither, he would take the nearest and most mellow piece he could select.

"I cover such soil, "he goes on," with the finest and best manure I can get. This manure should be ploughed under as early as the 15th of May. Drag and roll immediately;

harrow and cultivate at intervals, no matter how often, when the ground is in condition, being careful not to disturb the manure, up to the last of June or the 6th day of July. Cultivate very shallow, draw a smoother over the surface made of two slabs about eight feet long, with a two by four scantling spiked on the flat sides, say two feet from each end, so as to leave the slabs about eight or ten inches apart. Have the ends of the scantling run over on one edge, say 15 inches, for hitching the team. This will crush the lumps and leave the ground perfectly smooth and in good condition for the seed. Drill in the seed with hand seed drill in straight rows three feet apart. Put in plenty of seed, and as soon as up, thin out so that no two plants will stand together. When the plants are past all danger, thin to twelve or fifteen inches. Keep clean by shallow cultivating until last time through, then cultivate deep, and the work is done till harvest. If the ground is well fitted, three times through is sufficient. If you can sow the seed just before a rain, the plants will appear very quick. It is well to watch the weather for such a chance, but don't plant earlier or later than the time above mentioned."

A CHEAP FERTILIZER.—A North Carolina correspondent says:—Many of our best planters use a compound composed of 60 pounds of sulphate of ammonia, 40 pounds nitrate of soda, 4 bushels of salt, 250 pounds fine-ground bone, 250 pounds land plaster, 3 bushels of ashes, and 20 bushels of stable-manure or rich earth. They apply the above amount to 6 acres. Labor in preparing included, it costs about \$15. It gives as good results as most of the commercial fertilizers costing \$50 per ton.

WATER CONSUMED BY AN ACRE OF WHEAT.—From the results of a series of observations made in France it is calculated that a quantity of water equal to twelve inches in depth upon the surface of an acre of ground passes through the leaves of a wheat crop of twenty-five bushels, and is used in the process of maturing the grain and straw. This does not include the amount of water which evaporates or drains from the soil; nor does it include any portion of the rainfall which occurs between harvest and seed time.—One third of the average rainfall is required for the transpiration of the plant when twenty-five bushels per acre is obtained—and this twelve inches of rain, in weight, would amount to the enormous mass of twelve hundred tons to the acre.

THINNING CORN.—Prof. Roberts, of the Cornell University, made some experiments in growing corn upon the College farm last season, the results of which are valuable. He planted three plots of three-sixteenths of an acre each with corn, and thinned the hills in one lot to three stalks, another to four stalks to a hill; the third was not thinned. The first plot yielded at the rate of 160 bushels, the second 125 bushels, and the third 106 bushels (of ears) to the acre. Mr Roberts states, as the result of many experiments prior to these, at the Iowa Agricultural College, that the heaviest crops of corn were made by growing three stalks to a hill, and that two stalks to a hill will produce more corn than five stalks. If every stalk produces an ear, and corn is planted three feet apart each way, there will be nearly 100 bushels of shelled grain per acre. To grow maximum crops of corn then, it is only necessary to grow one ear upon a stalk, and ears of such a size that a hundred of them will make a bushel of grain.

A WRINKLE ABOUT CORN-PLANTING.—A correspondent of a western paper, who has for years been conducting experiments with corn, has arrived at a very valuable result. So far from replanting of corn being of little value, as is the common impression, he says, it is of so much consequence he replants whether it is needed or not—or rather, he plants two or three weeks after the crop is planted a hill every fifteenth row each way. He says: "If the weather becomes dry during the filling time, the silk and tassels both become dry and dead. In this condition, if it should become seasonable, the silk revives and renews its growth, but the tassels do not recover. Then for want of pollen, the new silk is unable to fill the office for which it was designed. The pollen from the replanted corn is then ready to supply the silk, and the filling is completed." He says nearly all the abortive ears, so common in all corn crops, are caused by the want of pollen, and he has known ears to double their size in this second filling.

FORESTALLING CUT-WORMS.—Cut-worms having done much damage last season and previously, I was induced to keep a record of my experience with the pests. Two years ago I planted a piece of sod to corn. My corn came up even and looked very fine, but in three days there was scarcely a stalk left on the ground. I let it remain two weeks, then cultivated it, and planted it to beans. While planting the beans I noticed the worms crawling away, and they attacked a piece of wheat adjoining, and destroyed a strip a rod wide along the edge. I came to the conclusion that the worms must have green food to sustain life. Last year I tried four acres of same sod, turning it over early before the grass had started much. I dragged it to bring up the roots and dry them. In a week I gave another dragging, which destroyed everything green. I then planted it to corn and had no more trouble from cut-worms. They do but little damage except on newly turned sod. Corn on such ground should be worked early and often, and be kept clean, so that worms and other insects have no shelter or food. Gardens kept clean are but little troubled with cut-worms. The best remedy is exposure and starvation.—*Country Gentleman.*

Grasses and Forage Plants.

More about the Prickly Comfrey.

The last number of the CANADA FARMER contained an article upon, and an illustration of the Prickly Comfrey, a plant now grown in Ireland, and extensively by a gentleman in Leicestershire. By the qualities claimed for it, it would seem to be worthy of attention. Since our last issue was published, we have chanced upon a laudatory description of the plant and its culture, in the *Quarterly Journal of Agriculture* for 1832. The plant is described as the *Symphytum aspernum*, hardly perennial, of gigantic growth, introduced into England from the Caucasus in 1801, as an ornamental plant. After describing it botanically, the writer says that the seeds assume, as they ripen, a dark brown and finally black color, and, if not collected at a critical period, fall to the ground and are lost. Generally speaking, the seeds were not fertile if collected and sown the following spring; but, if allowed to fall and then planted with some of the earth gathered up with them, they would grow all right. Subject to this difficulty plants may be raised from seed; but, by separating the roots, they may be propagated indefinitely. This division may be done at any time when the owner may desire to increase his stock.

The writer we are quoting increased his stock from two plants to 40,000 in five years. It will grow in all soils and situations, he says; by the side of ditches, corners of fields, orchards and waste places, succeeding best in a stiff but pale sandy loam. It is very early in its habit, for at the time of the writing, at the end of April, a bushel basket of leaves had been stripped daily from a small patch and given to a cow, at a time when the grass on the same patch was only just assuming a green tint. A case is quoted where a single cutting yielded an average of 17 tons, 3 cwt. per acre, and as it is claimed it can be cut every six weeks, the immense weight obtainable can be seen.

Horses, says the writer, eagerly eat the leaves; cows, not so freely at first, but soon are as eager as horses; sheep and lambs take it freely; swine eat both leaves and stalk freely. With respect to tillage, it is recommended that, after the final gathering, the ground be ploughed between the rows and left over winter; in spring ploughed again, and a little mould brought toward the plants; and, when the ground gets trodden hard, it should be stirred again. The writer says that he never knew a plant to die, though cut continually. Some had stood more than 20 years and were in full vigor.

Applying the same kind of reasoning to the Prickly Comfrey as we used lately with respect to the Hullless oats, it may be said that a plant with so many virtues and known for so long would have come into general use if its culture had been found profitable; and such reasoning would be sound. But we are not aware that the *Symphytum* has ever been tested on this continent, and therefore the very reasons (if any) which have kept it from coming into general use in Britain, might not apply here. A plant of such remarkable tenacity of life, and with such healthy-looking roots (see engraving in last issue), would certainly be a heart-breaker to eradicate; and probably this fact has something to do with its non-culture. But the need of an early forage plant that will yield greatly and will stand our extremes of climate (and a Caucasian plant ought to be able to do this last), is now so universally recognized that the Comfrey is worthy of trial on a small scale. We shall be happy to record any facts in its favor or disfavor that our readers may discover.

Blue Grass—"Poa Pratensis."

The illustration on this page is of one of the most valuable of the pastures grasses—*Poa pratensis*, variously called in our language, Blue grass, Kentucky Blue grass, June grass, Green grass, Smooth-stalked Meadow grass, and Spear grass. This grass is easily influenced by soil and climate and hence its value is variously estimated in different localities. Thus, while the famous pastures of Kentucky, where animals fatten faster than elsewhere, and the fine meadows and pastures of the green mountains, in Vermont, are composed principally of this grass, in north and north-eastern Ohio it is thought to be an un-

desirable visitant to the farmer's fields, chiefly on account of its exceeding tenacity of life, and the difficulty of its eradication. Like the Canada thistle, it is blessed with creeping roots which render it indestructible by fire, frost or drouth. When once it gets fair possession, nothing but constant ploughing can extirpate it.

Poa pratensis is indigenous in Canada and the Northern States, but there are legends in Kentucky, dating back, of course, to Daniel Boone, that a family from England who accompanied that famous pioneer to Boonsboro, brought the seed with them; that, the seed being sown, the grass was found to be a nuisance, was rooted up and thrown over the fence, from there spreading all over the State. In parts of Pennsylvania, June grass grows spontaneously, it being only necessary to well manure the ground, when the grass comes in at once and grows luxuriantly. In parts of Illinois, June grass will spring up whenever the prairie has been depastured, though not a blade has been known to exist before, and it will grow so vigorously as to exclude the former prairie plants.

This grass is difficult to distinguish from its close ally, the Rough-stalked Meadow grass, *Poa trivialis*, illustrated in the CANADA FARMER of April last. A comparison of the engravings will show the difference between the flowering plants. The smoothness of the leaves and culms of the *pratensis*, which are rough in the *trivialis*, and the blunt



ligule (that is, the flat part of the leaf in contradistinction from the part enclosing the stem), which in the *trivialis* is long and acute, will also distinguish it. But the difference will be readily perceptible in the roots, which in the *pratensis* are creeping, and in the *trivialis* fibrous. Under a microscope the seeds of the *pratensis* may be distinguished from those of its ally by the former appearing hollow on the face. Those of the *trivialis* are shorter, rounder and flat on the face. The *pratensis*, the subject of this article, is much the more early grass, coming into flower three or four weeks earlier than the *trivialis*, and being superior to it in nearly all respects.

In the Woburn experiments, the production of *Poa pratensis* on an acre was 10,209 pounds, which lost 7,337 pounds in drying, and gave 279 pounds of nutritive matter. When the seed was ripe, it yielded 8,507 pounds to the acre, lost 5,104 pounds in drying and gave 199 pounds of nutritive matter. Of aftermath, it produced 4,033 pounds to the acre, that yielded 111 pounds of nutritive matter. The chemical analysis of its properties by Way and by Scheven and Ritthausen gave the following results:

	Way.	Scheven & R.
	pounds	pounds.
In a hundred pounds of grass there were found:		
Water	67.14	62 00
Albuminous or flesh forming matter	3.41	4 00
Fatty matter	0.86	1 10
Heat-forming principles.....	14 15	15.40
Woody fibre.....	12.49	15.60
Mineral matter and ash.....	1.95	1.90
	100.00	100.00

The difference in the above analysis illustrates the fact above alluded to, viz., the variable value set upon this grass in different locations. Its chief value is to the dairyman to whom it is, indeed, indispensable. The best butter cannot be made where blue grass is wholly missing from the pasture, and whenever the sweetest and best butter is made, this grass will be found one of the most abundant varieties. Its effects are also particularly marked on the cheese made from pastures in which it is a principal part. It imparts a peculiar high flavor to the cheese, and curd derived from it is converted quickly into a rich, salty article far superior to, and less difficult to make than cheese got from pastures in which Blue grass is not prevalent.

Blue grass is natural to Canada and will introduce itself everywhere. There are places on most farms, such as steep side hills, gorges and banks of streams, which are useless for arable purposes. These may be seeded with Blue grass, at the rate of about a bushel of cleaned seed, weighing fourteen pounds, per acre. For lawns, Blue grass is the grass, and should predominate in a mixture in which red-top, orchard grass, and creeping bent-grass may be included.

Alsike.

Alsike clover was discussed at a recent meeting of the Elmira, N. Y., Farmers' Club.

W. A. Armstrong said it makes good pasture while it lasts, but it has no such endurance as the native grasses, and except as pasture, in its brief season, will bear no comparison with our common clover.

Mr. Billings sowed the seed with great hopes of producing good and permanent pasture, but disappointment followed. He had ten or twelve acres seeded with alsike, and found it made but small growth, and the plants did not stay. There was nothing like the amount of feed expected from the descriptions given of growth elsewhere—much less than on average pastures of native grasses—and what there was, soon disappeared.

President Hoffman sowed alsike two years in succession. The first year after the seeding it looked well, and made fine growth in every case, the pasture being of fine quality, but that season was all in which there was anything to commend. He had some made into hay, which looked green and fresh, as if it would be dainty feed for cattle, but by his standard it proved very inferior.

R. C. Armstrong used it to a small extent, and with the same results. It made excellent pasture while it lasted, but as hay it was worthless. His cattle would not eat it. After the second year it all disappeared.

James McCann regards it as a complete failure.

RIBBON GRASS.—Referring to the article in the last CANADA FARMER on the above grass—*Phalaris Arundinacea*, (L. Gray, Wood,) *Phalaris Americana*, (Elliot, Barton, Eaton,) is certainly a native species, though not found near Toronto. Variety *picta* is Ribbon Grass. *Phalaris Canariensis*, (L. Gray, Wood;) is an introduced annual species, originally from the Canary Islands. The common names are Canary grass, Canary seed.—W. BRODIE, Toronto.

CUTTING GRASS EARLY.—I have been watching a grass field since last July, part of which was cut early with a mower, and the rest left three weeks later. The square block of two or three acres in the centre of the field, which was cut last, seemed almost killed all the fall. The grass was timothy, and very little aftermath appeared, while the outside of the field cut first was bright and green. The same result appears again this spring, and I judge the middle of the field will not yield a half ton of hay per acre, while the outside may go up to a ton and a half. The meadow is past its best, and if the owner is wise he will plough it up and plant it this spring preparatory to re-seeding. Even here the lack of growth last fall must make this part of the sod less valuable, even for ploughing under. Add to this that the early cut grass was best for hay, and it makes a strong case for early cutting. It is equally important for clover, and indeed unless clover is kept very closely cut or pastured the second season, so as to prevent its seeding, it is rarely worth keeping for grass the third year.—*Country Gentleman*.

ORCHARD AND BLUE GRASS.—A Kentucky correspondent of the *Southern Agriculturist* writes:—While I think there is no grass equal to blue grass, yet I like orchard grass in some respects better than blue grass. In the first place you can graze it two weeks earlier in the spring, which is a very decided advantage over blue grass. If you graze properly, its fattening qualities are equal, if not superior, to those of the blue grass. In the next place, if you have a good stand, it affords as much, if not more grazing to the acre, than blue grass. Again, I have seen blue and orchard grass in the same field or pasture, growing side by side; a drouth of some four or five weeks would cause the blue grass to become dry enough to burn, while the orchard grass will be green and luxuriant, comparatively speaking. This is another great advantage over blue grass.

Implements.

Perry's New York Hay-Tedder.

On this page is an illustration of Perry's New York Hay-Tedder, an implement for which many advantages are claimed over the tedders which have hitherto been introduced. Among other peculiarities, it will pick up the grass directly behind the wheels, leaving it light and floppy there as elsewhere. This advantage is obtained by the reel being placed far in the rear. It will be readily understood on inspecting the illustration.

The large space between the two lines of forks allows easy clearance, and the small distance in the same line between the tines prevents long grass or clover from getting entangled. The separation and disentanglement of the grass is thus made more complete and certain. The operator, who is accommodated with a comfortable spring seat in itself a great advance over most of the previously invented tedders—can readily and accurately adjust the reel to the ground surface by using a lever handily placed just back of his right side. The tedder wants no adjustment on ordinary rough places or dead furrows. It may be backed safely, during which backing the reel does not revolve.

The implement is light of draught, has few joints or wearing parts, and therefore is exceedingly durable, can be managed by a boy if necessary, and is strongly made and put together. Its work is claimed to be done in a thorough manner, the bottom grass being reached and laid lightly and uniformly. It teds at corners, and turns the same as elsewhere, and, as we have before said, back of the wheels as well as between them.

The machine is manufactured in Canada, solely by Noxon Bros., Ingersoll, Ont. It has won high testimonials during the two years in which it has been in use in the United States. Many prominent agriculturists of New York State and elsewhere give it their warmest recommendations. Among them, the well-known dairy authority, N. A. Willard, who has thoroughly tested it, regards it as without doubt the best tedder he has seen, and considers it will be "of great value to dairymen," and it follows, to all other farmers.

Two Valuable Inventions.—Road Scraper and Hog-Ringer.

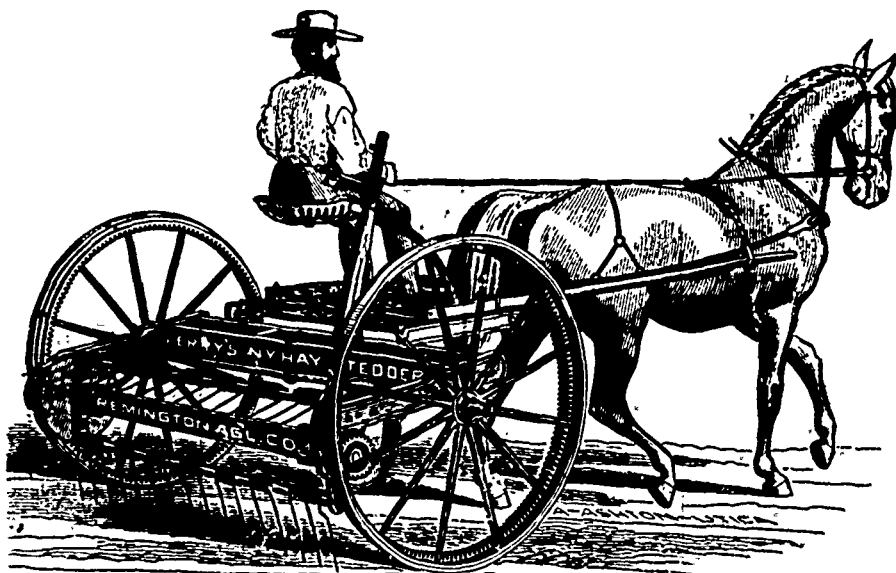
Mr. Beckwith, of Henrietta, N. Y., at a late meeting of the Farmers' Club, exhibited two inventions, which are valuable from their simplicity. The following account of them is sent to the *Country Gentleman*:

Some farmers in Henrietta have devised an improved road scraper. It consists of a heavy two-inch oak or hemlock plank, 11 feet long, and 12 to 14 inches wide. This is the scraper, and it is shod with a heavy iron plate. The peculiarity of this scraper is that the tongue is movable, being securely pinned at the end fastened to the scraper, while it can be moved sideways to make the scraper draw at an angle. This cuts down the ridge on the side on the track, and as the tongue can be moved more or less as desired, the dirt will be thrown into the centre of the road. When the tongue is moved sideways, a second pin fixes it securely in its place. Behind the scraper, on the opposite end from the tongue, is a small wheel with a lever attached, so that the end of the scraper may be raised at will. Thus in operation, the scraper is drawn so as to throw the dirt into the middle of the road, and carry it until some depression is reached, when the driver will raise the lever and "dump" the earth into the place where it is required.

A second device is for holding hogs by the neck and head while they are being rung. The hog is enticed to put his head between two upright bars, one of which is straight and firm, while the other is fastened at the bottom, and can at will be moved at the top and fastened. This movable bar is curved in such a shape that it gives room for a hog's neck, but not for his head, and thus fastened, piggy is safely held until the ring is placed in his snout. By setting the bars closer or farther apart, the contrivance will fit any sized animal. An inch board, five or six inches wide, will be strong enough for either of the bars, and the one which is not to be moved, and is not curved, need not be so wide. The device works well, costs little, and any farmer can make one, if I have made this description plain enough.

Hay-Caps.

We believe that hay-caps are not yet in use in Canada, probably from the notion that they are expensive and will not pay their cost. This is quite an erroneous notion. Caps a yard square, which is large enough, can be made from "Atlantic A" or yard-wide sheeting, which is the best material for the purpose, at very little cost. The retail price of the sheeting in Toronto is about fifteen cents a yard. Ten caps may be made to cover a ton of hay; the crop may thus be left in the field in safety until the whole can be carried to the barn. Then, the caps will be quite as useful for the barley as for the hay. Barley is frequently injured two or three cents a bushel by a heavy dew or a



slight shower; and is oftener injured double the amount by being hustled-up before it is ready in fear of a threatened storm. Neatly covered with the hay-cap, the hay or barley may be left out till the weather serves for gathering.

The following is a cheap dressing which may be applied to the caps to preserve them and render them thoroughly waterproof:—In a gallon of boiled linseed oil, stir thoroughly, a quarter of a pound of soft soap. Apply with a brush two or three coats, on one side only. This dressing will not crack when the canvas is doubled sharply, as will all dressings of which white lead is a part. If the dressing be applied on both sides, the canvas will rot.

HOW HORSE COLLARS ARE MADE.—The man first takes a piece of horse leather of the length required for the collar, and folds it in the double; a piece of burl which is to form the body sides is then sewn into it. This pipe is filled tightly with straw, then bent to the shape of the collar, forming the foundation. The edges of the body sides are then brought even to one of the edges left on the pipe. This is filled with straw to form the body side of the collar. The outside is then covered with a piece of horse leather called "afterwale," which finishes the collar. Rye straw is used for stuffing the piping, and this is combed clean before using it. It is then cut up into lengths of about six inches, and the workman takes up about as many of them as will, when doubled, fill the piping, and forces them in with a steel rod till they are tightly packed.

BASSWOOD RAILS.—If basswood timber, intended for rails, is cut about the beginning of June, the bark will then peel off freely, and the rails will dry quickly and thoroughly, and will last much longer than if the timber is cut in the winter.

The Profitableness of Good Tools.

Says a correspondent of the *Germania Telegraph*:
Few farms are supplied with enough good tools. Give an honest laborer just the implements he needs for his job, and he will do it in half the time it will take him if poorly equipped. Now a fork is better than a shovel to move manure. It will do the work quicker and easier. Coarse manure may be handled with a six-tined fork. Older and finer manure requires an eight-tined fork, while fine compost can be taken up rapidly with a ten-tined and twelve-tined fork.

A great deal of time is spent on farms spreading fine manure from carts on grass-lands. It is a paying operation. If done in autumn or winter it insures, on the right land, a good return. Some years ago I abandoned high sided, narrow cart-bodies for this work, and had them made extending from wheel to wheel, wider and lower-holding as much as before. Now every common-sense cart has a simple arrangement at the forward end, called a swivel. By this the load can be tilted so that it can be taken out easily. A common shovel is not the tool to lay out a load of fine manure. A strong, healthy man can easily take up from two to four shovelful of light manure without danger of hurting himself, and he should have for such work a many-tined steel fork.

We used to hire men to work on the farm for from twelve to sixteen dollars a month. Now they want double the money and a little smoother board than before. I am obliged to say that in the services performed there is a slight improvement. It seems doubly important that the right tool should be in every man's hand; one inducement, perhaps, to shorten the stories and the troublesome need of the refreshing pipe.

POTATO PLANTER.—An implement has been invented in the United States that we fancy will come into general use where potatoes are grown on a large scale. It is known as True's potato-planter. It opens the drill, cuts the seed, deposits the seeds at any required interval, together with a certain quantity of fertilizer, and closes the drill row, all at one operation. We saw one of the machines procured through Mr. Rennie, of Toronto, at work near the city a short time since. One man and team were planting potatoes with it as fast as the team could walk. With the exception of some minor difficulties caused solely by unfamiliarity with the principle of the implement, it appeared to be a success, and to perform all that is claimed for it.

A CHEAP CISTERN.—A cheap way to construct a cistern is to make a box two feet square and two and one-half feet long, and sink it two feet into the ground. Digging is then begun at the bottom of the box, the earth raised through it, and an egg shaped cavity made. Care must be had not to make the cavity so wide as to allow the earth to cave in on the workman. If the soil is hard, and there is no pressure of water towards the cistern, it can be made very good by plastering with water lime cement on the earth. It is so far below the surface that frost will not hurt the cement. A good cover should be put on the top of the box, and a pump put in the cistern.—*Country Gentleman*.

TO KEEP CAST IRON FROM RUSTING.—According to the *English Mechanic*, cast iron may be best preserved from rust "by heating it till if touched with fat it causes it to fizzle" and then plunging into a vat of mixed oil and grease. It is said that "the oleagenous matter actually penetrates the pores, and prevents oxidation for a very long time, while it does not prevent painting, if desirable, afterward."

HARNES POLISH.—The following is a good recipe which will give saddles and bridles a good polish, and be entirely free from all stickiness: The whites of three eggs evaporated till the substance left resembles the common gum, dissolved in a pint of gin, and put into a common wine bottle, and filled up with water.

A WEIGHING ATTACHMENT for common pitch-forks has been patented on the other side, and is sold at \$1.50. It is claimed that this will show the weight of hay or straw taken at each lift.

KEEP YOUR HOES constantly bright and sharp; spades also; and if you have a power grind-stone, it will pay to grind coulters, cultivator teeth, and plough-points.

Horticulture.

THE ORCHARD.

Plums at Owen Sound.

EDITOR CANADA FARMER:—One of your correspondents, in the March number, wishes some one to state if there is any plum in Canada, perfectly hardy, a good and early bearer, and curculio proof. Plums hardy, good and early bearers, may be found, but I do not know if there be any variety curculio proof. But I can assure him that the vicinity of the Town of Owen Sound is curculio-proof. Neither the Little Turk, the borer, the leaf-rolling insect, nor the apple-tree blight has yet visited this part of the country.

Whilst apples, pears, grapes, and, in some places, peaches ripen well, yet the plum may be considered a speciality, as plums of every variety do well, and bear abundantly. Some years ago, they were a drug in the market, but since the completion of the T. G. & B. Railway to the town, they can be sent off to any part of the country where there may be a failure. Two years ago 2,000 bushels were shipped off, the greater part by two speculators, to New York, where they were then selling for \$10 per bushel, while some found their way to the North shore and Lake Superior, by schooners and steamers.

Any person who understands the method of drying plums in a kiln for making prunes, might do well in that line here, by purchasing a lot of land, and planting some hundreds of plum-trees. The Black Knot is the only enemy the plum has to contend against here, and even that does not appear to be general. The fire blight has proved troublesome amongst the dwarf pears in some places, but that may be checked by cutting off all the branches close to the forks of the tree, and allowing them to sprout again, as they will do.

It is certainly very singular that plum-trees, in Canada, seldom last more than ten or twelve years, whilst, in the West of England, plum orchards, where I used to go in the fall for a supply of plums, nearly thirty years ago, are still as flourishing as ever. Perhaps our climate is too stimulating, but whatever is the reason such is the fact.

SARAWAK.

Buckwheat for Orchards.

For some reason, buckwheat, which is not much of a crop in itself, is found to be just the thing for growing in orchards. The dense shade afforded by the plant keeps the ground light and friable, and this tendency is further increased by ploughing under the green buckwheat at least once a year. If the orchard is old, it is as well not to try to grow the grain, but keep a succession of growths through the year to be turned under when in blossom.

Buckwheat is usually cheap, and needs only half a bushel per acre for seed. If allowed to ripen a crop occasionally, what is accidentally scattered will furnish sufficient seeding. This is the cheapest mode of keeping large orchards in good condition, as the grand requisite is to keep the soil, especially the surface soil loose. Clover injures the growth of young trees, and it takes two years to get a crop ready to plough under.

A new advantage of buckwheat is, that when rightly managed, it becomes an aid in fighting the codling moth. If the trees are kept smooth and no chance for a lodgment of the worm on the trunk, many will hide in the stalks of buckwheat. Ploughing the ground just before winter sets in, destroys the enemy, as it winters in the pupa state, and cannot live in contact with moist earth. Where all the loose stuff, weeds, and rubbish are ploughed under, just before freezing, thousands of the codling moth are destroyed, thus greatly lessening the evil the following season. This has been practically tested by apple-growers of the Grand Traverse (Mic.) region, who had buckwheat the best crop to keep their orchards in good condition.—*Cor. New York Times.*

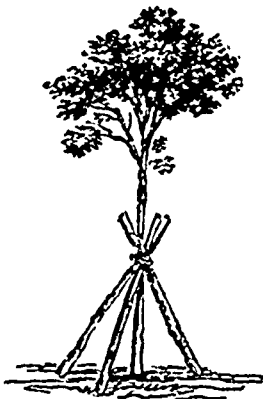
LIME FOR THE CODLING MOTH—Dr Hull, a noted horticulturist of Illinois, says that his lime remedy for the codling moth has proved completely effectual. The lime is thrown into the trees when the dew is on, or just after a rain, and after the fruit is set. A dipper or large spoon may be used—or best of all, a bellows made for the purpose. The insects "will not go where the lime is scattered," he remarks—"they go away."

Staking Newly-Planted Trees.

It is necessary in planting out young trees that they have a support furnished them to enable them to withstand the shaking and consequent displacement of their roots from the pressure of heavy winds. The usual way is to drive a stake by the side of the young tree and to tie the two together. There are some objections to this rough-and-ready process that a little forethought and trouble may abolish. If only a single stake be used, drive the stake deeply before the tree is planted. No injury will then be done to the roots of the young tree, as will be the case if the stake be driven after the tree is planted. In tying the tree to the stake, also, there is room for the exercise of common sense. The best mode will be to tie with twisted hay, crossing the band between the tree and the stake, making a figure of eight. The tree will thus be held immovable, and will not be chafed by rubbing against the stake.

With expensive trees it will pay to be more careful in staking, in order to prevent them being blown out of the ground or out of perpendicular. Instead of a single stake, use three, as in the engraving, tied at the point of crossing with twisted hay, soft rags, or something of a similar character, a piece of matting being first wrapped round the tree. By using three stakes, which enter the ground away from the roots of the young tree, an objection attending the use of a single stake, however well put in, is dispensed with; and, that is, the growth of the mycelium of fungi among the roots of the tree from the decay of the load wood of the stake.

The use of three stakes also allows the tree to oscillate



little, and recover itself by its own elasticity without in the least loosening the roots. In the spring following the first year after planting, the stakes may generally be drawn up, and the trees considered to have anchored themselves properly.

The Codling Moth.

The forthcoming report of the Michigan State Board of Agriculture will contain a valuable paper from Prof. Cook of the State Agricultural College. Included in the paper are some particulars about the codling moth, which we reproduce from advance sheets of the report.

All will concede that the codling moth holds first rank among our insect pests.

The little gray moths come forth in May and June, are wholly nocturnal, and therefore seldom seen. As soon as the fruit forms, a single egg is laid on the blossom end of the fruit; and as soon as the egg hatches the larva enters the apple. All know the subsequent history of the larva in the fruit, for who has not seen the tiny white caterpillar, with its black head musing away at the rich pulp, which it replaces with filth? In three weeks the larva matures, leaves the apple, and in some concealed place spins a silken cocoon and assumes the chrysalis state. In from nine to fifteen days, varying with the temperature, the moth issues. The apples are again stocked with eggs as before, after which comes a recurrence of all the disgusting work narrated above, except that the larva, upon leaving the apple, simply spin cocoons, in which they remain till spring, when they pupate; and in about two weeks the first moths appear.

The time when the first moths come forth varies from May 1 till July 1; so that moths will be issuing from May 1 till August 1, and the "worms" will be leaving the apples from the last of June till the fruit is gathered. My own experience seems to show that no pupae are formed after the first week of August, so, as far as I have examined, all larvae that leave the apples after that time simply spin a cocoon, in which they remain as larvae till the next spring. Some of the observing fruit-men of our

state think that during the past season many of these insects pupated after that time. Such cases came not within my observation.

Of those larvae which leave the apple while it still hangs on the tree, about one-half crawl down, till beneath some bark or in some crevice they find a seclusion in which to spin unobserved. Those which fall to the ground with the fruit crawl out; and if the ground is free from all rubbish, stumps, &c., they crawl up the tree and hide as before.

Place around the trunk of every bearing tree, midway between the ground and branches, a woolen cloth about five inches wide, and sufficiently long to lap enough to tuck. This may be fastened with one or two tacks. I have usually found one placed in the middle to be quite sufficient. The tack should not be driven quite up to the head. Before the cloth band is adjusted, the loose bark should be scraped off. This may be done earlier in the season, when time will best permit. The bands should be adjusted by June 20. Urge these bands the "worms" will secrete themselves. By July 7 the bands around the earliest apple trees should be unwound and examined, and the larvae destroyed. This can be done by passing the bands through a wringer, or by unwinding and crushing with the thumb. I have found this last method the best. Every ten days after the first round—every nine days if the weather is dry and warm—this work should be repeated, till the last week of August, and again at the close of the season after the fruit is gathered. A common carpet tack hammer, with good claw, suspended around the neck by a cord, will be found an advantage.

Many apples will be carried to the cellar with the larva still in them. These, unless destroyed, will go through their changes. Hence all barrels, bins, and boxes in the cellar should be examined. In knocking a box to pieces a few days ago (March 13), procured from a neighbor's cellar, I found over 100 larvae concealed between where the boards were nailed together. These were placed in a box, and all but two again spun cocoons. We cannot hope to find nearly all of these, it would be well if the apple cellar were so arranged as to preclude the moths from issuing forth. It would be excellent policy to have our cellars so close that not a moth could escape in May and June. Were all cellars so fixed this spring it would be a great benefit, for I can find no live larvae out in the orchards. In examining an orchard last week (April 27) I found over 100 cocoons. From more than one-third of these the insects had been taken by the sap-sucker (*Picus villosus*), while all the others, either from cold or some other cause, were dead. I never saw such codling moth mortality before this spring. Fires, and jars of sweetened water, will have no effect in destroying these moths, as I have proved that neither attract them. Hogs turned into the orchard are but a partial remedy, as at least half of the larvae never go to the ground at all.

SOIL FOR FRUIT.—The *Gardener's Monthly* gives briefly the following rules for selecting the best soils for the different fruits: "A light, dryish soil for the peach; a strong loamy soil for the pear; nearly the same for the plum; a heavy loam for the apple—if on limestone, all the better; and for the cherry a soil similar to that of the peach."

PROTECTING ORCHARDS.—Suel Foster says that he is now, after much observation and experience, "fully satisfied that orchards should be ploughed every year; the less grass the better. Plough in late fall and early spring." Of his own orchard he says: "I know of none, nor have I seen or heard of one in this country, that is this year so productive. I have kept it under the plough all the time, usually with a crop of potatoes or corn; no manure."

THE SAP-SUCKERS vs. INSECT PESTS.—Our readers will observe on this page, in the article on the Codling Moth, by Prof. A. J. Cook of the Michigan College, that one of the sapsuckers, the *Picus villosus*, is set down as a most formidable enemy to the Codling Moth, *Carpocapsa pomonella*. Taken in conjunction with the article in the last CANADA FARMER, wherein Mr. Brodie of Toronto records his discovery that another sap-sucker, the *Picus pubescens*, is a persistent destroyer of the Apple Moth, *Attacus Cecropia*, a clear case is made out on behalf of these birds, entitling them to the protection of all orchardists and lovers of fruit.

STOPPAGE OF DRAINS BY ROOTS.—In a paper lately read before the Edinburgh Botanical Society, a case was mentioned where a two-inch pipe, with sockets, laid in an orchard a foot below the surface, was completely filled with roots of an apple tree. In another a root had entered a lead pipe and grown and branched into numerous fibres, which filled the pipe for a considerable distance. The strangest case was where a willow growing near a dam sent roots 25 feet beneath a road, and penetrated a large leaden drain-pipe seven feet below the surface, and stopped it. The pipe was taken up and cleared, and the tree cut down. The drain was re-laid, but was some time afterwards again stopped. It was then found, that the stump which had sprouted, had sent a mass of rootlets into the drain, which had filled the pipe solidly; although their connection with the tree was only by a single fibrous rootlet.

THE FRUIT GARDEN.

Grapes for the Colder Parts of Canada.

Mr W W Smith Phillipsburgh, Quebec, writes that in all the Eastern Townships he is certain that grapes can be ripened in the open and his experience will be valuable to all those parts of Canada which are remote from lake influence. In his vineyard, the Adirondack is completely successful. Bunches, large and long, shouldered and compact, berries large and round, nearly black, covered with bloom, skin thin, flesh melting, no perceptible pulp, possessing a most refreshing flavor; ripens, Sept. 1st. Rogers' Hybrid No 3., Rogers' No. 33, are valuable and ripen, the former with the latter, a little later than the Adirondack. Hartford Prolific is successful and ripens a little later; with it ripens Walton, Martha, Rebecca. Concord is exceedingly vigorous and productive, and ripens Sept. 20th; with it the Delaware comes to perfection. Diana, Union Village, ripen a little later than the Concord.

Mr. Smith gives some brief directions for culture which will be especially acceptable to all whose land is not benefited by the modifying influence of large bodies of open water in winter. He says:—Soil, location, protection, and moderately rich black loam, with a sprinkling of gravelly limestone is, no doubt, the best, but any land suitable for wheat or corn will answer.

It must be naturally dry or thoroughly drained, with a southern, or south-western aspect, and a full exposure to the morning sun—and above all, thoroughly sheltered from the effects of our cold harsh winds—so disastrous to the grape. For this purpose a close board fence, on the north and north-west, say seven feet high, would form a good protection. Of course a wall would be better, but the former will answer a very good purpose. In our latitude (45 parallel), winter protection is also indispensable. Some of the above named varieties might escape being winter killed, but should they live, would likely be feeble and unproductive. Hence, the hardiest sorts should be laid down, just before the ground freezes up, and covered with a few inches of earth just sufficient to protect them from the changes of the weather.

We trust that none of our readers have been driven out of grape culture by the lowness of the price last season. Low as were prices then, they were compensated for by an abundance in quantity. We doubt if many growers actually lost money, had as the times were.

Pruning the Grapevine.

You can do almost anything with a grapevine if you understand it and apply the means; it is so susceptible to change of direction. Give it the proper soil and situation, and you can advance its growth amazingly. And you can direct this growth at will equally amazingly. You can grow wood, fruit, or both, of course with exceptions. But by growing the one you will lessen the other. You cannot grow fruit and wood largely at the same time—not generally. You can, however, grow a good crop of each with the proper knowledge and care, soil, treatment and climate suitable. The aim should always be, a balance between fruit and wood, as also an avoidance of excess and lack of growth. The medium course is found to be the true course. Then you get a fair to good growth of fruit of good quality, a good healthy growth of wood, and yearly growth of both wood and fruit, because the vigor is retained and continued all goes on like a perfect machine kept in good order without strain. In such cases you can bear, and indeed require, to have a good soil—not rich, necessarily, but one favorable to a good sound growth, which has reference to the mechanical, hygrometric, barometric, and other conditions of the soil, rather than to fertility—which in the main should not be great; expansion of the roots and a well aerated soil being of more account than high manuring, to connect quality of fruit with growth. Land cannot, therefore, be too deeply and thoroughly drained and disintegrated for the grape giving chance for its roots without danger from mouldiness or rot, or the evils referred to a wet soil.

Having, then, the proper soil, also the proper situation and climate—warm, dry atmosphere—there will remain only the task of directing the vine; and this is of equal importance with the provision for its roots. Let it go unchecked, and there will generally be little fruit. Cut close (the wood), and, with our American sorts, there will be disease and various mischief. The overgrowth of fruit will defeat itself, will hurt (exhaust) the vine, which will show the year following in lack, and perhaps failure of a

crop, the growth of the wood being suspended entirely in some parts of the vine, the frost of winter getting the credit. This is done by close pruning; especially summer pruning. It shows how easily the vine may be directed. If the shears had been withheld, there would have been an entirely different state of things—a large wood growth—a small, straggling fruit yield, lacking in quality and quantity, and good bunches; but the vine would have been healthy and remained vigorous; yet it would have defeated its purpose—fruit.

The course between would have remedied all. Excesses of all kinds must be avoided with the grape; it cannot bear them. Though the promoter of excess (intemperance), it requires moderation, care and delicacy of treatment, varying with some of the sorts, but generally the rule. There is a delicacy that cannot be overlooked; it must be respected. Then the vine will show a fine bloom and vigor; and then its wine as well as its clustered fruit will be what art and song have so fascinatingly described.—*Cor. Country Gentleman.*

THE FLOWER GARDEN.

Salpiglossis Pinnata.

The *Salpiglossis Pinnata* is a Chilean plant half-hardy in this latitude. In its native home it is a perennial, but in cultivation here in the open air it is treated as an annual. The variety illustrated on this page is the *Hybrida*, the flowers of which are iron-brown and yellow, veined with



brown, and funnel-shaped something like those of the *Petunia*, but not so broad and more delicate. The plant grows from one and a half to two feet high. It should be started early in a hot bed and planted out in a mixture of loam and sand enriched with rotted horse manure and a little leaf mould. It does not succeed so well on rich soil. We are obliged to Mr. Rennie of Toronto for the cut.

Some Ferns Found near Toronto.

EDITOR CANADA FARMER.—I was pleased to see in your last issue an article on the ferns found on this portion of the North American continent. Now that you have directed attention to these most beautiful objects, the study of which is one of the most interesting branches of botany, I hope to see an interest shown in them similar to that now exhibited in England, and *longo intervallo*, in some parts of the United States.

The increase in the interest taken in the hardy ferns in Great Britain is somewhat surprising. In the windows of the cottagers, in the artificial rockeries of the wealthy, in the shady corners of the middle class gardens, will be seen the delicate fronds of the ferns in their endless variety of shade and shape, atoning by the length of their season of

show for their being put out of countenance by more gaily flowers during the brief season of the latter's beauty.

Canada, we are told, cannot by any means be called a country of ferns; but there are here many beautiful varieties that will not grow in England without artificial heat, and this atones for the absence of some varieties which require more moisture than our drier atmosphere will furnish. As an illustration, I will mention a few varieties which I saw within a few yards of each other, not three miles from Toronto, on the Queen's Birthday. These were.—*Pteris aquilina*, *Phegopteris dryopteris*, *Oenoclea sensibilis*, *Adiantum pedatum*, *Aspidium filix mas*, *Aspidium marginale*, *Aspidium spinulosum*, *Osmunda cinnamomea*, *Botrychium Virginicum*, *Aspidium acrostichoides*, *Cystopteris fragilis*, *Struthiopteris Germanica*, *Aspidium thelypteris*, *Asplenium thelypteroides*. This is pretty well for a country which is not a fern country, and I do not pretend to say that this was all that was there. No doubt there were more about, but the season is so late that they had not put forth their fronds. If I discover more, I will, if you approve of it, send you a list of them. C. A. G.

Toronto, Ont.

We shall be glad to receive the names of ferns, or other plants found growing in any section of the Dominion. If our readers would like the varieties growing in their neighborhood named, we shall be happy to assist them. On receiving specimens we will assign them their proper epithets as nearly as we can.

Trustworthy Geraniums.

A friend asks for my opinion relative to the best varieties of the geranium for bedding purposes. After testing a very large number, I feel prepared to say that for a good scarlet zonal, I prefer the Gen. Grant. It is not perfect, either in the truss or individual flower, but the hotter the situation, it appears to me, the better will be the bloom. I like it because it is always brilliant with flowers under all circumstances. For a pink, nothing can surpass the Master Christine. It is a wonderful bloomer, covering the foliage with its beautiful trusses, and keeping up a succession all summer long. It flowers equally as well when potted, and continues this character during the winter. These two form the cream of the collection for show, but there are others that may make a name in the future; for instance, Jean Sisley is a brilliant scarlet with white eye, is perfect in form, blooms well, and has a prospect of "going up head." Among bronzes, I prefer Beauty of Calderdale, a very distinctly marked variety, bearing the sun well, and excellent for ribbon gardening. A golden variegated variety of great promise is the Crystal Palace Gem, which appears to withstand the effect of the sun better than any other of its class, a desideratum long looked for, and possibly now attained. I have nothing to say against the large list of choice kinds now being tested in this country, some of which are very beautiful, but the larger portion seem to lack in some important particular. I have as much faith in a new variety just introduced as any with which I am acquainted—the Jewell; it is a remarkably dwarf form, a profuse bloomer, very brilliant in color, very double, and beds out well, but whether it will retain all these characters as well in the future remains to be seen.—*New York Tribune.*

DOUBLE DAISIES.—The *Gardeners' Monthly* says: The English Daisy—Gowan of the Scotch poets—has been improved from time to time. Just now the "Victoria" strain is becoming popular in Europe. They are very beautiful in American spring gardening; but are somewhat difficult to get through our hot dry summers. Under the moisture of a hot bed sash, they got through very well, or in any similar place where they will not be subjected to a very dry summer air.

INSECTS AND FLOWERS.—In a lecture delivered a short time ago at the London Institution, Sir John Lubbock said.—"The observations commenced by Sprengel and recommended by Darwin seemed to have given to flowers an additional interest, and had shown that insects, and especially bees, had an importance previously unsuspected. To them we owe the beauties of our gardens and the sweetness of our fields. To them flowers were indebted for their scent and color, indeed their very existence in its present form. Not only had the brilliant colors, the sweet smell, and the honey of flowers been gradually developed by the unconscious agency of insects, but the very arrangements of the colours, the circular bands, and the radiating lines, the form, size and position of the petals, the arrangement of the stamens and pistil—all had reference to the visits of insects, and were disposed in such a manner as to ensure the great object which these visits were destined to effect."

THE VEGETABLE GARDEN.

Melon-Culture—Remedies for the Striped Bug, etc.

One of the chief annoyances attending the raising of melons is the loss suffered by the depredations of the striped bug, or rather beetle, the larva of which preys upon the roots, and the mature insect upon the leaves of the cucumber family. Various remedies are used against these pests. An effective one is Paris green in water, with which the vines may be sprayed. A good teaspoonful to ten quarts of water will be strong enough. We do not recommend the use of Paris green, even to potatoes, for reasons which we have already fully explained. Another good plan is to cover over the young plants with boxes with gauze tops, taking precaution first to kill all the insects inside the box.

Picking by hand is the most effective remedy, but is somewhat laborious. Still, if diligence be used at first, there will be no second broods to hatch multiplied by the indefinite number to which our insect enemies delight to propagate themselves. Sprinkling with ashes, plaster, air-slacked lime, or soot, are also good remedies. The beetles may also be trapped under chips, etc., in great numbers. And the striped epicureans may be betrayed by means of their affections by the planting here and there of a squash, to which they will resort in preference to the less toothsome melon. As soon as the rough leaves are formed, the danger may be considered over, and the beetle will seek something more suited to its refined and discriminating palate.

As soon as the vines begin to run, it will pay to cover the earth between plants with brush. This assists in retaining the moisture and keeping the ground free from weeds, and it is said to cause the melons to ripen quicker and more evenly. When the vines get too luxuriant, pinch off the leading shoots. Thin out the fruit, if it sets too numerous, when quite small. By doing this, the size of those left on will be increased, and they will be more vigorous.

The plants will want watering liberally during the hot weather; and, while in the younger stages, a liberal dose of liquid manure, twice a week will leave its mark. If very hot and dry weather come on, in place of watering the whole surface, dig a hole by each hill, and in that hole pour the soap-suds and liquid wash from the house; and as the farmer himself, or the help, will carry the bucket, two burds will be killed with one stone—for the melons will be watered, and the housewife relieved of a heavy lift.

Raising and Storing Onions.

James Holdauer of Buffalo, N.Y., is very successful in raising onions. He has raised as many as 7,000 bushels in a single year, and stored 5,000 through the winter. His building was once an open shed, 30 feet long, 18 feet wide, and with posts 11 feet long. He put in three floors, having the first on the sills, the next 4½ feet above the first, and the third 4½ feet above the second. The sides were filled with sawdust one foot in thickness. He never has the onions more than three feet deep, and prefers not to fill his house more than 2½ feet deep, leaving the space for air to circulate over them until the weather compels him to close up, shutting up the little windows, and filling the space with straw as close as possible.

As success does not all depend upon housing, I will, as briefly as possible, give you his method of raising and curing. He manures with well rotted manure, ploughs it in the fall, if possible, thereby gaining a few days, should the season be late. Fits the ground well, and sows the seed as follows: Two rows, 10 inches apart; a space of 20 inches is left, and so on until the whole field is planted. The 20-inch space is kept clean with a cultivator. The field must be kept clean from weeds, and when the onions are ripe, take them up. His plan is to pull up two double rows and clean the space occupied by them, then pull up four rows on each side and spread them out, turning them occasionally until the tops are dry. Should there be any green ones (as there will be), throw them out and keep them out.

He says he finds it the cheapest way to take them up to put them in bags to take to the onion house. His success in keeping them in a sound condition depends upon having them sound and handled carefully, and not allowing them to sweat or freeze.—*New England Farmer.*

How to Raise Potatoes from Cuttings.

All CANADA FARMER readers who are interested in the new varieties of potatoes are also interested in any process by which the expensive tubers may be made to yield as large a return as possible. To such gentlemen a description of the process by which potatoes may be raised from cuttings so that a pound of medium sized potatoes containing, say four tubers, may be made to yield three thousand pounds in a single season, will possess a lively interest. It is from the *London Garden*, a perfectly reliable source, that we gather the particulars.

The potatoes to be propagated must be divided lengthwise, and the pieces laid with the cut side down upon the soil of the hot-bed. Keep them perfectly dry until the top part has healed over and the sprouts have commenced to start. When the sprouts reach the height of three or four inches, cut them off about half-an-inch above the eye, and insert the ends of the cuttings thus obtained into the soil of the hot-bed. Shade them from the sun, and water carefully until they are well rooted and the leaves begin to develop.

The old pieces of the potato will continue to throw up shoots to an almost incredible number, and these are all to be removed, as soon as strong enough, in the same manner as the first ones. In order to increase the crop still more, as soon as these cuttings have reached the height of eight inches, their tops may also be removed, and planted in the same manner as the slips from the potato. As soon as the ground becomes warm and can be worked, prepare it as is usual in planting the tubers, and set out these young plants. It is best to transplant them on some cloudy day or towards evening, as the hot sun withers them and destroys many, if planted in the hot part of the day.

These plants will be found to grow very rapidly, and can be propagated indefinitely from cuttings of the older plants. No cuttings should be taken after the first of August, [this is referring to England], as they are liable to be destroyed by the cold weather before the crop is matured.

The immense increase of stock by the use of this method may be illustrated as follows; a pound usually contains four medium-sized potatoes, and there are from twelve to twenty eyes on each tuber. When cut and sprouted they will give, at least, five hundred plants. From each of these plants three cuttings may be taken, which gives a total of two thousand plants to be set in the ground. With the ordinary yield, each hill, at the lowest estimate, would give one-and-a-half pounds, or three thousand pounds; in all making about eighteen barrels of good, sound potatoes, or a year's supply for a large family.

This is no new experiment but one which has been practised by the knowing ones for some years. We opine that it has something to do with the miraculous 1000 to one yields which we occasionally see reported. Of course it would only pay with the newer and more expensive varieties.

BOARDS BETWEEN ROWS.—The *New York Tribune* has a correspondent who, in endeavoring to shirk his share of the primeval curse, succeeded somewhat better than do the general run of lazy people. He had made up his mind to beat the weeds in his celery and onion patches, and with that view laid down boards between the rows. He not only beat the weeds, but the plants put in an appearance several days sooner than those without boards, and grew much faster for several weeks. He has practised this plan for two seasons with the same favorable result. Boards should be two inches narrower than the space between rows; if, for example, rows are six inches apart, let boards be four inches wide. Slabs are preferable, as they will not cap and warp as boards do. If boards are used, they will need to be turned frequently.

GRAFTING CABBAGES.—A correspondent of the *Gardeners Record* states he has grafted Cabbages successfully. For this purpose I made choice, he says, of two varieties of Cabbages—Enfield Market as the stock, and the Red Dutch as the graft, choosing the darkest plant that my seed bed then afforded. The grafting was performed at the end of April, 1872; they united very freely, and the scion grew very luxuriantly. It is well known that, under ordinary circumstances, each of these cabbages produces very close, firm heads, but in this case the graft showed no inclination to do so; it remained open, with a slightly apparent dash of stock blood. At the end of spring, 1873, it threw up a very strong, straggling, flowering stem, from 7 feet to 8 feet in height, the individual flowers being particularly large, but by no means abundant, consequently the quantity of seed ripened was not large.

During the first week of February, 1874, a portion of the seed was sown, the result of which is that I have obtained a somewhat interesting lot of cabbages. Kale plants (very dark and curled, nearly, if not altogether, as dark as such as Dell's and Belvoir Castle Beet), Savoys, and Red Cabbage, a considerable number partaking of the character of the stock family. Although imbued with the blood of the graft, that of the stock predominates in the majority of cases, and, strange to say, all the progeny appear to be more or less deficient of the tendency to cabbage.

Digging in Market Gardens.

Market gardeners are particularly careful that their ground is deeply dug once a year if it is not trenched; and, as a rule, it is slightly dug over for every successive crop. Ground that is merely dug over one winter has most probably been double dug or trenched the previous one; hence, there is not so much necessity for trenching it so soon again. In digging, the ground is first of all cleared of the refuse vegetables on the surface, which are forked out of the ground, raked or gathered into heaps, and carted to the manure heap or to the piggery. If manure is to be applied, it is done at once, and is spread equally over the surface, short or well-decayed manure being preferable to rank material.

The plot of ground, if an open one, is then marked off into strips, say 12 paces wide. This done, about as many men are set to work in a line as the piece is paces wide, digging right abreast of them, and not going from side to side of the piece the whole length of the opening, as is commonly done in private gardens. No soil is thrown out of the opening at first to be carted to the other end of the field, to fill in the opening at the end, but it should be cast a little to one side; close up the opening at the end of the next strip when coming back. More frequently, however, no notice whatever is taken of laying aside the soil excavated from the opening, digging merely commencing at the shallowest end.

Permanent roots, if any, such as those of sea-kale, horse-radish, parsnips, onions, and the like that may exist in the soil at the time of digging, are carefully picked up and thrown in a heap on the top of the dug ground, from which they are afterwards gathered. In digging between a plantation of fruit trees or bushes, it sometimes occurs that, were all the men placed abreast across the whole space, they would be too thick to work conveniently; hence, a few are placed in each alternate row going the one way, and they dig the other when coming back.

Digging amongst fruit trees is done every year, and that deeply too, adding large quantities of manure at the same time. When one crop is removed, and the ground is not already occupied with some other catch crop, it is slightly dug and lined off for another. In the case of borders that have been trenched in due season, and have been cleared of their crops in early summer, the ground sometimes, in place of being re-dug, is merely gone over and loosened with a three-toed hack; but no manure must be given in this case.—*Garden.*

REMEDIES FOR CABBAGE WORMS.—Hellebore, lime, salt, and similar substances, have been used with varied success for the destruction of cabbage worms. It is now stated that bran and buckwheat flour answer the purpose better than any other remedies that have been tried. The bran is simply dusted over the infested cabbages as soon as the worms make their appearance. If the worms are very thick, about a handful of bran is required to each cabbage head, and sometimes it is necessary to go over the plants a second time. A hundred weight of bran is sufficient for an acre. It must be applied when the worms are young. When they are full-grown or very strong, it does not appear to affect them. The buckwheat flour is sifted upon them by means of a sieve, in the evening or in the morning—when the dew is on the plants. If one application does not destroy the worms, a second one should be made. It is probable that wheat flour, fine Indian meal, or any other pulverulent farinaceous substance would have the same effect.—*American Garden.*

HOT WATER FOR CABBAGE WORMS.—We tried, last year, a number of remedies for the cabbage worm, an insect too well known to many persons as a voracious eater of the pulp of the leaf. The sprinkling of red pepper did well; but the best, simplest, cheapest and most efficient was applying hot water. It may be wrongly applied, to the injury or destruction of the plant; and it may be properly applied, doing no injury, and killing the insects. Fill a watering-pot with boiling water, and sprinkle the infested leaves only for a second or two. It doesn't work very quickly on the worms; but the leaves being thick are not heated nor injured. The older the heads become, the less the danger. The operator must practice and spoil a few plants to save the rest. The water, by the time it reaches the plants, will be several degrees below boiling; he must determine by trying how long the hot water will do its work ere becoming too cold. At the same time he must ascertain by experiment how long he can contrive to apply the hot water before the leaves are injured by it, a very little time will determine these points.—*Country Gentleman.*

The Breeder and Grazier.

The Sheep Gad-Fly,—"Estrus Ovis."

The flock-master suffers much loss, and his sheep much agony, from the attention of the Gad-fly, *Estrus Ovis*, which in summer abounds in shady places. The fly endeavors to lay its eggs in the nostrils, and in the thin membrane at the upper part of the nose between the eyes of his sheep. The poor animals will try every means in their power to evade their tormentors, and may be seen shaking their heads and running violently with their noses close to the earth.

As soon as the eggs are hatched, the grubs crawl up into the frontal and maxillary sinuses, and, it is supposed, feed upon the mucous secretions of the membrane covering the sinuses. There are various remedies used for dislodging the grubs, none of which remedies amount to a great deal, however. Some syringe the nostrils with Scotch snuff or whiskey. Some grubs may be dislodged thus, but most of them will be too far up to be affected. Spirits of turpentine are used by some persons, but it is rather too severe a remedy. Others hold the head of the sheep over the fumes of burning tobacco, with the same object of dislodging the grubs by the violent sneezing induced.

The true remedy, and the only efficacious one, is to prevent the laying of the eggs by the aneasing of some viscous substance, such as tar, over the parts through which the fly will attempt to lay her eggs. As each animal is sheared, a broad band of tar can be readily put across its face under its eyes, laying the tar on as thickly as it will adhere. The fly's ovipositor cannot pierce through this substance, Common sense would also indicate that the sheep should be kept away from bushes and trees when the gad-fly is close to be around.

Washing and Shearing Sheep.

Indiscriminate washing of sheep, previous to shearing, whether they really want it or not, is now going out of fashion. The wool, no matter how cleanly washed, will not be used by the manufacturer without a thorough scouring, and it is now a settled thing with many intelligent farmers that the few cents a pound extra that washed wool will bring, will not compensate for the cost of the labor of washing and the danger to the health of the sheep and the men employed to wash them. Only those sheep the fleeces of which are soiled with mud or dung are now washed.

Shearing, to the onlooker, is a very simple affair. But when the beginner has tried his hand, he will realize how perversely shears can cut, how easy it is to snip out about a pound of mutton, and how difficult not to balance the error by leaving on one extra pound of wool. When, too, he has had a fair trial of strength with an old ram, he will begin to wonder if there is not some magic in the art, as he sees the "old hand" coolly snipping away, the sheep lying contentedly or giving up after a few futile kicks. Facility with the shears can only be acquired by practice, and the best school is to watch a skilful operator and acquire the trick from him. A study of the following from an "old hand" of California, will help:

As to where the shears are to be first inserted and how the shearer is to hold his sheep, are points for the shearer to decide. I should insist that the fleece be always taken off as an entirety, with exception, perhaps of the belly and tags. Also see that the wool is not cut to pieces nor hacked by cutting twice in the same place. Each stroke with the shears should be clear and complete, and made close to the body. If a miscut be made, let it go at that; for if you do leave a half inch of wool at that spot, you get it next shearing, and if cut now it will be too short to be of any use to the manufacturer, and will only injure in his estimation the parcel of wool in which it is discovered. In opening up the neck or shearing the belly, when it becomes necessary to open the wool, let the shears be worked in gradually, cutting the wool of an even plane close to the skin until they are in and underneath the wool as far as they will go, then raise them, tearing the fleece open. Thus commence at the point of the shoulder, working up towards the head. This prevents cutting the staple along the neck and makes a better job. In shear-

ing on the floor a man has better control of his sheep. If shearing on a bench, catch the sheep by the left hind leg, back it towards the bench and roll it over thereon; set it up on its butt, and then, as you stand with your left foot on the bench, lay the sheep's neck across your left knee, with his right side against your body; now take the two fore-legs under your left arm, and begin about the centre of the belly and upon the fleece fore and aft. Shear what would be the left side of the belly if the sheep were on his feet, also the left side of the brisket. Now cut off all tags from the inside of the hind legs, and shear the breach as far as you can reach in this position. Return to the point of the shoulder, going up under the wool with the shears as above described, to the butt of the ear; now shear around, taking off the fleece as an entirety and including the foretop clear around the neck.

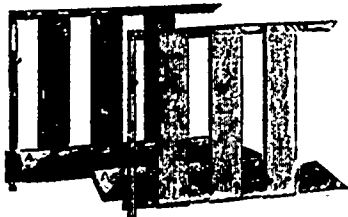
You will proceed thus down the left side, taking the left fore-leg by the way, and shearing as far around the sheep as practicable while holding it in the position described, which will be two to three inches past the spine. In reaching the hind leg, say about the stifle, you will then insert the shears at the inside of the hocks (wool below that point is commonly tags) and shear around that leg back to where you left off on the stifle joint. Should the sheep persist in kicking at this stage, place the palm of your left hand on the stifle joint, which causes the leg to lie out straight. Shear clear around to the breach or the place shorn when working on the belly tiggings, and go clear around past the tail, so that were the sheep standing on its feet, everything on the left side, including one to three inches on the right side from the spine, from head to tail and including the whole tail shall be shorn.

Now, taking the left hind leg (the one that is shorn), in your left hand swing the sheep around with its spine directly towards you, being careful that some of the fleece goes under him, for his left hip bone, which is shorn and bare, now comes in contact with the boards, causing him to lie uneasily. Now return with the shears to the head or neck and go down the right side (the "winning side" as it is called), taking in the two legs and right hand side of the brisket and belly. You may now finish up, trimming off any tags that may have escaped, including that wool on the legs below the knee and hock joints. Now see that the fleece is all clear from the sheep and let the animal go. Next gather up all bits of fleece and tags together with the fleece itself, and give them to the man who ties up wool.

If the floor and bench round about be clean, proceed to catch another sheep, if they be not clean and if any excrement has passed, it is to be taken up and thrown out of the pen. It will be seen by this description that the wool all through the operation will hang down and have a tendency to fall apart. This is counteracted in a greater measure if the sheep be shorn on the floor, than on a bench, for though the same manner of opening up and shearing is pursued, still, as the shearer goes down each side, the sheep lies on the opposite side, and the distance from that point of the fleece whence the wool is hanging, to that point on the door where it is resting, is not so great as where the sheep sits "up on end."

A Convenient Sheep Rack.

A correspondent sends to the *Country Gentleman* a sketch of a sheep rack which we copy below. It is simple and cheap, and, says the writer, is the best rack for feeding sheep that he has ever seen in use. The posts, P, are made of 3 by 3-inch scantling, with a 2 by 3-inch scant-



ling nailed on the top, and a board 8 inches wide nailed on the bottom, on which to nail the upright boards on each side of the rack. These are 10 inches wide, with an 8-inch space between them. At each end nail at the bottom of the posts a 10-inch board 3½ feet long, with notches cut near the ends to receive the feed troughs which are made by nailing 9 and 8-inch boards together in the shape of a V. The troughs should fit snug to the bottom sideboards. (The end board is not shown in the cut.) Lay a 1½ inch plank, 12 inches wide, in the centre, overlapping the inner edges of the feed troughs. Board up the ends and the feed rack is finished.

The rack is placed in the sheep shed, where the hay is stored in the loft, and boards are run from the top of the rack to the floor of the loft, where the hay is dropped into the rack, to keep it from falling over on the sheep. After

throwing down sufficient hay the feeder steps down into the rack and distributes it. The sheep will eat it without waste, and will not get their necks and backs filled with seeds and chaff. The greatest advantage in this rack is in feeding roots or grain. By having a gate or steps at one end, the feeder can step into the rack and walk from one end to the other distributing the feed, without being crowded or caught and held by the sheep. Those who have had experience in feeding long-wooled sheep will appreciate this. The edges of the board which come in contact with the wool should be rounded. Each sheep will get its share of feed, as they cannot crowd each other.

WEIGHING CATTLE BY MEASURE.—The following rules are given by which the weight of cattle can be ascertained approximately by measurements.—Take the length of the back from the curve of the tail to the fore-end of the shoulder blade, and the girth around the breast just behind the forelegs. These dimensions must be taken in inches. Multiply the girth by the length, and divide by 144. If the girth is less than 3 feet, multiply by 11; if between 3 and 5 feet, multiply by 16; if between 5 and 7 feet, multiply by 23; if between 7 and 9, multiply by 31. If the animal is very lean, one-twentieth must be deducted—and if very fat, one-twentieth must be added. Another rule.—Take all dimensions as before, in feet, and then multiply the square of the girth by the length, and that product by 3.36. The result will be pounds. If you desire to know what an animal will dress, multiply the live weight by the decimal .605; the product approximates to the actual net weight, very closely.

THE VALUE OF PURE BRED MALES.—The great necessity now apparent is for breeds which will fatten easily. Pigs which will dress 300 or more at eight months make much cheaper pork than the coarse breeds which must have twenty months of feeding to reach such proportions, and the latter are as good as the average, while there is abundant proof that the crosses of the fine thoroughbreds on ordinary coarse sows, by good feeding, would easily make the weight named in the lesser time, and there was the further argument that the pork so made is greatly superior in quality. Instances are named of Berkshire crosses which had exceeded 300 pounds weight at eight months old without a pretense of skilful feeding, and the argument was made that such success might just as well become general if only the proper attention were given to the employment of pure bred males, looking always in the progeny to the capabilities of assimilating food rather than to color or great size.

SHORT-HORN BREEDING.—An English Short-horn breeder of long experience writes thus to a young friend who had sought his advice, through the medium of the *Agricultural Gazette*—"Short-horn breeding is a delightful occupation when matters prosper. It is so encouraging to find the combinations one had mentally worked out, producing satisfactory results. You have an exceedingly interesting work before you, and being young, and if you have health and are spared, you will have ample time to weed a draft as you see necessary, in order to produce that uniformity of character without which your herd will not attain the celebrity which I fancy you aim at. You will find it for a time up-hill work, for until you have, by considerable experience, come to know the peculiarities of the different families your herd contains, you will be in a manner working in the dark; but a few years of experience and close attention to their peculiarities will enable you to reject what will not forward the object you have in view. By all means stick most pertinaciously to the essentials of sound, hardy constitutions, heavy bodies on short legs, thickness through behind the elbow, round ribs, and a good twist, all covered with as thick a hide as you can get, only let it be supple, with plenty of curly hair."

OIL MEAL.—Oil cake is the refuse of flaxseed meal after the oil has been expressed. The cakes, which are about the size of small cheese, are almost as hard as stone. Preparatory to feeding this material to the stock the cakes are broken into fragments and ground to meal in mills. This constitutes the oil meal of commerce, which is bought and sold by the ton or by the hundred pounds. A suitable quantity for a cow at the commencement is one quart in the morning and one quart at night, either alone or mixed with any other food. It is better if mixed with the mash of bran, cloys, roots or cut feed of any kind. If the meal be soaked for six or eight hours the effect will be to increase its bulk two or three times. The quantity can be increased gradually, according to the effect produced, ordinarily not exceeding three or four quarts per day. For beef cattle oil meal has fattening properties which cannot be found in any other feed, the beef always being more tender and juicy, and of a much finer quality than when fattened on any other feed, and no feed known will so quickly prepare animals for market as oil cake meal. For horses a small quantity given daily promotes their health, and is especially valuable for them when chilled or injured from overliving. It is a error by some feeders that oil meal is one of the best remedies known for horses subject to the heaves or rheumatism, as it tends to increase the cleanliness, evenness and glossiness of the hair.—*New York Herald.*

Management of Large Bulls.

All stock breeders know that large bulls have a perfect disregard for fences, and therefore have to be kept in the stable, sometimes for years. Experience has shown in most cases where bulls are kept so confined, without air or exercise, that they become either impotent, or very precarious stock getters, also headstrong and dangerous to handle. I kept a Short-Horn bull six years. When he was a year old I began handling him with a rope similar to one ordinarily used to cast a horse. He would make great resistance, and after a hard struggle would have to come down. I repeated this every six months as long as I had him, and he never knew that he had any strength. His lofty head was leveled to the ground in a manner very humiliating to him; he was always as kind as an ox, and any child could lead him to water. Throwing him took the conceit entirely out of him.

I then invented a plan to exercise him. I set a post in the ground about three feet high, with a cart wheel on top, then lashed a 16 foot ash pole across it, made a frame for his neck at the end, so that the pole would be against his breast, with a rod running out in front to tie his strap to. He very soon learned to go round, describing a circle 32 feet in diameter, with a good track. He was put in this every day, and would walk two hours. After a few days he needed no attention, as he seemed to enjoy it, and was so impatient to start that we could hardly hold him still long enough to tie him.

The result of this was that he was the most active and vigorous bull I ever saw; and out of 87 cows served the summer he was four years old, only four missed. Some of my stock breeding friends have tried these experiments, and say that they have been the means of prolonging the usefulness of their valuable bulls for years. We all know that far too many of our high priced and choice bulls go prematurely to the shambles in consequence of the above troubles. —*Country Gentleman.*

Feeding Corn Stalks.

Economy in the feeding of farm stock is one of the best criterions of a successful farmer, and no one who is either wasteful or extravagant in this particular needs feel at all surprised, if in making up his accounts at the end of the year, he discovers that any balance existing is to be found on the wrong side of the sheet. The principle holds good whether we waste peas at a dollar per bushel or pea-straw at a dollar per ton. Let the *habitus* only become fully formed, and there is no telling what the result may be. The following method of preparing corn-stalks will commend itself to the good sense of everybody, and furnishes a good example of the numberless, simple and effective means of coaxing the appetites of our domestic animals, and thus utilizing a variety of substances that would otherwise be either lost altogether, or go direct to the manure heap. We quote from the *Farm Journal*:—

Corn-stalks enter largely into the fall feed of dairy cows, and how to feed them is the important question. The common practice is to feed them in the bundle, as but few farmers feel able or willing to use a cutting machine. This feeding in a bundle without any preparation, I am fully satisfied, is very wasteful, as not only are the butts left, but frequently near the whole stock. I have learned by experience that a little brine sprinkled upon stalks once every day just before feeding, is of material advantage in many respects. The weak brine will cause the cows to consume nearly all, even when fed whole; the flow of milk increases, the condition of the cows improves, and they show greater contentment, especially in this last remark true on cold, windy, and rainy days. I find it much better as a general rule, when it can be done, to feed salt on the food, instead of feeding it alone. In no case should more than one day be permitted to pass without bringing the morning's feed. The brine should not be strong, only enough to furnish sufficient salt to the cows. Of course the cows should have access to plenty of water; this brine food will cause them to drink more, and thus increase the flow of milk. Let farmers try this, and they will hereafter place a greater value upon corn-stalks.

Economic Horse Management.

(Continued from last month.)

No better illustration of the truth of these statements [viz., that some foods produce fat, some muscle, some heat, etc.] can be found than the practical success of the Banting system. That system, founded upon the above data, clearly proves that foods rich in starch, sugar, or fat, will increase the fat of the body, but not add to the muscular strength, that lean meat does not add to the fat of the body, but does supply the waste of muscle; and we know that lean meat is simply equivalent to the albuminous or nitrogenous principles found in vegetables. We

know, too, that the demand for these different constituents of food differs according to the state of the animal. In very cold climates the rapid loss of animal heat demands an excessive supply of the heat-producing foods; thus the Esquimaux consume enormous quantities of fat.

Again, whenever the muscular system of the animal is greatly taxed, we find a demand for the nitrogenous foods. Hunters cannot do their work on hay alone, they require oats and beans to supply the flesh-forming matter. The British soldier and workman has hitherto excelled in physical endurance and muscular power as much on account of his meat diet as his national qualities. The late Mr. Brassey found that when he fed his foreign workmen on the same diet as his British navvies, the work done by the two approached an equality. Previously they had no chance with the Englishmen. Flesh, of course, supplies a heavy percentage of nitrogenous matter, but beans and peas supply even a much larger proportion, and their feeding value was well tested in the late Franco-German war, the German soldiers being largely dependent upon peas as an ingredient of their food to meet the waste of muscular tissue. The wonderful endurance of these men is conclusive evidence of the nutritive value of such food.

But we need not multiply illustrations. We wish simply to impress the truth of the chemistry of feeding upon our minds, that we may afterwards fully appreciate the different values of feeding materials. The value of the above table is enhanced when qualified by physiological knowledge, which informs us that woody fibre is indigestible, and, therefore, an excess of it in any food is evidence of at least one disadvantage. It also tells us that a certain bulk of food is necessary to healthy digestion, and that, therefore, we cannot successfully feed entirely on those foods which contain the elements of the body in the most compact form. Further, we are warned against the action of different foods upon the digestive organs; thus linseed, bran, and maize, all cause laxness, whilst beans and peas tend to produce constipation. Some of these articles of provender then possess very different properties, some are laxative, others constipative, but by judiciously mixing them we are able to remove both these objections, and produce a most valuable food.

To keep horses in health when not hard worked we need no mixtures; we have one grain in which the nutritive elements are so proportionately arranged that it cannot be improved upon; practice has long adopted it. I refer to oats. But to keep hard working horses in condition is a very different thing. Oats alone are not equal to it, nor can any other single grain preserve both health and condition. The fact is, either their chemical constitution or their physiological action is defective, and we must, by mixing different articles, so alter the nutritive value, and so balance the physiological actions as to produce a food which will not derange the functions of the animal, but which will supply all the requirements of the body.

Both chemistry and physiology, then, suggest that more than one kind of grain is advisable, if we aim at economy and high condition. But the full economy of mixed feeding is only seen when we consider the money value of the different articles of provender in relation to their nutritive constituents; that is, when we compare the feeding value with the cost of the article. When then, we understand the chemical, physiological, and monetary value of foods, we are in a position to select the cheapest and best food; or rather, I should say, we are able to select those articles of food which, when mixed in proper proportions, afford the largest amount of feeding material at the smallest possible cost. Thus, and thus only, is the highest feeding compatible with the strictest economy. If in the feeding of horses cost were of no importance, so long as health and condition were obtained, a large proportion of the advantages of using mixed food would be lost, as unquestionably oats and hay alone are a very good diet for horses not excessively hard worked. Such materials are, however, 30 per cent., sometimes even 50 per cent dearer than other provender equally valuable for feeding.

Not unrequently when I have been advising the use of a larger quantity of peas, barley, or maize, to the exclusion of a proportionate quantity of oats, I have been met with the remark, "Well, granted they are cheaper, are they as good food? Look at the Scotch; see what strong, healthy, muscular men they are, and many of them subsist almost entirely on oatmeal." This argument is easily refuted. In the first place, oats are not all oatmeal. They contain from 30 to 40 per cent. of husk—indigestible material, equal in feeding value to chopped straw. For this husk we have to pay at the rate of 600 per cent. more than it is worth as food. In every ton of oats are 7 or 8 cwt. of husk, which cost at the rate of from £8 to £12, whereas they are only worth 20s. per ton—the price given at the manufactories. Secondly, although the Scotch laborers, as a class, are fine, big men, they are decidedly inferior in muscle and "condition" to the pitmen of Durham and Northumberland, who eat daily from 12oz. to 14oz. of flesh food. I believe that no part of the work is there a class of men equal in muscular tone and condition to the coal hewers of Northumberland. The "pit heap" of a large colliery, when the men are assembled to go down, is a sight worth seeing, for many reasons; but none is more striking than the enormous development of limbs, chest, and shoulders displayed by the majority. Change their diet, substituting oatmeal for

meat, and we should at once have a diminished output of coal, and a reduction in the size and tone of their muscles.

To hard-worked men oatmeal is no efficient substitute for beef and mutton, and for hard-working horses oats are inefficient as compared with beans and peas. Experience tells us this most plainly, and science explains it by showing that beans, peas, and tares are almost identical with beef and mutton in the amount of muscle-forming material contained by each, whereas oats contain nearly 60 per cent less than either of the latter.

Now, in horses or other animals excessively worked, the consumption of muscle is far in excess of the waste of other tissue, and the blood must be supplied by a correspondingly large amount of flesh-forming material. To fulfil this requirement we must give food containing a heavy percentage of nitrogenous material, otherwise the digestive organs will not be able to supply the requisite pabulum to the blood. Beans or beef will supply it, oats or potatoes will not, even if we give an extra amount of them, because this entails the consumption of such an immense bulk of material, a large proportion of which is indigestible and non-nitrogenous, that the digestive organs are overpowered and unable to reduce the mass to a state in which all its value may be absorbed. For these reasons, then, we say that the use of oats as a principal article of diet for excessively hard-worked horses is very expensive, if not injurious.

WALKING HORSES.—We hope that those societies who have not yet settled their prize-lists will consider the propriety of giving premiums for the best walking horses. Walking is the gait that is of most use to farmers, and it is this pace which should be encouraged. A horse that can walk three-and-a-half or four miles an hour will not eat much more than one which crawls along at half the pace.

BREEDING FROM FAT ANIMALS.—Dr. Horne, of Wisconsin, a well-known veterinarian, gives his testimony in favor of breeding from animals in moderately low condition. He says that he has had ample opportunity for judging of the best condition of animals at the time of parturition. He could bring innumerable proofs that while animals in high condition suffer much and often at the time of bringing forth, animals so poor as to be a disgrace to their owners, enjoy immunity from more than ordinary suffering, and as a rule do well. Cases of puerperal or milk fever are comparatively unknown in moderately low-conditioned animals.

CASTRATING RAMS.—My experience runs through fifty years. I have seen rams castrated at all seasons of the year, with success in proportion to the heat or cold of the weather at the time of operation. The colder the day the better. I once castrated an old ram when the thermometer was at 40° below zero; and an hour after, and until healed, he paid no attention to it. In the operation I press the testes down, and cut the slit near the lower end, so that no blood can find lodgment; and just large enough to get the testes out; I then cut away the ligaments as usually done, and then draw the man cord out carefully, so as to pull it as far out as possible; the longer the cord is drawn out, the less bleeding. As I pull I wind it around my fingers and draw till it breaks. I never cut or tie the cord, and there is seldom more bleeding than just from the cutting of the skin; I never lost one in my life. —*Country Gentleman.*

THE "TOUCH" OF SHORT-HORNS.—The "touch," or mellowness of handling, which indicates aptness to fatten, is the most difficult of all points to obtain in a breed of cattle. It is one of the distinguishing marks of Short-horns, and which has never been equalled in any other breed of cattle. To imprint this special quality on a herd, years must elapse, at any rate before you can depend on it with any degree of certainty. It is a very much the fashion now to deride the high prices given for Short-horn cattle, but I would venture to say that if the high prices had never existed, the Short-horn would have been a greatly inferior animal to what it is at present. The money value has assisted in keeping up their notability, and consequently attracting attention, and but for this particular attention being paid to them they could not have retained that quality and form for which they are so famed. —*Cheviot in N. B. Agriculturist.*

BARLEY AS A FEEDING GRAIN.—A *Country Gentleman* correspondent writes:—An acre of meadow that will produce two tons of hay will produce at least thirty bushels of barley. Were this thirty bushels of barley ground and fed with the straw, cut and steamed, the produce of an acre of land would go farther and keep stock better—enough better, I think, more than to pay for the extra labor involved. I would not say a word in behalf of barley straw for fodder, saved as it usually is. Its reputation is just as good as it should be. The farmer starts with the impression that barley straw is almost worthless for anything except bedding for stock. If the straw is short it is cut with the mowing machine after standing perhaps a week longer than it should. It lies in the swath nearly a week, getting wet perhaps once or twice, and then it is raked up with the horse-rake, with the teeth of the rake forced as close to the ground as possible, for the purpose of gathering all the barley, and, in addition, gathering a large amount of gravel. The straw as thus saved is a gritty, dusty and indigestible substance. How much worse it must be when, after threshing, it is piled up in a large, flat-topped heap, by courtesy called a "stack!"—

Veterinary.

Worms in Horses:

EDITOR CANADA FARMER:—Please give me some remedy for worms in horses.

READER.

Reply by Dr. A. Smith, V. S.

Of worms inhabiting the intestinal canal of the horse, there may be said to be several kinds. The lumbricoides or round worms are very common, and are frequently seen in the faeces of horses, which are kept the greater part of their time in the stable. These worms have a resemblance to the common earth-worm, but are rather thicker in the middle, and gradually tapering towards either extremity; and they vary in length from three to twenty inches.

Another class of worms, much smaller than the former, are often found in great numbers in the large intestines. These are small, and vary in length, from half an inch to an inch. Other varieties have also been noticed, such as the oxyures, which are usually found doubled up in the form of a double comb.

Worms are frequently blamed as a cause of a great many diseases of the digestive organs, such as colic, inflammation of the bowels, etc., but the exciting causes of these diseases, however, are more frequently due to sudden changes of food, etc., than to worms. No doubt, when they are present in large numbers, they give rise to irritation and to disease.

Horses in which these parasites are numerous, are generally in a poor unthrifty condition. Their muscles, instead of being hard and firm, are soft and flabby, and they perspire easily on the least exertion. In some cases, the verge of the rectum and anus are covered with a yellow-colored incrustation, which, as a simple means of diagnosis, should not be overlooked.

A great many different remedies are recommended for the removal of worms. An old and excellent remedy is oil of turpentine in doses of from one to two ounces, combined with four or five ounces of raw linseed oil, to be given every second morning, an hour or so before feeding, and to be continued until three or four doses are given. Another very good, and perhaps a safer remedy than turpentine, is tartar emetic and powdered gentian, of each one drachm, to be given every night until eight or ten doses are given, after which a brisk dose of purgative medicine should be given.

Assafoetida and aloes in small doses is another very good vermifuge. When the horse is under medicine, he should be carefully and moderately fed on easily digestible food. One good dose of purgative medicine, as six to eight drachms of aloes, will frequently be sufficient to remove worms without anything else.

For Bloat or Hoven in Cattle.

EDITOR CANADA FARMER:—A couple of handfuls of soot well stirred up in a bottle of water, and turned down the animal's throat, relieved one of my oxen a few days ago, in a very short time; and, being followed in about an hour by a dose of Epsom Salts, opened the bowels, and he has worked as usual ever since. I have repeatedly seen both oxen and cows cured, by taking about a pound or two of fresh butter or lard, wrapping it in thin paper and placing it down the animal's throat as far as possible, so that it had to be swallowed. The animal can hardly be considered safe till the bowels are opened. In the West of England a tube for relieving choked or bloat cattle was formerly manufactured, but it required so much care and skill in applying it, that I do not believe it was ever extensively used.

SARAWAK.

A MONSTROSITY.—Mr J T Laing, of Puslinch, Ont. writes us that a sow of his was, on May 24, delivered of a remarkable pig with eight legs, two heads, four ears, two mouths, two tongues, one throat, two distinct hind parts up to the middle, then joined together as if locked in each other's arms. They were full grown, and it was with difficulty that they were extracted. However, by fastening two pieces of tape around the hind-legs, one at the feet and one above the joint, he was successful in taking them whole.

Cow with Ingrowing Horn.

EDITOR CANADA FARMER:—Referring to the enquiry in the last number, with the above head, a friend of mine told me he once had a very beautiful heifer in Ireland, but her beauty was marred by an ingrowing horn. He said to his herdsman that he would willingly give a pound to have her horn like the other. A few days after the conversation, his man asked him to look at the heifer, when he found, to his delight, that her horn was changed and stood up as the other. The man told him he had taken a loaf of bread hot from the oven and thrust it on the horn, and left it there for some time, and then turned the horn up. I give the story for what it is worth,* but I could depend on my friend's veracity. If "X. Y. P." should try it and succeed, he might let you know of it.

A SUBSCRIBER.

*So do we [Ed. C. F.].

Cows Bleeding to Death after Calving.

DURING the last twelve months I have lost two valuable young Shorthorn cows from bleeding from the womb occurring about eight days after calving. Both were heifers with their first calves. Both were previously in good health, in fair condition, feeding on grass and hay, allowed plenty of exercise, not pampered or in a gross, overfed state, the bowels in a perfectly normal condition. Both carried their calves the full time, which I take as 285 days. Neither had severe or protracted labours; no instruments or undue traction were employed to hasten delivery; the calves born were sound and healthy; nothing peculiar was observable during parturition excepting that in each case rather more blood passed than is usual. The placenta came away of its own accord within a few hours after the calf. The calves remained with their dams, any superfluous milk being removed from the udders night and morning. The heifers made perfect recoveries. No unusual discharge, no dulness, want of power of the hinder extremities, or feverishness, was observed. The one animal calved at midsummer, the other a fortnight ago.

Just eight days after her calving I was summoned to the hovels, and found the heifer bleeding rather freely from the vagina; the blood was bright crimson arterial blood. Presently it came away in still fuller stream, mixed occasionally with clots; there were no uterine pains. Rugs wrung out of cold water were applied over the back and loins, in the hope that, by reflex action, constriction of the flaccid, open uterine vessels might occur. Cold water was injected with an ordinary clyster-barrel syringe into the uterus. Acetate of lead solution was also injected. As a general astringent about an ounce of chloride of iron solution in a pint of water was given and another dose prepared to be swallowed in half-an-hour. Ice was sent for to be introduced into the uterus; but it did not come in time. Steadily the life-blood ebbed away, and in little more than half-an-hour from the bleeding being observed the red heifer died. The more recent case—a white heifer, just three years old—nine days after calving, without any premonitory symptoms, was seized with hæmorrhage during the night, large quantities of blood were found in clots, and saturating the litter of the stall, and the animal lying in a comfortable natural position was discovered in the morning dead.

The uterus in both cases was rather flaccid and relaxed, its walls, as might have been expected, were soft and blanched. The clot formed at calving, and acting for a week as a sufficient plug, had apparently melted away, leaving imperfectly closed the large vessel or sinus. I failed to discover any fatty or other degeneration in the leaking vessel or in the uterine walls. I doubt whether the accident is traceable to any mismanagement during gestation. Cases of this description, although very rare amongst cattle, are not unfrequent amongst mares. The practical lesson which, as a stock-owner, I have learned from these two losses, is to watch for any undue flux of blood during calving, and wherever such bleeding is observed to keep the animal quiet for a fortnight, and administer during that period as an astringent half-ounce doses night and morning of chloride of iron solution or of sugar of lead. Moderate quantities of digestible unstimulating food should be given. Three days after calving I shall probably inject daily into the womb a cold solution of oak bark or of chloride of iron in the hope of constringing relaxed vessels or soft flaccid uterine walls. —*Corr. North British Agriculturist.*

BLIND STAGGERS IN PIGS.—Prof Law gives the following:—When the hog is attacked, dash bucketfuls of cold water over the body, throw a purgative injection into the rectum, composed of six ounces of sulphate of soda, and one or two teaspoonfuls of spirits of turpentine in ten

ounces of water. Setons saturated with turpentine may be inserted under the skin behind the ears, or the back of the neck may be blistered by rubbing in the following mixture: Spirits of turpentine and liquid of ammonia one ounce each, with powdered cantharides, two drachms.

Mange, Itch, &c.

Mange, itch, &c., in cattle, hogs, dogs, and all other animals, are caused by little insects in the skin. To get rid of these you must drive them out by the internal use of sulphur, or kill them by the external application of soap-suds, quacksilver, nitric acid, &c. No insect or worm can live in the abdomen or skin of an animal while its system is under the influence of sulphur. It is a sure preventive of worms in hogs, mange in cattle, dogs, &c., ticks on sheep, lice on horses and cattle, and all skin diseases to which animals, including birds, of all kinds are subject. Hence I call it my universal remedy.

There would be but few diseases among stock if they were kept under the influence of sulphur; besides it is worth almost as much as it costs for food. It aids digestion, prevents costiveness, and acts like a charm upon the bowels and kidneys. It would pay any farmer who has one dozen head of stock, much less we who have 200 or 300 head, to use a little sulphur daily in their salt or food.

It has often been said that sulphur is dangerous in cold and wet weather. This is a mistake. I have often used it in large quantities on horses, cattle, hogs, and sheep, while they were exposed all day to the rain and snow. However, it is better, when used externally with grease, to apply it on a warm day, when the sun is shining, or, if the weather is inclement, to keep the animal under shelter. It is not to the interest of the owner to expose his stock to inclement weather, be they sick or well.

I have been breeding and dealing in stock about ten years, and owned from two to three hundred head annually, and have not yet had one to die of disease, if I am not mistaken, except a few hogs of the so-called cholera. My secret has been prevention. If you would be successful in the breeding of stock, let me suggest that you never own a scrub. Get the best of pure-bred cattle, horses, hogs, sheep, &c.; take good care of them by providing good warm shelter and an abundance of good nutritious food, and use prevention for all diseases. Fine stock is less subject to disease than scrubs, and yield a larger per cent on the money invested.—*Cor. N. Y. Times.*

Scab in Sheep.

The following is from the transactions of the Highland Agricultural Society of Scotland:—

It is clearly ascertained by scientific men that the scab in sheep, like the itch in the human being, is connected with and propagated by certain minute insects belonging to the class of acari, which inhabit pimples or pustules. But the question naturally arises, how came it first into existence? This problem is very difficult of solution, and puzzles the most eminent physiologists. But, as I have already said, I have never known it to break out spontaneously among a flock of sheep, properly managed, during thirty years' experience as a shepherd in pastoral districts. Various and conflicting opinions exist as to what extent the disease is infectious. Some affirm that it requires sheep to come in contact with the diseased before it can be communicated, while others maintain that the disease is propagated by the mere travelling on the road, such as a public drove road, from large markets or fairs. I, however, do not think the disease is so catching as the latter advocates affirm. For example, I acted as shepherd for sixteen years, on various farms, where the drove road from Falkirk to the South passes through the sheep pasture, and every year some of the lots of sheep were more or less affected with scab, and during all that period not a single sheep of which I had charge caught the disease.

The cure of scab lies in the destruction of the insect, but the important question is, what is the best composition or infusion for that purpose. The remedies that are commonly applied are numerous, but the most effectual, with the least danger of injuring the animal, that I have ever seen applied, is the common spirits of tar; and, if properly applied, will penetrate and destroy the insect concealed in the pustules, or buried beneath the skin. The quantity applied may vary according to the condition and age of the sheep, but for hill, or ordinary breeding stock, one bottle of spirits of tar, mixed with twelve times the quantity of water, is sufficient for twelve sheep; or one common wine glass of the spirits of tar, mixed with twelve times the amount of water, is sufficient for one. If mixing for a hundred, six gallons of water with six pounds of common soda ought to be warmed to the boiling pitch, then add the spirits of tar.

FOOT ROT OR FOULS IN CATTLE.—Says a correspondent of the *Rural New Yorker*—The foot rot can easily be cured by simply taking a tarred rope, drawing it smartly through the split in the hoof a few times, when it will give out a bad stench, remove the rope and fill the raw wound with fine salt. One application is all that is necessary generally; keep the animal from the wet barnyard—which is a fruitful cause of this disease, have had six or eight so affected at once, always effecting a speedy cure by using the means described above.

The Poultry Yard.

Emblen Geese.

The appellation of Emblen has been obtained from a town of that name in Westphalia, but, in this country, they are sometimes called by the name of "Bremen," owing it is claimed, to the first two trios ever brought into America having been imported from Bremen in Germany, by a Mr. Jacques in 1821, and called by him after that town. Originally however, they were brought to England from Holland.

The Emblen goose has prominent blue eyes, is remarkably strong in the neck, and the feathers from near the shoulder to the head are far more curled than is seen in other birds. The plumage is uniformly pure white, the bill flesh color and free from dark blotches, and the legs and feet orange. In carriage they should be tall and erect, with fine square bodies, which in fat specimens touch the ground. They come to enormous size, a three year old gander has weighed as much as thirty-two pounds, and a goose of the same age twenty-six, but a good bird of any breed weighing twenty pounds is considered very fine, and for breeding purposes such weight is quite sufficient to ensure good stock.

The Emblen goose seldom lays till after a year old. Their eggs are white in color, very large and rough in the shell, which is extremely thick. Regular goose breeders rarely, if ever, allow the geese themselves to sit, but put from three to four eggs under a cochon or dorking hen, which can well cover and take care of them. A turkey hen also makes a capital mother. The eggs should be regularly sprinkled with luke-warm water to prevent the shell becoming so hard as to check the egress of the young.

Sometimes, but not often, they lay two settings of eggs in a season. The period of incubation is thirty days.

The goslings are easily reared on the same food as ducklings, but they require green food as well, and for this purpose young green onions are strongly recommended. When once fledged, they will thrive well with no other food than can be procured by them in the field or by the wayside, until later in the fall, when they should be shut up for a few weeks, and fed on meal, oats &c.; they will lay on flesh quickly and come to great weight. Emblen geese do not necessarily require much water, but of course, to look well, the pure Emblen geese will require a large pond or brook to wash themselves in.

One of the great advantages of the Emblen geese, is that all their feathers being perfectly white, their value where many are kept, is far greater in the market than is even the case with "mixed" feathers. The quiet domestic character of this variety causes them to lay on flesh rapidly. They never stray away from their home, the nearest pond and field satisfying their wants, and much of their time is spent in quiet repose. Their flesh is equal to that of the famous Toulouse of France. Mr. Hewitt says, "these birds have an advantage even over the Toulouse. In instituting comparisons between the white and colored geese, I have noticed that the pendent abdominal pouch of the Toulouse tells sadly against it when dressed, and would undoubtedly be prejudicial against its sale, in accordance with current opinion of such an appendage being indicative of advanced age."

All white aquatic poultry are considered to dress of a clearer and better appearance than the parti-colored or dark feathered birds, more especially when young. This arises from the patches where the dark feathers grow, showing even after being carefully plucked, more particularly if the plumage at the time they are killed happens to be immature.

Good Range and Plenty of Water.

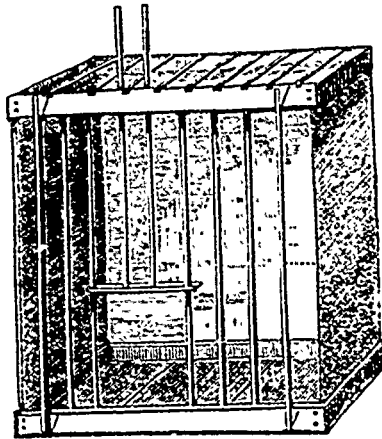
I have for many years been a poultry fancier, and for a few years have bred the Asiatic and French varieties, and am satisfied that it pays better than the same capital in any other investment.

Although the past year has been a very unfavorable one, and many poultry yards have been almost entirely depopulated by diseases incident to fowls, still this is no argument against the improvement of our domestic birds. Large numbers of fowls cannot be successfully reared

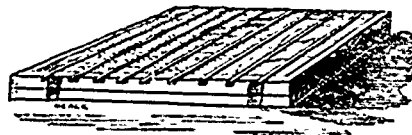
together, especially in limited range, and this is often a cause of defeat with inexperienced fanciers who are anxious to increase their numbers beyond the capacity of their accommodations, and ready to ascribe the cause to something else, for which they look forever in vain. This is the rock on which I split, and it was only by sad experience that I learned the truth that beyond a certain limit you must not attempt to go, and if you do, your chances are, to lose all. As to the number of fowls which may be successfully reared on a given amount of space, that will depend on the location and surroundings. If the ground be high and dry, and remote from marshes, a larger number will thrive than on low and swampy ground, and although a pure and plentiful supply of water is indispensable, it should be supplied either by an active stream or a dripping fountain. It has been estimated that one acre of ground is enough for 300 fowls, but my opinion is to the reverse, and that three acres of ground will better accommodate 100 fowls. In conclusion, let me say that upon the hygienic surroundings of your poultry yards, buildings, etc., much of your success will depend. —Cor. *Poultry Argus*.

Exhibition Coop.

The coop depicted on this page is an American invention, and is called "Shepard's Collapsible Coop." It was used, and found great favor at the last shows of the Connecticut Poultry Societies. To our mind it could be im-



proved by substituting an opening door for the sliding one, as the latter could not be got at if there were more than one tier of coops. The top and bottom of the coop are drawer-shaped, and are held apart, when expanded, by four removable posts. The two sides and back are of cloth permanently secured to the top and bottom. The rear posts are on the outside of the cloth, so that there are three smooth cloth walls against which it is impossible to injure a feather. The posts are keyed-in by dove-tailed wedges, which hold the parts very rigidly together. For packing, the four posts and the rounds in front are withdrawn and packed inside the bottom, when the cloth sides



are folded inwards with a bellows fold, and the top and bottom collapse. Although designed for exhibition purposes only, some of the exhibitors use it for transporting their birds to and from the exhibition.

Diseased Feet in Chickens.

Under the above heading we find in the *London Fanciers Gazette* a communication from M. Leno, an old and some what famous breeder of chickens, in which he says:

During the last twenty-six years I have been solicited by near neighbors to unravel, if possible, the mystery of diseased feet in chickens, which included young turkeys, pheasants and poultry. I found the toes of many completely eaten off, some crumpled up with sores, others with toes turned under the foot and of course many deaths, as they could scarcely move about. I made the most careful enquiries of the several individuals as to the food given to them, and in every case I found a large quantity of animal food was being used, such as hard-boiled eggs, mutton and boiled rabbit.

A man employed by myself also tried one year some mutton for young pheasants. I cautioned him, desiring him to use it very sparingly, but my cautioning was un-

heeded; the consequence was, that in a few days numbers of the birds became lame, their feet and legs appearing as though they had been dipped in hot water, the feet of many breaking out in sores—the toes, as disease increased, turning and crumpling up as before named, the toes of some completely rotting off, and only a very few that were affected recovering. I ordered the meat to be discontinued at once, the result of which was that not a single bird fell with the disease that had not been fed with the meat, proving to my mind that the disease was caused through the too liberal use of animal food; and the other cases I inspected were similarly affected to mine.

My opinion, founded on long experience, as regards so-called cramp in young pheasants and poultry, is that it is caused by a too bountiful supply of animal food, and not by wet ground. I know many game and poultry rears who will believe me to be on the wrong scent; but when so-called cramp makes its appearance, reduce the quantity of animal food and note the result. I am not against the use of animal food, for I know, if judiciously and sparingly used, it is a very great help; but overdo it, and the result will prove very disastrous.

The Apiary.

Bees, Wasps and Grapes.

Some persons imagine that the bees injure fruits, and especially grapes. They are greatly in error. It is useful to insist on the part taken by bees and hornets in the prejudice done to our vineyards. First let us consult the books. I do not find a single book on agriculture or horticulture, fruit or grape culture, that does not cite the wasp among noxious insects that should be fought incessantly and mercilessly; while not a single book mentions as such the industrious honey-bee, whose indicator I now am.

The wasp pierces the fruits, to the grapes it leaves nothing but the skin and the seeds. The bee only profits by those spoils; for she usually goes from blossom to blossom, gathering honey in gardens and fields. If at times she is seen in orchards or vineyards, where she only goes after the wasps, it is only to gather the remains of the feast.

Curious experiments have been tried, it appears. Some sound fruits were placed simultaneously within the reach of both wasps and bees, the former have soon achieved their work of destruction, while the latter starved to death.

Therefore, bees do not eat grapes. So it is with profound conviction that I say to those who wish, if not to prohibit, at least to render impossible the establishment of hives in the neighborhood of large cities, under the fallacious pretext that they destroy grapes. Respect the bee, since she respects our fruits: let her live in peace near us, she never will be ungrateful. Is she not the mysterious instrument that helps and facilitates the phenomenon of the fertilization of flowers, and perhaps produces those innumerable and beautiful varieties by carrying pollen from the calyx of one into that of another? Is she not the living image of work, that gives us the perfumed honey and the wax that we use so diversely? —*Bee Journal*.

RED CLOVER.—I noticed in August and the beginning of September, while the bees were gathering honey from the buckwheat, that they obtained pollen of a brownish color from some source. On investigating the matter, I found that they collected it from the red clover. This somewhat surprised me, as I had never seen them gathering honey from the red clover to such an extent, particularly while other forage was plenty. It is true I have seen a few, in the fore part of summer, at the red clover; but they were very few. I have also noticed that the bees visited only those heads that were imperfect, the tubes being shorter in consequence. —*R. B. O., in Bee Journal*.

PRUNING BEES.—Most apiarists would be benefitted vastly by having the combs lifted out of each hive just before they gather any quantity of honey to fill the combs and give them a thorough examination; some have too much drone comb, which should be cut out; others have ill-shaped or crooked combs, which may be straightened or cut out. Brood combs after being in use a few years, get filled up with cocoons so as to reduce the size of the cell, and require more labor of the bees to keep them in order than to make new ones. We have extracted out of one cell forty-four cocoons of bee shrouds, which was evidence that forty-four bees had been raised in this cell, such combs should be rejected, but never on account of being black or of a dark color. The dressing up of the combs of a stock of bees, if properly done, will encourage and infuse new industry into them. We have known colonies that were doing little or no good, which, by pruning, were made to pay a large per cent. The combs of each colony should be examined, at least once each year; a careful inspection will do a prosperous colony no harm, while it will rid the defective ones. —*Practical Farmer*.

The Dairy.

The Holstein or Dutch Cow.

The Holstein breed cows are now attracting much attention in various parts of this continent from their wonderful milking qualities. They are natives of the north of Germany, large, heavy cattle, of compact form, making, when fattened, excellent beef, and being also good workers. They have been grown in Holland for generations with special regard to their milking qualities. In that country, they are invariably black and white; but in their native Duchy they are found of various colors.

The quality of the milk of the Holstein is such as fits it well for the cheese-maker, the globules being small and uniform in size. The skim-milk is of a very blue tinge. The butter made from the cream possesses great lasting qualities.

Several instances are on record, and are well authenticated, where cows of this breed have given large quantities of milk. One cow is certified to have yielded an average of eighteen quarts a day for nine months. A heifer owned in Chemung Co., N. Y., gave after her first calf fifteen quarts a day for nine months. An instance is also recorded where a Holstein gave 74 pounds, for ten consecutive days, of milk that yielded 22.70 of cream. The record of a heifer belonging to a Stock-Breeders' Association in New York State shows that, after her first calf, she gave for 12 days, 40.65 pounds; for the next month, May 43.17 pounds; June, 52.15 pounds; July, 51.55 pounds; August, 50.12 pounds; September, 41.00 pounds; October, 33.17 pounds; November, 27.70 pounds; being an average per day for the seven months and a half, of close upon 45 pounds. Her feed was, for the first month, simply hay with three pecks of turnips daily, and afterward pasture and two quarts of corn meal. After Oct. 1, four quarts of a mixture of oats, corn and shorts, and one-half bushel of roots were fed.

Salting Dairy Cattle.

EDITOR CANADA FARMER:—I noticed in a late number that you asked for items of experience on salting cattle. I now salt my cattle daily, giving them a small handful each. I find that some of the cows will not take all I offer them, but if I let them go by for a day or two, they are ravenous after salt and would eat enough to purge them. Formerly, I used to salt my cattle once every three days, and, previous to that, once a week. I am quite satisfied that my present system is the best. When cattle cannot have salt regularly, they will take all they can get when they have a chance. If it is supplied regularly, they will take what nature tells them to, and no more. I think that regular salting increases the flow of milk and makes it richer. I find that my best cows are those that eat the most salt.

SUBSCRIBER

Essex Co., Ont.

Dairy Houses.

A proper dairy-house is indispensable to the keeping of milk in the best condition. The annexed description of a good one, from the *New York Times* is easily intelligible:

The dairy-house is built about four feet below ground; it is airy, high, light, dry, cool and detached from any other building. It is smoothly plastered inside, and well ventilated. No impure air of any kind reaches it from without, and everything within is the perfection of cleanliness and neatness. It is furnished with open racks of lath all around it, a bench beneath a northern window, and a table in the centre. The pans, which are shallow ones of tin, holding about ten quarts each, are filled to three inches in depth, and are placed on the shelves of the racks. The shelves are made of laths, so that the cool, fresh air of the milk-room reaches all parts of the pan, and speedily reduces the milk to the desired temperature. This is kept at about 55 all the year round by means of a current of cold air, which is brought into the room through pipes from the adjoining ice-house in Summer, and by a stove in Winter.

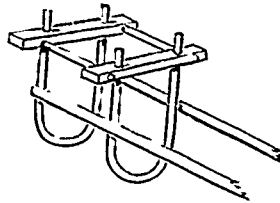
The cream is skimmed, after the milk has stood thirty-six hours, into oaken casks of forty gallons each. The churning-room adjoins the milk-room. The churns are casks similar in every respect to those in which the cream is stored. The churning is done by small horse power run by a small pony which by means of a rocking shaft, operates a common upright dash. The churning is made to

occupy at least half an hour. It is held here that first-class butter cannot be made in fifteen minutes, by any of the rapidly working churners. The butter is worked by a lever fixed to an inclined table, and the buttermilk, as it is worked out, is absorbed by a sponge enveloped in a clean linen cloth, and dipped in pure ice cold water.

Curing Self-Milkers.

To break a self-milking cow of her vice is no easy task, for every device must necessarily leave her exposed to the attacks of flies, and if the use of the preventive be discontinued, she will soon realize the fact and resume her habit. For that reason, the application of bitter aloes to the teats is, as well as being nasty, undesirable, though it is, for the time that it is applied, successful. Slitting the tongue, which we have heard of as being practised, is barbarous in the extreme.

Of mechanical means, there is, simplest of all, the tying of a hardwood stick, sharpened at each end, across the horns. An inveterate self-milker will soon learn that the ends of the stick are pointed and will display great perseverance and ingenuity in turning her head down so that she can get at her milk without hurting herself. An effective way is to put a circle around her body, and attach straps thence to each of her horns. And the *New York Tribune* gives another simple plan which is found to be effective. Take two old ox-bows and fit each in a piece of hard wood, say 2x3 inch stuff, 14 inches long, tying these



single yoke pieces on her neck, to stand about a foot apart. Then connect the hardwood pieces by oak pieces like ladder-rungs and screw upon the bows, on each side, a slender pin of hickory, pointed at the end, extending back to rest upon her sides. The hardwood pieces should be cut out so as not to hurt the neck.

Breeds for the Dairy.

The fairs of the season, we are pleased to observe, have a larger number of entries in the dairy class than for several years past. Indeed, we do not remember to have seen so many in any previous year. They embrace Ayrshires, Jerseys, Holsteins, and Short-horns, and have been very generally of rare excellence, showing that increased attention is being attracted to this important department of breeding. We do not know what race is most popular. The large black-and-white Holsteins are certainly showing well, though, as yet, in much smaller numbers than the other two milk breeds. We are not posted as to the records that have been made where the associations have required tests of quantity of milk and butter.

At the Ohio State Fair the prizes for best dairy cows, with statement of quantity of milk and butter, have been mostly taken by Short-horns. The first prize at the late fair was taken by a thoroughbred sold by us as a calf in 1869. The score, as reported to us by the owner of this Short-horn, was 406 lbs. of milk, and 1 lib. 13 oz. of butter in seven days, on grass only.

We have the promise of a full report from this gentleman as to the yield of his cows for several years past. We hope that owners of dairy stock in different parts of the country will favor us with reports of facts illustrative of the value of the various breeds.

An intelligent gentleman, a recent graduate of Harvard College, whom we met at the New York State Fair, and who is engaged in the manufacture of butter for the Boston market, observed that butter made from the Jersey cow, while very excellent and fine looking for present use, did not keep well. We should be greatly obliged to our subscribers for statements of any facts in relation to this interesting question. If there is any difference in the particular stated between the milk of the Jerseys and the Ayrshires or the Short-horns, a chemical test on either will show us what it is. We should also be greatly obliged for any information in regard to the feeding qualities and excellencies of the beef of the Ayrshires, the Jerseys, and the Holsteins, as these are matters that cannot be entirely overlooked in determining the value of even a dairy cow. *Cor. L. S. Journal.*

The Rennet Used by Cheddar Makers.

An English cheese-maker, Mr. Nicholls, of Somersetshire, gives the following as the recipe in use in his country where the fine Cheddar cheese is manufactured.—

Twelve lemons cut into thin slices, pour upon them 12 quarts of boiling water, cover it down to infuse for 12 hours; then strain and add 12 vells or flaps (be careful to see they are not tainted), let this stand 2 days, seeing that the vells are kept under the surface of the Rennet; at the expiration of 2 days, put in 7 lbs. of salt (Liverpool), 2 ozs. saltpetre; 2 ozs. alum (Roach); when dissolved, it is fit for use. When this is half used, make another supply to follow. Be careful that the vells are never swimming on the surface, which will be the case without pressure being put upon them.

The quality of vells being uncertain in strength, it is necessary that a trial should be made to ascertain the quality of the rennet before using it, which can be done effectually, and without much sacrifice, by getting a quart of milk and heating it to 54 degrees, tying fast 2 diams (more or less) of the Rennet and if it produces curd of a proper consistence in 1 hour (or 1 1/2 hour), by multiplying both, a correct proportion can be exactly ascertained for any quantity.

Before using the rennet, the temperature of the milk should be ascertained and if the weather should be at

Temp 40°	run or add rennet at 93°	to the milk
50°	"	90°
55°	"	86°
60°	"	84°
70°	"	80°

BONES ON DAIRY FARMS.—In the celebrated dairy county of Cheshire in England, the use of bones has contributed largely to enable the farmers to secure the highest and most satisfactory results. The pastures have literally been renewed by the use of bones. They are simply crushed where permanence of benefit is sought for, or if results are wanted more quickly, they are ground into meal or dust.

SORE TEATS.—A *Farmers' Union* correspondent says that his cows had sore teats every summer from the attacks of flies, which ate into the teats making great, ugly scabs. He cured them by rubbing on a mixture of equal parts of tar and lard melted and run together. After the teats were well, the flies began bothering again, so, finally, he rubbed on the tar and lard every morning whether the teats were sore or not.

PROPORTION OF CREAM TO MILK.—Experiments in England, some time ago, indicated that the following are the proportions of cream to milk from the several breeds of cattle, the variations being found to depend upon the food, the lowest figures having been given by feeding on grass or hay, and the highest when food of the richest character was given.—Brittany cows 16.27 to 22.60 per cent of cream; Jerseys, 18.65 to 20.00 per cent; cross of Jersey and Short-horn, 17.99 to 19.05 per cent; Short-horn or Durham, 15.32 to 18.56 per cent; Devon, 14.56 to 17.00 per cent; and Ayrshire, 13.47 to 14.84 per cent.

THE MILKING SERVICES OF SHORT-HORNS.—Jonathan Talcott says in the *County Gentleman*, that he is entirely satisfied that there are families of pure bred Short-horns that are most excellent milkers, that there are others that would not be valuable for the dairy. I am as fully persuaded, not by my own experience, but by observation, and what other breeders tell me of their herds. I am also just as fully persuaded that there is no breed which is not liable to the same objection. Even the Jerseys have a good many worthless animals for the dairyman in their number; but I judge their owners are weeding out such animals and striving to breed those that have more uniform excellence. In my pursuit of one or two good Jersey cows to experiment with, I had correspondence and personal talks with quite a number of Jersey breeders, and they all admitted that there were a good many poor cows of this breed.

POINTS OF THE DAIRY COW.—Mr. E. H. Seward, of Marengo, N. Y., in giving the characteristics which he most prized in dairy cows, says:—We want a cow low in legs, deep in the chest, and through the lungs a chance for a large flow of blood, this gives health. We want also a great width across the loins, this shows great secreting power; the udder should set well up under the body, wide teats and wide quarters. The scutcheon, or milk mirror, should be wide and under the better. The hair should be bright, showing a healthy condition. He wanted also a deep shoulder, neck to come out large from the body, tapering finely to the head, the head high and bony. The head should taper well down to a small muzzle; the skin should always show a yellow color, with a firm, soft feeling. A body that is essential, good cows are not dull, and are apt to be fractious and nervous if ill-used. Dairywomen should look carefully to the comfort of the cow. A cow showing a yellow skin with a yellow inside to the ear, indicates gain, rich milk. He would like the hair on the milk mirror soft and firm. He thought a large cow on the same food would give the most milk.

The Canada Farmer

TORONTO, CANADA, JUNE 15, 1875.

Work for June—July.

The late Spring will have retarded farm operations somewhat, but we question if to a very injurious extent. If crops had been more forward in the last week of May they would have suffered severely from the frosty nights at that period. As it was, not much damage was done. The general tenor of our information is, that crops look better on the whole in Canada than on any part of the continent; and, as we are secure from any invasion of locusts, we can afford to extend our heartiest sympathy to those Western farmers who have suffered, or apprehend that they will suffer, from the devastation of that formidable enemy.

There will be no lack of work to be done during this month, and the effect of the crowding into it of some of last month's work will be that some things will not be done at all. The man who has his work systematized will be the one who can see most readily what can be dispensed with.

Corn-planting should be all done by the time this will reach our readers. If from any cause it should have been delayed, the earliest-maturing varieties should be planted. Hills which have been killed out from any cause should be replanted; and while doing this, and during the after-culture, a sharp look-out should be kept for cut-worms. Time being now of consequence, it may pay better to drill than to hill the late corn. To hurry it up, corn planted by hand may be soaked in tepid water for a day before planting. Previous to planting, dust the wet grains over with plaster, which will stimulate their growth.

Swedes should be sown about now. Drill about two and a half pounds of seed to the acre, in rows two and a half feet apart. About two hundred pounds of superphosphate to the acre will force a heavy growth. The seed-bed should be moist, mellow and fine; roll as soon as sown. Thin out the young plants to about a foot apart. Sugar beets and mangold-wurzel should have been sown earlier, and should now be ready to thin out.

Pass the cultivator over every ten days or so, through the potato and root crops, and do not allow a weed to lift its head. After using the cultivators, clean them and put them under shelter. The same will apply to all tools. Have a place for everything, and when a tool is not in use see that it is not pitched away to some place where an hour's hunt will not find it again when wanted.

Buckwheat should be sown about now. If for turning under, it should be sown thickly. Plough under when in blossom. As a cleaning crop, buckwheat has no superior. Its quick and dense growth not allowing weeds a chance. For a crop, sow later, and preferably on light, sandy soil. Three pecks to the acre are sufficient.

Every spare minute and all rainy days should be used in preparing for haying and harvest. See that you have a full stock of implements, and rather have too many than too few. See that there are on hand plenty of harvest stores of all kinds.

A common error with the hay crop is letting the grass get too ripe before cutting. Hay intended for sale to the city dealers may be allowed to become riper; but hay for his own stock the farmer should cut when the grass is in blossom. In that state, it will furnish the most nutriment to his stock, and be most easily digestible. Every farmer who uses a mower should use a tedder also, by the use of which the grass may be dried and ready for raking before the dew begins to fall. Hay should sweat a little in the cock. The moisture will pass off in loading and carrying. A slight fermentation in the barn will put it all right. Clover should only lie in the sun long enough to wilt thoroughly. It should then be stirred and placed in high, narrow cocks. As soon as it sweats, it should be spread and carried to the barn.

At shearing time, notice should be taken of those animals which give a fleece of inferior weight or quality, and they should be culled from the flock. Old ewes should be taken out and their places filled with young ones of better

quality. Mark all such as are to be disposed of at a favorable opportunity. Examine for signs of foot-rot or scab, and isolate any animals that show signs of either of those infectious diseases. Ticks will be found on the lambs, on which they will have gathered from the sheep. Dip the lamb in some approved sheep-dip. There is one made now in which carbolic acid is an ingredient, which is thoroughly efficient. Put a broad band of tar across the face of the sheep, below the eyes; this will prevent the gad-fly from laying her eggs, from which come the grubs, the cause of much mortality.

Let the milch cows have good pasture, and do not let them be worried by the companionship of unruly colts or vicious horses. The yield of the cows should be noticed, and any unprofitable member of the herd should be "bounced" on the first opportunity.

Farmers who breed pigs should use none but pure-bred boars. Now is the time to buy a young boar cheap. Let the young pigs have all the milk that can be spared.

In the orchard, the newly-set grafts will want looking to. Shoots should be removed from the stock. The grafting-wax should be at hand to remedy all deficiencies. See that newly-planted trees have not got out of the upright. From now to the end of June is a good time for pruning, and pruning at this time tends to encourage the formation of fruit buds. Trees which make a large growth of wood every year, and have given little fruit, should be shortened in. Orchards of young trees should be cultivated. Some crop that requires constant tillage should be planted between the rows. Keep a sharp look out for destructive insects, and lose no opportunity of lessening their number.

Runners should be removed from those strawberries which are to bear fruit. The plants should be mulched to protect the fruit from sand or mud. Mulch put on after rain will preserve moisture during the bearing season, and increase the crop.

Caterpillars and leaf-eating grubs should be picked off to currant and gooseberry bushes, and currant branches showing signs of the borer should be cut away and burnt. Suckers should be cut away.

Cabbages, cauliflower and brocoli should be planted from time to time for succession. Carrots and parsnips should be kept free from weeds. Corn should be planted or sown every two weeks for succession. The later in the season the earlier the sort that should be sown. Squashes and cucumbers should be sown in well-manured hills, four feet apart; winter squashes, six to eight feet apart.

Do not cut asparagus too low. Gardeners cut it so low because the public know no better than to buy a lot of uneatable stalk. For their own use, they let it grow six inches above ground, and then cut it at the surface. Only those who have eaten it when thus cut know how delicious asparagus can be. Do not cut after peas come in. Manure well before the tops grow.

Leave no pools of stagnant water lying around the house to breed mosquitoes and malarial fevers; and no heaps of decaying vegetable or animal matter should be allowed except on the manure pile. Eat all the fruit and green vegetables that you can lay your hand on. Diarrhoea is oftener brought on by lack of fruit and vegetables than by an over-supply. And finally, do not overwork either yourself or your help.

The Use of Paris Green.

Prof. Riley, State Entomologist of Missouri, has written an exhaustive article for the *New York Tribune*, upon the subject of the use of Paris green for the destruction of the Colorado beetle. We summarize his conclusions as follows.—Referring to the experiments of the Potomac Fruit Growers' Association, [CANADA FARMER for March, p. 54.] he says that they used Paris green in the proportion of one to six of the diluent, instead of from 25 to 30 of the latter, and that it was no wonder that the vitality of the plants was impaired. He thinks those experiments of little value when pitted against the experience of the Mississippi valley farmers.

The fear of evil influence of Paris green on the soil, Prof. Riley thinks to be ungrounded. A pound of green uniformly spread over an acre would amount to sixteen-hundredths of a grain per foot, if it all reached the soil unchanged, which it does not, for part of it is acted upon by the digestive organs of the insects, its victims. This

might be added annually, even allowing it to remain unchanged, for half a century, without any serious effects on plants. But, according to Prof. Kedzie of Michigan College, it does not remain unchanged, a portion of it being converted into an insoluble and harmless precipitate with the oxide of iron which exists very generally in soils.

Some persons, says Prof. Riley, think that the soggy and watery potatoes now so common, are due to the influence of this poison—an idea which, he says, is proved to be erroneous by the fact that soggy potatoes are complained of where no poison has been used. The bad quality is more likely to be due to the deprivations of the insects, for no plant can be healthy when its leaf surface is being preyed upon.

Prof. Riley says that a proper use of the poison has been and will be a good blessing to the country; that a plant could not absorb enough to injure a man without itself being killed; and that the idea that the earth is being sown with death by using this poison, may be dismissed as a pure phantasmagoria—nevertheless and notwithstanding which big word, the CANADA FARMER sticks to its advice previously given, viz.:—Not to use Paris green, where hand-picking can be practised, or any other remedy can be used. Fifty years is a long time, certainly, during which Paris green may be applied before it converts fruitful land into a wilderness, but we fancy few farmers would be willing to use an agent which would defertilize their farms in twice that time. And Prof. Riley seems to have forgotten the one useful thing which the Potomac Association experiments proved, viz., that other plants than potatoes do take up the poison unchanged—which one item of positive evidence showing the use of the green to be dangerous, should weigh more than the testimony of twenty chemical analyses showing merely that the poison has not been found in the tubers of potatoes.

The Ocean Transit of Live Stock.

Complaints having been made in the London press of the inhuman treatment of live stock in transit by sea, Mr. James Martin, Assistant-secretary to the Live Cattle Importation Company (Limited), writes describing some novel arrangements for obviating the evil complained of. The Company which he represents is at present engaged in importing cattle and horses from Texas into England. This is done by the use of 'tween-deck fittings, by which it is said the animals are secured against injury during boisterous weather, and with the smallest possible amount of loss by death or wear and tear. The 'tween-deck fittings when put up form a range of pens with slings and suitable fastenings in which, he says, the animals are conveyed with comparative safety, and even comfort to themselves, and with economy and profit to the shipper.

Food and water can be supplied to them and when the weather will permit the whole apparatus can be so adjusted as to permit the reclining or lying posture so necessary to all animals, and especially to those fattened for the Metropolitan Meat Market. By simply turning a crank, the entire range of slings can be lowered, and the animals thus permitted to lie down. A cargo of horses and cattle from Texas is daily expected to arrive in Southampton. Mr. Martin says—"The loss in bulk and deterioration in quality which horses and cattle suffer in transit, especially in prolonged ocean passages, are well known to shippers and dealers in stock, and it is to remove this formidable difficulty in the way of a successful prosecution of the traffic that this Company has been organized."

Some day, the carrying of live stock by water will be as ordinary an occurrence as now is the carrying of human passengers. A vast trade will then open up for Canadian farmers, who can feed cattle for the English Market on cheap Western corn, not only realizing a good healthy product on the beef, but gaining, beside, a desirable quantity of manure of which our farms, as a rule, are sadly in need. Even now, if tough, stringy Texans can be sold at a profit in England, with the present imperfect modes of transportation, we can see no reason why prime Canadian cattle, which would bring twice the money per pound, cannot also be exported at a profit.

ATTENTION IS DIRECTED to the advertisement of Oak-Hill Stock farm, Iowa, the property of Mr. Milton Briggs, the well-known breeder.

Getting up Cattle for Show.

The Ayrshire Agricultural Association is setting its face against the getting up of cattle for exhibition. That there are some practices used which are fraudulent is admitted on all hands, but there are others against which no reasonable objection could be urged, and it might be difficult to draw the line between the allowable and the dishonest. The English Farmer is somewhat severe upon Ayrshire for its sudden access of virtue, and retorts, "you began it," in this style.—It is notorious that the most flagrant deceivers in stock exhibitors have been Ayrshire men. Not many years ago, we were present at an exhibition where a cow's tail was so admirably sown that the most expert "drawer" in a woollen manufactory could not have improved upon it; and the turned up horns so beautifully adjusted and tapered that nature alone could be thought of as the artificer. Alas! for the late Duke of Athole, who was a great fancier of this fine milk producing breed—the Dowager Duchess still is—when he got her safely into the byre at Dunkeld he found that the bushy tail was a movable appendage, and that the horns had been set on to order. Behind the scenes, unobserved, we have seen on Show mornings crueller things than this practised upon Ayrshires. Did they not look rotund enough; were their sides too flat? Pailfuls of water poured down their throats were not looking to insure well-sprung ribs. Did they not fill so well out as a perfect type ought to at particular points? A convenient straw was found to convey air under incisions in the skin; and those who inflated the parts apparently did it with the delectation of one sipping a sherry cobbler. Was the udder not well distended? The milk was kept in to the verge of bursting; to the harrowing agony of the cow. And it is this Ayrshire which now, like little Jack Horner, having got its plum, sits in its corner chuckling, "What a good boy am I!" It says in effect: we took notice of this first. Of course we did because it was not known in other places until it was imported from the land of Burns. It is good work, however, Ayrshire is doing now, but it would have been better had it never needed to be performed.

Our Lowly Evergreens.

EDITOR CANADA FARMER:—Under the above heading I purpose noticing, very briefly, those small terrestrial phanerogamous plants indigenous in the vicinity of Toronto, whose leaves survive the winter, and are in full vitality during the succeeding summer. I will give the scientific name and also the common names in general use. I will specify at least one locality near Toronto, and give the general distribution throughout the County of York.

First in botanical order, and among the first in general distribution, comes *Coptis Trifolia*, L., Goldthread, Yellow Root, with its shining trilobed, trifoliate leaves, small, stellate, white flowers and gold-colored roots. The roots are used rather extensively in medicine as a mild astringent, and are known to backwoods mothers as a remedy for aphthous sore mouth in babies. Toronto, St. James' Cemetery; common in the country in pine and hemlock woods, open cedar swamps.

Sarracenia purpurea, L., Side Saddle flower, Pitcher Plant, the Hunter's Cup. The *Sarracenia* can scarcely be called an evergreen, in this latitude; but, as it often survives the winter, when a little protected, and as often, even in exposed situations, the lower part of the cups remains unharmed, I have included it in this list. It is every way a remarkable plant, especially interesting now as one of the plants said to be carnivorous. Careful observation seems to indicate that the outside of the cup is physiologically leaf; the inside, physiologically, root. The leaf is neither folded nor rolled in its immature state; is neither incised nor subtended by tract or stipule; the petiole of the cup splits a little below the wing, and, out of the split, the new cup appears as a lance-linear, brownish-colored leaf, gradually developing into the mature form. When Toronto was "only a few shanties," the *Sarracenia* was common in the small marshy bays where now is the Esplanade. It is still found around Grenadier Pond, Humber Flats; abundant in marshes, township of Whitechurch, on watershed between Lakes Simcoe and Ontario.

Cornus Canadensis, L., Ground Dogwood. The woody, subterranean stem of this plant sends up herbaceous petioles, 4 to 10 inches long, each topped with a whorl of

3 to 6 pointed oval leaves, often striped and blotched with brownish-red; the flowers are included in a large, white, four-leaved involucre, on a short peduncle above the leaves. Toronto, St. James' Cemetery, common in pine and hemlock woods, sometimes in open, sandy fields, throughout the county.

Linum boreale, L., Twin flower. A very graceful little trailing plant, with oval, somewhat hairy, dull greyish green leaves. From the axils of the leaves spring bushlike like peduncles, each bearing two small but very beautiful eight-purple flowers. This plant does well in cultivation as a covering for rock work, and for hanging baskets. Toronto, St. James' Cemetery, general throughout the county in pine and hemlock woods, open cedar swamps.

Mitchella repens, L., Partridge berry. Pigeon berry. Who, Canadian does not know this beautiful little trailing plant? Who, in early spring, has not admired its coral red berries, its beautifully veined, fresh green leaves, unscathed by frost and snow? And he who will observe more closely, later in the season, will be rewarded by the attractive fragrance of its delicate, white, ten-lobed flower. *Mitchella* does well in cultivation in shade; used as a domestic medicine. Toronto, St. James' Cemetery; abundant in woods throughout the county.

Vaccinium oxycoccus, L., Small cranberry. A slender, creeping bog-plant, with small leaves, large fruit, usually speckled red and white; yields fruit sparingly, sometimes used as a cure for cancer; efficacy doubtful. This cranberry is especially suitable for hanging baskets. Marsh, Ashbridge Bay; Big Marsh, 5th con. Whitechurch.

Vaccinium macrocarpon, Ait., Cranberry. Stems sometimes five feet long, often densely matted; yields fruit very abundantly; the cranberry of commerce. Easily cultivated in situations where the bed can be flooded, and very profitable. Found in damp places on glebe land, 2½ miles east of Toronto, north of Danforth Road. In 1870 a square rod of this patch yielded one-half bushel of fruit. Now nearly all ploughed over. Of rare occurrence in the county.

(To be continued.)

W. BRADIE.

TORONTO.

AND SO THE ENGLISH FARMERS HAVE GOT their "Agricultural Holdings Act," and much good it promises to do them! The principle it establishes is, that a landlord and tenant may, if so they choose, enter into an agreement whereby the tenant cannot be ejected without compensation for such unexhausted improvements as he may have earned out with the knowledge and consent of his landlord. This could have been done equally as well without as with the Act—in fact, the Act is a humbug, and the English farmers are well aware of it. But it will answer one purpose very well—and that is, to stave off, for a year or two, legislation upon a subject that must, sooner or later, become the leading question in Great Britain, viz., the whole system of land tenure.

WE LEARN FROM THE *BOREYGEON Independent* that there is great prospect of the Rice grass of the inland lakes being utilized in the manufacture of paper. The grass, from experiments at Lindsay is proved to furnish a remarkably fine sample of paper without any foreign mixture. The only drawback hitherto has been the expense of cutting, which has had to be performed by hand and which cost \$20 a ton. It is now proposed to employ steam machinery for cutting the grass, and by this means the cost can probably be reduced one half, in which case it is beyond all doubt that these lakes will become the centre of a very large manufacturing industry. Steam cutters for the grass have already been tried at Lake Erie, and failed, not because they were unfit for the work, but because at the season the grass was only to cut the level of the lake had fallen to such an extent as to render the rice beds little more than mud banks over which navigation was impossible. This difficulty does not exist in these inland lakes, the Government having placed the whole of the waters under supervision, and appropriated a sufficient sum of money to build new dams and repair old ones. An agent is now in Europe with good prospect of raising capital to commence work on a large scale.

OUR OPINION ABOUT THE HULLLESS OATS is already known to our readers. In corroboration of our assertions,

we reproduce a few sentences from a gentleman residing at West Macedon, N.Y., who says, in the *Rural New Yorker*.—I don't propose to say much about the "Hullless" oats. Mr. Boutelle doubtless was familiar with the great Ramsdell oat humberg, which succeeded so well for one or two seasons, and then, with its great popularity, piles of money and rich proprietors' (it "stepped down and out," and will be wise enough not to pursue the subject to the little end, as did the proprietors of the Norways. I had cultivated the Hullless oats as a curiosity long before Mr. Boutelle found that one grain. I have also distributed it as a premium for subscriptions to the *Rural New Yorker*, but never in a larger quantity than one ounce, and never recommended it as a field crop. It ripens unevenly, and, therefore, must of necessity waste much in harvesting. That a bushel of Hullless oats ("skinless, I call them,) is worth as much as three bushels of ordinary oats cannot be doubted. A gentleman in Canada sent me a sample of these oats and wished me to sell for him; said there were 3,000 bushels of them among a few farmers, and 2,000 bushels were sold at \$5 per bushel.

PAPER BARRELS for the transportation of flour are now made on a large scale in the United States. The barrels are made of successive layers of paper board cemented together, and subjected to enormous pressure. The sheet thus formed is then shaped in the form of a perpendicular cylinder, and united by a "dovetail joint," backed by a sheet of the same material as the cylinder, and nailed with double pointed wrought iron tacks. It is also furnished with iron and paper hoops. The heads are of wood, neatly turned and flanged, so as to constitute both a cover and a head. The paper from which the barrel is made is manufactured from wheat straw. The paper is not treated chemically in making the barrel, and is as clean and sweet as the original straw, the waterproof and color being entirely harmless, and upon the outer surface of the barrel. The advantages claimed over wooden barrels are that, being a perfect cylinder, and without the central bulge of the wooden barrel, there is a saving of 15 per cent in stowage; that they are enormously strong, having withstood a pressure of 4,000 lbs. from the inside; that they do not contract odors; that they are impervious to dust, vermin and insects; that they can be shipped each part separate and put together where wanted thus saving room; and that they are handled more easily than wooden barrels as they always roll straight.

AN AMERICAN BARREL to the case of Alderman Meek who only took to farming after he had realized a fortune in trade, is given by the Hon. Geo. Geddes in the *New York Tribune*.—William Chamberlain, of Dutchess Co., N.Y., was formerly an importing merchant in New York. The time came when he could indulge his love of country life on the farm, and still carry on his mercantile business. The first sixteen years of his youth had been spent on a Vermont farm, and he had doubtless learned many things that were of use to him when he came to own one. However this may have been, he took an old, worn-out farm, and not only brought back its pristine fertility, but made it profitable in the direct returns, and he has introduced, in large numbers of—by far the best variety of very fine-wooled sheep that has ever been imported. I know of no more successful practical farming than I have seen on his place. Once I was much pleased, while visiting Mr. Chamberlain, to be present when one of the native-born and his long-farmers of the neighborhood came to this gentleman farmer for advice as to what he should do with his own worn out farm, on which he had lived and cut hay, and sold it to the city of New York, until the crop had fallen to a very low yield, and just then the price was very low. This man, to the manner born, had seen his own farm growing poorer and poorer, and he had seen this New York merchant turn barrenness into fertility, and he, like a wise man, choked down his pride and came for advice, introducing himself, and stating his case, and listened with intense care to the advice which Mr. Chamberlain took pleasure in giving. The sum of this whole matter is: The most successful farmers of the vicinity are the best advisers of any new beginner in farming as to the best general management of his farm, and there are none of us that ever know so much about farming that we cannot learn a little by comparing notes with our neighbors.

The Education of Farmers' Sons.

EDITOR CANADA FARMER. — In the March number I noticed some remarks of yours on the important subject of education of farmers' sons. Our system of Public School Education is miserably deficient. The present programme of studies, although perhaps well suited for High Schools, contains too many subjects for the Public Schools which should be strictly confined to laying the groundwork of a sound English Education—for instance the three Rs, with, in the higher class, Canadian Geography and History, Botany and Entomology can only be taught efficiently during intermission, and give practical lessons on the spot.

As for Mathematics, Algebra, Dynamics, Hydrostatics, with the different 'ologies and 'osophies, these things should be relegated to the High Schools, Grammar Schools, and Collegiate Institutions. Farmers' sons do not generally require them, and their heads are so crammed with odds and ends of these things, that they either become conceited prigs, or get disgusted with their studies, and become stupid oafs. Such education will do very little towards improving the minds of our country lads, and, if they are intended for farmers, they ought to commence their lessons in ploughing, etc., etc., as soon as they are able to guide a plough. If they are trained up in a really intelligent manner, they could improve themselves during our long winter evenings. This could easily be set to rights by the Council of Public Instruction, whose business it is to prepare the Programme.

Another branch of Education, in which I fear our country lads will prove apt pupils, is a knowledge of horse-racing, with its accompanying evils of pool selling, intemperance and profanity—which, I am sorry to say, appears to be fast extending into the rural districts, and making those worse who were by no means too good before. The Municipal Corporations could prevent this if they pleased, but they do not seem to care much about it. Our sons have hitherto been too prone to leave the farm and seek employment in the cities and towns, as it is, without inculcating them with a love of horse-racing and pool-selling.

Another serious evil which I observe is increasing, is the tendency of well-to-do farmers to sell or lease their farms, and rush into mercantile business for which, from their previous habits of life and modes of thought, they are by no means suited, and when they fail, and failure with them is only a question of time, they will probably feel disinclined to return to farming, and will travel about as agents for sewing machines and other inventions, and will look back with regret to the time when they were in a situation of independence, and enjoyed the satisfaction of being able to pay all their debts at the end of every year.

CHAS. J. LYMAN.

Presqu'ile, Ont.

IT IS POSSIBLE THAT A WAY OUT of the dilemma of having the crops destroyed by insects, or of rendering the land infertile by the application of unassimilable poison, has been discovered by Mr S. J. Lyman, a chemist of Montreal. He has invented a compound of phosphorus and soap, which is applied in solution to the plants, and which, it is claimed, not only kills all insects, including the redoubtable Colorado beetle, but gives great vigor to the plants, and enables them better to resist the attacks of pests of all kinds. The feeling against the indiscriminate use of Paris-Green is one that is steadily growing in strength, notwithstanding the efforts of interested parties to pool pool any suggestion of danger, and the CANADA FARMER has done its best to get the use of the poison abandoned. We are confident that, sooner or later, an effective and unobjectionable remedy against the Potato beetle will be found. The efficacy of the phosphorus soap mentioned above may be tested at very small cost, and we would be obliged to any of our readers who try it if they will report the result.

AN ENGLISH FIRM, Messrs. Garrett, have invented a portable engine for threshing which burns straw for fuel. At a recent trial, from beginning to end, nothing whatever was used under the boiler but straw, and the draft at starting being dull, there was some delay in getting up steam. Shortly after 5 A.M., however, 75 lbs. pressure was shown, and work was started on a large stack of wheat, and continued without further impediment or delay, except the usual intervals for refreshment, until 4.15 P.M. The stack was finished at that time, and had

yielded 430 bushels of 60 lbs. each, from a weight of straw estimated at about 17 tons (of 2,000 lbs.) The total quantity of straw burnt and wasted was 1,996 lbs. In other words, 100 lbs. straw used as fuel, threshed out a net weight of 1,700 lbs. of straw, extracting from it 1,275 lbs. (21½ bushels nearly) of wheat—making a total weight of nearly 3,000 lbs. carried through the threshing for each 100 lbs. of straw consumed. There will soon be a field for these straw burning engines in our rapidly developing Northwest.

Perillus Circumcinctus.

Mr Isaac Watts, of Toronto, brought us, for naming, an insect which he found on his potato vines. The insect is the *Perillus circumcinctus*, and as it is a friend, and not an enemy, to the farmer, we have had it engraved, so that it may be known and spared. It is a carnivorous insect, and preys upon the larvæ of other insects, among them the larvæ of the Colorado potato-beetle. Unfortunately, like the rest of us, the *Perillus* has its bad points. It



preys on the larvæ, not only of injurious insects, but also of those which are not noxious. But, on the whole, it may be reckoned a good friend. The line to the right of the cut shows the exact size of the insect.

In color, the *Perillus* is a deep, chocolate-brown, with broad margins and bands of creamy white. It attacks its prey with its beak, upon which it transfixes its victim. Thus being done, it plants itself firmly on its feet, with the beak raised and the victim spitted upon it, holding it aloft while it extracts the contents of its body.

FEARS OF THE EXHAUSTION OF THE GUANO DEPOSITS may now be considered as dispelled. The engineer of the Peruvian Government has estimated the quantity of guano in newly discovered beds to be not less than 10,000,000 of tons—enough to load a vessel of 300 tons every working day in the year for one hundred years to come. This estimate is stated by British officers to be rather under than over the probable amount. As the supply at the Chincha Islands is totally exhausted, and that from the Guanape Isles is nearly so, this news will be welcome to the farming community. The newly-discovered deposits are said by French analysts to be richer in phosphoric acid and ammonia than the best of the Chincha Island guano, but samples brought to London did not give as high average results on analysis, ranging from 11.01 to 16.65 per cent. of phosphoric acid, and from 6.55 to 15.08 per cent. of nitrogen (equivalent to 7.95 to 18.31 per cent. ammonia.) The new guano is reported as for the most part in excellent condition, dry and free from lumps.

THE FOLLOWING amusing anecdote of Coleridge and Wordsworth is told in Cottle's "Life of Coleridge":

"I led the horse to the stable, when a fresh perplexity arose. I removed the harness with difficulty; but, after many strenuous attempts, I could not remove the collar. In despair I called for assistance, when aid soon drew near. Mr. Wordsworth brought his ingenuity into exercise; but, after several unsuccessful efforts, he relinquished the achievement as a thing altogether impracticable. Mr. Coleridge now tried his hand, but showed no more grooming skill than his predecessors; for, after vainly twisting the poor horse's neck almost to strangulation and the great danger of his eyes, he gave up the useless task, pronouncing that the horse's head must have grown (gout or dropsy?) since the collar was put on; for he said it was a downright impossibility for such a huge *o frontis* to pass through so narrow a collar. Just at this point a servant girl came near, and, understanding the cause of our consternation, 'La, master,' said she, 'you don't go about the work in the right way. You should do like this;' when, turning the collar completely upside down, she slipped it off in a moment, to our great humiliation and wonderment, each satisfied afresh that there were heights of knowledge in the world to which we had not attained."

A CONTRIBUTOR TO THE *Gardeners' Monthly* adds his mite to the literature of new diseases. He says that a startling discovery has been made in consequence of the death of many florists and gardeners with almost identical symptoms. The curious nature of the disease attracted the notice of the doctors of England generally, and of those of London and New York, etc., especially, so as to excite their interest to a high degree, and one of them examining the head of a florist in the employ of the well-known firm of Pater & Son, found the cerebrum all gone, and the cerebellum covered with numberless reddish spots, which, upon microscopic examination, proved to be representations of as many different varieties of scarlet Pelargoniums. The fact being established beyond a doubt, the doctors, however, have not yet agreed—as they never do on any subject—on the name to be given this new disease. Some are for calling it Pelargonionomania, others Geraniomania. The reader's interest in the story will subside when he learns that the discoverer was the celebrated Dr. Looksharp.

THERE ARE NO FURTHER developments in the scandal caused, as mentioned in the CANADA FARMER last month, by the endorsement by Mr. Kelley, Secretary of the National Grange of the United States, of a swindling "Grangers' Store" run by his brother-in-law. Mr. Kelley preserves a silence as complete as it is undignified and, presuming he has any ground of justification, unwise; and this, notwithstanding that each issue of the *New York Weekly World*, which was the first journal to expose the alleged connexion of the Secretary with Farley & Co., contains letters from Patrons demanding explanation. We see it announced that Mr. Kelley is about to publish a history of the Order. It may be that his silence is due to his unwillingness to forestall public interest; and that his work will be a complete history of the Order. Unless it be so, and unless his (forthcoming?) explanation be satisfactory, we can but repeat our congratulations to Canadian Patrons that Mr. Kelley is no servant of theirs, and that the respectability of the Order here will not be affected either by equivocal explanations, or by silence which has almost ceased to be equivocal.

"THERE'S MONEY IN IT;" and if there is still in our land a man who doubts that education to the farming profession will not bear fruit equally with education to the so-called "learned professions," let him read and ponder over these eloquent sentences from the record of the Transactions of the Highland and Agricultural Society of Scotland for 1874:—From the exceptional educational advantages which Scotland has so long enjoyed, agriculturists in this country have been greatly superior in point of instruction to those of most other countries, and it is also important to note that the increase in the value of landed property in Scotland has been exceptionally great. It was shown about three years ago, from reliable statistics produced by Government, when the Irish land question was before Parliament, that while the rental of land in Ireland had doubled during the previous hundred years, and that of England tripled, the rental of Scotland had septupled itself in the same time. There has been, then, in that space of time, an increase in the value of landed property in Scotland of 500 per cent., against an increase of 200 per cent. in England and 100 per cent. in Ireland. *This is a remarkable fact; and there can be no doubt that the explanation of it is to be found chiefly in the vastly superior school system which Scotland has possessed, and in the intelligence and enterprise which it has been the means of developing among her agricultural classes.* * * * * * The subject is one well worthy the attention of landlords, as it shows what magnificent returns may be reaped from a judicious expenditure in providing suitable education for those who have the management and cultivation of the soil.

IN ANSWER TO THE ENQUIRY of a Hamilton reader, we reply that the accounts mentioned about the properties of the Eucalyptus, the Australian gum tree, as a preventive of fevers from malarious influences are founded on fact. The tree has immense masses of roots which absorb vast quantities of water, and it is thus valuable in marshy districts. Unfortunately for us, it will not stand the slightest frost.

Agricultural Intelligence.

The Agricultural and Arts Association of Ontario.

A meeting of the Council of this Association took place in Toronto on May 26th, President McNab in the chair. The report of Mr. A. Smith, Principal of the Ontario Veterinary College, was read. It recommended an enlargement of the museum; the giving to cattle Pathology a better position in the course; the establishment of a library; the making more available of the School of Practical Science and Technology; a collection of anatomical models for the School of Agriculture, and for the professional teachers in the Veterinary College; the publication annually of facts relating to the College for distribution in Canada and the United States. Mr. Sheriff Gibbons, of Goderich, was declared to be member of the Association for District No. 10. A communication was read from Secretary Sandreth, of the Philadelphia Centennial Commission, asking for correspondence.

The Executive Committee recommended that the prizes on stock be increased. The alterations made in the prize list were that class 4, instead of being Canadian-bred horses, be agricultural draught horses, excluding Clydesdale and Suffolk breeds. Class 5 to be heavy draught, including Clydesdale and Suffolk breeds. The other classes to remain as before. The age of animals is to be calculated to the first of September instead of the first day of exhibition. It was agreed that the prizes of animals shall be increased in some of the classes at the rate of ten per cent. The increase was in blood horses, roadsters, carriage horses, heavy draught horses; Durham, Ayrshire, and grade cattle; Cotswold and Leicestershire sheep. The other classes to remain as before. In class 26 it was proposed to introduce a prize for Muscovy ducks, and in class 27 a prize is to be given for best broad-cast grain and seed sower. In class 31 the prize for hybridized fall wheat was to be reduced from \$60 to \$40. A prize was to be given for Late Rose potatoes. In wines, in class 35, it was proposed that there should be three bottles of "any other kind" of wine exhibited. With respect to fruit, a rule had been introduced that after the fruit had been placed on the table for exhibition it shall not be interfered with except by leave of the superintendent, and that no "ruined" fruit shall be exhibited.

The annual meeting is to be held on Wednesday instead of Thursday of the Show week. Rule 56 was altered so as to compel protests against Judges' decisions to be made in writing before the close of the exhibition. The ploughing-match prizes were increased to \$400.

A resolution was adopted fixing Sept. 1st as the nominal date for the holding of the fair, from which date the ages of all animals shown will be calculated.

A discussion took place on the prizes for cheese, and finally, on motion of Rev. Mr. Burnett, it was resolved that the prizes for cheese exhibited be \$50, \$30, \$20, \$10, that six cheeses be shown, and that the said cheeses be manufactured on the first and third Thursdays in July and August, and the first and second Thursdays in September, a written declaration to that effect to accompany the articles shown; and that the cheeses weigh not less than 45 lbs. It was also decided that class 6 and 7 in the dairy produce prizes be awarded to Canada made Stilton, Canada "loaf" and Canada "truckles" cheese.

On motion of Mr. J. Young, M. P., the Council agreed to give prizes for power-mortising, tenoning, etc.

A bronze model of a cow given by Mr. Wilkes, was assigned as the first prize for the best herd of Ayrshires.

An Executive Committee was appointed, consisting of Hon. Mr. Christie, Dr. Burnet, Messrs. Mayan, Waite and Aylesworth, to take what action they deemed proper to assist the Ontario Government in selecting articles for the Philadelphia Centennial.

THE ROYAL AGRICULTURAL SHOW for 1876 will be held at Birmingham, and will probably be the most successful of the Society's Shows.

THE NORTH AMERICAN AYRSHIRE REGISTER, published by Messrs Lewis & Sturtevant, South Framingham, Mass., is now issued. It contains the pedigrees of 238 bulls and 521 cows, all tracing clearly back to imported stock. The book is the product of three years of labor, and the appearance of it shows that no time has been wasted.

An Early Short-Horn Importation.

J. D. Chaffee, of Otsego Co., N. Y., says, in the *Country Gentleman*:

As there are no facts published in the Herd Book about the Hollis importation of Short-horns, I have taken upon myself the trouble to investigate the matter, and bring these pedigrees out of the woods. The facts are that Humphrey Hollis (the father of Thomas Hollis, as recorded in the Herd Book,) in the month of June, 1821, imported two cows, Heart and Nudd; they came over in the ship Illinois, Capt. Funck. Wm. Hollis, a son of Humphrey Hollis, came over in the same vessel with the cows, and assisted in driving the stock from Albany to Butternuts, Otsego Co., N. Y.

Mr. Wm. Hollis informs me his father Humphrey bred Heart, and she was sired by Wellington (679), bred by Chas. Colling, and from stock which his father purchased of Mr. Colling. Nudd was bred by George Morley, of Boylestone, England, from a cow called Ruddy, and sired by Wellington (679). The name of Ruddy degenerated into Nudd while in the hands of Morley previous to importation.

The cow Heart was a mottled color, red and white, the spots of red being about the size of a quarter of a dollar, a very fine cow and heavy milker. The cow Nudd was a red cow with white flank and belly, and some white in the face, and a very superior cow in all respects—said to be the finest cow imported to America at that time. Mr. Hollis also states that the bulls imported by John Wayne came over in the same vessel with him, and were driven to Cherry valley, in company with their own stock, and that both of the bulls were bred from the same stock as their own (the Colling stock). He also informs me that he was well acquainted with the stock of Chas. and Robert Colling previous to coming to this country; he distinctly recollects the paying for the use of the bull Wellington by his father, and many other items which are not necessary here, as this will set at rest the title Hollis importation in the future, and place the pedigrees of that stock beyond a doubt. The statement of Wm. Hollis is fully endorsed by his brother, the Hon. G. M. Hollis, of Butternuts.

THE FRENCH PEOPLE import every year \$15,000,000 worth of beef cattle.

THE CHICAGO TROTTER MARE, Clomentine, has been sold to Budd Doble for \$15,000. Her best record is 2:27½.

THE DEATH IS ANNOUNCED at his residence, St. Johnsville, Vt., of Mr. Quinby, the veteran aparian.

MR. J. LAINO, Pushoch, Ont., writes us that a ewe of his dropped a lamb weighing 14 lbs. three hours after birth.

EIGHTEEN HEAD OF HOLSTEIN CATTLE arrived lately, purchased in North Holland by J. H. Comer, Orange Co., N. Y.

RICE IS NOW COMING INTO USE for brewing, and the beer produced from it is said to be superior in color, flavor and liveliness, to that from any other grain.

THE NEW YORK STATE AGRICULTURAL SOCIETY has adopted a rule by which the age of animals entered for exhibition at the State Fairs will be reckoned from Sept. 1st.

A POLLED ABERDEEN YEARLING BULLOCK was bought at the recent sale at Morayston, Invernesshire, by Mr. McCombe, M.P., for £72, the highest price yet recorded for that class of stock.

LORD TREDEGAR is dead. He was an active promoter of the agricultural interests and was once a President of the Royal Agricultural Society. He was principally known in connection with coursing.

THE FIRST CHEESE FAIR was held at Ingersoll on May 25th, and was fairly successful, though sellers were melancholy about the decline in prices. The fair will now be held weekly instead of fortnightly as at first arranged.

MR. WILLIAM CHAMBERLAIN, one of the best known of the New-York State farmers, and a regular contributor to the *Country Gentleman*, died on May 12th in the 76th year of his age.

THE SUBJECT OF EXHIBITION AGES is being agitated across the water as well as here. The *N. B. Agriculturist* wants ages to be reckoned from 1st November or 1st December, instead of, as now, from 1st January.

MR. JAMES ALLEN RANSOME, head of the celebrated English agricultural implement firm of Ransome & Sims, is dead. He was 69 years old, and was one of the original promoters of the Royal Agricultural Society.

THE CHESTNUT COIT, Vicksburg, by Vandal, out of Blondin, by Commodore, has been bought by Mr. Forbes, of Canada, from Mr. G. Cadwallader, of Kentucky, for \$1,750.

MR. GEO. HOOD, says the *Guelph Mercury*, has sold a yearling Hereford Bull to Mr. Aldridge, of Ohio, for \$200.

THE MODEL FARM of the Agricultural College at Amherst, Mass., one of the best farms naturally in the town, costs to run it, with the garden, \$5,205. The receipts are \$2,036, \$3,169 less than cost, and yet people wonder that practical farmers do not believe in college farming.

AT NELSON, VA., a few days ago, a gentleman who had lost several sheep by dogs, put strychnine in large quantities upon one of the carcasses, and the next morning found thirty-one dead dogs in the field, the farthest one being less than one hundred yards from the dead sheep.

THE AGRICULTURAL EXHIBITION at Guelph will be held Sept. 14, 15 and 16. The Provincial Exhibition will take place at Ottawa, on Sept. 21, 22, 23 and 24. The Toronto Exhibition, the Hamilton Exhibition, and the Western Fair at London, are fixed for Sept. 28, 29, 30 and Oct 1. The Toronto exhibition will also continue on Oct 2.

EXHIBITION AGES.—The Council of the Agricultural and Arts Association of Ontario has adopted the suggestion that a nominal date should be fixed for the Fair, viz., Sept. 1st, to which the ages of animals entered are to be calculated. If this rule be generally adopted, a source of much unpleasantness will be avoided.

IN AUSTRALIA AND TASMANIA sheep have increased from 38,866,098 at the end of 1867 to 45,796,270 at the end of 1873, while cattle increased from 3,574,133 to 5,123,453 during the same period. In New Zealand, during the same period, the increase in the number of sheep and cattle was equally remarkable, the former multiplying from 8,418,579 to 11,694,863, and the latter from 312,830 to 491,113.

THE PRESENT TOTAL VALUE of the endowment and property of the Ohio Agricultural and Mechanical College is said to be more than \$1,000,000. The following departments of study are maintained: Physics, Chemistry, Zoology, Botany, Geology, Agriculture, Mathematics, Latin and Greek languages, Political Economy and Civil Policy, Mechanical and Free Hand Drawing, and History. There are at present 66 students at the Institution.

CANADIAN SHEEP IN KENTUCKY.—The *Nelson Co., (Ky.) Record* says:—Messrs. T. W. Samuels & Son, of Deatsville, this county, have some of the finest sheep in Kentucky, judging from the specimens of wool they have sent us. The fleece from their imported buck lamb Canada Chief, is sixteen inches long, and that from their imported ewes, Queen of Canada West and Victoria, fifteen inches each—and it is all of the finest quality.

MR. J. H. HOLDEN, Belleville, has made the under-mentioned sales of Ayrshire cattle recently:—To A. D. Denny, Cassadago, N. Y., imported cow (106), Netty, 1680; to J. B. Shattuck, Cherry Creek, N. Y., two year old Bull (825), Mahomet; to G. Avery, Buffalo, N. Y., yearling heifer (550); Grand Duchess, 1st prize winner of New York State fair, 1874; to A. Ireland, Middletown, N. Y., cows (461), Netty 2nd, 1678; [223], Primrose; [224], Mignonette; yearling heifer (920), Lady Kate, and two years old Bull (740), Canova.

MRS. KIMBERLY, of West Liberty, Ia., who has been buying so many costly Short-horn cattle lately, is an enthusiast on the subject of fine cattle. At Bloomington, Ill., she became the possessor of several fine animals, and at another sale bought the celebrated Breastplate, a famous Canadian animal, paying for the same a large figure reaching up into several thousands. Mr. and Mrs. Kimberly reside near West Liberty, own a large farm, and are reputed to be wealthy. The husband is said to be an extensive dealer in fine thoroughbred horses. Mrs. Kimberly is represented as a lady of culture, fine personal appearance, and bids fair to become the cattle queen of Iowa.

AT THE ROYAL AGRICULTURAL SHOW AT DUBLIN, lately, the first prize in his class was awarded to a two-year-old bull, Busaco, of the little Kerry breed. He was only 34 inches high at the shoulder, girth 50 inches, and length from top of shoulder to tail, 38 inches. His dead weight, calculated from these dimensions, it was supposed would be about 13 stone—equal to 282 pounds. A first-prize two-year-old heifer of the same breed was a trifle larger than the bull. For the Chaloner Plate for the best bull of all breeds, the microscopic Busaco was placed alongside the elephantine Short-horn bull King Richard the Second. The latter of course won over all competitors; but Tom Boland, the attendant squire to the renowned Lilliputian, Busaco, was very indignant at this decision.

THE PROSPECTS OF FARMERS IN THE WESTERN STATES this year are, as we write, June 12th, exceedingly blue. The districts devastated by grasshoppers, last year, are being overrun by the young hatched from eggs deposited there last fall. The insects are not yet sufficiently developed to take flight and settle down in billions on other communities. Scurvy has appeared in some of the districts from which every green thing was devoured last year. There are great hopes that the pest will not become permanent. Some farmers in Kansas, have found that three-fourths of the grass-hoppers contain well-developed live maggots, which, they are confident, will soon exterminate the pests in this country. In further proof of the existence of this maggot, they say a large pile of grasshoppers which they have killed were almost immediately alive with maggots.

Short-Horn Sales of the Month—Important Purchases for England.

The past month has been one of great activity in Short-horn circles, both on this continent and in England. A noteworthy occurrence is the purchase here by Mr. Fox, of Cheshire, for exportation to England of several animals, for which very high prices have been paid...

The results of the English sales will be found elsewhere on this page and the preceding one. It will be observed that the competition for the fashionable strains is at least as keen as ever, and that the principal purchasers are bearers of titles, showing that the British aristocracy are inclined to maintain their good name as promoters of agricultural progress.

On this continent a series of sales took place at Dexter Park, Chicago, between May 18 and 22. Other important sales took place at Indianapolis and Cambridge City, Ind., on June 2 and 3. The best prices realized at these sales were as follows:—

DEXTER PARK, CHICAGO. L. W. Towne, Hannibal, Mo.

Table listing various cattle breeds and their prices, including 2nd Pride of Autumn, J. R. Craig, Edmonston, Ont., and others.

J. P. Sanborn, Port Huron, Mich.

Table listing various cattle breeds and their prices, including Duchess of Huron, J. R. Craig, Edmonston, Ont., and others.

Avery and Murphy, Port Huron, Mich.

Table listing various cattle breeds and their prices, including Joan of Arc, A. Crane, Kansas, and others.

J. R. Shelly, Shannon, Ill.

Table listing various cattle breeds and their prices, including 37th Lady Sale of Putney, J. R. Davidson, Kentucky, and others.

Table listing various cattle breeds and their prices, including Cambridge City, Ind., S. Meredith & Son, and others.

Summary of the Above Sales.

Summary table showing total sales for various categories like Towne, Sanborn, Avery, Shelly, and Lowder.

Sale of Mr. Douglas' Short-Horns.

At the sale, on June 2, of the Short-horn herd of Mr. Douglas, of Onondaga, Ontario, the attendance was very limited, and the prices realized low. The principal sales were:—

Table listing specific cattle sales from Mr. Douglas' herd, including Beauty, Dr. McCargow, Caledonia, and others.

On the following day, Mr. Martin, of Cayuga, held a sale. The attendance was equally bad, and only one animal, Wild Flower, purchased by Mr. H. Robins, of Canboro, sold for \$100.

Mr. PICKERELL, a well-known Illinois breeder, is gone to England to look for desirable Short-horns.

THE SHORT-HORN BREEDERS OF INDIANA held their fourth annual convention at Indianapolis, on May 26.

A BATES' BELL, the Duke of Columbia, has been sold by Colonel Gunter, of England, to go to the United States of Colombia, in South America.

TWO CAR-LOADS OF THOROUGHBRED BULLS were recently taken into Colorado for the improvement of the native stock there.

HON. M. H. COCHRAN, has sold to Mr. B. P. Goff, Kentucky, a red heifer calf, own sister to Breastplate, by Star of the Realm.

THE 17TH DUCHESS OF AIRDRIE has given birth to a fine heifer calf by 24th Duke of Airdrie. She belongs to Mr. Alexander of Kentucky.

THE 11TH DUKE OF GENEVA, a \$10,000 animal, belonging to Mr. Bedford, of Kentucky, died lately of disease of the heart.

COL. MORRIS, of Westchester Co., N. Y., has sold his entire herd of Short-horns to Avery & Murphy, Port Huron, Mich.,—so the announced sale by auction will not take place.

MESSRS. HUNTER, Alma, have sold to Mr. A. Walker, Co. Wellington, the Short-horn bull Sir James, by Knight of Warlaw, and the yearling heifer, Oxford Rose 3rd, by Oxford Duke.

DUKE OF CLARENCE (19611), the head of the Wetherby Grange herd, died lately of old age in his fifteenth year. He was vigorous to the last and leaves several cows and heifers in calf.

MR. GEORGE FOX, OF ENGLAND, has purchased from Mr. A. J. Alexander, of Kentucky, the 20th Duchess of Airdrie (12 months old) for \$18,000, and the 24th Duke of Airdrie for \$12,000.

MR. ROBERT HOLLOWAY, Alexis, Ill., lost lately his remarkably fine young bull 20th Duke of Goodness, by 14th Duke of Thorndale, 827, dam 9th Duchess of Goodness, bred by Mr. Bedford of Kentucky.

THE FOLLOWING IMPORTED BOOTH COWS.—Regal Star (and her roan bull calf by Sirius), Mistress Ford, Negus, Waterloo Rose, Princess and Baddow Rose, have been sold by Hon. M. Cochrane to Mr. A. Crane, Kansas.

MAZURKA BELLE, by St. Valentine, 2795, a valuable cow belonging to Mr. Bedford, of Kentucky, dropped dead in the pasture recently. A few weeks before she had dropped an extra fine bull calf by Treble Duke, 18465.

THE SHORT-HORN HEIFER, 16th Duchess of Airdrie, red, calved Nov. 7th, 1873, by 10th Duke of Thorndale, out of 11th Duchess of Airdrie by Royal Oxford, 480, has been sold by Mr. A. J. Alexander, of Kentucky, to Mr. E. H. Cheney, Gaddesby Hall, England, for \$17,000.

THE GROWTH IN VALUE of the particular strains of Short-horns now in request in England is shown by these figures:—In 1869, Siddingtons averaged \$1,550, at recent sales in 1875, \$2,827; Gazelles, in 1869, \$420; in 1875, \$885; Musicals, in 1869, \$275; in 1875, \$400.

MR. W. HOUSEMAN, writing in Bell's Messenger, speaks highly of the Seraphina tribe of Short-horns. "Wherever I have found Seraphinas," he says, "I have found good short-horns," an experience, adds the London Farmer, which agrees with the observations made by many breeders.

COL. TAYLOR, LONDON, ONT., has bought, in prospective, providing it be a heifer, a calf expected to be dropped by either one of two Lady Marys, by Earl of Seaham, belonging to Mr. Walsworth, Genesee, N. Y. The price is to be \$4,000 at three months old.

AT THE RECENT HAVERING PARK HERD SALE, Duchess Carolina was bought by Lord Penrhyn for 430 guineas; Lady Barrington, same purchaser, 200 guineas; Baron Haverling 5th, James Ludd, 160 guineas; Duke of Carolina 2nd, Frank Smith, 160 guineas. Twenty-nine head averaged £114, 14s. 9d.

THE KINGSFOTE SHORT-HORNS which were sold lately in England, brought an average of £180 4s 8d. The highest prices were: Ariel Marchioness, 450 guineas, Lord Bective; Ariel Countess, 350 guineas, Lord Penrhyn; Oxford Ida, Mr. Loder, 350 guineas; Judith, same, 355 guineas; Carrie Craggs, same, 300 guineas; Lady Secret, Sir C. Sampson, 320 guineas.

GOOD PRICE FOR A SERAPHINA HEIFER.—The North British Agriculturist says:—Seraphina Carissima 3d, roan, calved Oct. 12th, 1873, got by Cherub 3d (30725), dam Seraphina Carissima, by Baron Booth (2142), was bought lately from the breeder, Lord Sudeley, by Messrs. Boswell & Richardson, Kentucky, for 350 guineas. Seraphina Carissima 3d is full sister to Booth's Seraphina, dam of Cherub 4th, now in the Uppermill herd.

THE SIDDINGTON SHORT-HORNS were sold last month. The prices realized were very high; the average for cows was £275 6s. 8d., for bulls £106 8s. 0d. The best prices were:—G. zelle 21st, Lord Fitzhardinge, £436; Gazelle 29th, Mr. Larking, £425; Siddington 13th, Mr. Macintosh, £682; Siddington 16th, Lord Bective, £630; Siddington 16th, Mr. Larking, £530; Duke of Siddington 2nd, Lord Fitzhardinge, £420.

A LARGE SALE took place at Warrak, New South Wales, on 6th Jan., of stock belonging to the Australian Agricultural Company. Sixty-one bulls were sold, for which £2273 were realized. The highest price paid for any bull was 91 guineas, the purchaser being Mr. Coberoff. The Australian Company have a large stock of sheep and cattle. Their cattle number about 10,000, and their sheep about 120,000.

THE WICKEN PARK SHORT-HORN herd of Lord Penrhyn was sold last month. Twenty-two cows averaged £334 13s. 3d.; seven bulls, £71 8s. 6d. Waterloo 3rd, purchased by Lord Feversham, brought 500 guineas; Jessie, E. Bowley 300 guineas; Cherry Duchess 24th, Rev. P. Graham, 900 guineas; Waterloo 35th, D. Macintosh, 560 guineas; Cherry Duchess 22nd, Lord Bective, 900 guineas; Fifth Belle of Oxford, Rev. P. Graham, 1050 guineas; Cherry Duchess 25th, Mr. Fox, 720 guineas.

THE SALE OF THE HEYBRIDGE SHORT-HORNS came off in England lately. The highest sum for a cow was 960 gs., given by Mr. Larking for Fuchisia 9th, a daughter of Capt. Blathway's Grand Duke of York (by Seventh Duke of York from a Fidget dam); and the highest for a bull 200 gs. paid by Mr. Jacob Wilson for the Red Rose Bull, Airdrie, Geneva, whose dam is one of the favourites at Dunmore. The Wild Eyes and Fuchisia tribes were in great demand. Winsome 6th brought 610 guineas, R. Loder; Graceful, H. Brassey, 300 guineas; Winsome's Wild Eyes, Sir R. Masgrave, 300 guineas; Guinevere, J. Wilson, 340 guineas; Lady Fuchisia; D. McIntosh; 430 guineas; Winsome Wild Eyes 3rd, R. Loder, 400 guineas.

New Granges of Patrons of Husbandry.

The following new Granges have been constituted in the Dominion since our last issue:—

Division Granges.

11. KENT.—John McLean, Master; Henry West, jr., Secretary.

12. NORTH MIDDLESEX.—W. J. Anderson, Master; T. Campbell, Secretary.

Subordinate Granges.

174. CALEDON County of Peel. William Clarke Master Caledon; William Bell, Secretary, Caledon

175. DUBLIN, County of Peel. John Bradley, Master, Campbell's Cross, Peter McCool, Secretary, Campbell's Cross.

176.—DARLINGTON CENTRE, County of Durham.—Wm. Cryderman, Master, Enniskillen, C. W. Smith, Secretary, Hampton.

177.—MONO ROAD, County of Peel.—Thomas Penson, Master, Mono Road; Robert Shields, Secretary, Mono Road.

178. ROSE BUD, County of Lambton.—Alexander Hume, Master, Watford; H. S. Leacock, Secretary, Watford.

179. INMAN, County of Haldimand.—Joseph Mummy, Master, Dunville; Richard Hicks, Secretary, Dunville.

180. MILL CREEK, County of Grey.—Wm. Hewyill, Master, Heathcote; Samuel Goodfellow, Secretary, Heathcote.

181.—MIDHURST, County of Simcoe.—John McGowen, Master, Midhurst; George Sneath, Secretary, Midhurst.

182. GOWNSTOWN, County of Perth.—William Turnbull, Master, Gownstown; Robert Wilson, Secretary, Shipley.

183. AMARANTH, County of Wellington.—Wm Woodsworth, Master, Bowling Green; Thomas Durham, Secretary, Bowling Green.

184. FAIRFIELD, County of Huron.—Thomas Gregory, Master, Centralia; Sept. Hogarth, Secretary, Exeter

185. UNION, County of Kent.—James Mann, Master, Valetta; Mungo Stewart, Secretary, Valetta.

186. DOVER, County of Kent.—John Wright, Master, Chatham; William Stringer, Secretary, Chatham.

187. CHELTENHAM, County of Peel.—Joseph Little, Master, Cheltenham, Colin Campbell, Secretary, Cheltenham.

188. BATTLE HILL, County of Middlesex.—J. Watterworth, Master, Glencoe; L. Annett, Secretary, Glencoe.

189. ESQUERIE, County of Halton.—G. C. Tompson, Master, Georgetown; Wesley Reid, Secretary, Georgetown.

190. CHERRY GROVE, County of North Middlesex.—Robert Brown, Master, St. Mary's; John Cameron, Secretary, St. Mary's.

CATALOGUES are to hand of John Watson, agricultural implement dealer, Ayr, Ont., and D. M. Dewey, nurserymen's requisites, Rochester, N. Y.

THE PECULIAR STATE of the English grain market is shown by a fact cited by the *Mark Lane Express* where a farmer sold a quantity of wheat, the growth of one field, for £56, and for the straw which produced that wheat he realized £60!

MR. WILLIAM CARR, of the Bermuda Islands, is dead. He was the gentleman whom we noticed lately as having instituted some severe comparisons between farming in Canada and the place where he resided. Probably he fell a victim to the deadly climate of his favorite location, as many have done before him.

X. A. WILLARD, than whom there is no one more competent for the task, has written a comprehensive work on the making of butter. Mr. Willard is well known as Dairy Editor of the *Rural New Yorker*, as a lecturer before various institutions, associations, etc., and as the author of the standard work "Willard's Dairy-Husbandry," with which work the newly-published "Practical Butter Book" will doubtless take rank.

AT A RECENT EXHIBITION in Bremen, a fleece was exhibited from South Australia of a yearling ram, which was so remarkable for its fine silky lustre and softness, and the unusual length (over five inches) of the smooth, fine wool, as well as for its beautiful, almost dazzling whiteness, that all were satisfied that a fine, firm yarn, and very superior cloth, could be made from it. It was stated that it was a result of in and-in breeding of Negretti sheep with Leicester (Lincoln) rams, the number of generations required was not stated, however.

THERE MUST HAVE BEEN some hard feelings between the tenant who inserts the following advertisement in an English paper and his landlord:—WANTED IMMEDIATELY, to enable me to leave the house which I have for these last five years inhabited, in the same plight and condition in which I found it, five hundred *live rats*, for which I will gladly pay the sum of five pounds sterling; and, as I cannot leave the farm attached thereto in the same order in which I got it, without at least five millions of docks and dockens (weevils), I do hereby promise a further sum of five pounds for said number of dockens.—N.B. The rats must be full grown, and no cripples.

Seeds.

How "English Peas" come to be Weovilly.

We noticed a complaint in the *Gardeners' Monthly*, lately, that a packet of Carter's 1st crop received from England had been found to be affected by pea-weevils. Our contemporary mentions the strangeness of the fact, it being supposed that the insect is not destructive except on this continent.

We think we can explain the mystery. The peas were, probably, not English peas, but Canadian peas. English nurserymen have discovered that peas grown in Canada are brighter, more vigorous and altogether a better article than the home-grown product; and so large quantities are grown here, shipped to England and thence retailed at more or less fancy prices, a very large trade being done with the United States.

The misfortune with the English dealers is, that they are not sufficiently well posted in Canadian farming matters to enable them to select the proper location for their seed-farms. The pea-bug thrives as well in some parts of Canada as in the United States. In localities lying to the north and north west of Toronto, the insect does not prevail and it is to that section that the continent owes the possibility of the cultivation of peas as a paying crop.

Indian Wheat.

An enquiry through the *Country Gentleman* for information about Indian wheat called forth the following reply:

It resembles buckwheat. Sow half a bushel to an acre any time when the frost will not kill it. The sun will not blast it. It will produce from 30 to 60 bushels per acre, and ripens at the same time as other buckwheat, or in same number of months. Cut and cure in same way: run it through a smut mill before grinding to take off the bitter fuzz from the skin; make griddle cakes, or bake the batter in a pan one inch deep and eat warm. Both ways are good. The flour and cakes are in color light yellow. I think it will produce more flour to the bushel than buckwheat. I think it does not injure the land more than other crops; it will ripen in midsummer, and grow as readily next summer as pigeon grass. Sow oats on the ground next year, and what seed has scattered on the ground will grow with the oats, and is worth more than the oats per bushel, to feed cattle, hogs or fowls. I have lost my seed, and cannot find any.

Another correspondent writes on the same subject:—I have raised it in Stanstead Co., P. Q. Never raised any buckwheat. I never saw bread made from it. It makes very light cakes. It makes a very small quantity of flour to the bushel, (I cannot say how much) and the coarse flour is bitter, and cannot be eaten in bread. It is the last crop to sow in spring; the first to middle of June was soon enough in Stanstead county, and it was the first crop ripe in the fall, or rather summer. Yield about 25 or 30 bushels to the acre. Land that was too poor for any other crop we used for Indian wheat. It is injurious to the land only in the extraordinary vitality of the seed, which shells out considerably on the land, and will grow on plowing a field after it has been mowed for years. It is a very easy weed to kill with the hoe, much like the burweed, which, if cut off close to the ground, dies.

Why Potatoes Run Out.

All vegetables says a *Country Gentleman* correspondent, can be improved by careful selection of seed, beets, carrots, parsnips, turnips, peas and beans particularly so. Potatoes are equally susceptible of this sort of improvement, yet while more or less attention is paid to selecting seeds, the potato is neglected. For planting, it selected at all, those which are good for little else are chosen—not good enough to sell or to eat, but they will do to plant. This is the rule rather than the exception. The potato certainly is very accommodating in its willingness to grow, however mutilated. What other vegetable would bear being divided into detached parts, and regardless of circumstances, be expected to yield an hundred-fold?

It is supposed (if there is any supposition about it) that each eye or germ is a seed. But the potato is really a compound of at least two qualities; these are what may be called the stem and the seed ends, and when separated the seed end will produce numbers, the other size. It is true that each germ will produce a potato, but it is imperfect seed, and will "run out." If we take a germ or eye from the seed end of the potato and plant, and follow next year the same treatment, it reverts to the wild potato. The habit of promiscuous cutting and planting saves it from entire reversion, but its vitality is weakened, and it degenerates. If care is taken in selecting the best specimens of

medium size, and they are planted whole, or if cut, cut lengthwise, to secure all the properties of perfect seed, they will not run out, but show as much capacity for improvement as any vegetable grown.

THE EGYPTIAN WHEAT.—A correspondent of the *Rural New Yorker* writes:—While reading lately, I came across a mention of the *new variety* of wheat exhibited at the Agriculture Rooms a few years ago and sold at \$1 per quart. I think it was called Egyptian, or Mummy, or something of that sort, with a mysterious origin having very large, branching heads, short, plump, white berry. This same wheat my father grew over fifty years ago, in Schenectady Co., N. Y. Its true origin in this country was thus, beyond a doubt, viz.—A gentleman took the fresh grain from the crop of a wild goose which he shot on Lake Champlain; hence it was called then "Wild Goose Wheat," and "Champlain Wheat." It was what we call Spring Wheat. We grew it only a few years and discarded it as unprofitable, but a few sheaves were suspended from the rafters of the corn-house, where it must have been hanging about twenty years, when I brought some of the heads with me to Western New York, and for two or three years tried every means to coax a little of it to germinate, but without success.

DEPTH FOR PLANTING CORN AND PEAS.—In a series of experiments conducted by Prof. Beal at the Michigan Agricultural College, corn was planted at different depths. Some was dropped, (six hills in each lot) on the surface, and covered with an inch of soil compressed. That planted on the surface always kept ahead of all the rest, although the soil was dry as dust when planted on sandy land. Some was planted a foot deep and grew tolerably well. Peas were planted at different depths, from one inch to a foot. Those nine inches down did as well as any. Those deeply planted stood drought best and yielded best. We usually, says Prof. Beal, plant four inches deep, except for the very earliest of early sorts, then two inches deep.

Correspondence.

POULTRY FOR THE FARM.—Reader.—Read the poultry department in our last number. Perhaps the best breed for the farm where the fowl will have to scratch around for a living, is the Light Brahma.

NON-EXPLOSIVES FOR KEROSENE.—Reader, London.—Have nothing to do with any preparation which the vendors profess will render kerosene non explosive. Such things are dangerous frauds, the sellers of which ought to be punished heavily.

POULTRY AND DUCKS. G. Laing, Puslinch, Ont. You will find your questions about poultry answered at length in the May number. As to the ducks, if by the "big English duck," you mean the Aylesbury, you have a sort which is hard to beat.

LIVE STOCK FROM CANADA FOR THE UNITED STATES.—There is a duty of 20 per cent. on all live stock imported into the United States, calculated on the actual cost. Birds, fowls, and animals imported for breeding purposes are excepted on affidavit made before a United States Consul, verifying the facts.

THE PICKLY CONFREY.—Enquirers, Weston, Ont., Desboro', Ont., Moro, Ill., Anamosa, Ioa., and elsewhere.—We do not suppose that this plant is obtainable here. We believe that Messrs. Dickson & Sons, Chester, England, can either furnish it, or give you information where it can be got. This issue contains further particulars of the plant.

DRAINS IN ORCHARDS.—The correspondent who enquired about the utility of stone drains in orchards, and was answered in last month's issue, will be interested in a statement showing the power of roots that is now going the rounds. It is said that a tile-drain pipe was lately rushed at Hartford, Conn. by the pressure of root fibres growing around it. There is nothing unworthy of belief in the statement. Many similar instances have been recorded.

GRAPE VINE PEST.—D. A. Purdy, Newbury, Ont.—The segments of grape-vine, showing the work of an insect which pierces the stem at regular intervals, resembling sewing machine work, and the larva of which eats the pith, are received. If it is the work of a beetle, which we cannot tell without seeing the mature insect; it is probably allied to the *Oberia tripunctata*, which perforates raspberry vines in the same manner. If the mature insect can be sent, we can tell more about it.

Miscellaneous.

Fish-Culture and Fish Protection.

We now give the concluding part of Mr. Wilmot's address to the American Fish-Culturists' Association, which gives the mode of conducting the hatching-house :

This building is divided into several compartments, and the different sexes are placed in different pens. When ripe, a female is taken out and held over a tin pan or other vessel, and the eggs are extruded from the vent by a gentle pressure of the hand lengthwise along the abdomen. A male is then taken, and the same operation is performed, and the milt or semen taken from him is mixed with the eggs in the pan by gently stirring together, or by a tremulous shake of the vessel. By this means every egg will come into contact with the fecundating fluid of the male, and unless from some natural defect, either in the egg or the milt, all of the ova will become impregnated. The pan or vessel is then laid aside for a short time, and in order to ascertain the quantity, they are measured by means of a little measure, made to contain a certain number, and then placed upon the breeding trays; they are then laid in the hatching troughs, through which a constant flow of water from the stream is made to run. Here the eggs are allowed to remain during the whole period of their incubation, namely, from October and November till the following April and May.

During this time they are closely watched, and should any of the ova become bad, they will turn an opaque white color, and being easily noticed are removed by means of forceps, or other instruments adapted for the purpose. Should these white, or dead eggs, be kept too long, they will become putrid, and a fungus will begin to grow upon them; this would seriously affect and destroy all adjoining eggs.

Should any sediment or other deleterious substance settle upon the ova during the time of hatching, it is immediately washed off by sprinkling water upon them with an ordinary gardener's watering can. By this means they are kept clean and free from filth of all kinds. No frost is allowed to penetrate the building, and the flow of water is regulated at pleasure by taps leading it into each of the series of troughs throughout the entire building. At the entrance of each trough perforated screens are placed to prevent the possibility of small fish entering them. In this thoroughly protected state the ova are kept until the young fish emerge from the shell, generally in April and May, after which time also, and until the umbilical sac is wholly absorbed, they are carefully watched and protected.

In May and June the fry will have become beautifully developed, active little fish, and should be turned into the rivers or other waters which are required to be restocked, or at this time they may be placed in ponds of living water, and regularly fed until they become parrs, and afterwards smolts. At this latter stage they make their first migrant on to the sea, or other large body of water, where they become grilse, and afterwards salmon.

The *mulus operandi* pursued in the artificial impregnation of fish-eggs and the rearing of fry being somewhat minutely described, it only remains now to draw a contrast between the natural and the artificial methods of propagating fish. In the latter there is no possibility of losing either the egg or the milt by being swept out of or beyond the pan or artificial bed in which they were placed by hand, as would be the case when laid by the parent fish in the rough rapid waters of rivers and streams. In the one case a few moments will suffice to relieve the fish of the whole burden of eggs which she carries in her body, when she is set free and at liberty in the river; in the other, days and weeks sometimes are occupied in the prostrating effects of laying the egg.

It will appear equally clear that every egg put in the pan or vessel must necessarily come in contact with some portion of the vitalizing fluid of the male, and become impregnated, whilst great numbers that are laid in the streams by the female, without the presence of the male, are wholly lost. Neither will there be found in the artificial beds hordes of predaceous fish, waiting eagerly to devour the eggs as they are dropped, nor will trout, parrs, chubs, or eels be found there, seeking which may get the lion's share; and aquatic birds cannot gratify their appetizing desire for fish eggs within the precincts of the breeding room. Again, the ova are not subjected to injurious bruising and crushing from stones and gravel falling upon them in the act of being laid in the rough bottoms of streams.

During the six months in which the eggs are undergoing the process of hatching, no insects, water beetles, bugs, or aquatic animals, constantly on the alert for food in the gravel beds of rivers, can possibly attack or perforate the fish eggs in their snug and well protected beds in the artificial breeding room. Clusters of dead ova, spreading out in insidious fungus growth to every adjoining egg, are not permitted here.

The baneful efforts of all kinds of sediment and of various substances from mills, manufactories, manures, &c., are all regularly and systematically cleaned from the eggs when found resting upon them; neither anchor ice,

nor ice floes, nor freshets, destroy or sweep them away when thus cared for. Here, from the fostering care and protection afforded them, a vastly greater number of eggs produce living fish. Well may it be said that "from the cradle to the grave the salmon has but one constant succession of remorseless enemies," and that "not exceeding one per cent. of the ova laid in the natural way ever produces a living animal." Contrast this with the artificial system, and the gratifying result is an increase of at least seventy-five per cent., and even this average is overcome at the present time at the several Canadian and American fish breeding establishments, where at their commencement a few years ago, only thirty and forty per cent. were obtained; but now, from close application and well devised experiments, ninety per cent. of the ova laid down has produced living fish, and not in small numbers either, but amounting in several instances at some of these establishments to millions of fish in one season.

These statements ought to show clearly the great superiority of the one system over the other; and when it is shown that by ordinary intelligence and industry an increase of seventy to eighty per cent. of one of the natural products of the country can be brought, it ought not to be viewed in any other light than that of wisdom and economy on the part of Canada and the United States to generally adopt it.

Perhaps in no part of the globe can there be found so wide a field for successfully carrying on this new industry of propagating fish, as in the territory of the United States and in Canada. The limpid waters of the many large rivers and multitudes of smaller streams, the immense inland seas of pure fresh water and the numerous inlets and bays to be found everywhere along their extensive maritime coasts, are sources for yielding wealth that can not be surpassed. And now that the people and the Governments are becoming more alive to the great benefits which are to be obtained from the inland and coast fisheries of their respective countries, every effort should be put forth by those in power not only to sustain, but also to increase and multiply the products of those extensive nurseries by a vigorous application of such means as will best conduce to the growth and expansion of the pisciculture of the two countries.

French Leech-Ponds.

How some of the proprietors of leech-ponds manage things in France is told in some shocking disclosures which have just been made. There are certain ponds in the neighbourhood of Paris from which the market of the fair city is supplied with leeches. It is the custom of the proprietors to feed their leeches occasionally by turning into the pond live horses aged or ailing and doomed to die, but whose fate it is to succumb at last to the voracious blood-sucking of hundreds of these aquatic little creatures. The horses are driven into the pools up to their girths and allowed to remain there until they expire from loss of blood. The black loathsome vermin attach themselves to their limbs in such quantities that the appearance of the poor quadruped so beset is spoken of jestingly as "wearing the *caloon*" (or drawers.) A man named Moulm, whose little child, a boy of seven years old was sometimes allowed to play with a superannuated horse on the premises, turned one of them one day into the pond to feed his leeches, and went away leaving the poor animal to his fate. On his return his little boy was missing. He had waded into the leech pond to seek his play fellow, and, having reached the horse, he clung to his neck in desperation, his naked little legs covered with the thirsty blood-suckers. The father found his dying son, of whom he was very fond, also "wearing the *caloon*." The story requires no comment to heighten its horrible effect on the minds of any of our readers.

Periodical Flow of Sap in Trees.

Baranetzky, of the Observatory at Kieff, has investigated the periodicity of the bleeding of certain plants and its cause. Hofmeister was the first who recognized that this phenomena was one very widely observed among forest trees, and the daily and annual periods of this flow of sap have been examined into by several persons. Among the newer results arrived at by Baranetzky, it may be mentioned that he has been able to show that the daily variations of temperature had but little to do with the flow of sap, the latter being as decided in trees protected from temperature variations, by being inclosed in the hot-houses of the botanical gardens, as in the trees of the open air.

The variations are perfectly regular, attaining their maxima and minima on the same day and at the same hours, and seem to him to indicate that the influence of temperature on the periodicity of the bleeding is, at least in certain plants, not direct and immediate, but of such a nature that it at first becomes manifest some time after the action of that which causes it. By introducing an artificial temperature variation, this idea was brought to a severe test, and it was shown that the temperature had really but little to do with the flow of sap, although it would be hasty to conclude that it had no influence whatever. It is only in the case of great temperature variations (for instance, a change of 20° Fahr.), that the normal rate of flow of sap is sensibly disturbed.—*Garden*.

Preservation of Wood by Lime.

M. Letail, railway contractor, of Ferniny, has communicated to the Society of Mineral Industry, at St. Etienne, France, the results of his observations on the effect of lime in preserving wood and his method of applying it. He piles the planks in a tank, and puts over all a layer of quicklime, which is gradually slaked with water. Timber for mines requires about a week to become thoroughly impregnated, and other wood more or less time, according to its thickness. The wood acquires remarkable consistency and hardness, and it is said will never rot. Wood has been prepared in this manner for several mines, so that the plan will shortly be tested on a considerable scale. Beech-wood has been prepared in this manner for hammers and other tools for several iron works, and it is said to become as hard as oak without losing its elasticity or toughness, and to last much longer than when unprepared. It has long been known that wood set in lime or mortar is preserved from decay, but no systematic plan for its preservation has until now been attempted.

FLOWING WATERS.—Water flowing in a body, such as a river, will run sufficiently swift with a fall of one foot per mile. A smaller river will require a fall of two feet per mile. A brook will not keep an open course under four feet per mile, while the water in a small covered drain will require at least a fall of ten feet per mile to set the water in motion.

A HEART WOUND NOT FATAL.—C. L. Ford, of the University of Michigan, informs the *Medical Record* that a severe wound of the heart is not necessarily fatal, as instanced in the case of a deer which was shot the past Winter, having a bullet in its heart that had evidently lodged there a year previous, as indicated by the cicatrix. The shot had traversed the muscular structure for three inches nearly parallel to the septum. "The whole indication," he says, "is complete recovery from the injury done at the time."

THE EXCLUSION OF DAMP FROM BRICK-WORK.—It is stated that one of the most effective methods of accomplishing this object is the following: Three-quarters of a pound of mottled soap are dissolved in one gallon of boiling water, and the hot solution spread steadily with a flat brush over the outer surface of the brick work, care being taken that it does not lather; this is allowed to dry for twenty-four hours, when a solution formed of a quarter of a pound of alum dissolved in two gallons of water, is applied in a similar manner over the coating of soap. The soap and alum form an insoluble varnish, which the rain is unable to penetrate, and this cause of dampness is thus said to be effectually removed. The operation should be performed in dry, settled weather. Another method is to use eight parts of linseed oil and one part of sulphur heated together to 278° in an iron vessel.—*Scientific American*.

NEW CURE FOR WOUNDS.—Mr. S. W. Hemenway writes to the *Scientific American* that he wishes to publish the following cure for punctured wounds for the benefit of all who may need it: "As soon as such a wound is inflicted, get a light stick (a knife or file handle will do) and commence to tap gently on the wound. Do not stop for the hurt, but continue until it bleeds freely and becomes perfectly numb. When this point is reached you are safe; all that is then necessary is to protect it from dirt. Do not stop short of the bleeding and numbness, and do not on any account close the opening with plaster. Nothing more than a little cerate on a clean cloth is necessary. I have used and seen this used on all kinds of simple punctures for thirty years, and never knew a single instance of a wound becoming inflamed or sore after the treatment as above. Among other cases, a coal rake tooth going entirely through the foot, a rusty darned needle through the foot, a bad bite by a sucking pig, several instances of file shanks through the hand, and numberless cases of rusty nails, awls, etc.; but I never knew a failure of this treatment."

THE LANGUAGE OF ANIMALS.—On the subject of language of animals, Aristotle confines himself to saying that some "are capable of hearing sounds and discerning the variety of signs." Plutarch also recognizes that "animals have only voices, and no language." Montaigne believes that beasts have a language; we do not understand it, it is true; but whose is the fault? "It is to be guessed," he says, "whose is the fault that we do not understand it; for we do not understand them any more than they do us; for the same reason, they may esteem us brutes as we esteem them." He further cleverly remarks "their movements discourse and treat." Dupont de Nemours imagines that beasts have a language, and he imagines he hears it. He has given us, as we know, the translation of the nightingale's songs; he has given us also the dictionary of crows, "a work which has cost him," he says, "two winters, and great cold of feet and hands." Coming down to later date, we remember finding in that quaint book "Life in the West," published a few years since by the late S. R. Wells, a chapter on this subject, in which the author gives a most entertaining account of his adventures in trying to get at the conversation of cattle, of his final failure, and his "escape with his life."

Farmer John.

By J. T. Trowbridge.

Home from his journey Farmer John Arrived this morning safe and sound. His black coat off, and his old clothes on, "Now I'm myself!" says Farmer John; And he thinks, "I'll look around. Up leaps the dog: "Get down, you pup! Are you so glad you would eat me up?" The old cow lows at the gate to meet him, "Well, well, old Bay!

—New York Tribune

Educated Wild Ducks.

The Wyandotte, Mich. Courier says that W. R. Jardine, who has charge of W. O. Hall's shooting demesne at Point Mouliere, has educated five wild ducks to an extraordinary degree. They are allowed to roam at will and will come at the call of their teacher when he is ready to start for the shooting grounds, either riding on the bow of the boat or swiftly gliding at its side.

HOW BUTTER IS MADE IN DENMARK.—In Denmark, the country of butter, and which supplies China and Japan, as well as England, with this commodity, the mode of its preparation has completely changed within the last sixteen years. The milk while warm from the cow, is placed in vases capable of holding 50 or 50 litres, and immersed in reservoirs of water possessing a natural low temperature of 43 degrees; the churning also takes place at a low temperature, and takes generally 45 minutes.

THE ATTEMPT TO PRESERVE railway ties by the introduction of sulphate of copper into the pores of the wood has not proved successful in Europe. It has been ascertained that the chemical compound formed by the sulphate and the woody tissue is soluble to some extent even in pure water.

BRICK AND MORTAR.—Five courses of brick will lay one foot in height on a chimney, six bricks in a course will make a flue four inches wide and twelve inches long, and eight bricks in a course will make a flue eight inches wide and sixteen inches long. Eight bushels of good lime, sixteen bushels of sand, and one bushel of hair, will make enough mortar to plaster one hundred square yards.

NEW WAY OF MAKING SCREWS.—A new mode of manufacturing screws has been introduced at Edinburg. By this method the screw, instead of being made, as at present, by cutting away the iron of the bolt to leave the thread, is formed by rolling the screw on the bolt blank, while hot. It is claimed for this process that a great saving of time and labor is effected. Recent experiments show that the tensile strength and the holding power, in both soft and hard wood, of rolled screws, were considerably greater than those of cut ones.

THE FLIGHT OF BIRDS.—Birds have a more or less instinctive knowledge of engineering. When a bird commences its flight, if there is any wind, unless forced to take wing too suddenly, it will generally lean toward the wind at the start. The reason for such action is obvious. In order to readily ascend, each stroke of the wing must come in contact with a fresh volume of air, which could not be the case unless the bird either made a progressive movement, or the air itself was either past the bird, as in a wind current. The downward impulse of successive strokes would be greatly impaired in its efficiency by beating largely upon the air which comes in to fill the space from which the air has been removed by the preceding stroke. Hence the onward movement of a bird plays an important part in the efficiency of the action of the wings.

IF YOU ARE ABOUT EIGHTEEN YEARS OF AGE, you have 160 bones, and 500 muscles; 25 pounds of blood; your heart is 5 inches long and 3 broad; it beats 70 times a minute, 4,200 times an hour, 100,800 times a day, and 36,722,200 a year. About two ounces of blood are thrown out of it at every beat: so that it discharges about seven tons of that life-nourishing element every day. Your lungs will contain a gallon of air, and you inhale 21,000 gallons a day. The weight of your brain is something over three pounds, and the number of nerves upward of 10,000,000. Your skin is composed of three layers, and varies from one-eighth to one-fourth of an inch in thickness, and is subject to a pressure of 15 pounds to the square inch. Each square inch contains 3,500 pores, each about one-fourth of an inch in length, making an aggregate length on the entire surface of your body of 201,166 feet. A tile ditch for draining the body, almost 40 miles long.

EPPS'S COCOA.—GRATEFUL AND COMFORTING. By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack, wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Civil Service Gazette. Made simply with boiling water or milk. Each packet is labelled—"JAMES EPPS & Co., Homoeopathic Chemist, 48 Threadneedle Street, and 170 Piccadilly; Works, Euston Road and Camden Town, London."

MANUFACTURE OF COCOA.—We will now give an account of the process adopted by Messrs. James Epps & Co., Homoeopathic Chemists, and manufacturers of dietetic articles, at their works in the Euston Road, London.—See article in Cassell's Household Guide.

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