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VOL. X. No. VI.
(NEW SERIES.)

TORONTO, CANADA, MARCH 31, 1873.

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The Field.

The Oat Crop.

By Mr. Walter Riddell.

At a meeting of the township of Hamilton Farmers' Club, held at Cobourg, on March 22, 1873. Mr. John Pratt, President, in the chair. The subject was "Oats and their Cultivation," which was introduced by Mr. Walter Riddell, the Secretary; he said: The botanical name of our common oat is *Avena Sativa*. Its native country is unknown but most probably it came from Central Asia. There is no mention of oats in the Old Testament; we are told that Solomon fed his horses and dromedaries on barley. Oats were however known to the Greeks, who called them *Bromos*, and to the Romans who made use of them as provender for their horses, early in the Christian era. The oat is better suited to a moist than to a dry, and to a cool rather than to a warm climate, though their field of cultivation does not extend quite so far north as that of the coarser kinds of barley. In Scotland, oats are grown to the extreme north point; in Norway their culture extends to north latitude 56°, in Sweden to latitude 63° 30', in Russia these polar limits appear to correspond with those of rye; south of the parallel of Paris, oats are little cultivated. In Spain and Portugal they are scarcely known, yet they are grown with considerable advantage in Bengal.

The different varieties of oats are very numerous. There has been quite a rage of late years for new varieties, which have been sold at enormous prices. Of these the Surprise oat, and the Norway oat, are well known examples, both of them being now widely spread. Whether they are any better, or more prolific than the older varieties, remains to be seen when they have been longer and more generally grown, under ordinary cultivation. Some twenty years ago, there were 54 varieties of oats in the Highland and Agricultural Society's Museum, at Edinburgh. We have all heard of Dr. Johnson's defining oats as "food for men in Scotland, and horses in England," and the sarcastic comment "and where will you find such men as in Scotland, or such horses as in England?" For feeding horses, no grain is so much esteemed or so universally used for this purpose. In Scotland, Ireland, the north of England, and some parts of Germany, the oat furnishes a considerable portion of the usual food of the people.

The wide use of oats, and the ease with which they are raised on almost every kind of soil from the heaviest clay to the lightest sand, have won them a place in almost every rotation of crops grown amongst us; yet I believe there is no other cereal crop that receives so little attention from us, as our oats. Land that is too wet, or too poor, or too dirty,

or that cannot be got ready in proper season for wheat or barley, is sown with oats. They seldom get the best land on the farm. Most of us grow them because we must have them for feeding purposes, rather than for a market crop. Many of our farmers place their chief dependence upon their wheat crop, others upon their barley, and some upon peas, but none grow oats as their principal crop. Of all the plants cultivated in the field, oats are said, to have the greatest power to draw nourishment from the soil, and hence are considered as a very exhaustive crop. Some farmers on this account prefer buying all the oats they want, rather than grow them on their land. Where the soil is well adapted for growing wheat or barley, which bring a better price, this may be a judicious plan; but as a general rule it is always more profitable to raise oats for home consumption than to trust to a fluctuating market. With proper management on good land, a crop of oats may give as great a profit as any other crop—when it is considered that it requires less manure, and produces a large bulk of straw for the winter food of cattle and sheep, supplemented with turnips or other roots. In the part of Scotland where I came from, oats were the principle crop. The best crops of them were grown upon green sod, after land had lain in grass for two, three, or more years. Or if land was taken in and broken up, that had not been ploughed before, it was sown with oats, and gave generally large, bulky, crops—in some cases rather too much straw. In this part of the Province sowing oats on green sod does not seem to answer so well, probably from the dryness of our seasons; and then peas do so well on green sod, it is better to sow them on it as they are a profitable crop. Oats are generally sown here after wheat or barley. In the cultivation of oats, I have always had the best crops of grain when the land was ploughed in the fall, and sown as early as possible in the spring; but have had full as large crops of straw if the ground was ploughed in the spring, and sown rather late. If the land has been ploughed in the fall, I prefer to cultivate the ground in the spring, across the ridges, and use from two to three bushels of seed to the acre. They seldom receive any top-dressing or manure; though they would pay for either as well as any other grain crop. Though oats are harder than wheat (and will grow on soils not suitable to it), or any other grain crop; and though in mountainous sections where the soil is too cold and wet for other kinds of grain to grow, they will frequently give a good return:—yet, like all other grains, they thrive best on deep rich soils, and give the greatest returns on such soils. Oats, in whatever way they are harvested, are almost always bound up in sheaves. They are a nice clean grain to work among, pleasanter to handle than any other grain, and are all the better if cut before they are dead ripe. The straw is much better feed, the

grain is fairer, and thinner in the skin, and there is less waste in harvesting them. Oats require to stand longer in the stook than either wheat or barley, as they are very apt to heat when taken in too soon. For this reason many farmers prefer to let them lie a day or two unbound after they are cut; but the straw is better, and there is less waste of grain, if bound and set up as they are cut, and then allowed a sufficient time to dry in the stook. There is one kind of oat we are happily free from in this section; I mean the wild oat that is so common and so troublesome in some of the western counties of this Province. This weed is supposed to have been first introduced into Canada by some German emigrants; and when once they got into the ground they are very hard to get quit of. It is said they are as bad as our *charlock*. From the census returns of 1851 we learn that the quantity of oats grown in the Township of Hamilton was then 3075 acres, yielding 102,693 bushels, or an average of 33½ bushels to the acre. The county of Northumberland then returned 18,099 acres in oats, yielding 534,560 bushels, or 29½ bushels to the acre. In 1851 the Province of Upper Canada had 413,058 acres, yielding 11,391,681 bushels of oats, or 27½ bushels to the acre, and in 1861 it had 678,337 acres, yielding 21,229,874 bushels of oats, or 31½ bushels to the acre.

Go Gradually Deeper.

There can be no doubt that other things being equal, a deep soil is preferable to a shallow one, but it is quite possible to deepen the seed-bed injudiciously and injuriously. When the top-soil is a mere surface-coating, and the sub-soil hungry and barren, the deepening of the soil must be a work of time. To bury the thin stratum of good soil, under a mass of poor soil, would be most unwise; yet we have known this done, and then in view of a meagre harvest, deep ploughing has been denounced as a delusion and a snare. The true course in such a case, is to put the plough down an inch or so deeper each time, and if possible, give the land a good dressing of manure at every ploughing. In this gradual way, a deep soil and a rich one may be secured at one and the same time.

Deep ploughing secures to some extent the benefits of drainage. Nothing is more detrimental to the life and health of plants, than the continuous immersion of the roots in stagnant water. Trees are often killed in this way by the back-water of mill-dams. In wet seasons, crops on shallow soils that rest on retentive sub-soils are drowned out. The deeper down the ground is stirred, the less danger there is of this.

Deep ploughing enlarges the farm, it gives more land to the acre. The rage is usually for broad acres, but deep ones are far preferable every way. Farmers generally cultivate too much land. If they would till less and do it better, if they would go down in

research of the new farm that there is under the old one, and bring it into culture, their business would pay them better, and be pursued more pleasantly. For deep ploughing saves labor, while it increases land. As a living writer on agriculture observes:—"If a farmer who has commonly ploughed his field six inches deep, will plough, the present year, to the depth of seven inches, and will put on seven loads of manure where he had previously put on six, he will, with the same labor, get seven bushels of roots or of corn, where he has commonly got only six. If then, the next year, he will plough eight inches deep instead of seven, and apply eight loads of manure instead of seven, he will find his crops increased in that proportion, upon the same land, and with no more labor. The next year or at the beginning of the next rotation, he may on the same principal, plough to the depth of nine or ten inches." While deep ploughing is beneficial to all crops, it is especially necessary in the cultivation of deep tap-rooted crops, like turnips, mangolds, carrot and parsnips.

About Barley.

(From the *Canadian Farmer*, 20th Month.)

I frequently go to the New York exchange—the great grain market—where I have learned that the highest price per bushel, is the four rowed Canadian barley. Last week the price of our State barley was easy at ninety-five cents per bushel; while Canada barley was held firmly at \$1.25. Canada barley is clean, bright and often shiny, all of one variety, and so free from foul seed and other grain that one must search a long time before he can find a single kernel of any seed, whereas most of the State barley offered consists of a mixture of two rowed, four rowed and six rowed grain, much of it having a dark, weather beaten color, and with the mass mingled more or less oats, wheat, buck-wheat, and seeds of noxious weeds. All such grain and seeds will make no malt. Hence they detract greatly from the market value of the grain, as the small quantity found in every bushel will prove a dead loss to the maltsters. Besides this, when a quantity of two rowed, four rowed, and six rowed grain is mixed together, one variety will be thoroughly sprouted before the remainder has grown sufficiently to have the germinating process arrested. Here, then, will occur another loss to the maltster.

I sincerely wish that the standard of excellence in barley was not regulated by malt and beer, for immense quantities of this kind of grain are employed for purposes which are not antagonistic to virtue and temperance. But as this standard is established, let the tillers of the soil put forth a united effort for improving the quality of their barley to such an extent that the standard of excellence at the corn exchange shall be grain that shall yield the largest percentage of barley meal for loaves and for cakes.

* The first step will be to procure an excellent quality of clean and pure seed. The seed must not only be free from wheat, oats, buckwheat, and the seeds of weeds, but it must be the product of careful and judicious selection and superior culture for four or five successive seasons. We want the Simon pure four rowed barley, which, when sowed on good land of fair fertility, will produce the genuine horedum vulgare with the same unerring certainty that a herd of Durham cattle is raised up from thorough-bred animals.

Then the seed must be kept pure with as much care as good farmers exercise in selecting their seed for a crop of Indian corn. If they were careful to do this, State barley would soon command as much per bushel as Canada barley. A goodly number of State farmers, who raise bountiful crops of superior wheat, produce just as good and clean barley as is shipped from Canada. The best farmers never sow barley after barley or buckwheat, except when the crop is designed for feed. If practicable, barley is cultivated on the best loamy soils of which there is a generous supply of silica and phosphoric acid. Generous top dressings of unleached ashes or caustic lime, will always aid materially in producing grain of a semi-transparent appearance; whereas the barley that is produced on a soil in which carbon preponderates in the form of muck, will usually be of an inferior quality.

A point of transcendent importance in the cultivation of barley is to have the grain ripen with the utmost practicable uniformity. To accomplish this object the seed must be buried at a uniform depth.

If the seed is scattered broadcast and harrowed in, the feet of heavy teams will bury much of it so deep, that many of the ears will be only half grown when most of the grain is fit to be harvested. There will be a loss to the farmer as well as the maltster. If the soil is heavy the seed should be buried not over one or two inches. But on light land the seed should be put at least three inches deep. With a good seed drill this object can be attained, but when the seed is covered with harrows the barley will grow unevenly; and will never mature with a satisfactory uniformity. Besides that, more than half a bushel of seed per acre will be saved when a drill is employed, and the yield will often be ten bushels per acre larger than if the seed had been harrowed in.

Cows on Pasture.

In a paper read by H. C. Drake, of Lebe Mills, Wis., he said in regard to

Pastures:

I am inclined to favor one large pasture and not two or three small ones, as is the practice of some to have Cows, it is true, like a variety of grasses, but that should be all in the same field. If a pasture is allowed to lay a week or over with no stock upon it, some places obtain a rank growth, and cattle when turned upon it will not rest until they have explored the whole field, and I think more grass is destroyed and trod down than when they range all the time in one field. A restless, uneasy disposition, I think, is cultivated by a change of pastures, which, with irregular feeding, is sure to affect the flow of milk unfavorably. Much less fence is required, and expense in that way saved by one pasture.

Cows should not only have a variety, but such a combination of grasses as will afford them some one or more kinds in maturity or approaching maturity continuously during so long a season as possible. This may be done by learning the nature of different grasses and sowing those which will mature in different parts of the season, as we may wish. If pastures be so arranged that they can be provided with shade, cows will show their appreciation of them by an appropriation of their cooling effects during a few hours of the sultry midsummer days.

Water.

It is perhaps unnecessary to say anything here of the necessity of providing cows with pure water. Yet it is so very important and so much neglected that this appears to be one of the truths that need a frequent repetition. When we consider that 57-100 of milk is water, and 31-100 of all good, soft, mellow cheese is water, we at once see the impossibility of the production of pure milk without pure water. It should not only be pure, but it should be in abundance, and in convenient places, to avoid too much exercise by the cow in obtaining it, as that tends to hurt the milk, and it comes into the hands of the dairyman carrying more animal heat and odor, which if not destroyed, just so much helps the milk on in its decomposition.

Meadows.

In speaking of meadows Mr. D. said: I think we have always overlooked the importance of a variety of feed—at least we are very much behind our English neighbors, who have for many years been noted for their fine pastures and meadows. In England, some 30 or 35 different kinds of grasses are in general use, many of them imparting a desirable fragrance to their hay, causing it to be eaten by their cows with a peculiar relish. In this country not more than six or eight are common, and cows are often kept through an entire winter on one kind of hay alone, which should be avoided.

Roots have been too much neglected, perhaps, mainly on account of the amount of labor required in raising them. Most of them are most relished by stock in consequence of their freshness and furnishing a variety, and some of them rank high in nutritive virtues. The total nutritive percentage in 100 pounds, as given by good authority, is, of potatoes, 20; sugar beet, 14; mangold wurtzel, 13; white carrots are only 7, and common white turnips only 4.

Another reason for sowing a variety of grasses is, that individual plants of the same species will not thrive in close proximity to each other, but intermediate plants will soon decay, as all are drawing heavily upon the same elements of the soil. But if different kinds of grasses are sown, the roots will interlock and thrive close to each other, and thus we get a good turf, in which no weeds can grow, and we have a clean crop of hay. The prevention of the growth of weeds is quite important, as many of them are eaten by the cows, and a bad flavor given to latter and cheese.

Silver-hull Buckwheat.

In answer to your inquiry concerning the merits of this new variety of buckwheat, permit me to say that I have looked into its history somewhat, and find that it probably originated in France, and a small quantity has been sent out by the Department of Agriculture. The grain is of a beautiful silver grey, varying slightly in shade, and the corners are less pronounced than in the ordinary variety, while the husks are thicker. Messrs. Platt & Barnes, proprietors of the large buckwheat mills in this State, to whom I have sent a sample, write:—"We would say, in regard to the silver-hull buckwheat, that it is altogether the best we have ever seen, and should judge it will make from three to five pounds of flour per measured bushel more than the ordinary buckwheat, and of better quality. We trust you will distribute the seed in the country from which we draw our supplies."

The Iowa correspondent of the Department speaks of its "wonderful yield—seven pounds of seed yielding thirty-five bushels of beautiful buckwheat, the weight of which is considerably greater than that of the ordinary." I believe that the weight of the ordinary long-cornered black or grayish buckwheat is from forty to forty-five pounds—scarcely more than the latter figures. The silver-hull weighed with me last year from fifty-eight to sixty pounds per measured bushel—an important difference! I have weighed none this year, but it looks to be full as heavy.

Concerning the yield:—I have grown it for two years, also the common kind, in adjoining fields, and find the difference to be surprisingly in favor of the silver-hull, perhaps yielding—I have made no accurate experiment with it—two or three times as much, under the same conditions of soil and culture. Many who saw it growing, estimated the yield at fifty bushels per acre. At any rate, it has been awarded the first premium in our county agricultural societies as a field crop, for the two years I have grown it, and the agricultural committee this year not only adjudge it the heaviest crop in the county, but say it was the plumpest and best filled buckwheat they ever saw. Unfortunately, an early frost cut a considerable portion of my crop on low-lying ground. There can be no doubt that it should, and eventually will, entirely supersede the old variety.—*H. S. Goodale, Berkshire Co., Mass.*

Cut-Worms and Corn.

Put the seed corn into a tight tub or barrel, and pour in enough water to keep it well covered after it swells. For each bushel of corn add a pound or a pound and a half of copperas, dissolved in warm water. Stir well, and allow the corn to remain in the copperas-water twenty-four or thirty hours. Stir several times while soaking. When the corn has remained in the water as directed, take it out and sprinkle a small quantity of land-plaster over it—enough to prevent the grain from sticking together—and plant. Corn treated in this manner will not be troubled by cut-worms, and it will be out of their reach before the effect of the copperas is destroyed. This remedy has been tried by my father for the last twelve years, and always with success. He has tried it repeatedly, in the same field with corn planted without any preparation, and the result was that his corn required no replanting, while in some instances the other corn required replanting two or three times. Other farmers in this portion of the country have tried this remedy, and always with success.—*Cor. Country Gentleman.*

Shaving the Meadows.

A correspondent of the *Country Gentleman* discusses the question why the hay crop is growing lighter from year to year. Among other things, he says: Another reason has been whispered, which is this: That on account of the great competition among the different mowing machine manufacturers, as to which machine shall shave—yes, literally shave—the surface of our meadows the closest, the roots of the grass are really and permanently injured in leaving them bare, and thus very liable to be frozen out absolutely. We believe a good deal of clover is killed out in this way, the crowns being sliced off to the very roots. Close mowing of grass, like close cropping of the human hair, is a very senseless practice. The "velvet cut," as it is called, which makes men with dark brown hair look for all the world like monkeys, deprives the head, to all intents and purposes, of its natural protection. So "shaving" the meadows deprives them of that natural mulching which is such a protection against the droughts of summer and the rigors of winter.

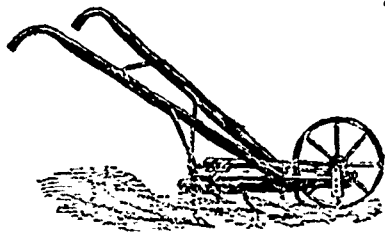
Agricultural Implements.

CULTIVATORS.

In early times in Canada it used to be a practice (and it still is with many farmers) in preparing ground for fall wheat, to plough it three times; once, late in the autumn, leaving it to rest over winter; in early spring it was ploughed a second time; and, just before sowing, a third time. This required a great deal of labor, and it was not until experience, proved again and again, that a thorough scarifying with the cultivator was equivalent to two ploughings, that this implement came into general use. The importance of the cultivator then, as an implement of husbandry, need hardly be discussed. It may be used at almost any time before sowing, and its use is always followed with beneficial results.

Like all other implements of its kind, the cultivator is designed to thoroughly shake up the crust of the soil to a depth of from 3 to 5 inches for the evaporation of surplus moisture, the absorption of atmospheric air and solar heat, and for a more thorough intermixture of manure, in short, when used on a field just before sowing, its pulverizing effects are such that new particles are brought into contact, new chemical affinities are formed and new life is imparted to the soil.

Of course, on sandy ground, which is already only too porous, the cultivator would be unnecessary, whilst on adhesive, and especially on clayey soils, it is indispensable and can hardly be used too frequently.



The "HAND CULTIVATOR," as its name implies, is both guided and impelled by the operator, and though more adapted for garden and nursery work, is not unfrequently used with great advantage in the field. It is intended as a substitute for the hoe, in destroying and preventing the growth of weeds between rows of young trees, plants, &c.; and can be set to any width from 8 to 14 inches. It is a light but durable implement, and when properly handled will do the work of half a dozen men with hoes.

A good serviceable horse cultivator for farm use is provided with from 5 to 7 iron prongs or "ploughs," projecting downwards from a strong wooden frame, and slightly curving forward towards their lower ends, which are shovel-tipped or "duck-footed." These prongs are so adjusted in the frame that they do not follow each other directly, but the wing of each hinder one is made to overlap that of its precursor, thus effectually shaking and stirring up the soil.

An excellent implement of the class, and one much used, is composed of a strong wooden frame of 4 transverse bars, resting upon an axle between two wheels. This frame is provided with 7 prongs, 3 in front and 4 behind, arranged as already noticed. To the axle are also attached two levers, one at each end close by the wheels, by means of which the frame may be raised or lowered, and the depth of dig thus regulated, as in the following:

The teeth or prongs in this implement may be made either of cast or wrought-iron with steel points. The wrought-iron is preferable because when made of cast-iron the tooth requires to be pretty stout to ensure strength, whereas a wrought-iron one may be considerably smaller, with the same strength, and will not be so apt to carry weeds along in front of it. An excellent contrivance on the implement also en-

ables the operator to raise one wheel at pleasure without interfering with the other—thus adapting it to hill-sides.

The same machine is now manufactured also with its frame in two distinct parts, hinged longitudinally, the one resting on the axle as in the case mentioned, and the other or moveable part provided with the prongs. In this way as will readily be understood, the pronged part may be dipped down considerably below the level of the axle, while the raising is done by simply elevating the entire frame as in the first example.

Still another cultivator is also considerably used, and deemed an improvement with regard to the distance apart of the prongs.

In both cases given, it will be noticed that whilst the lowering of the frame and prongs has been secured, there is no provision to have the prongs approach each other or separate farther from one another, were such a thing desirable.

The "PATENT FLEXIBLE IRON CULTIVATOR" is made in sections, like the zig-zag harrow of a former article. The teeth are formed of $\frac{3}{4}$ or inch bar iron, the bottom or shear being laid with steel.

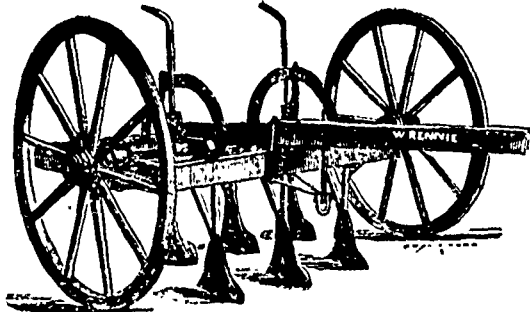
The chief advantages of this implement consists, as in the case with the harrow referred to in its adaptation of itself to all inequalities of surface, while the absence of wheels enables the operator to cultivate much closer to trees, fences, &c., than he could possibly do with the wheeled article.

In Great Britain, where farms are for the most part clear and even, and where farming is conducted more scientifically as a general rule than in Canada, the implements of this class are much more massive and elaborate than ours—being designed to do considerably more work. Amongst these COLEMAN'S PRIZE CULTIVATORS perhaps stand unrivalled. They

are intended for from two to four horses, and perform the operations of the cultivator, the broadshare and the scarifier. Besides the two side wheels behind, they are provided also with one in front, to secure uniformity of work, and the teeth are so arranged that they can be slipped upwards or downwards through sockets or mortices to any required depth, and there fixed. They are likewise provided with a

centre lever, both to regulate the depth, and to lift the teeth entirely out of the ground while turning; and with a side-lever or rack, for use on uneven ground, or when one wheel runs in a furrow. Their frame is so made also that an extra tooth may be applied behind each wheel to cut up the track.

In our next we shall treat of HORSE HOES—a large family nearly akin to the Cultivator.

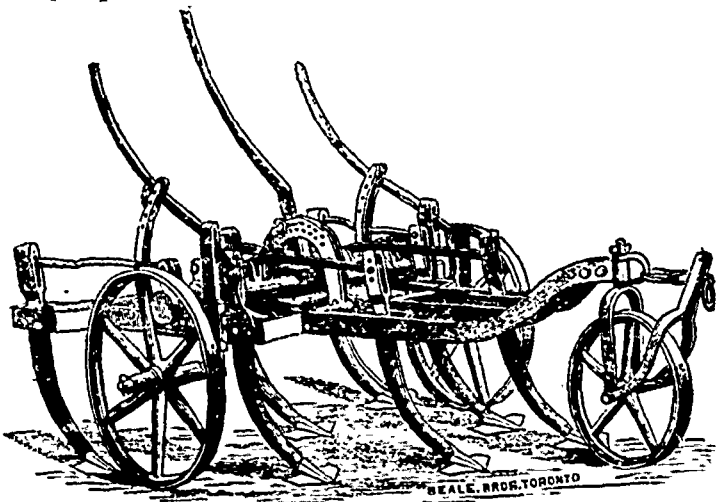
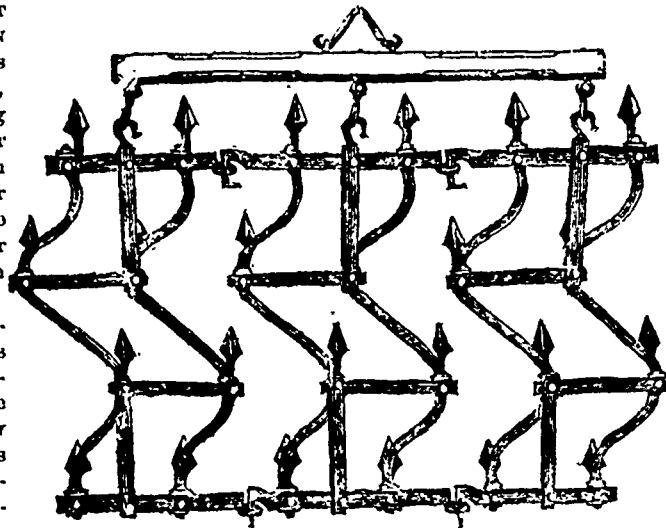


Protecting Farm Implements.

It is safe to state that more tools and machinery are used up by rust and exposure to the weather than by the actual wear and tear of use. Harrows are frequently left with the teeth in the ground all winter, and many people think because the teeth are iron, they are not injured. But the scale of rust that sometimes forms on harrow-teeth destroys more iron during the winter than is worn off by all the harrowing done in one year.

How often do we see good ploughs standing in the furrow all winter! Water not only fills the cracks in the wood but enters every joint, causing the grain of the timber to expand and then shrink in dry weather, and at length rot, before the plough is worn out; and the formation of a scale of rust on the iron where it comes in contact with the

soil, rapidly uses up the iron parts, so that implements not protected, go to destruction with astonishing rapidity, whether made of wood or metal. Waggon wheels that are allowed to stand in the storms and sunshine, even when well painted, rust out faster than they wear out. Water soaks into joints of the felloes and spokes, and between the tires and wood, rusting the iron and destroying the solidity of the structure. This is why waggon tires must be re-set so frequently. More iron will rust off sleigh shoes in one season, when they rest on the ground, even under shelter, than will wear off while running all winter in a snow track. The same is equally true of hoes, shovels, and many other tools. On a farm properly furnished with cellars and sheds, of course all implements should be kept under cover at all seasons. They ought to be off the ground, the wood-work, except handles of tools, should be well painted.



SCALE, ROAD, TORONTO

Grasses and Forage Plants.

Mangold Wurzel.

Mangolds now occupy a very prominent position in England husbandry—and it is much to be regretted that they are not cultivated in Canada to a far greater extent than at present. In most parts of Ontario they are a much surer crop than Swedes; a larger crop of them can ordinarily be obtained than of Swedes; and they keep better and are more valuable for cattle food than Swedes.

Varieties.

There are now several different varieties entering into general cultivation:—

LONG RED is a productive variety, root long, large, fleshy, grows about one third out of the ground, top full and bushy; mid-rib and veins of leaves tinged with red.

RO GLOBE resembles the preceding in the color of its roots and of its leaves. Is also a poorer yielder and more suitable for shallow soils.

ORANGE GLOBE is a very popular variety and largely cultivated, is very hardy, grows well out of the ground, with an orange tint *outside*, and of a yellowish white *internally*. It is usually very productive and well adapted to soils of a heavy character, carries a good bold head, the leaves having their mid-rib and veins tinged with red.

The **LONG ORANGE** resembles the Long Red in its habit of growth, the color of the root and of the leaves being the principal points of divergence. Some people prefer it to the Long Red, considering the light colored varieties more hardy than the red. Under suitable conditions, however, the Long Red is usually the most prolific yielder, and from our experience decidedly the safest and most profitable to grow in Canada.

There is also a variety known as the *Silvan Beet*, grown very extensively on the continent for its escholarino properties, but very seldom met with elsewhere. It very much resembles the Belgian Carrot in appearance, white, either with or without a green top, is long, grows deeply into the ground and is sweeter to the taste than the Mangold, but its product per acre is so greatly inferior that for field culture it cannot be recommended, but for feeding purposes in Canada the Long Red and Yellow Globe, are the right varieties to grow.

Suitable Soils.

The Mangold thrives best in soils that contain a proportion of clayey matter, although it by no means rejects those of a lighter character. For the vigorous development of the mangold, the soil in which it is grown must possess the necessary properties of moisture free from stagnation, and a liberal supply of mineral substances that enter largely into its structure. And in the case of the long varieties especially, free untrammelled penetration into the depths of the subsoil.

Preparation of Soil.

Autumnal cultivation and preparation of the land is essentially important for the Mangold beyond all other crops. Indeed, it may safely be asserted that labor is rarely so beneficially bestowed upon a farm as in clearing the stubbles, and getting the land into proper condition before the winter, with its rain and frosts, sets in. *Quality should always be preferred to quantity* in the labor arrangements of a farm; and, in this light, we hold that in the fall, when ploughing for Mangold or any other root crop, a team accomplishing two-thirds of an acre nine inches deep is more profitable to the farmer, in most cases, than an acre of land only six inches deep. The *mechanical* is just as important as the chemical conditions of the soil, it should be as deep as possible, in a fine state of minute division with sufficient moisture to ensure germination, and in as available condition to originate vegetation and maintain the plant throughout its various stages to ultimate perfection. A neglect of these important matters will surely operate disadvantageously on the crop. Whilst the Mangold rejoices in abundance of moisture, great care must be exercised in protecting the plant from a *superfluity*, as the injurious effects of such excess are speedily witnessed in the leaves assuming a yellowish hue, and the plant itself becoming sickly.

Manures.

It has already been pointed out how essential it is that the soil should be in a fine state of tilth for the proper growth of Mangolds; and it is equally important to guard against the application of farm-yard manure to this crop in a green state, as producing a tendency not only to oppose the easy descent of the tap root, but also to induce either a distorted growth of the main root or a growth of lateral roots, which affect materially the bulk and value of the crop. Farm-yard manure, when applied at the time of sowing the Mangold seed, should be in a *thoroughly decomposed state*, and, manuring in the autumn is decidedly preferable to that of spring. Organic manures, such as farm-yard dung, invariably increase the yield of Mangolds; whilst ammoniacal manures, while increasing the bulk, are found to have done so mainly by a mere increase of water contained in the root. Mr. Pusey, a very reliable British authority, in his experiments with dung and artificial manures upon beet-root, ascertained that on a soil which unmanured produced 15½ tons per acre, an increase was obtained of one ton per acre for each load of manure applied up to 28½ tons; after which the addition of more dung produced no effect. By combining highly nitrogenized manures—Peruvian guano, or woollen rags—with the dung, the yield was forced up to 36 tons per acre.

Mangold Wurzel being a direct descendant of a marine plant, salt enters very largely into its composition; indeed so largely is this the case that unless it is present in the soil in requisite proportions, the other valuable fertilizing matters, phosphates, ammonia and potash, no matter how liberally they may have been applied, will only be of very partial benefit to the growing crop. It may be mixed with the farm-yard manure, or it may be sown broadcast at the time of ploughing in, or it may be distributed over the surface in spring, previous to sowing the Mangold seed. The quantity applied may vary according to the requirements of the soil, and in the discretion of the farmer, say from 500 to 1000 lbs. per acre. In some experiments undertaken by Mr. James Laird, the eminent English agriculturist, the beneficial action of salt upon the growth of Mangolds was very forcibly illustrated. For his own satisfaction he directed certain portions of a field of uniform soil to be manured with different substances—farm-yard manure, Peruvian guano, super-phosphate and nitro-phosphate, by themselves, and mixed together in certain proportions. In every case, when salt was added to either of these, an increased yield was obtained. Thus, whilst 20 cubic yards of dung and 449 lbs. of Peruvian guano gave a return of 24 tons, the addition of 500 lbs. of salt to the same materials gave a return of 30½ tons, or an increase of 6½ tons per acre, at a cost of \$1.87.

Selection and Treatment of Seed.

The seed of the Mangold differs from that of any of our other farm crops, as instead of each seed being separate and distinct from another, they are packed together in threes, and enveloped in a thick wrinkled skin, which, while it preserves them from injury, greatly retards their process of germination, and renders it irregular when in the soil. Though in appearance but a single seed; the removal of the envelope shows that the interior contains *three seeds*, two of which are fertile, and one usually barren. These have been separated by being passed through a bean mill, and it is stated, by thus depriving them of their covering, they germinate more readily. This irregularity of germination has everywhere been remarked, and has led to the practice of steeping the seeds previous to sowing, so that the outer covering might be completely saturated, and thus furnish to the germs within sufficient moisture for their initial processes of vital action. Simple immersion in plain water for twenty-four to forty-eight hours previous to sowing, is all that is required. The seed should then be spread out on the floor to dry sufficiently to prevent them from adhering to each other, which can readily be secured by sprinkling a little sand or fine ashes over them, to absorb any surplus moisture that may remain. If this is carefully managed the seed thus steeped is sown as easily as dry seed, while its more equal germination and regular growth in the drill testify to the advantage of the practice. Still a great difference of opinion exists as to its merits. If from any cause the sowing be delayed after the seed is steeped it is apt to heat and be injured; or if it be sown in a very dry or badly tilled soil, the seed may

commence but not be able to carry on the process of germination, and thus be destroyed; whereas in such soils, unsteeped seed would remain dormant until sufficient rain had fallen to saturate them, and start the growth of the plant.

The ordinary turnip drill is used for depositing the seed, taking care, however, to use larger cups. The subsequent treatment of the young plants is the same as for the turnip crop, recollecting, however, that in *sowing*, the long varieties should be placed closer than the globe, the width of the drills apart having also material influence in this respect. About twenty-seven inches apart may probably be accepted as a suitable distance between the rows, and for the long varieties from 12 to 13 inches, and for the globe from 18 to 24 inches apart in the drills. It is decidedly more advantageous to have a crop of large, sound, well developed roots in comparison with a greater number of smaller roots, even if the weight per acre be the same, as the latter entail more labor, and cost lifting and storing, and the feeding value is diminished from the greater proportion of rind. It is an excellent practice in dry seasons to keep the soil constantly stirred, so as to facilitate the absorption of moisture from the dews and night-air for the use of the plants; and with proper care this may be done up to a very late period of the growth of the crop.

Harvesting.

The labor involved in this operation is somewhat heavier than for turnips; and more care is required in its application. Fine, dry weather is also very important. The globe varieties can usually be lifted by hand, but for the long varieties a fork is requisite, except where grown on the lighter class of soils. The roots when lifted have the dirt removed, the principal roots trimmed off with a knife, and the tops either wrenched or cut off, so as to leave the crown of the root perfectly uninjured. They should then be placed in small heaps in the field, covering them carefully at night with their own leaves as a protection from frost. In this condition they should, if possible, be allowed to remain for several days to admit of the "sweating" process, so that when carted to the root-house, the liability to decay from a superfluity of moisture may be avoided. Great caution must be exercised on this point as if piled up with a super-abundance of moisture, and without due ventilation, fermentation and decomposition would inevitably result. Attention must be paid that the crown of the Mangold is not injured in the cleaning and trimming process; any injured or decaying roots should be thrown aside and carefully excluded from being stored with the sound ones.

Produce per Acre.

Mangolds may generally be regarded as a more productive crop than turnips. In England we read of 40, 50, 60 and even 70 tons per acre being obtained under the highest condition of soil and climate. Mangolds if fed fresh from the ground, are apt to purge cattle, hence the advisability of the roots not being used until spring, when they become more nutritious than Swedes, which deteriorate somewhat by keeping. Mangolds contain a sweet nutritious juice well adapted for cows in milk, imparting no acid flavor, and consequently very desirable for dairy purposes. They are also particularly valuable and acceptable to ewes in lamb, as being both more healthful and productive of a more generous flow of milk than Swedes at a time when good nourishment is invaluable.

Mangold Wurzel plants may be transplanted with perfect ease and success, and the blanks in the field can then be easily filled up.

Mangolds may be considered as a more *exhaustive* crop than Swedes on account of their greater acreable product; hence the necessity of a very generous manurial treatment of the soil whereon they are grown.

ORCHARD grass is not half well enough appreciated by stock growers. It will not by any means take the place of clover on the grain farm, but in nine cases in ten orchard grass is preferable to timothy to mix with clover, for a meadow or pasture of one or two years' standing. It is well adapted to filling gaps in the clover stand; by itself it is apt to make large gaps, owing to its habit of forming tussocks or bunches, hence the necessity of clover with it, or else very thick seeding and close pasturing. But if mixed with clover, which is intended for hay, the yield will be better and quality of hay also, than if timothy is used. The orchard grass is early and ripens with the clover, so one is not tempted to let the grass stand too long and get the clover over-ripe, in order to let the rest grow more, and thus secure a larger yield. This grass also springs again, after being cut, about as quick as clover; so it is fine for pasture. In the Northwest it is growing in favor with farmers, and can not, probably, be there too highly praised.

Entomological Department.

Wheat Insects in 1872.

If we are justified at all in drawing conclusions from the few returns contained in the report just issued by the Commissioner of Agriculture, we may most heartily congratulate the farmers of this province, and indeed the whole community, upon the exemption of their wheat-crops from all ravages of insects during the past year. It is much to be regretted, however, that out of the *eighty-one* electoral division agricultural societies, who received aid from the legislature during the past year; most of them \$700 each; only *thirty-nine* have taken the trouble to reply to the commissioner's enquiries respecting the average per acre, and the quality of the various field crops, the ravages of insects, the culture of fruit, hops, flax, &c. By this neglect a great deal of valuable information is lost to the country, while the sparseness of the returns renders what is afforded of comparatively little use as a basis of calculation. We should like to see the payment of the pecuniary grant made dependent each year upon a proper compliance with the requirements of the commissioner, so that an end may be put to this inexcusable negligence.

In former years we have traced the gradual decline of the ravages of the wheat-midge. We are now able to state that during the past year it has almost entirely disappeared. The only counties of Ontario in which mention is made of its presence, are Niagara, North Wentworth and South Victoria. The reports are as follows:—

"Niagara.—White wheat somewhat affected by midge."

"North Wentworth.—Fall wheat, midge affected some that was injured by frost."

"South Victoria.—It is gratifying to be able to state the almost total disappearance of the midge, which for many years has proved more or less a pest."

As no mention is made of the midge in the other thirty-six counties from which we have returns, we may fairly conclude either that the insect has altogether disappeared from their fields, or that it has affected the crops only to an inappreciable extent. In either case there is much reason for congratulation and thankfulness. Now that the farmers, under Divine Providence, have put an end to the ravages of this once dreaded pest by careful cultivation and the employment of satisfactory varieties of seed, we trust that they will turn their attention to what has recently proved as injurious as any insect pest, the winter-killing of their most valuable crops. Let this matter be at once thoroughly investigated, and let the most successful remedies be universally adopted.

Printers' Ink and Canker-Worms.

We quote the following useful information and correspondence from the *American Agriculturist*:—

The wingless female moth that lays the eggs of the Canker-worm must ascend the tree by climbing up the trunk. All the methods of prevention oppose some obstacle to her ascent, or catch her in the act of climbing. One great difficulty with all these preventives is that they are not put upon the tree early enough. It has been found that the insects ascend very early, even during the warm spells that we often have in February, and that the only safety in sections where they are abundant is to keep the protecting material always ready. Tar has been used, but the following, from our correspondent, "Bay State," is much better. He writes:

"Having had some twenty years experience with the Canker-worm, and during that time having either tried or witnessed the results of the experiments of others, with all the various methods, patented and otherwise, to prevent the female from ascending the trees, I feel that the right thing has been hit upon at last. It consists simply of bands of sheathing-

paper, 6 or 8 inches wide, tacked around the trees (same as for the old tar process), and an application of refuse printers' ink. The ink is now manufactured for the purpose and costs 12½c. per pound. This remedy has been used in Massachusetts three years, and gives general satisfaction. Two to four applications a year are sufficient, and an orchard averaging from four to twelve inch trees can be protected for an annual sum of *ten cents* per tree. As some evidently know but little of the persistency of the Canker-worm, I thought the above item might be useful."

F. G. Pratt, Concord, Mass., writes as follows: "In the December number, I see an article on the Canker-worm, giving a remedy for the pest. My father, as Superintendent of Public Grounds of Concord, has for the past three years had the charge of the noble elms that line the streets of this ancient town. He uses the refuse printers' ink for that purpose, and finds it effectual. But my object in writing this was to say that the sheathing-paper is useless, and only increases the expense. We merely smooth the rough bark slightly with a drawing-shave, and spread the ink directly on to the bark. It does not injure the tree; it can be put on much faster, and is much more effectual, as it leaves no chance for the moth to go up under the paper, which can not be made perfectly tight and close. The female moth begins to run about the first week in November, and runs from then to the middle or last of April, whenever a warm thaw comes on during the winter. The ink must be put on about once in ten days during the fall and spring, and whenever a long thaw seems likely during the winter. The slightest contact with the ink is death to the insect."

Agricultural Chemistry.

SOILS.—Continued.

We have seen that the chief bulk of ordinary soils consists of variable quantities of sand and clay, with usually more or less of carbonate of lime. These ingredients constitute the insoluble or *earthy* portion of the soil. All fertile soils, however, contain in addition to this a small quantity of saline substances which dissolve in water. They may be extracted by pouring water on the soil; stirring well, allowing the earthy portion to settle, and then pouring off the clear liquid which will contain all the soluble matter. On boiling the liquid down to dryness, the saline substances will be left as a residue at the bottom of the vessel. A pound of dry soil, when treated in this way, will give from 30 to 100 grains of such a residue, consisting of potassium, sodium, calcium, and magnesium, in combination with chlorine, with sulphuric, nitric, and phosphoric acids, and with certain organic acids. It will be well to say a few words about each of these substances.

Potassium, symbol K., *Kalium*—is a metal which readily unites with oxygen to form an oxide which is called *potash*.

Pearl-ash is the carbonate of potash, K_2CO_3 . It forms a large part of wood ashes, and is obtained from them by treating them with water, in which it readily dissolves. From this liquor the carbonate of potash is obtained by boiling it down. By boiling a solution of carbonate of potash with *lime caustic potash* is produced. It is a compound of potash and water and is called *hydrate of potash*. Hydrate of potash is very soluble in water, and has powerful alkaline properties, that is, it entirely neutralizes acids forming with them *salts*, and it restores the blue color to a solution of litmus that has been reddened by an acid. Pieces of paper that have been dipped in a solution of litmus are used to ascertain whether a body is acid or alkaline. Acids turn them red and alkalies restore the blue color. Litmus is a blue coloring matter prepared from a species of lichen which grows on rocks on the sea-coast in various parts of the world. Potash exists in feldspar, as we know, in combination with silicic acid, SiO_2 , and when this mineral is acted upon by moist air containing, as the atmosphere always does, carbonic acid, the silicic acid is liberated and carbonate of potash is formed. When carbonate

of potash is acted upon by acids, carbonic acid is driven off and a salt of potassium is formed with the acid. In this manner the various compounds of potassium find their way into the soil.

Sodium, Na., (*Natrium* from *natron*, soda)—is a metal bearing a great general resemblance to potassium. In combination with chlorine it forms common salt, which is the *chloride of sodium*, NaCl. Ordinary washing soda is the carbonate of soda, and baking soda is the *bi-carbonate*, that is, it contains twice as much carbonic acid, in proportion to the soda, as the carbonate does. *Soda*, the oxide of sodium, closely resembles potash, and, like potash, forms a strongly alkaline hydrate. Soda occurs in place of potash in some kinds of feldspars; and chloride of sodium is abundant in many places as rock salt. Glauber's salts are sulphate of soda.

Calcium, Ca., is the metal of which *lime*, Ca. O., is the oxide. Lime is not nearly so soluble in water as potash or soda. Quick-lime is the oxide of calcium, free from water. When brought in contact with water it absorbs it greedily, as everyone knows, forming slaked lime, which is a hydrate. We have already spoken of the carbonate of lime. *Gypsum*, or plaster of Paris, is the sulphate. Phosphate of lime occurs in many places as a mineral called *apatite*; it is also found in bones.

Magnesium, Mg., is a metal which unites with oxygen to form magnesia. Epsom salts are sulphate of magnesia. Magnesia, in combination with silicic acid, occurs in many rocks.

Chlorine, Cl., is a greenish yellow gas, of a suffocating odour, which is given off when hydrochloric acid is heated with black oxide of manganese. Hydrochloric acid is a compound of hydrogen and chlorine represented by the formula, HCl. It is made by heating common salt, (*chloride of sodium*), with sulphuric acid. It is a gas which dissolves readily in water forming a very acid liquid, to which the name *muratic acid* was formerly given, but which is now generally called hydrochloric acid. Chlorine unites with metals forming compounds called chlorides, most of which are soluble in water. The best known is the chloride of sodium, common salt.

Sulphuric acid, H_2SO_4 , is a compound of hydrogen and oxygen with sulphur. It is a heavy oily-looking liquid, and is sometimes made from the sulphate of iron, or *green vitriol* as it is called. Hence the common name for sulphuric acid is *oil of vitriol*. It is an exceedingly powerful acid and very corrosive. It blackens and chars wood or paper. The hydrogen of sulphuric acid can be replaced by a metal, and the resulting compound is called a sulphate. Thus K_2SO_4 is sulphate of potash. Sulphuric acid occurs in large quantities in combination with lime as gypsum, Ca. SO_4 .

Sulphur unites with metals to form compounds called *sulphides*, and these metallic sulphides are of very frequent occurrence. One of the commonest is the sulphide of iron, which forms a hard mineral of a brass yellow color, known as *iron pyrites*. This mineral is found in many rocks, sometimes in cubes and sometimes in scattered grains, and from its color has often been mistaken for gold, from which, however, it may be readily distinguished by being hard enough to scratch glass. These sulphides, when exposed to damp air, absorb oxygen and become converted into sulphates, thus explaining the presence of sulphates in the soil.

Nitric acid, $HN O_3$, is another powerful acid made by distilling nitre, which is a nitrate of potash, KNO_3 , with oil of vitriol. Nitric acid collects in the receiver and sulphate of potash remains in the retort. Nitrates are formed in the soil by a rather complicated process. When animal substances decompose they always give off ammonia gas, NH_3 . This gas, when liberated in the soil, in contact with some metallic oxide or base such as lime, potash or soda, absorbs oxygen from the air and is converted into nitric acid, which unites with the base to form a nitrate. Hence nitrates are found in considerable quantities in the soil of old graveyards.

Phosphoric acid, H_3PO_4 , is formed by the oxidation of phosphorus. It is an important ingredient in fertile soils, and is derived from the crumbling away of the mineral *apatite*, which is a phosphate of lime.

Rural Architecture.

A COMFORTABLE FARM HOUSE.

The design presented on this page is of a good farm house, recommended by Mr. A. J. Downing. It is a substantial and commodious building, planned with careful regard to the purposes for which it is intended. Unquestionably the best material for a farm-house is stone or concrete; and this plan, it will be seen, is for a stone building. Locality and other circumstances, however, often leave no choice in the selection of material—and brick or wood may be the only available resource. The design before us can easily be adapted to either of these materials. The architect claims for it the great merit of "looking like a farmhouse," expressing "the beauty of a farmer's life—simple, honest, strong and frank—telling its own story at a glance. While unambitious, it is neither mean nor meagre."

The main building, of stone, is 30 by 46 feet, and two stories in height. The L part is but one story. In the ground plan, A is the front Piazza; B, the Parlor or Living-room, 18 by 20 feet; D, Hall, C, C, Bedrooms, 13 by 13 each; E, Pantry, between the parlor and kitchen (F, 16 by 16). The passage and two doors between the parlor and kitchen shut all kitchen noises from the living-room. G is a Wash-room, 16 by 16, which may be used as a Summer-kitchen. H is the Dairy, and I the Wood-house. The Kitchen, F, 16 feet square, opens by a back door upon a broad stone platform, under which the steps next the main building descend to the cellar. The Wash-room, G, has, beside the fire-place a circular copper boiler set for boiling the clothes. The Dairy, H, may, if thought best, be sunk three feet below the level of the wash-house, and paved with flag-stones in order to keep it cool; a stone shelf being around the outside for milk pans. The wood-house has a large door to facilitate unloading from wagons.

The second floor has four Bedrooms, J, J, each 13 by 18; K, 17 by 20, and L, 8 by 12 feet. There is also ample room for closets. Above this story is a roomy garret.

On any of our readers who may think of erecting a permanent house such as this, we strongly urge that before entering on the work, they should earnestly consider which is the very best site to be found on the farm—with special regard to soil, water, drainage, and protection from the blasts of winter.

Building Cellars.

There is no greater convenience, and I may say luxury, for any family, than a good cellar. But the way to build a dry, sweet, airy cellar, especially on clay land, is not so well understood. To begin a good cellar, avoid the first error, do not build too small, but build under the whole house. Many of the best qualities of a good cellar depend upon its being large,

stones under the wall does not make a desirable drain, for it will fill up with sediment, washed down outside of the wall in a few years at most, and the water flows broad-cast over the cellar. Where tiles can be had, there is a better way. Build the wall on the bottom of the cellar, and when completed dig a trench along the face of the wall five inches deep, and in the bottom lay a three inch tile for the drain, with the proper descent from the highest to the lowest point. To fill the other two inches of the trench, lay a tier of bricks across it, with one end fitted to the wall and

resting on the tile, and the other packed into the cellar bottom, so that the upper surface of the bricks makes a part of the smooth bottom. Use mortar in laying these bricks, and put nothing between the tile and the wall to obstruct the water, and the drainage will be perfect, with a good outlet. This manner of laying bricks crossways at the tile, in my cel-



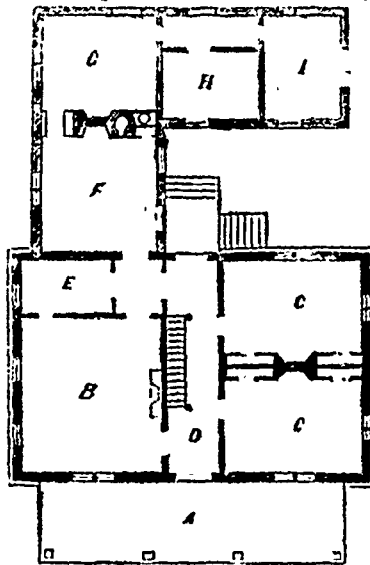
A COMFORTABLE FARM HOUSE—ELEVATION.

and it costs but a trifle, if any more. For a square house it takes the same amount of wall for a cellar under the whole, as for one under one-half, and a half wall for a foundation under the other. Then, avoid the next and greater error, do not dig too deep.

lar, has for years proved a perfect protection against rats. I doubt if rats ever dig from the outside down into the cellar first, but get in and dig out. They have had access to my cellar during the summer seasons, but appear to stay no longer than to go around and examine the joint between the bricks and the wall, but finding no place to go out, they leave as silently as they came.

The next point is good ventilation, by plenty of windows, so arranged that the wind during the summer can blow through and displace the damp air from every corner, and replace it with pure sunshine every day. If the cellar is large, and not too deep below the surface of the ground, and well drained and ventilated, a better one for family use can hardly be expected.

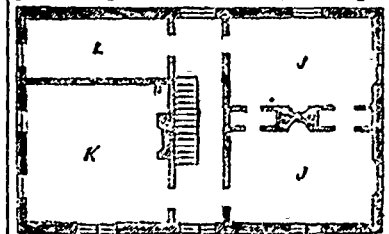
In a sanitary point of view, a good cellar is of the greatest importance. No family can long be healthy



PLAN OF FIRST FLOOR.

Dig two feet six inches, bank up two feet, and above, face up for the windows one foot eight inches, and the house will have a good elevation, and the cellar will be 6 feet two inches in the clear.

Experience proves that a trench filled with small



PLAN OF SECOND FLOOR.

in a house over a damp, mouldy cellar, nor can a house without a cellar be healthy where the foundation walls confine the damp air beneath the floor until it becomes almost pestilential, and finds its way up through the crevices, to be breathed in every apartment in the house. Air purified by sunshine is the great source of health in nature, and if we took more pains to introduce it into our cellars and houses there would be less necessity for going abroad for pure air, or renewed health, even in our cities.—Farm Journal.

Horticulture.

EDITOR—D. W. BEADLE, CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

THE FRUIT GARDEN.

Strawberries.

We promised in a former number that we would name some of the more desirable varieties of this universally favorite fruit, and treat of the special culture adapted to each. First then in our list of varieties we shall name the

Wilson.

This variety has been the most widely distributed of all, and after years of trial has been found to succeed in all soils, situations and climates better than any other sort; and to be the most profitable variety for market, taking a series of years together, that has yet been tried. The plants are healthy, vigorous, and very hardy, yielding, with good culture, enormous crops of good sized fruit. The first berries to ripen are usually very large, two thirds of the remainder of the crop will be fine and large, the last third will run from small to very small, especially if the weather be dry and hot. The fruit is of a very dark crimson color when fully ripe, and having a sprightly acid flavor. Many have said the fruit was too sour to be fit for the table, but such have probably formed their opinion from imperfectly ripened fruit, having supposed that it was ripe when the color was yet of a bright scarlet. For ourselves, we prefer perfectly ripened Wilson's, nicely sprinkled with pure white sugar, to any other variety we have ever used.

We have had the best results by growing them in ground that has been deeply cultivated and most highly enriched. The plants were set in April, carefully cultivated and kept clean during the summer; and after the fruit was gathered the next season, the runners were allowed to strike, and fill up the bed. The following summer a splendid crop was gathered and as soon as the picking was done, the plants were spaded under. If allowed to remain another year the old plants fail and the crop is not so fine. A constant succession of new beds will give better results with this variety, than can be obtained by retaining the beds beyond the second fruiting. The flowers yield an abundance of pollen, hence the pistils are well fertilized and the fruit always sets perfectly and the berries are without defects.

Triomphe de Gand.

This variety stands next to the Wilson in popular estimation. It has been very widely disseminated, and in some places is largely grown for market. The plants succeed best in rich, well drained, clayey soils, and yield their finest fruit when grown in hills, with the runners kept carefully cut off. They are vigorous and tolerably hardy, though not as hardy as the Wilson. The berries are large, those ripening first are very large, the color a light crimson, glossy as though delicately glazed, firm, and bearing carriage well. Though the flowers are hermaphrodite, there is often an insufficiency of pollen to fertilize all the seed germs, hence the fruit is sometimes mis-shaped and the apex, in particular, of the berry is hard. The flavor of the fruit is pleasant, mild, sub-acid, but not very rich.

Jucunda.

This variety was loudly praised by Dr. Knox, and in consequence of the high encomiums bestowed upon it by him, has been planted by many cultivators. It has not proved to be as valuable in the hands of other growers as it seemed to be with him. It has many points of resemblance to the Triomphe de Gand, like that variety, it prefers a rich, clayey soil, thrives best and yields its best crops and finest fruit when grown in hills, with the runners constantly cut off. The berries are large, light scarlet, with a moderately firm flesh, pleasant but not high flavor. It ripens late. Hermaphrodite.

Trollope's Victoria.

We remember being present at a meeting of the Fruit Growers' Association held at Galt, when a travelling pedlar of nursery stuff was brought forward who had with him samples of a new strawberry, as he said, called the *Golden Queen*, plants of which being quite scarce he would undertake to supply at

the very moderate price of three dollars per dozen. Unfortunately for the prosperity of his speculations some of the members were well acquainted with the so called *Golden Queen*, and at once recognized in it an old and much esteemed acquaintance. They pronounced it to be, without doubt, the *Trollope's Victoria*, and some of the members present offered to supply any desired quantity at three dollars for a hundred plants instead of a dozen. The fruit of this variety is large and handsome, light crimson, juicy, rich, and with a peculiarly pleasant and almost aromatic flavor. The only trouble is that while the plants are vigorous and healthy, they are not very productive.

Downer's Prolific.

This is one of the sorts of more recent introduction which promises to be valuable, especially to the market gardener, because the bulk of the crop ripens early, and the plants are *extremely hardy*. It succeeds best cultivated in hills, often yielding enormous crops of large, well developed fruit. It is said by some who have had it for several years that it rivals the Wilson in productiveness and profit.

The berries are light scarlet in color, nearly round in form and pleasant, but not high flavored.

Ida.

Is an early ripening sort, which yields large crops of medium sized fruit, of a brilliant scarlet color. The berries are juicy, rich, and sprightly acid. The plants are vigorous and healthy, but the flowers are pistillate and require the presence of some other variety yielding abundance of pollen in order to fertilize them.

Lennig's White.

Those who must have a white strawberry of delicious flavor can not have a better berry than this, the only trouble being to get the berries. The plants are vigorous and the flowers hermaphrodite, but unfortunately they do yield but very moderate crops. The fruit is large, of a whitish color, delicately tinged with pink, juicy, sweet, rich, and of the most delicious pine-apple flavor.

The number of varieties of strawberries that might be described is very nearly endless. We have selected a few, those most hardy, most productive, most generally esteemed, from which our readers can make a selection of those they wish to cultivate with every prospect of obtaining satisfactory results.

Great Yield of Cranberries.

The *Maine Farmer* says:—Mr. Clark Stanley, of Porter, has raised a crop of cranberries this year that exceeds anything of the kind that we have ever seen. He picked this season from a patch of ground that was sixteen feet square, seven bushels of nice cranberries, and there is at least another bushel on the vines that he cannot gather at present for the water. These vines grow partly on ground that has been ploughed, with no cultivation whatever. They are of the Bell variety.

Grapes in Pennsylvania.

An experienced fruit culturist, of Reading, Pa., writes as follows to the *Dispatch*: "Upon investigation made in grape vines, I am sorry to find that most of the vines in our district are completely ruined by the severe cold of this winter, with the exception of the Clinton vines, which are as yet good. The Concord may run up next best, but the other kinds are nearly all gone. This has never happened, in my recollection, in our section before by the severity of the winter."

Trellis for Raspberries.

My plan is as follows:—I use white-oak posts split, so as to be rather wider than usual. These I set, tops down, at a distance of twenty to twenty-five feet apart, in a row. In setting, I commence by taking a very wide post for the ends of the row. The second post is set so that it stands to the right of the centre of the row, twenty-five feet from the first post. The third post, twenty-five feet from the last one, is set to the left of the centre of the row, which gives a space between the wires of about twelve inches. I place the first wire on the outside of the posts at a height of three feet from the ground; the second wire about eighteen inches above that. I then place wires at the same height on the opposite sides of the posts. This gives plenty of room for the canes between, and it holds the canes in their places in good style. I set my plants in rows five feet apart. Six feet would have been better, as I now find them somewhat close. My vines are mainly of the black cap variety. I am well pleased with the Philadelphia.—*Rural World*.

The Plaster Treatment of Vines and Trees.

A gentleman writing from Italy to the *Garden*, of London, relates this interesting experiment:—I have

a large quantity of grape vines planted in the open ground, and trained on poles and wires along the gravel walks. In planting these I had the holes dug 25 inches deep. I then threw into each hole six or six lumps of old plaster of Paris, about the size of my fist. I threw a little earth over these lumps and then planted the vines in the usual way. The result has been wonderful, the vines which were not half an inch thick when planted three years ago, are now two inches and more in diameter, and bear finely. The grapes are also freer from disease. Other vines, not so treated, are much smaller and produce less, the fruit being also more liable to disease. To try the effect of this plaster, in planting two American black walnuts, we put plaster to the one end and not to the other. The former grew twice as fast as the other. Last year we dug about the roots of the one to which no plaster was put, and we threw in seven or eight large lumps of plaster among the roots; the trees are now both of the same size, and though only four years old are 16 or 17 feet high.

THE FLOWER GARDEN.

New Plants.

The *Floral Magazine* for March introduces to our notice a new and very handsome variety of the *CANTERBURY BELL*. The color is a pleasing, delicate blue, the corolla is much larger than usual, and the calyx is nearly four inches in diameter, presenting the form of a saucer, and changed from the green color which has hitherto prevailed, into the same hue as that of the corolla. It is a hardy biennial, easily grown from seed, flourishing in any good garden soil. It makes also a handsome window plant when flowered in a pot. There is also a white variety having the same characteristics.

PRIMULA JAPONICA.—The *Floral Magazine* also figures two varieties of this Queen of the Primroses. All these varieties it states come true from seed, so that there is no difficulty in perpetuating them. Those figured in the March number are designated as *Primula Japonica Carminata* and *Alba*. The *Carminata* is of a very bright rosy carmine color, while the other is pure white. The normal color of this Primrose is a bright magenta, plants of which we see are now offered for sale by some of our leading florists.

CINERARIA MARATIMA-ANEA MARGINATA.—In a previous number of this year is figured a very beautiful variety of the well known *Cineraria Maratima* which has been so long considered one of our most valuable bedding plants; its graceful foliage, so beautifully silver-white, forming such admirable contrasts with the dark blood-red leaves of *Areseno Lindeni* or the deep crimson *Colceus Verchaffelti*. This variety retaining the silvery-white appearance of the normal condition, has the edges of the upper surface of the leaves broadly margined with golden yellow. Such a beautiful combination of graceful foliage and beautiful coloring must excite the admiration of everyone, and we look to its introduction here, in the expectation that it will prove a valuable and charming addition to our varieties of bedding plants.

New Show Pelargoniums.

In the *Floral Magazine* for February, notice is taken of two new varieties of these attractive flowers. One, named *Countess*, is described as being distinct in its coloring, the pale pink of the lower petals being unusual; the top petals are maroon shaded off to a deep orange rose, the edge being of a pale lilac, and the eye clear white.

The other, named *Duchess*, is a very rich dark flower with a clear white eye, the lower petals are crimson, veined with a darker shade, the top petals intense deep maroon, almost black; bordered with a narrow edge of bright crimson. These have both been awarded first-class certificates.

Grass Mixture for Lawns.

The *American Farmer* says, choose the following kinds in nearly equal proportions, viz: blue-grass, red-top, hard fescue, white-top, sweet scented vernal grass, and to this mixture add ten pounds of white clover seed. About thirty pounds of this mixture will sow an acre so as to make a good sod. Make the ground mellow and fine before sowing, rake in gently, and finish by rolling it well down.

THE ORCHARD.

Grafting.

EXPERIMENTS in grafting of an interesting character have recently been made at the Illinois Agricultural University. In 1872 scions of the Ben Davis apple, each five inches long, were grafted early in February and set out in the latter part of April. The scions were cut from the shoots of the previous summer, beginning at the butt, which was called the first cut, the next above the second cut, and the last the third cut. The seedlings into which they were grafted were also cut into pieces, the piece of the root nearest the surface of the ground was called the first cut, the next piece the second cut, and the last the third cut.

Those grafted with the first cut of the scion grew 21 17 inches, as an average growth; and 66.66 per cent. lived. Those made of the second cut of scion grew 20.44 inches, and 83.33 per cent. lived, and those made of the third cut of scion grew 20.95 inches, and 55 per cent. lived.

Those grafted into the collar or first cut of the root grew 22.61 inches, and 66.66 per cent. lived; those grafted into the second piece of the root grew 21.1 inches, and 77.33 per cent. lived; those grafted into the top or third cut of the root grew 18.60 inches, and 75 per cent. lived.

Experimenting with roots of different lengths, it was found that those which were grafted into pieces six inches long made an average growth of 27.75 inches, and 85 per cent. of them lived; those grafted into pieces four inches long grew 24.50 inches, and 75 per cent. lived; those in roots two and a half inches long grew 22.83 inches, and 70 per cent. lived; those in roots one and a half inches in length grew 19.93 inches, and 63 per cent. lived.

Thus it will be seen that the six inch roots gave the longest average growth and the highest per cent. of living grafts, and that the length of growth and per cent. of life diminish very nearly in proportion to the diminished length of root.

Looking at the part of the branch from which the scions were taken, it seems that the butt or first cut gives the longest growth, but the second cut the highest per cent. of living grafts. So also of the roots, the first or collar cut gives the longest growth, but the second the most living grafts.

Soap Wash the bodies of your Fruit Trees.

The beneficial influence of a weak alkali wash upon the bark of fruit trees is of long standing acknowledgment. Its action is in expansion of the pores, while at the same time it is destructive of all insect life, sporadic or otherwise. Writers or tourists differ as to the best time to apply it; but we have always found that if good common sense be used in preparing it, the time of application is always good. And now for the preparation. If you use purchased potash, reduce it so that you can bear your finger in it a half minute or more without a tingling or sore sensation. If you can obtain good soft soap—such as all good country economicals advocate, and assimilants of their own ground products and their needed returns ought to have—made from the refuse grease and ley of ashes saved up dry, then take of it and reduce it (the soap) down, not to a suds, but so that it will not beropy when used by a soft white wash brush. Use it freely, and as we have before said, it matters not materially just when, but say now, and any time most convenient until 1st of July; but after that time it is perhaps better to wait a year.—F. R. ELLIOTT.

Vitality of Fruit Tree Scions.

The annual report of the horticultural society of the Colony of Victoria gives some facts proving that scions and cuttings retain their vitality much longer than has been generally supposed. The society had a case of fruit tree cuttings forwarded to them from the Chiswick gardens. These cuttings were from among the prunings taken off in month of October. They were forwarded in December, and reached Victoria in about six months after they were cut from the trees. On their arrival in the month of April, "there being no stocks in country for grafting," they were kept over for another month until the following August, when they were worked. It will thus be seen that more than three-quarters of a year elapsed from the time the cuttings were taken from the parent tree at Chiswick, until they were used as scions at Victoria. Notwithstanding the delay, the result is, that out of the consignment, five vines, eight plums, twenty-four figs, sixty-four apples, and seventy-two pears, have been saved. The importance of this fact is not to be overrated.—Ex.

Pear Tree Blight.

A series of interesting experiments have been conducted during the past two years, by William Saunders, on the grounds of the agricultural department, at Washington, D. C., in relation to pear blight. A pear tree which was badly blighted on its main trunk was made the subject of special experiment. Nearly all of the bark was blighted within three feet of the ground, only about an inch and a half in width being left to connect the upper part of the tree with the unblighted bark at the base. The affected part was removed, and the sap-wood left quite exposed to view, but to prevent injury from the air it was at once coated with a composition of carbolic acid, sulphur and lime, largely diluted with water. After the lapse of two years the tree has wholly recovered, and the denuded part is again covered with new and healthy bark. The tree in all respects presents a healthy appearance. Many other trees much affected with blight were coated heavily with the sulphur composition and have evinced marked signs of improvement. It is intended to continue these experiments on a larger scale, until sufficiently numerous and well-established facts attest the best mode of treatment. The department grounds consist of a heavy, compact, partially underdrained soil, lying low; they are, therefore, unfavorable for the highest development of pear tree culture. It has been only by persistent effort that the fruit trees on the department grounds have been brought to their present highly improved state.—Horticulturist, Feb. 1873.

Manure for Fruit Trees.

It is clear that animal manures are not what is wanted for fruit trees, including grape vines, berries, &c. There may be a benefit, and usually is, at first, but the quality of the fruit will suffer, and the wood and foliage are not of that healthy character which is desired. This has been noticed by Liebig and others. We have known prolific grape vines to bear more fruit, but at an expense of quality, where the contents of the privy were freely used for manuring. We have always found the best success when leaves, the weedings of the garden, chip-mannure, and forest mold, either singly or combined, have been freely applied. These seem to contain the different materials, in proper proportion, that is, the organic, the carbonaceous, and the nitrogenous; the mineral needs to be supplied, and nothing does this so satisfactorily as wood ashes. It supplies largely potash, which is needed. The best success—and it has been fully achieved—which we ever attained, was by applying a coat of leaves in the fall, worked into the soil in the spring, followed by weedings from the garden, clippings of the vine with other vegetable refuse, as a mulch, sprinkled over with wood ashes, leached or unleached—if the latter, more were required. This made a healthy, not excessive growth, and increased both the quality and quantity of the fruit. It makes a sounder and better keeping fruit. This with a variety of soils, but particularly a clay soil. There should be good drainage and exposure to air, or else, with a green mulch kept moist by the ashes, there might be too much humidity. For grapes, this will not do. Nor will it for fruit trees if there is a close, heavy top reaching well down, holding thus the moisture which evaporates, and inviting parasitic lodgments, which will appear in masses, mildew, rusted fruit, &c. Herbaceous material and ashes, with occasional bone dust, we have found the best application for fruit trees in general, for berries, and for the grape. Apply yearly where the soil is not rich, and in the spring, when the ground is dry enough, spade it well. Use sparingly, if any, the strong, nitrogenous manures.—Utica Herald.

THE KITCHEN GARDEN.

Choice Varieties of Vegetables.

F. R. Elliott pays considerable attention to the matter of garden vegetables, and gives to the *Clarendon Herald*, his opinion of a few. He says the best dwarf Bean is the white seeded German Wax, and next the China, then the large White Kidney. In Beets we make Egyptian the early one, while Dewing's Turnip and Bassano can't be left out. In Cauliflower there is a good thing in Lenormand's "Sport Stem." In Cabbage we have a long time had our fancy for Winningstadt for our early, while the Savoy varieties are the only ones thereafter for those who love a good thing in the cabbage line, but the market men must study money interests, and they must go in for Early York, Wakefield, Flat Dutch, Drumhead, etc.

In Peas, Carter's first crop is the earliest that the amateur will value, while Waite's Caractacus comes in for the market-man's early. McLeans Little Gem and Advancer, then, Champion of England and Yorkshire Hero fill the bill of what most of us want.

Canada Victor Tomato.

It seems that a new tomato has originated in Canada which is claimed to be ahead of all other sorts. Mr. J. H. Gregory thus describes it.

"Last season a gentleman residing in Canada sent me a glowing description of a new tomato. I wrote, asking for a pinch of seed, that I might test it in my experimental garden—a tract of land of about three-quarters of an acre, which is pretty well filled every season with varieties of new vegetables my numerous correspondents kindly send me for trial. I planted these on my ground, anticipating the usual result, a tomato with some very good characteristics but on the whole not superior to some kinds already before the public. About the time the plants were put out I left for Europe. When I returned my foreman called my special attention to this new tomato, which had ripened its fruit several days earlier than any other kind of the twenty-five varieties I was growing scattered over my different farms.

"On examining the new sort I saw at a glance that here was a decided acquisition. The fruit was not only the earliest of all, but of large size and exceedingly symmetrical and handsome, while in ripening it had no green left around the stem, a great fault with many kinds otherwise good. The fruit was heavy, full meated and rich, between round and oval in shape, and red in color; it was distributed very evenly on the vines. A correspondence developed the fact that the gentleman who sent it had for the past three seasons been testing it side by side with other standard varieties, and found that it ripened six to ten days earlier. This fact may be in part accounted for by its having been grown for years in a northern latitude, while the utmost care had always been used in the selecting of seed stock. As fair a test as I can present of its merits is this: A market gardener came over forty miles specially to examine my varieties of tomatoes on the ground as they grew, that he might select the very best for his own planting. After carefully examining every sort, he emphatically declared his preference for this new kind, though he knew nothing of its history."

Profit by growing Early Potatoes.

Potato growing is generally counted as a staple crop belonging to the farmer, but experience proves that it is also one of the best payingly productive crops of the market garden. This is especially the case with early maturing varieties. With the early varieties two crops can be successfully grown upon the same land. If the soil be at first a sod turned under for the spring or first crop, the culture of the ground will be clean, and the ploughing for the second crop, which of course is to be of early varieties, will turn up and intermingle the decaying sod as a supply of nourishing food. If fresh stable manure be used freely upon old land, for the first crop, its half decayed condition supplies just the food needed for the second crop. The culture of course being clean, and mainly with a horse-hoe, together with the cleaning of the ground in digging, leaves little or nothing of weeds or their seeds. The soil is a feature to be studied, inasmuch as a heavy clay or naturally wet, cold soil, however well drained, would not be one of dependence, but any light, loamy, sandy soil, or light clayey loam, will be found profitable. Fresh sod, or land broken the autumn previous, and cropped with turnips, produces profitable crops. Whatever implements be used for working in cultivating the land between the rows after the plants are well up, we must say that the Thomas's turning harrow, for the first working of the crop, or just as the plants break ground, is the best implement we have seen. This harrow has its teeth pointed downwards, as it were, and the result is, that while it completely pulverizes the surface, it tears up no deep roots. The profit of early potatoes as a crop may be summed up as follows: People will eat early potatoes only half grown, at a price of two dollars per bushel when they will not pay forty cents for a bushel of fully matured sorts. At this price it pays to grow, and the market becomes supplied and prices run down to one dollar, it is often advisable to dig and lay away the mature crop in a cool cellar. They will keep even to the coming spring, but generally during the month of September there is a dearth of potatoes in market, and the price rises, because the late crop is not ready, and the majority of growers of early potatoes have disposed of their crop. All should remember also that the early varieties of potatoes, such as Early Rose, Early York, etc., keep equally as well as late ones, and that if they are gathered early and a little before fully ripe, they not only keep well, but are of the greatest value for seed for another year, while they are even more mealy when cooked than if permitted to fully ripen, with tops quite dead before digging. F. R. ELLIOTT.

Veterinary Department.

Diseases of the Feet.

Sub-acute Laminitis.

In a former number we gave a brief description of the causes, symptoms, etc., of acute laminitis. In the sub-acute form the symptoms are more prolonged, but not of such an alarming nature as in the acute form. The horse is tender in the feet, and he walks with a short stumbling action; the feet are hot, and the hoof is very hard and dry; when standing, he is continually shifting his weight from one foot to the other. In some cases the disease terminates in a partial descent of the coffin bone, rendering the sole convex, and when he walks he places his heels upon the ground first, giving to the animal a very peculiar action. A horse may suffer for a considerable time from laminitis in this form without being entirely incapacitated for work. In the treatment of this disease, as a matter of course, the horse should have perfect rest for sometime, the shoes removed, and the feet poulticed for a few days, then apply a shoe, thin at the heels and thick towards the toe, or a bar shoe may be used. In warm weather very great benefit will be derived from standing the patient for a hour or two daily in a cold water bath. When the inflammatory action is somewhat reduced, which is easily known by the foot regaining the natural temperature, and the animal moving more freely, then apply a cantharidine blister around the coronet. When the blister ceases to act, the horse may be given a little walking exercise daily, and if he continues to improve he may be immediately put to work.

Horses that have been affected with laminitis in the sub-acute form should only be used for slow work, and are more suitable for farm work than for the tear and wear of macadamised roads and streets. A run to pasture where the land is somewhat soft and moist, tends greatly to subdue the irritation and restore the parts to their normal condition.

Pumice Foot,

Is the name sometimes applied to that condition of the foot wherein the sole is convex instead of being concave, the convexity being due to a partial descent of the coffin bone. Horses so affected are useless for fast work, but for slow work, or ordinary farm work, they are serviceable, but require very careful shoeing, the bar shoe thinner at the heel than the toe is the best shoe for pumicea foot.

Hydrophobia among Cotswold Flocks.

The *Wills and Gloucestershire Standard* says:—"On the night of the 16th of last month, Mr. Barton, of Cold Ashton, had a number of sheep bitten and torn by dogs. In the morning one was dead and three others were killed through being so badly injured. There were several others bitten slightly, chiefly on the nose. The dog or dogs then seemed to have attacked a flock belonging to Mr. Johnston of the same place, and severely bitten several. On the following morning a large dog of the mastiff breed was seen prowling about the roads and going in the direction of Adoversford. It was foaming at the mouth. On its way it rushed at a cat and killed it. The dog next overtook Mr. Greening, the carrier, and seized his horse by the nose. It went on a short distance when it rushed at a child standing at the wicket gate. The animal continued its course until it came to Shipton, where it rushed at two dogs belonging to Mr. Fletcher, and was afterwards killed. Mr. Fletcher destroyed his dogs, but the sheep belonging to Mr. Barton and Mr. Johnson (except those killed) appeared to get all right, until Friday last, when symptoms of hydrophobia presented themselves. A veterinary surgeon ordered the worst to be shot and buried. There are others which will no doubt be destroyed. The eyes of the suffering sheep were blood-shot and protruding nearly out of their sockets, and nearly as large again as in their ordinary state. The sheep appeared to be quite blind, and would instantly rush at any person near, and bite and tear at the hurdles which enclosed them."

Inflammation of the Udder.

We have lately been consulted about a number of cases of inflammation of the udder in cows, which has generally resulted from exposure. In the treatment of such cases, the animal should be placed in a comfortable stable and given three-quarters of a pound of epsom salts dissolved in a couple of quarts of water. After the medicine operates, give a teaspoonful of saltpetre three times a day. Foment the udder with warm water twice a day, and afterwards rub in a liniment composed of tincture of camphor, two ounces, and tincture of arnica three ounces. If the swelling of the udder becomes very hard, apply a liniment composed of liquor ammonia one ounce, olive oil four ounces, and one dram of iodine. A little of the liniment should be applied with smart friction three times a day. The food for a few days should consist principally of bran mashies. To keep the udder warm, apply a cloth with holes cut in it for the teats to pass through, and secure it around the body by means of a bandage or soft rope, then wool or wadding may be carefully placed around the udder, which will tend to keep up a proper heat in the part.—*Farmer's Union.*

Linseed Tea for Sick Horses.

According to the *American Veterinary Journal*, this is not only a valuable restorative, but is exceedingly useful in cases of inflammation of the membranes peculiar to the organs of respiration and digestion; it shields and lubricates them; tranquilizes the irritable states of the parts and favors healthy action. The editor says we have prescribed linseed tea in large quantities during the past month for horses laboring under the prevailing influenza; they seem to derive much benefit from it, and generally drank it with avidity. Aside from the benefit we derive from the action of mucilage and oil, which the seed contains, its nutritive elements are of some account, especially when given to animals laboring under soreness in the organs of deglutition, which incapacitates from swallowing more solid food. In the event of an animal becoming prostrated by inability to masticate or swallow more food, linseed tea may be resorted to, and in case of irritable cough the addition of a little honey makes it still more useful. In the latter form it may be given to animals laboring under acute or chronic disease of the urinary apparatus, more especially of the kidneys. The linseed tea is prepared as follows: Put a couple of handfuls of the seed into a bucket, and pour a gallon and a half of boiling water upon it. Cover it up a short time, then add a couple of quarts of cold water, when it will be fit for use.

Pleuro-Pneumonia in New Jersey.

Early last summer there were unmistakable symptoms of pleuro-pneumonia among the cows in some of the large dairies in Essex and Union counties, New Jersey. Since then this disease has spread rapidly, and the loss to farmers in those counties is heavier than it was 12 years ago, when the same disease created so much excitement among cattle-growers in the State. Now, the facts have been kept secret, and instead of the farmers trying, as they did formerly, to cure the disease by medical treatment, another plan has been adopted. Just as soon as the disease shows itself, and before the cows lose much flesh, the diseased animals are sold to the butcher for about half price. A cow that is worth to the butcher, if in good health, \$60 to \$70, will bring \$25 to \$30. Some idea of the spread of this disease may be gathered from the fact that during the last eight months, taking a circuit of six miles around Newark, there have been more than 500 diseased cows slaughtered in Newark, this diseased meat being sold to her citizens, while the milk from the animals affected has been consumed by the people of both Newark and Elizabeth, daily, since last May. The disease exists in the suburbs of East Newark, East Orange, Bloomfield, Waverley, and other milk-raising districts. One milkman has sold 56 diseased cows and lost four by death. Another has lost 12 by death and sold 12 diseased animals. The disease is spreading rapidly in the vicinity of Elizabeth. More than a dozen farmers within two or three miles of the city have their cattle infected by it. At a meeting of the Executive Committee of the State Agricultural Society of New Jersey, held at Elizabeth, on Friday afternoon, the following resolution was unanimously passed: Whereas, this Society has been appealed to aid in stopping the introduction and sale of diseased cattle from other States be it—*Resolved*, That the Legislature of this State, now in session, be memorialized to appoint a committee, with full power, to examine into the nature and pro-

gress of this disease known as pleuro-pneumonia, most fatal, and other diseases of cattle prevailing among the cattle in this State, and that they be authorized to prosecute all offending parties who may be implicated in such introduction and sale.—*N. Y. Tribune.*

The Treatment of Sick Animals.

Of course, when an animal is sick, any farmer who is ignorant of what should be done ought to secure the best advice within his reach. But he should always retain so much control over the treatment as to avoid a resort to barbarous remedies, unless the unskilled practitioner can convince him that there is no good reason for it; for, as a general rule, an animal left to the unguided curative processes of nature would come better out of its troubles than if subjected to the operation of brutal means for the restoration of its health. With animals, as with men, there is far too much medicine-giving, blistering, and bleeding; and probably more are killed or permanently injured by these practices than are cured by them. In some desperate cases they are necessary, but they should always be resorted to with caution, and with much hesitation. In all minor diseases, which result almost invariably from bad air, bad food, filth, and neglect, the wisest treatment is the removal of the cause, and the restoration of those simple, natural conditions upon which the return, no less than the maintenance, of health is based. The purging ball may often be with advantage supplanted by a loosening diet; bleeding, almost invariably by such a diet and by pure air. Warm clothing and thorough grooming will usually do the work of the blister, and do it much better. In all cases of strains, bruises, and wounds, water is an almost sovereign remedy; and in nine-tenths of the cases in which it is thought necessary to send for the local cow doctor or horse doctor, the simple treatment above indicated will be found not only cheaper, but far better in its application and in its effects.—*Exchange.*

Disease in Sheep.

The *Middletown Sentinel* says Henry L. Stewart, Esq., of Middle Haddam, who has expended considerable money in importing improved breeds of sheep from England, has lost all of his best sheep by a disease that is new for this country. The last of his flock, a lamb, died last week. Dr. Cressy, the State veterinary surgeon, made a post mortem examination of one of Mr. Stewart's sheep two weeks ago or more, and found a parasite literally consuming the lungs. This parasite is known as the "Strongylus filaria," or round thread worm. It has been long known in England, but not in this country. This is the first case brought to Dr. Cressy's attention, and no mention of its being known in the United States is made in any of the books or reports. The worm, full grown, is two or three inches in length, and about as large as number 20 cotton thread. It first attacks the lungs, and then spreads to the bowels and intestines; but as yet, none have been found in the flesh of sheep. It increases its kind very rapidly, there being from five to ten thousand living embryos in each mother worm. We had the pleasure of examining, under the microscope, a number of the embryo in all stages of development, magnified twenty thousand times. It was a startling sight. Mr. Stewart has lost thirty-five sheep by this insidious and destructive worm during the past two or three years, and some other cases have occurred in Hartford county. As most of the sheep affected were imported, it is quite certain that the parasite was also brought from England. A very simple remedy (turpentine) will extirpate this worm, so no alarm need be felt by sheep raisers and lovers of mutton. Dr. Cressy is giving the subject his attention, and the spread of the disease to any extent need not be feared. Mr. Stewart describes the symptoms and course of this disease very clearly, as follows: Sheep run a little at the nose, cough by spells, and when doing it, draw themselves up together; stand with head down to the ground and feet near together, with back arched up; have a very loose state of the bowels towards the last stage of the disease; sheep grow very poor and weak, often falling down as they walk, and making hard work to get up again. On opening after death, lungs very small, pale in color and covered with whitish spots on the outside, the under side of the lung often colored with purple spots; the air tubes pale and stiff, and a fine thread like worm found in them from one to three inches long; worm nearly white; the lungs are often speckled with gritty bunches of a shelly character; bowels covered with numerous branches of a like character.

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The Canada Farmer.

TORONTO, CANADA, MARCH 31, 1873.

Short-horn Herd Book.

The second volume of the CANADA SHORT-HORN HERD BOOK has been issued, and should be in the hands of every enterprising farmer. It is edited by Mr. Hugh C. Thomson, Secretary of the Agricultural Association of Ontario, and issued under the auspices of that Association. This second volume is much larger than the first. It is a book of nearly a thousand pages, and is got up in good style. The price is \$4 and the book can be had by personal or written application to Mr. Thomson, at the offices of the Agricultural Association, on the corner of Queen and Yonge streets, Toronto. We shall speak of its contents in a future number.

Birmingham Short-horn Bull Sale.

An Annual Sale is held at Birmingham, England, of Short-horn bulls, sent in by breeders throughout the Three Kingdoms, which always attracts attention from farmers. The animals are not as a general thing presented at this sale in show order, but merely in good growing condition, and the competition for prizes at it is yearly becoming keener, and success in the strife a higher distinction. The event for 1873 came off at Bingley Hall, Birmingham, on 6th March, when no fewer than 177 bulls were entered for competition and sale.

The prizes were awarded as follows:—

Short-horn bulls, exceeding twelve and not exceeding twenty months old. First prize, £39, Sir G. Jenkinson; second, £20, Col. Lloyd Lindsay; third, £10, Mr. Charles Hayes, Kettering. Commended and reserve, Mr. Charles Hayes. Commended, Major Webb; Sir G. Jenkinson; Messrs. T. Garne & Son. Bull calves, exceeding six and not exceeding twelve months old. First prize, £20, Mr. Thomas Hewer, Inglesham, Gloucestershire; second, £10, Mr. Thomas Mace, Sherborne; third, £5, Mr. Vivesash, Berwick, Bassett, Swindon. Highly commended and reserve, G. Briscoe, Worcester; commended, Thomas Mace; Mr. Pilgrim, Hinkley; Mr. R. Robbins, Kenilworth; Mr. Horton, Park House, Shipwell; T. Latham, Abingdon.

For the best bull, exceeding twenty and not exceeding thirty-six months old.—Prize, £5, Mr. Horton. Commended and reserve—Mr. V. Hitehouse Kingsbury, Tamworth.

For the best bull, exceeding thirty-six months old.—Prize, £5, William Tidy, Middleton, Tamworth.

But the exciting part of the day's proceedings was

the auction sale of the animals. Under the regulations of the sale, every animal exhibited must be disposed of under the hammer with one reserve bid to the owner of twenty guineas (\$105). Of the 177 entries, twenty-seven failed to make their appearance in the ring; but all the rest were knocked off in the short space of 4½ hours. The second prize bull brought 100 guineas, while the first prize only made 80 guineas; and one or two animals were disposed of for more money than either. The bull calves averaged \$160 each; the yearling Bulls \$201; and the total proceeds of the sale were £23,500. The show is held to have been a grand success, and the sale very satisfactory to the breeders.

Plans of Operation:

Perhaps there is no greater error systematically fallen into by a large proportion of our Canadian farmers, than in omitting to sit down, thoughtfully and studiously, at stated periods of every year, and work out mature plans of operation for the coming months. We heartily agree with our cotemporary of the *Rural Home*, that success in farming depends more on good calculations, and due economy of labor and expense, than on the quantity of soil or kind of crops raised. The man who farms without plans well laid can not work to the best advantage, and does not therefore economize labor. Each field of the farm should have in the mind of the farmer, the crop allotted to it, the mode of cultivation and the fertilizers to be used, and understood and provided for before the active season of farm labor begins.

As a general rule in Canada, the live stock of the farm must have first consideration—for on it rests the vital issue of profit or loss for the year. The first point then for the farmer to determine is the quantity of stock he desires to carry during the coming season—how many horses, cows, steers, sheep, hogs and young animals of all kinds, it is desirable that he should keep? The desirable number of animals being ascertained, then comes the calculation how much feed will be necessary to carry them well and safely through the year? How much pasture? How much green fodder when the pastures fail? How much fall fodder before winter sets in?—and, How much hay, oats, roots, cornstalks, &c., for winter provender and bedding? With a little trouble a very near approximation can be made to the several quantities required, by adopting a fixed plan of feeding, and allowing three pounds daily of good hay, or the equivalent of good hay, for every 100 lbs. the animals will weigh. By throwing in one-fifth or one-sixth in the gross beyond the quantities thus arrived at, there will be enough and to spare. Of green fodder in proper feeding condition, from 10 to 12 lbs. are equivalent to three lbs. of good hay.

Having thus clearly ascertained the quantities of each class of food necessary to be provided—then comes the laying out of the field crops in such a manner as will secure the fodder wanted. This is a nice part of the calculation and should be done closely. If it is found inconvenient to raise the desired quantities of some of the articles, other crops, to an equivalent amount, should be substituted; and if it is found that the full quantity cannot be obtained, then there should be no dallying—the quantity of stock should be reduced to the capacity of the farm at the earliest prudent moment, or the deficient supplies provided for by purchase.

The live-stock having been thus carefully provided for, the question then comes how shall the land remaining for crops to be sold off the farm, be appropriated? The answer to this question must, of course, be determined by the character of the several fields at disposal, the condition they are in, the crops last grown on them, and the comparative profit likely to be derived from the several crops

suitable for them. Having formed a programme for those fields that from these points of view would be desirable to carry out, then arises the question, can this plan be carried out?—will there be force enough on the farm to accomplish it?—and will there be time to take up the fields in succession and keep beforehand with the work? The way to settle these queries is to classify the several crops in the order of time in which they ought to be taken up, and calculate from the acreage of each field the number of days ploughing, cultivating, harrowing, seeding, rolling each will consume; then tot up the whole, and if you cannot see your way to get through the work between the 10th of April and the 10th of June, change your programme at once and adapt it to your strength. It is folly to go blindly on in hope of something to turn up. The experience of every intelligent farmer in Canada is that to get in the right crop at the right moment is the secret of success.

Next in importance to the laying down of a good plan, is the mode of carrying it into effect. We strongly recommend every intelligent farmer to write out his programme clearly and methodically; and to have it always with him to keep him up to the mark of his own matured resolutions. He should be able to recal at any moment what he expects from each field, and detect promptly any failure of his anticipations; and when such coming deficiency becomes manifest, there should be no hesitation, no dallying—the remedy for it should at once be applied. If the fall wheat has been winter-killed, a spring crop can yet be got in. If the young grass-seeds come up weak and patchy, additional seed can be sown or the land ploughed for a crop. If the hay crop is deficient, there is yet time for Hungarian grass or millet, or corn-fodder to supply its place. If the mangolds or carrots fail, there is time to replace them with turnips or rape. If the peas come to grief, there is yet time for corn-fodder or buckwheat. With the hot summers and rapid growth and great variety of crops raised in Canada, the farmer who has brains to lay plans, and the energy to carry them out, need never lack well-filled barns when harvest is over.

Books on Insects.

A correspondent has recently enquired of us what books he should procure in order to enter upon the study of insects. As we have no doubt that many others desire the same information, we shall give here the best advice that we can upon the subject.

As an introduction to the study, we should recommend for general perusal, a truly entertaining and instructive work that may be read and appreciated by any one who has no previous knowledge whatever of the subject; we refer to *Kirby and Spencer's Introduction to Entomology*. It was originally published in four volumes, the last two being devoted to technical entomology. The first two volumes have since been published separately, and have gone through several editions. Recently they have been reprinted as a "people's edition" in one volume (London: Longmans, 1867)—price in Toronto \$1.50. We should advise the reader after going through the first three chapters, to turn to the chapter on the "Societies of Insects," and afterwards to read any particular ones whose subjects take his fancy; to read directly through the book would probably be found wearisome at first.

Having thus acquired some general information upon the subject, the reader will no doubt commence to form a collection of insects,—without a collection, it is almost needless to say no satisfactory progress can be made in the study of the science—and very soon he will desire to know the names of the specimens that he has acquired. To aid him in this, we strongly recommend *Harris' Insects injurious to Vegetation* (Boston: Crosby & Nichols; New York. This is an invaluable work, containing over three hundred figures of insects in all stages, and an immense

mass of practical information. The next work that will meet the student's growing requirements, one from which he may learn much respecting the structure and classification of insects, is *Packard's Guide to the study of Insects* (American Naturalist Press, Salem, Mass., price \$5.00). It contains a very large number of illustrations of American insects, affording upwards of a thousand figures, and is the best manual for the Canadian student that has yet been published.

The foregoing are works that every one who collects or observes insects at all ought to have. But if one goes on to study entomology, he will probably soon find that he must confine his attention almost exclusively to some one order if he wishes to do any thorough work; the field is too large to be entirely embraced by anyone who has not unlimited time at his disposal. The student will find admirable treatises on special orders among the publications of the Smithsonian Institute, at Washington, e. g. *Le Comte's Coleoptera*, *Loew's Diptera*, *Morris' Lepidoptera*, *Scudder's Orthoptera*, &c. In general entomology he cannot find a better work than *Westwood's Modern classification of Insects*, (London: Longmans, 2 vols. 8 vo.); it is now unhappily out of print, but copies can occasionally be obtained at second-hand booksellers in large cities. In order to keep himself acquainted with the progress of the science, the student will require to procure the current periodicals upon the subject, e. g. *The Canadian Entomologist* (London: \$1.00 a year), and the *Transactions of the American Entomological Society*, (Philadelphia: \$3.00 a year); he will also do well to take in the *American Naturalist* (Salem, Mass., \$4.00 a year), and if he can afford it some English and foreign publications. The annual reports of the state entomologists will be found to contain an immense mass of valuable descriptions and observations, especially those of Fitch (N. Y.), Walsh & LeBaron (Illinois), Riley (Missouri), Packard (Mass.), Lintner, Glover and others, not overlooking those of our own Canadian society.

Most of the above mentioned works can be obtained through the principal Toronto booksellers at the prices stated; others, such as the "Reports" are not so easy to procure but may often be obtained at the "Naturalist's Book Agency," Salem, Mass.,—a useful repository for scientific works of all kinds.

Our correspondent also asks what microscope he should procure in order to study animal and vegetable physiology. To ask a naturalist to recommend a microscope is like asking a lady what sewing-machine she prefers; the reply is almost sure to be the particular one that the individual chances to possess. There are very large number of different microscopes manufactured at the present time, varying very much, of course, in excellence and in cost, but many of them admirable instruments. The choice depends greatly upon the pocket of the student; if he can afford it, nothing will give him greater satisfaction than the purchase of a good English instrument. Our own preference is for those of Smith & Beck; they can be obtained from ten pounds sterling up to any amount the purchaser pleases; their "Binocular popular Microscopes" are well adapted for all ordinary work, and will take all the extra fittings and powers that one chooses to invest in. There are said to be some really good cheap microscopes made in Germany, but we have never yet seen an inexpensive instrument that was worth having for purposes of study and research.

W. H. CHEEVER & Co., of the North Attleboro, Mass., market, recently slaughtered a yoke of oxen that weighed 5328 lbs. The dressed weight of one was 1997 lbs., and of the other 1865 lbs., fed by Josiah Richards of North Attleboro. At the Attleboro fair, one year ago last fall, 6 yoke of working oxen were exhibited by Richards & Bros., averaging 3500 lbs. per yoke.—the heaviest weighing 4100 lbs.

Adulteration of Seed.

The secrets of the seed trade have lately had a thorough ventilation in England, and the facts brought out before the committee of the House of Commons which investigated the matter, have been most startling. They were shortly as follows:

That pure "seed" (that is seed of the last year's growth), cannot be obtained from retailers, who do not raise their own seed.

That the overplus of any year's seed is not destroyed, but is kept to mix with and adulterate the seed of the following year. The mixture of old and imperfect seed with new seed varies from twenty-five per cent. to seventy-five per cent. according to the scarcity of the various kinds of new seed.

That there are large establishments in Britain for the "killing" of seed. This is done by kiln-drying at such a heat and for such a length of time as to destroy vitality. This "killed" seed is a regular article of merchandise, and is sold in large quantities to the trade, for the purposes of adulteration. Thus turnip seed (when there is an overplus of any variety and all seeds of the same class whose cheapness admits of it) is "killed" and mixed with new seed of similar appearance and greater value. This seed after preparation is polished and prepared by oiling and machinery to look like new seed.

For example if a man has an overplus of Belgian carrot seed, which he cannot sell, or is doubtful of its vitality, he has it "killed," and he can then mix it with the more expensive kinds, and as the seed is "killed" the fraud is not discovered by the grower. In this manner the most expensive seeds such as cauliflower, brocoli, etc., are largely mixed with other small "killed" seeds of a similar appearance. The same plan is adopted with clover seed. Foreign seed which is inferior and cheap, is "killed," and mixed with that of home growth. Where the seed does not carry the right appearance, it is even stained, painted, and polished and renovated in appearance, so that even an expert cannot detect the fraud.

These practices have been for years carried to such an excess, that length some five or six of the great seed houses rebelled against them; and after exposing the frauds, applied to the British Parliament for relief. The consequence was the passing of an act 32 and 33 Victoria, Cap. 112, making all such practices criminal offences, and strictly prohibiting the killing establishments, and the sale or preparation of killed and dyed seeds. As it was scarcely to be expected that many of the large establishments and the more unprincipled of the dealers, would lose all the inferior seeds they had on hand, it was whilst the act was under discussion hurried abroad at any sacrifice. Every farmer who buys seed ought to sprout 100 grains and test their germinating powers. If he finds the seed good and that it all grows he must look for the remedy for a bad plant to his own mode of sowing it.

Oiling Rose Bushes.

Mr. George Gordon, in the *Gardeners' Magazine* (English), considers oil to be the grand restorer of half dead roses. Horticulturists in the United States are not so well satisfied of the value of oil as an application to shrubs and trees, the experience here being decidedly adverse. Below we give what the correspondent says:

"A gentleman whom I had the honor of being introduced to the other day, at Horsesey Lane, and who is an enthusiastic amateur, planted a quantity of standard roses last February. Well, some of these started away vigorously, others died without much ceremony, but two would do neither. The bark of the stems and branches kept green, but not a single bud made any sign of starting right up to the middle of July, notwithstanding their being kept well watered throughout the whole season. Being a deep thinker, he thought over the subject and came to the conclusion that the bark must be so contracted that sufficient moisture could not ascend to start the growth.

Matters could not well be worse; so he thought he would try the effects of a good oiling upon one of them. Acting upon this resolution, he gave the whole of the branches and of the main stem a thorough good dressing of ordinary colza oil, two successive mornings, such as is used for burning in moderator lamps. The effect was marvellous, for in a very few days the buds pushed, and grew with the greatest rapidity and made stronger and finer growths than those which started in spring. When I was there, it had the largest and healthiest head of any of the newly planted trees; but the one not oiled was quite dead. I shall withhold the name of the gentleman, otherwise I have no doubt his garden gate would be besieged for the next month by the curious, who are never satisfied unless they can "go and see," and thus give him a lot of trouble which I do not feel justified in doing. But, as a proof of its correctness, I will subscribe my name, and, were further proof necessary, I will just mention that a very old friend of mine, Mr. Chetwood, of the Horsesey Lane Farm, Highgate, has watched it throughout the whole process, and, in fact, during the whole summer.

Flax in Britain.

The Irish Flax Supply Association has just issued a report on the state of the flax industry, in which full returns are given in regard to it. From this report it appears that in the Three Kingdoms there were 174,251 acres devoted to the flax crop in 1871, and 138,360 acres in 1872—distributed as follows:—

	1871.	1872.
Acres in Ireland.....	156,883	122,003
“ “ England.....	15,949	15,011
“ “ Scotland.....	1,244	1,262
“ “ Wales.....	175	84

We are not informed as to the weight of flax obtained in the other Kingdoms; but in Ireland the total flax crop of 1871 was 13,612 tons; and in 1872, 18,920 tons—showing, in 1872, an increase of 39 per cent. in the crop, from an acreage diminished by 22½ per cent.

As to the quality of the flax in 1872, the report says: "Had the weather been even moderately favorable during the season, when the retting and grassing processes were being carried on, the yield per acre would probably have compared favorably with the highest that has ever been obtained in Ireland; but, in consequence of the unavoidable exposure while on the grass, the flax softened, and was unable to undergo the scutching operations without inordinate waste. The flax crop, previous to being pulled, promised to be everything a farmer could have desired, and, notwithstanding the serious injury which it sustained through the unparalleled wetness of the season, reports of prolific yields have been received from many districts in Ireland, and flax on the whole suffered comparatively less than other crops. It has been frequently urged that till farmers give flax a steady but very moderate place in their rotation, they will never derive the benefit which results from its culture. One acre sown on suitable and carefully-prepared ground, with selected seed, will be more profitable than ten acres under reverse circumstances."

Guelph Easter Fat Cattle Show.

The Easter Fat Cattle Show and Fair, under the auspices of the South Wellington Agricultural Society, came off under most unfavorable circumstances as regards weather and the state of the roads. Still the number of persons present was very large, and the turn out of cattle exceedingly numerous. It is computed that about 500 head changed hands; many that were brought in being taken home again, on account of prices not coming up to the expectations of sellers. The quality of the cattle was particularly good, and buyers from all portions of the Province were present in considerable numbers. Prices ranged from \$3 50 to \$6 00 per 100 lbs. for the fair ordinary class of cattle, while from \$6 00 to \$10 00 per 100 lbs. was given for some of the fancy stock. There were comparatively few sheep on the ground.

English Short-Horn Sales in 1873.

The following sales of thorough-bred stock have been announced in England—
APRIL 2.—Messrs Brogden and Ashburner's Short-horns. At Lightburne, Uxertown
APRIL 3.—Mr. A. H. Brassey's "Booth" Short-horns. At Preston Hall, Aylesford.
APRIL 22.—Captain Winnall's Short-horns. At Eccleswall Court, Ross
APRIL 24.—Mr. Duncan's Jersey herd. At Bradwell, Wolverton.
MAY 1.—Col Towneley's Short-horns.
MAY 8.—Lord Penrhyn's Short-horns. At Wicken Park, Stony Stratford
MAY 15.—Mr. C. Chapman's Short-horn herd. At Exton, Oakham
JULY 10.—Mr. F. H. Cheney's Short-horns. At Gaddesby Hall, Leicester

Chief Agricultural Meetings in Britain for 1873.

APRIL 15.—Royal Dublin Society Meeting in Dublin. President, The Lord Lieutenant of Ireland.
MAY 31 to JUNE 9.—Vienna Universal Exhibition.—Cattle Show. Secretary, Mr. P. C. Owen, 41, Parliament Street, London
JUNE 2, 3, 4, 5, and 6.—Bath and West of England Agricultural Society Meeting at Plymouth. President, The Earl of Mount Edgcumbe.
JULY 14, 15, 16, 17, and 18.—Royal Agricultural Society of England.—Meeting at Hull. President, Earl Cathcart.
AUGUST 5, 6, 7, and 8.—Highland and Agricultural Society of Scotland Meeting at Stirling. President, His Royal Highness The Prince of Wales
SEPTEMBER 13, 14, and 15.—Royal Agricultural Society of Ireland.—Meeting at Waterford. President, Lord Lismore.
SEPTEMBER 18 to 27.—Vienna Universal Exhibition. Horse and Poultry Show
DECEMBER 8, 9, 10, 11, and 12.—Smithfield Club Fat Cattle Show, at Islington.—President, The Duke of Richmond

To Remove Skunks' Hides.

As I have caught and skinned a good many skunks within the last ten years, I will give you my method. Place the skunk on his back and commence at the centre of his under jaw, rip down the middle to the forelegs; skin the head and neck, then take a rope or small chain, put round his neck and hang him up just high enough to work at conveniently; skin the forward pair of legs; rip down the middle; stop about three inches from the tail. Commence at the top, skin down and towards the back. Keep the knife in your right hand and hold the skin with the left; be very careful not to touch the carcass with the left hand, nor the hair side of the skin with the right. The glands that contain the essence, are placed on the under side near the tail; skin very carefully here so as not to cut them. After removing the skin rip it open down to the tail, and nail it up on some out building to dry. Remove the glands and bury them. Now, if you have done all of this with care, the fat will not be scented, and you can cut it off and cook it out over the kitchen stove. The oil is valuable for harnesses, for greasing waggon, and all lubricating purposes. I have taken a quart from one animal. I killed some once, and not having time to skin them the same day, they froze, and I put them in a stream of running water to thaw them; when I skinned them there was no scent on the hair, the water having carried it all away.—R. C. C.

American Marble.

At last, if all reports be true, the importation of marble from Italy to this country, is threatened with a sudden and eternal cessation. Already the boulders of Solano county, California, have yielded a marble superior in beauty to any European article, and one that is preferred by the Italians themselves, who buy it by the pound and use it for fancy veneering. But the detached boulders which yield these many colored slabs are inconveniently located and the supplies from that source limited in quantity and variety. Not so, however, the vast beds of marble recently discovered in an old settled district of Western Vermont, on Lake Champlain. Strange as it may seem, that such a mine of wealth should have remained so long undiscovered, the State Geologist reports these beds as the finest quarries in the world. The strata varies from one to six feet in thickness; the stone is of extraordinary hardness and durability; blocks of any size can be obtained and the surface polished till it is

as brilliant and as free from flaw or crack as a mirror. No other quarry it is said, has ever yielded such a beautiful variety of colored and variegated marble as may be obtained from the different veins of these Vermont beds. The owners claim that the supply is inexhaustible, and that they cannot only undersell foreign competition, but will be able to supply England with a material at once better and cheaper than her builders can get elsewhere

Rainfall.

Professor Daniel Draper, Director of the Central Park Observatory in New York, who has made a critical study of the subject during the past three years, states positively that the statistics of the rainfall for these three years exhibit no perceptible diminution in amount being respectively 46.81 inches, 42.32 inches, and 52.06 inches, which shows in the last year, 1871, a considerable excess over either of the others. If the examination is extended further back, and includes a longer period, a like result is obtained. Thus taking the years from 1836 to 1872 inclusive, and forming them into equal groups, it will be seen that the amount of rain during each period has advanced rather than declined, while for the whole time the average is but a small fraction above what it has been during 1869-70-71. Hence Prof. Draper is of the opinion that though the variations from year to year are large, yet these neutralize each other when long periods of time are considered, and that no apprehension need therefore be felt of permanent disturbance of the water supply. He sums up the matter as follows:—"Although in the last thirty-six years great changes have been made in all those portions of the United States intervening between the Mississippi and the Atlantic ocean, large surfaces having been cleared of the primeval forests and brought under cultivation, their physical aspect having therefore been essentially altered, no corresponding diminution can nevertheless be traced in the mean amount of water that has fallen. On the contrary there has been an actual increase."

Texas Cattle for 1873.

A cattle dealer of San Antonio, Texas, writes under date of Feb. 26th: With reference to the cattle trade, the number computed to be driven from Texas, this season, will be unusually large. From my own personal observation and interviews with stock men, it will be in excess of the amount driven last year. Very little Northern capital, comparatively, will be expended for cattle here this spring, for the reason there are so many cattle in the Northern States; low prices, and financial affairs being close everywhere. The general appearance that everything bears is anything but encouraging to speculation. Cattle this season will be driven by raisers, generally, the succession of drouths last summer causing so great a scarcity of grass that vast numbers of stock have died during the winter and spring, and those alive, which I have seen, are very, very poor. Hence many are driving all their stock that they can gather, being desirous of abandoning the business; while very many of the cattle men are deeply involved financially and are forced to drive to raise money, since as they tell me, bankers do not feel inclined to grant accommodation, under the appearance of things, as they now exist.

Grass is very backward; many drivers are ready to start, but there is no old grass and the young is only just starting, hence cattle cannot live between here and Fort Worth, for a month yet. Nearly all the old parties are going to drive this season. The weather now is spring-like and the peach and plum trees have been in bloom for two weeks past.—Ohio Farmer.

The Supply of Horses in England.

The following select committee on this subject has been appointed in the British House of Lords:—The Prince of Wales, the Duke of Cambridge, Lord Halifax, the Duke of Richmond, the Marquis of Lansdowne, the Marquis of Ailesbury, the Earl of Portsmouth, the Earl of Malmesbury, Earl Grey, Viscount Falmouth, the Earl of Bessborough, the Marquis of Waterford, Lord Rosedale, the Earl of Roseberry, Lord Kesteven, Lord Blackford, and Lord Strathnairn.

In the House of Commons during the discussion of the army estimates, Lord Eustace Cecil expressed a hope that the Secretary of State for war would say how he intends to make up the deficiency of horses for the cavalry. In the Prussian army he found they had 73,000 horses to 312,000 men, or one horse to every four men; whilst in the English army there

were 462,000 men and 15,120 horses, or one horse to every thirty men. The Prussians besides that had a sufficient number of reserve horses, which could be called into the field at any moment. Mr. A. Brown, referring to the same subject, showed that through the colonels of different regiments going to the fairs to purchase the best horses they could get for remounts for their respective regiments, the dealers held out for higher prices than they could obtain if the purchases for the different regiments were made by one individual. While the good serviceable horses used by the London general omnibus company did not exceed in the highest £37, those bought by the Government for the autumn manoeuvres reached £42 each.

Friction Needed.

Farmers need mental friction. What a man reads or what he thinks, requires discussion as much as food does chewing. The man who looks at life from a single stand-point sees but one phase of it, and that imperfectly. We press this matter of farmers' conventions, clubs, exchanges, societies again upon the attention of farm readers, because we have an abiding faith in its utility. It is an educational agency no neighborhood of would-be progressive farmers can afford to forego. "Why, sir," said a farmer to us the other day, "our club has done more to improve the agriculture of our town and increase the market value of our farms than all other agencies combined. Men who were supposed to know little, and almost without influence, have come right to the front, while others, inflated with egotism and full of assumption, who believed themselves neighborhood oracles, have fallen back to their places. They were mere gas bubbles, and a little joint discussion of their theories and notions let the gas out, and the bubbles collapsed. They are now content to learn of men at whom, three years ago, they sneered. I tell you it is a great thing to show who's who." Meet once a week, gentlemen, if it is only in some one's barn, and have a good talk over the uppermost matters in your minds. If you do not choose to hold a formal meeting, hold an informal one. If the roads are bad, talk about good ones, and devise ways and means to make them good. Think, and talk together, and you'll find you know more (or less, which is an equally profitable thing to find out) than you thought you did. The more you know the more you'll want to, and you will have each other to draw upon for it. If this advice seems in any degree arrogant or presuming to anybody, let them be assured that it is not intended to be. It is simply urging the doing of what we know, from much experience and observation, it is profitable to do.—Rural New Yorker.

Have a Specialty.

It does not matter what a man's vocation may be—whether a farmer, mechanic, physician, lawyer or literateur—he should have some specialty to which he may devote his leisure, even if it be in the line of his vocation. Yes, if you prefer the term, let him have a hobby! We do not mean that he shall ride his hobby at all times and in all places and on all occasions, but he should select some special department of science or industry for investigation and research—to master in all its details. Doing this, he will, *perforce*, enlarge his general knowledge and the scope of his usefulness. Indeed it is wise for a farmer to take up some specialty in agriculture in which to excel—not upon which he shall depend exclusively, and to which he shall devote all his energies, but in the prosecution of which he shall take especial pride and pains, and upon which he shall become known as a reliable authority, as well as having the best of that special product that can be grown. We do not urge this because we think it will prove, in all cases, a money-making adventure, but because we believe in the wholesome influence of *motif* upon the general life and success of men—because we know that specialists are more likely to have accurate as well as general knowledge than those who live and labor without any particular objective point which they are especially aiming to reach. Let one man take up beans for example, procure and cultivate all the varieties he can hear of, study their respective habits, learn to know their season of ripening, their nutritious qualities, peculiarities of flavor, their history, and the enemies which attack them, and he will find a most interesting field for investigation opening before him, which will expand yearly and increase not only his knowledge but his fame. Let such a man once become known as "the bean man" in a community, and as growing all sorts that can be grown in his climate, and such a reputation will be valuable in a pecuniary point of view. So of potatoes, corn, tomatoes, peas, or whatever crop one may choose to adopt. By all means, have a specialty.—Rural New Yorker.

The Clydesdale Stallion Show.

The annual show of stallions was held on Wednesday 26th Feb. in the cattle market, Glasgow, Scotland. The number of entries was 81, compared with 54 in 1872, 63 in 1871, and 30 in 1870. Originally established for the purpose of enabling the Glasgow Agricultural Society to select a good stallion to travel their district, it has gradually grown in dimensions, as provincial Societies in all parts of the country adopted the practice of sending deputations to Glasgow to make choice of a horse for their respective localities. In this way nearly £800 were competed for in direct premiums. As this was the largest, so the show may be considered the best ever held by the Western Society. It was last year a subject of general complaint, not in Clydesdale only, but all over the country, that too much of the best blood in Scotland had been bought up by foreigners and colonists and withdrawn from the country. This was borne out on Wednesday by the fact that few aged stallions were exhibited, the majority being three and four-year-olds.

The Glasgow Agricultural Society had first choice of the 81 entries, and *Crown Prince* was made their choice. He is a dark brown five-year-old horse, bred by Mr. G. Brown, Shields, New Galloway, his sire being Mr. Muir's Champion. As a yearling at the Glasgow summer show he gained the first prize, and afterwards injured his hock against a stake. Barring this blemish on the hock, which, however, cannot affect his stock, Prince is an almost model Clydesdale. Large in size, he possesses a beautiful head, with fine broad chest, great girth round the heart, a strong back, capital rib, and sound feet. *Crown Prince* was secured last year by the Mid Calder Society, which awarded their £50 premium to Mr. H. Andrew's *Holland Chief*, a bright bay three-year-old with good barrel, long quarters, and fine hocks, although a little plain in the fore legs. The Marquis of Londonderry's tenantry in the Castle Eden district, Durham, gave their £50 premium to *The Swell*, who stands 17 hands high, and has great bone and substance. *The Swell* was eventually purchased by the Marquis of Londonderry for £300. Mr. Wm. Crawford's (Acholter Bute) *Lusty 4th*, a bay six-year-old, of prepossessing shape and style of moving, was sold to Mr. Joseph Fearon, Whitehaven, for £500; and Mr. James Kerr, Lochend, Kilbowie, sold his *Victor*, a grand ribbed, well coupled brown, four-year-old, to Mr. Greig, for £400, for the now Cornwall Stud Company.—*Mark Lane Express*, 6th March.

Look to your Cellars.

It is a practice of many farmers to bank up their cellars tightly in the autumn leaving no ventilation and no chance for the effluvia arising from decaying vegetables to escape, excepting through the cracks in the rooms above. Is it any wonder that scarlet fever, diphtheria, measles and small-pox prevail where such is the practice? If the children are sick and die, do not call it a dispensation of Providence, or lay the blame upon the cold winter, but look to the cellar, whence the trouble springs. If there are rotten fruit, bins of decaying potatoes, turnips, cabbages, musty barrels, and all manner of disagreeable odors, do not forget that they breed disease, and do not wonder whence the scarlet fever and measles can come from; but set to work and rout out all the foulness which lies under your feet. Take the barrels out of doors; wash them and let them dry; bury in the barnyard all decaying vegetable matter. Look to the pork and beef barrels; keep them sweet and clean. Commence the work in the morning when the sun shines warm and bright; remove all the banking, take out the windows, throw open the hatchway, and let the fresh air blow through every part. Carry out every box, barrel and movable thing, and sweep the bottom thoroughly; and not only the bottom, but the sides and the rafters. Do you think they are clean? The foul air, the lightest air, is settled there, pressing its way upwards into your rooms, and sowing the seeds of diphtheria and typhoid pneumonia and fevers of all kinds. So take a thick broom and scrub down every part; give the sides a similar treatment, and clean the whole cellar thoroughly; do not leave one sprouting potato or onion; all the vegetables are better in the barn than in the cellar now. To be sure, it is not easy work; but neither is it easy to watch by the sick bed, to see our loved ones suffer, to have no rest night or day, and finally to robe them for the grave.

Make whitewash with one peck of unslacked lime and boiling water enough to thin it; add to it four pounds of copperas and three pints of flour starch;

make it thin enough to spread well, and yellow with the copperas. Wash every rafter, stone, and crack or crevice at the sides or overhead, and see how sweet the place will become, and what a scampy ring of mice and rats will follow. Throw bits of copperas in the corners, lay them on the shelves, and purify every part of the cellars with this cheap disinfectant, which is also disagreeable to the rodents. Don't delay, because your own health and the health of your wife and children depend upon it. A family living over a foul cellar is more liable to be afflicted with illness than a city family living in a tenement building. With plenty of pure air, water, and exercise, farmers ought to keep the evil imp, disease, from their midst; but foul cellars, iron stoves, small sleeping rooms, are fast making country villages as unhealthy as the crowded city.—*Country Gentleman*.

East Lothian Agriculture.

The disastrous season of 1872 has dealt a blow to the agriculture of East Lothian, from the effects of which it will take years to recover. The individual losses, especially in some districts of the country, are enormous; losses which, owing to the high farming practiced now-a-days, are simply unprecedented. To illustrate these, we give a few particulars.

There are twenty-five parishes in East Lothian, which are estimated from the valuation roll of the country, to yield an annual rental of about £200,000, and when we state the actual loss *in money*, from the deficiency of crops in 1872 to be at least £500,000, your readers may form some idea of the position in which our farmers are placed by what can only be termed a national calamity. The half of this large sum has been lost by potatoes, which is sufficient to cause serious doubts regarding the prudence of continuing to practise a system of husbandry whereby such a risk may be incurred. There are 566 occupiers of land in the county, and the extent of soil in cultivation may be taken at 105,000 acres. Of these 566 occupiers there are over 200 who grow a mere fraction of potatoes and their loss is trifling when contrasted with those who farm in the potato and wheat growing districts. This extensive potato cultivation is caused entirely by the rent at which the land has been let. The great failure of the potato crops which occurred in 1845-46, did not affect the East Lothian farmers in the least. Potatoes were only grown to a small extent; in fact, merely for home use. We had no means of exporting our produce in those days, unless by sea. The opening up of large southern markets totally changed the aspect of affairs. The demand for land has been increased very much, also rents in many instances to a pitch which could only be paid under favorable seasons.

The prospects for 1873 are not good. Very little winter wheat has been sown, and the small quantity which is sown has suffered from too much rain. The acreage under potatoes must be much less than usual, because it will be impossible to get seed; and the expense must deter many from running such risk, which, after the disasters of 1872, may only be characterized as a species of agricultural gambling. The wheat crop in East Lothian has suffered more than elsewhere. For illustration, the produce of two acres in one of the best districts (which appeared before it was cut to be a much better crop than the average of the county) realised £10 15s., or £5 7s. 6d. per acre, a sum which would scarcely pay seed and labor. Every one knows it was wet weather which made such havoc with our crops. The rainfall in East Lothian during 1872 was 44 inches. Of this, over 5 inches fell in September, a season when farmers gratefully accept a minimum supply. The average rainfall for the last 40 years was 24 inches.—*London Gentleman's Magazine*.

Of all dreary places, deliver me from the farm houses which many people call home. Bars for a front gate, chickens wallowing before the door, pig pens elbowing the house in the rear, scraggy trees never cared for or no trees at all, no cheering shrubs, no neatness, no trimness. And yet a lawn and trees and a neat walk and a pleasant fence don't cost a great deal."

WHEN TO SKIL WHEAT.—A Wisconsin farmer who evidently believes in figures, has sent the *Western Farmer* a statement concerning his sales of wheat the past 8 years, from which it appears that commencing with 1865 his wheat has averaged him a fraction over \$1.29 per bushel; the sales made from September to January averaged \$1.22 5-7ths per bushel; while the sales made from January 1st to July 31st, averaged \$1.36 1/2 per bushel—a difference of 14 cents per bushel

in favor of holding wheat, provided the shrinkage and waste does not eat up that amount. It would be interesting to know the average cost per bushel of producing and marketing that wheat for eight years.

Australian papers state that meat preserving is still carried on to a moderate extent only. So much has now to be paid for sheep that the business is not so profitable as it was when the meats were selling at a lower price than at present in London. The fact appears to be that the times are so good with the squatters that they have no wish to part with their stock. The grass is abundant on the runs, and the condition of the animals excellent. Large numbers of store sheep are also sent up, it appears, to the north, where country abandoned several years ago is now being re-stocked. In 1871, preserved meats of the value of £356,109 were exported from Victoria; in 1872, of the value of only £253,342.

VENTILATING ROOMS.—Inasmuch as warm air always tends to ascend, the old methods of ventilation were all founded on the idea of withdrawing the warm air from the upper part of the room and letting the cold air in near the floor, and this, too, in spite of the fact that carbonic acid, which is the principal impurity in the air of inhabited rooms, is much heavier than common air, and consequently descends instead of rising towards the ceiling. An enterprising inventor has lately patented a method of ventilation in which the old system is entirely reversed, the cold air being let in at the upper part of the room, while the warm air, with its contained carbonic acid and other impurities, is drawn into an outlet-flue through an opening near the floor.

The Irish agricultural statistics for 1872 have been issued. From the various tables furnished it appears that, compared with 1871, wheat shows a decrease of 16,242 acres, oats of 14,323 acres, barley of 2085 acres, and bere and rye of 1560 acres, potatoes of 66,632 acres, vetches and rape 1290 acres, flax, 34,697 acres, and meadow and clover 29,114 acres. In beans and peas there is an increase of 869 acres, turnips 19,429 acres, mangold and beetroot 2999 acres, cabbage 6317 acres, and carrots, parsnips, and other green crops 1334 acres. The returns of live stock for 1872 when compared with 1871 show an increase in the number of horses of 2650, of cattle 80,781, and of sheep 28,692; and a decrease of pigs amounting to 236,037. The total estimated value of horses, cattle, sheep, and pigs this year is £37,117,517, being an increase of £282,781 when compared with 1871. The number of mills for scutching flax in each province in 1871 was, in Ulster 1391, in Leinster 40, in Munster 35, and in Connaught 33; making a total of 1499.

PROTECTION OF SMALL BIRDS IN BRITAIN.—Some of our readers will be interested in being reminded of the Act for the protection of certain wild birds during the breeding season, which passed last session of Parliament, and will come into operation on the 15th of this month. The second section provides that:—"Any person who shall knowingly, or with intent kill, wound, or take any wild bird, or shall expose or offer for sale any wild bird recently killed, wounded, or taken, between the 15th day of March and the 1st day of August, in any year, shall, on conviction of any such offence before any justice or justices of the peace in England or Ireland, or before the sheriff or any justice or justices of the peace in Scotland, for the first offence be reprimanded, and discharged on payment of costs and summons, and for every subsequent offence, forfeit and pay for every such wild bird so killed, wounded, or taken, or so exposed or offered for sale, such sum of money, as, including costs of conviction, shall not exceed five shillings, as to the said justice, or justices, or sheriff shall seem meet, unless he shall prove to the satisfaction of the said justice, justices, or sheriff, that the said wild bird was or were bought or received on or before the said 15th day of March, or of or from some person or persons residing out of the United Kingdom. Provided, nevertheless, that every summons issued under this Act shall specify the kind of wild bird in respect of which an offence has been committed, and that not more than one summons shall be issued for the same offence." The third section makes it lawful for any person to require the name and place of abode of any individuals offending against the Act, and a penalty may be inflicted for refusing or giving wrong name or address. The following, among other birds, are included in the schedule to the Act:—Blackcap, chaffinch, cuckoo, flycatcher, golden-crested wren, goldfinch, greenshank, hawfinch, hedge sparrow, kingfisher, landrail, martin moor (or water) hen, nightingale, nightjar, owl, peewit, plover, redpoll, redstart, robin redbreast, snipe, swallow, swift, titmouse, wagtail, warbler (reed or sedge), wheatear, woodlark, woodpecker, woodwren, wren, wryneck.—*Scottish Farmer*.

Breeder and Grazier.

Devon Cattle.

The Devon breed of cattle are found in their purest state in North Devon. The head of a good Devon is small, clean, and free from flesh about the

jaws; deer-like, light and airy in its countenance; neck long and thin; throat free from jowl or dewlap; eye and round its eye of a dark orange color; ears thin and pointed, tinged on their inside with the same color that is always found to encircle its eyes; horns thin, and fine to their roots, of a cream color, tipped with black, growing with a regular curve upwards, and rather springing from each other; light in the withers, resting on a shoulder a little retiring and spreading, and so rounded below as to sink all appearance of its pinion in the body of the animal; open bosom, with a deep chest or keel; small and tapering below the knee, fine at and above the joint, and where the arm begins to increase, it becomes suddenly lost in the shoulder; line of the back straight from the withers to the rump, lying completely on a level with the pin, or huckles, which lie wide and open; the hind quarters seated high with flesh, leaving a fine hair-ham tapering from the hock to the fetlock; long from rump to huckle, and from the pinion of the shoulder to the end of the nose; thin loose skin, covered with hair of a soft and furry nature, inclined to curl whenever the animal is in good condition and in full coat; a white saddle is sometimes passed over, but seldom without objection.

The Devon cattle are highly esteemed, both for feeding and draught, but are not so much valued for the dairy; yet their milk although deficient in quantity, is of such excellent quality, that as much butter can be made from that yielded by a north

Devon cow, as from that yielded by the breed which are esteemed better milkers. For all the purposes of labor, whether activity, docility, or strength and hardiness, this breed cannot be excelled. It is said that on fallow land, it is no uncommon day's work for four steers to plough two acres with a double furrow plough. Although they do not attain the height of several other breeds, they fatten early and

in England, will afford the reader a good idea of the form and characteristic points of the modern Devon; a breed that has come down to us in the greatest purity, and commands the admiration of every beholder.

Coming Sale of the Towneley Herd.

The world renowned Towneley Herd of Short-horns is to be brought to the hammer on the 1st of

May. In regard to this coming event *Bell's Weekly newspaper* thus speaks:—

"Since the dispersion of the first Towneley herd, when the descendants of Barmpton Rose confirmed in the sale ring the reputation they had won in innumerable show-yards contests, and Royal Butterfly, whose appearance on the scene of action was proclaimed 'with trump and solemn heraldry,' remained at the reserve of 1200 guineas, a few purchases of females were made. The selections included members of the justly favorite Barmpton Rose family, and other sorts of the shapely and wealthy type suggestive of happy results from a Butterfly alliance, and it must be remembered that in Royal Butterfly himself Colonel Towneley had the moiety of material for a second herd as good as the first. The manager of the Towneley short-horns was not, however, one to be fettered by his own enormous success. Had he relied upon name alone, we doubt not that 'Butterfly' with variations would have prevailed over the purses of buyers as an irresistible 'open sesame;' but sectarian ambition was banished or placed secondary to the main object, that of producing, in ample numbers, short-horns of a certain character and standard of merit. In Baron Oxford, a most suitable alliance was found; one which without impairing the admirable frame and flesh of the Towneley Short horn, contributed much to the perpetuation of style, of fine hair, of the property technically called 'quality' and of rich and attractive colors.



rapidly, and their flesh is of excellent quality. Indeed the quality of the meat is unrivalled by that of any other breed.

The accompanying engraving of a bull and cow, taken from the portraits of celebrated prize animals

ance was found; one which without impairing the admirable frame and flesh of the Towneley Short horn, contributed much to the perpetuation of style, of fine hair, of the property technically called "quality" and of rich and attractive colors.

To Prevent Sows Devouring Young.

A Scotch farmer writes:—I noticed some time ago a method for preventing sows from devouring their young, which they will do at times, and sometimes they won't let down their milk. When this state of things is not caused by a diseased condition of the uterus, it is said that the sow can be brought to terms by pouring a mixture of ten to twenty grains of spirits of camphor with one to three of tincture of opium, into the ear. The sow will immediately lie down on the side of the ear to which the application was made, and remain quiet for several hours in this position, without interfering with her pigs; and on recovery from the stupor will have lost her irritability in regard to them. The experiment has been tried in Germany hundreds of times, according to one of the agricultural journals, without any injurious effects. It is also said that the eating of pigs by the parent sow can be readily prevented by rubbing them all over with brandy, and making the same application about the nose of the sow herself.

High Feeding Only Will Pay.

Our graziers are beginning to learn that they will soon be driven out of the field as feeders, if they continue to undertake to compete with the coarse Texas cattle of the South and the vagabond grass-fed steers of the Western plains. The best feeders in our State have already adopted the practice of buying grade Durhams, and the higher the grade the better, and if full blood, so much the better yet, and crowding into them all they can eat from the very start, and selling them at two, or between two and three years. In summer blue grass and timothy clover and standing corn; in the winter corn in the shock and corn in the ear, cornmeal and oilmeal, sheaf oats and the best hay the richest fields will yield—such is the bill of fare provided. Grade steers so pushed, make a gross weight of from 1,300 to 1,600 at the age named, and sell for 7c. to 8c. while equally heavy but scrubby raw bone, bring not more than 4c. As ordinarily fed, our prairie cattle getting ready for market, lose the fat and flesh, and everything but the mere bone and frame growth of two summers. The calf in good condition at the first of September is a skeleton at a year old. He gained flesh during the summer to be reduced again the second winter, and is finally sold, after he has gained three and lost two suits of fat and flesh. This style of feeding is about at an end; and so it is getting to be with hogs. It is recognized that in order to be profitable, they must be sold at 9 and 12 months, instead of 18 and 24. In Kentucky I understand, about the only profitable business now pursued on their high priced lands, is feeding mules and breeding fine cattle, horses, sheep and hogs. The mule colts are bought in the fall at home as largely as possible, and abroad across the river in Ohio and Indiana, from \$40 to \$75 being paid for far to best mule colts. These colts are placed on the highly cultivated, high priced, rich lands, and are pushed with all the art and skill the experience of half a century has gained, until they are sold the spring they are two years old. These animals so fed are never allowed to get hungry, never wet; never athirst, and their appetite is never suffered to be cloyed. The market for them is on the cotton plantations of the South, where they bring from \$400 to \$600 the pair, according to the quality and the market. If we should feed cattle and hogs and mules as they ought to be fed, there would be few things better than corn and oats.—B., Country Gentleman.

Food for Calves.

I am fully persuaded that the milk of the mother, fresh and warm, is altogether the safest and the best food for the calf, and I am not yet fully decided but that it is the cheapest, all things considered, so long as it is not worth more than two cents per quart, to manufacture into butter and cheese. But calves fed with new milk, or with any one of the substitutes for it, such as hay-tea, sweet whey, or skim milk, require good, nice hay, or fresh grass in addition to it, and require it in increasing quantities as the calf becomes older. A purely milk diet will not distend the stomach of the calf, or develop its ruminating habits or digestive powers, which is always of great importance for a good dairy cow.

To those dairymen who regard new milk as of too much value to use for raising calves, I would say that sweet whey or skim milk, with oil-meal, or oat-meal, or both, will make a good substitute, and that very good calves can be raised upon it at a less cost in dollars and cents, not counting the extra labor in preparing it. The change, however, from new milk to skim milk and the oil, or oat-meal, or to whey and

the meal, should be very gradual, and may be made by increasing the quantity of skim milk, or whey, and diminishing the quantity of new milk from feeding to feeding until the change is effected. My practice (which I do not claim to be the best) has been as follows: As soon as I commence making cheese every day, I dip off sufficient whey for the night's feed, as soon as it separates from the curd, and heat it boiling hot; then having wet with a small quantity of whey or water, the amount of oil or oat-meal I wish to feed at night, put it into a cask and turn on the boiling whey. This will cook the meal sufficiently, and at the same time prevent the whey from souring, even during the most unfavorable weather, and if covered up will be warm enough to feed at night when the weather is cool, and, uncovered, will be about right temperature when the weather is warm. For the morning's feed I use whey alone, taken from the cheese-vat as soon as the whey gets up to about 90°, which it soon does, in the process of cooking the cheese. If oil or oat-meal is used with skim milk to feed calves, it should be cooked by turning upon it sufficient boiling water to cook it thoroughly, but in either case it is necessary to first wet the meal to prevent its lumping.

Oil-meal is the best substitute for the fatty matter taken from the milk, in the manufacture of butter and cheese, that I have found, and oat-meal will furnish the calf with all the necessary food for building up and keeping in a healthy condition the muscular tissues. Whenever skim milk, or sweet whey is substituted for new milk, I would suggest feeding oat-meal and oil-meal in about equal proportions, thoroughly cooked.

Early calves, that have had good care, and made a good start, will sometimes do well if turned out to grass early in spring. But when this plan is adopted, the calves require the very best kind of pasture, good shelter from the hot sun and cold rains, complete exemption from annoyance by other animals, and an abundant supply of good water. Other dairymen feed their calves until they have good fresh air-feed to turn into, which is about the last of August.

In whatever manner calves are raised one thing is essential to their health and prosperity, and that is, good ventilation and perfect cleanliness, as well as good food, and plenty of it. This one thing includes all these things, and more too.—Harris Lewis in *New York Times*.

Bran as Food for Stock.

The nutritive value of all food depends much upon the amount of gluten which it contains, as this is the substance which goes to form muscle. The proportions of gluten in whole grain, bran, and fine flour are as follows: Whole grain, 12 per cent; bran, 14 per cent; fine flour, 10 per cent. By sifting out the bran we, therefore, render the flour less nutritious as well as less wholesome. As bran constitutes from one-eighth to one-fourth of the whole weight of wheat, on the average one-sixth, there is a great waste of muscle-forming material by bolting. True, it may go for the nourishment of inferior animals, but it sells for less price, does less good, and thus used is a drawback on the just profits of the farmer.

As compensation for this loss in the sale of his wheat and flour, the farmer should use all his bran in feeding his stock, and if he purchases the bran of his neighbors, both his stock and his farm will be benefited. Wheat bran may not put as much fat on cattle as does corn-meal, as it does not contain so much starch and oil, but it will produce more muscle and more bone. It contains more muscle material than fine flour, and if we burn any given weight of bran and fine meal, we shall find that the amount of ash (bone material) is at least six times as much in the former as in the latter. As it is this inorganic matter which is so much needed on our old soils, farmers can in no more economical way renovate their old lands than by feeding bran heavily to their stock. We know some farmers in Massachusetts who feed to their cows, both summer and winter, from four to eight quarts of bran daily, and get great returns not only in the increased flow of milk, but in improved pastures and meadows. We have looked over the pastures of some of these bran-feeding farmers, and are satisfied that there is no better mode of renovating them. Bran furnishes just the compensation that the pastures need, for the phosphates and sulphates of lime, potash, and soda, which have been removed from them in the form of milk and bones. By feeding it during the summer to cows, they scatter it in their excrements over the pasture without any expense to the farmer.

If the cows are found to loose flesh under a bran diet, mix with the bran one-third, or on one-half corn-meal. In the winter we should recommend mixing meal with the bran for a regular diet, as the highly carbonaceous character of meal tends to furnish

warmth to the animal. Fed alone, and in a large quantity, meal produces too inflammatory a condition, tends to garget and other inflammatory diseases, and runs the cow through life too fast. Bran acts as an antidote to this inflammatory tendency in meal, and and while stimulating a great flow of milk, keeps the animal in good health, and prolongs her usefulness to a good old age. If oil-cake or cotton-seed meal is fed to young cattle or milch cows, there is still greater necessity for mixing some bran with their feed, as these substances furnish carbon in a more concentrated form than does meal, and consequently act on the animal much as abundance of coal and a strong draft do on a furnace—they burn it up quickly. A cow driven to the top of her speed, with oil-cake, cotton-seed meal, or even corn-meal, cannot be expected to last many years. Roots or bran must temper such high feeding.—Alexander Hyde.

Weight and Value of Live Stock.

For the benefit of young beginners in agriculture, I make the following observations:—If you are wrong in the buying, selling, or managing of live stock, you may bid adieu to comfortable profits. How to buy and sell well are two axioms of the utmost importance to successful farming, therefore if you cannot trust your own judgment, get the unbiased opinion, if you can, of some competent friend. It is even worth paying for if you have it not. But in the absence of both, let me commend to you the weighing machine which will put you on a par with some of the best judges and gave you confidence in your selling and reprove you if in buying you pay too dear. The weighing machine clears up many doubts. You should remember that in selling to the buyers (butchers or dealers) you have to do with experienced hands, who as a rule, thoroughly understand their business, and can judge closely of animal weights, so that the odds are sadly against you unless you know the weight, and can therefore insist on a fair market price, which you are sure always to get either from one or another. I have known of many a rare picking got out of farmers who did not know what proper price to ask; and that reminds me that it is very false economy not to have a knowledge of the metropolitan and other markets. The daily papers convey this information. I quote the following extract from the late Mr. Horsfall's most valuable paper on cattle breeding and dairy management. I have weighed my fattening cattle for a number of years, and my milk cows for more than two years. This practice enables me at once to detect any deficiency in the performance of the animals, it gives also a stimulus to the feeders, who attend at the weighings, and who are desirous that the cattle entrusted to their care should bear comparison with their rivals. Another obvious advantage is in avoiding all cavils respecting the weight by my purchasers, who having satisfied themselves as to the quality of the animal, ask and obtain the most recent weighing. The usual computation for a well-fed but not over fat beast is—live to dead weight as 21 to 12, or 100 to 59 1-7th, with such modifications as suggest themselves by appearances. I recommend also in this matter a reference to those valuable investigations and tables by Messrs Lawes & Gilbert, in the Royal Agricultural Society's Journal, vol. 13, p. 193, and in vol. 21, p. 484.

They say well bred and moderately fattened oxen should yield 58 to 60 per cent. carcass in fasted live weight; excessively fat oxen may yield from 65 to 70 per cent. Moderately fattened sheep (shorn) should yield about 58 per cent. carcass in fasted live weight; excessively fat sheep may yield 64 per cent. or more. Moderately fat pigs, killed for fresh pork, should yield (including the head and feet) about 80 to 82 per cent. carcass in fasted live weight; large, well fattened pigs, fed for curing, will yield a considerably higher proportion. In each of the three descriptions of animal the proportion will however, vary much, according to breed, age and condition.

It is a painful truth that an agricultural library rarely forms a part of a farmer's investment; but the school-master is abroad now, so that we may reasonably hope for better things; and I never met with a farmer who was educated at our Royal Agricultural College at Cirencester, who did not show the good effects of theory combined with practice—the why and the wherefore. Out of a million farmers, great and small, in the United Kingdom, there are not twenty thousand who belong to the three great agricultural societies of England, Ireland and Scotland, and who benefit by their publications. This is sad evidence of the lack of literature in agriculture. I hope the time will come when no British farmer can be found, who will say: "None of your theory or book-farming for me—I am a practical man;" for as that great man Baron Liebig truly says—"Theory is not opposed to successful practice, but is an explanation of the cause of its being successful."—J. J. Mechi.

The Dairy.

EDITOR—L. B. ARNOLD, OF ILLINOIS, SECRETARY OF THE AMERICAN DAIRYMEN'S ASSOCIATION.

Food for Dairy Stock.

The question of food for dairy cattle is a wide one. It involves not only the discussion of the qualities and effects of the various kinds of food in use, but also their relative values and cost. It requires knowledge of the different qualities in food suitable for dairy and other stock respectively, and of the special requirements of the cows when simply feeding, when being fattened; and when giving milk or breeding, or both at the same time; also whether the cow is exposed to heat or cold; and what is the condition in which the food is to be given. In short, it calls up the whole question of cattle food in all its bearings, and reaches out with such wide ramifications that nothing short of a plerthoric octavo could do anything like justice to the subject. In an article for which any newspaper could afford space, only the merest glance at the merits of the subject can be given. Nothing more than brief outlines can be attempted here.

The cost and economical use of food for the dairy determines more than any other outlay the measure of success. The cost of stock, and labor, and apparatus and buildings is not very different in the several localities in which dairy husbandry is, or can be carried on, and the condensedness in bulk and value of butter and cheese and the ease of handling the packages make the cost of transportation so light as to put dairymen all over the continent nearly on a level with each other, so far as freight charges are concerned. But in the cost of food there is great variance. The widest difference in this respect is found in the price of dairy farms. If one farm costs \$150 per acre, as in central New York, and another costs \$50 an acre, and it takes three acres to keep a cow for a year, reckoning interest at six per cent., the annual interest on the land to keep a single cow, will, in one case be \$27, and in the other \$9. This makes \$18 difference in the cost of supplying a year's food; and the profits ought to be large to carry it. In the production of cheap food, the low priced lands of Canada give a great advantage to the Canadian dairyman.

What kind is best?

The cost of procuring food is a heavy item, and if not managed with skill and economy is liable to get the balance on the wrong side of the dairyman's account. Not only its cost, but its quality, must be closely studied, because every variation affects the quality of the milk. Cattle food has been the subject of a great deal of discussion, and much light has been thrown upon it, but there are very many important points yet unsettled, which science and practical observation are striving unitedly to solve. When they agree upon any point the correct thing may be considered settled. It is curious to note their points of agreement and divergence, and the progress they respectively make. Science would move or rest on rigid logic. Practical men, struggling with hard labor and limited means, are keenly alive to every opening for loss or gain, and are controlled by these results, and though they sometimes form opinions wide of the mark and prejudicial to their own welfare, it is interesting to see how very often their experience and intelligent observation lead them to uniform and sound conclusions—even in advance of science. Ask a hundred dairymen what is the best food for cows in milk, and with one accord they will all answer "grass," which means young grass as it is grazed from the turf. With this answer science accords; and we consider it settled.

Grass is best.

Nothing excites such a liberal secretion or makes such delicious milk as grass. Nothing makes such high colored and fine flavored butter and cheese as grass. Nothing better contributes to the health and

general welfare of the herd than to roam free in the open air upon clean pastures, eating and drinking, moving and resting when they will. More food and more milk, may perhaps be obtained from a given area of ground, by some other way than by grazing, but nothing can surpass grass in the excellence of its products; and on lands of moderate price, the almost universal practice of dairymen argues that it is, all things considered, the cheapest as well as the best. In considering food for the dairy, we shall assume that for all ordinary cases, grass ought to be used as long as it can be obtained, and when no longer available, then such food as comes nearest to it.

Early pasturing.

We will begin with grass in the spring and follow through the year to grass again. Divergent practices appear at the outset. It is the practice of some to keep their cows yarded and not allowed to taste grass till it is grown high enough for them to fill themselves readily, and to subsist on it entirely. Others allow them the range of the pasture, or a part of it, and let them change gradually from hay to grass as the latter comes slowly forward. There are advantages and disadvantages in both these practices. It may be urged on one side that feed will hold out better to keep the herd from it till there is a "full bite," and that by tasting grass cows lose their appetite for hay and will not eat enough to keep up their flesh and strength; all of which is true. On the other side, it may be said that it is better for cows, or any other stock to change gradually from dry feed to green, and that the season for dry food, always too long, is stretched to its utmost by shutting cows from the early grass, which is also true. A sudden and radical change of food for either man or beast is always attended with ill consequences. The condition of the stomach and bowels, and the quality of the gastric juices, adapt themselves to the nature of the food used. To break up an established order of things, deranges all the operations of the system and impairs its functions. In turning cows suddenly and wholly upon grass they are usually made sick for several days, and their milk is so much affected as to work badly in the cheese-vat for a week or more. Diarrhea sets in, they become weak, and the loss of flesh by scouring is often greater than that occasioned by a loss of appetite for hay. It is the general practice with the best dairymen to give their cows early the range of at least, a part of their pasture. We have always found it better, taking the season through, to make the change from hay to grass a gradual one, and to prevent any tendency to falling away by extra feed.

Green fodder crops.

But, if from scanty pasturing or any other cause, a dairyman determines to shut his cows entirely from grass till feed is abundant, he may abate the ill effects of a too long season of foddering, and prepare his cows for a diet of grass, by feeding some kind of green food—as beets, carrots, mangolds, turnips or potatoes. By baiting the herd an hour or so at a time each day, for a few days, and by closing up the foddering season with early cut hay and some green food, the cows may be so well prepared for grass that they will not be much affected by the change, though they may not be turned out till quite late. But a small quantity of good hay will be relished by cows a long time after they have been turned to grass, and it should be fed as long as they will eat it, for it will keep them from scouring, and promote a healthy digestion.

Salt necessary.

Salt ought at all times to enter into the food of the dairy cow, and it should be kept where she can partake of it *ad libitum*. It enters largely into the mineral elements of milk, and as these elements are in scanty proportion in young grass, it is most needed in the early part of summer. Both the quantity and quality of milk are considerably affected by withholding salt till the cows get hungry for it. Cows in the season of lactation require more salt than at other times, and those that give the most milk require the most of it. In some experiments in June it was found that from letting the cows go without salt five days, they fell off in their milk two per cent. in quantity, and seven per cent. in quality; making a loss of nine per cent. on the cheese, which was at once restored by supplying salt again. While cows are at grass, salt should be given every day; and in May and June it is well to give it twice a day.

We may now pass on to midsummer with the remark that while grass is used it should be abundant, so that the herd can fill themselves readily and rest and ruminate.

Soiling in aid.

It is not believed to be the best plan to depend entirely on grazing through the whole season. To do this, it would be necessary to reduce the stock so low as to have a large surplus of feed in June and July; otherwise there would be a deficiency in mid-

summer. Grass that gets very much ahead of the stock, is liable to waste by trampling down, and to lose its value by becoming dry and woody. But it is desirable to make the grazing season as long as we can, and it may be prolonged by sowing different varieties of grass, the mixture including such as will come forward in regular succession of time. Orchard grass is one of the earliest, and is an excellent one to graze off with in the spring, and red clover with its long roots reaching down to moist earth, will hold on, like timothy, June grass, and red-top fill up the space between, and are ready to revive when the dry season is past.

The length of the grazing season will depend very much on the character of the soil—whether it is dry or moist. It is desirable to have the pasture, or part of it, at least, located on loamy soil that will retain moisture and keep the feed green. It is thought to pay best to stock so as not to have a large surplus of feed at the approach of the dry season, and to carry the herd through the drought partly on grass and partly by soiling. For soiling, fodder corn is generally used, and if there is occasion for soiling before corn is fit to use, green oats will furnish it by coming forward early.

Corn for soiling.

There is much diversity of opinion in regard to the fitness of sowed corn for soiling; some regarding it as nearly worthless, while others prize it highly. It has certainly given very different results on different farms. But this difference is not the fault of the corn, nor of the farms on which it is grown. It is due to the faulty manner of growing and feeding it. Physiologically, corn and grass are quite different. The greatest per-centage of cheesy matter and butter appear in the earliest stages of the growth of grass; they are then most highly colored and most aromatic. Steadily, as the grass-plant increases in height and age to prepare for seed-bearing, the per-centage of these valuable properties begins to diminish and the color to grow paler; the starch, sugar and germ prepare for, and begin to change into, woody fibre, and the aroma steadily wastes away. In the growth of corn it is different. Its valuable properties—its casein, butter, sugar and aroma—deficient at first, steadily improve in quality and increase in per-centage till the flowering begins; and it is not well to feed it much before that time. Those who have condemned it have fed it too young, or have sown it so thick that its aliment was not developed. When too thickly planted, its stems and leaves are soft and pale; its juices thin and poor; and the effect is a growth somewhat like a potato-vine in a cellar. If sown thin, or in drills, so that the air and light and heat of the sun can reach it, and not fed till nearly its full size, it is a valuable soiling plant, and is fed with satisfactory results. But in its best estate it is deficient in flesh-forming material, and should not be fed alone. Grass or wheat-bran, or some food richer in albuminoids, should always be used with it to produce the best effect.

Lucerne for Soiling.

In respect to valuable properties, lucerne is far ahead of it, being quite rich in albuminoids. Lucerne is an excellent soiling plant, and yields a very large crop, on soils adapted to its growth. On the deep rich alluvial flats of the Mohawk, Harris Lewis finds it much more profitable than corn.

Fall feeding.

Whatever course is taken by the farmer, some provision must be made for keeping up the flow when grass first fails. If this is not done, diminished milk and milk products must be expected the remainder of the season. After a cow is well along in the milking season, and especially if she is with calf, as she is very likely to be in August, if she is allowed to fall away in her milk, she cannot by any after feeding be brought up to give as much as she would have given had the flow been kept up all along. High feeding will then stimulate the growth of the fœtus, and the cow will run to flesh rather than milk. Earlier in the season, especially for a few weeks after coming in, the activity of the milk glands is such that they will rob the blood of the cow of what is necessary to supply her daily waste, and she will grow poor under their action if she is not abundantly fed. But later in the season those glands abate their activity, and the increasing vigor of the cow and her growing fœtus, make the strongest draught upon her nutrition, and if there is any deficiency, it will be felt in the milk. Hence the great necessity of never slackening in the supply of feed after the middle of the summer.

Soiling in fall.

If the fall feed comes in well and is abundant, extra feeding may not be required during the fall. But usually some succulent food, as fodder corn, pumpkins, apples or roots, will be required to keep the milk from dropping down too fast. In the absence

of any such feed, wheat or rye bran will be found an excellent substitute. It is about as good as soiling at any time, and is more convenient to feed. If not very much dried of their milk, five or six pounds of bran per day for each cow, wet and thrown into some coarse fodder, will make a pound of milk or over, for every pound of bran, and the milk will more than pay the cost of the bran and labor of feeding. Bran is excellent food for cows at any time when extra food is required. We have always been able to get from it more milk and of better quality whether for butter or cheese, than from an equal cost of any other ground feed. It is better suited to warm weather than meal. As the weather becomes cool, if cows are at all thin, meal may be profitably added. At any rate feed enough of some kind to keep up both milk and strength all the fall. One of the worst errors a dairyman ever commits, is to let a cow go into winter quarters drooping.

Winter and spring feeding in next issue.

Packing Butter.

The following rules are found on trial to work well: For each twelve pounds of butter, use one pound of the following ingredients after they are properly incorporated with each other: 11 pounds Ashton salt, 5 pounds loaf sugar, and three-fourths of a pound of salt petre. The firkins to be made of white oak timber, entirely free of sap, and must weigh 22 pounds, and be finished, in every part, in the most perfect manner. While packing, the brine must not be allowed to touch the exterior of the package. The package should be kept scrupulously clean and when full with the head in, should be covered with coarse sacking, which should remain on while the package is in transit to market. Tubs should hold about fifty pounds, the cover fit tight—and the package should be as small and smoothly made as the firkin, and well sacked to keep it clean. All packages should be soaked with brine for two days before receiving the butter.

A Remarkable Cow.

At Appleton, last week, we had the opportunity of seeing a remarkable cow belonging to Dr. B. Douglas, of that city. The character of her ancestry is somewhat in doubt, although the evidence is thought satisfactory that she was sired by a full blooded Durham bull. She was purchased by Dr. Douglas early in 1865, when five years old. From March 15, 1865, to March 15, 1866, she gave milk from which 351 pounds of butter, and 200 pounds of cheese were made. Her calf, fattened on her milk, weighed 200 pounds dressed. The cheese was whole milk cheese, not made from skimmed milk. In 1867 she gave 6,654 pounds of milk in 181 days, each milking being weighed. The cow is now being fattened, as for two years she has failed to produce living calves. She has given Mr. Dou. six heifer-calves all of which, old enough for milk production, are of more than ordinary excellence, and one or two it is thought will equal the old cow. They were sired by different bulls, but none of them known to be of milking families.—*Western Farmer.*

Butter and Skim-Milk Cheese.

At the recent Utica Dairyman's convention, Mr. Gardner D. Weeks read a paper on "Creameries." In these the milk is more or less skimmed, and the principal object is butter. He skimmed all the Sunday's milk, and set the remainder an average time of twenty-four hours. The cream is set better in the cheese vats, set shallow, than in deep pails. He set his milk for cheese at 88 or 90 degrees. Many of his full-skim cheeses were better and richer than half-skim from other localities. None were "white oak." Thick cheeses sell best. Thin cheeses get hard too quickly. Fourteen to fifteen and a half inches in diameter, and nine or ten inches in thickness, are about right. His factory is in a gran region, and the grasses are of good quality. It is not safe to throw blankets over the cans while the milk is being carried to the factory. The milk is apt to get tainted. The cans must be exposed to free currents of air. Although he gets more money by making butter and half-skim cheese, yet he doubts whether it will be best in the long run. Is afraid that this practice will result in injury to the reputation of American cheese. But he thinks it possible to make half-skim cheese rich, soft, and wholesome. He kept the cream twenty-four hours before it was churned. His summer butter did not keep well. The fall butter will keep all winter.

Pure Milk.

In London, the names of those who are known to sell adulterated milk are published monthly, and, it is said, with good effect. There is in London, a company—the Aylesbury Dairy Company—which occupied premises covering an area of fifty acres of ground, the system being to procure and distribute milk, from reliable sources and of an assured good quality, at rates which shall be reasonably remunerative to dairy-men, and at the same time secure consumers against extortion from speculators, middle, and others. The company has been in operation long enough to have tested its practicability and beneficent effects, and it now supplies several thousand families once, twice, and in some instances three times a day, with pure milk. It commenced with a capital of fifty thousand dollars, but it has been increased to five hundred thousand, upon which a dividend of ten per cent. is paid. The price of milk furnished by the company, has never exceeded eight cents a quart. The purity of milk may easily be determined by ascertaining the percentage of cream and solid matter which it gives. Genuine milk will average ten per cent of cream, and twelve per cent of solid matter. A milk with less cream and solid matter than this has been skimmed or watered.—*Agricultural Report.*

Chautauqua Creamery.

The following official statement of the operations of the Chautauqua Creamery, for 1872, appears in the *Chautauqua Farmer*, of March 1. Making commenced on the 16th of July last, with the milk of 175 cows; closed on the 31st of October, with 280 cows—being an average, through the season, of 275 cows. The patrons increased from 14 to 24:

Whole number lbs. of milk received	515,700
do. do. butter made	12,591
do. do. cheese made	43,860
Number lbs. of milk for lb. of butter	40.9
do. do. do. cheese	11.75
Total amount received for butter	\$3,565 71
do. do. do. cheese	4,150 87
Total	\$7,716 68
Average price per lb. received for butter	28
do. do. do. cheese	0
Total expense for packing butter	\$371 29
do. do. do. cheese	377 20
Cost of rennets	8 43
Total cost of making	1,251 92
Net proceeds to patrons for their 515,700 lbs. of milk furnished	6,464 66
Average net value to patrons of lb. of milk when made into cheese	00033
Average when made into butter	00619
For both	01254
Average net income of each cow to her owner	\$23 06
Cost of making butter per pound, including packages	04
Cost of making cheese per pound	02

This is a new enterprise, 1872 being its first season, and the *Farmer* states that it is "the only creamery in the county in successful operation."

Feed for Producing Milk.

The *Practical Farmer* says:—It is well settled in the opinion of all our best dairymen, that bran greatly promotes the milk secretions in cows, and it is fed almost universally. About equally mixed with corn meal is the usual proportion. This mixture seems to promote both quantity and quality of milk. From several sources we hear that buck-wheat bran is a great milk producer, and it is now being used considerably among our Chester county dairymen, in about the same proportions as the other.

Thomas Gawthrop, near West Grove, Chester Co., also by repeated trials with his own cows, has fully satisfied himself that they do as well with corn and cob meal and bran as with pure corn meal and bran. The amount of nutriment in corn-cobs is so very small that this result will have to be explained on the supposition of the ground cob, acting to promote digestion by distending the stomach. The presence of bulky material being necessary to promote distension and fill up the stomach of ruminating animals, before perfect digestion can be accomplished, is frequently lost sight of. Hungarian grass is also found for milch cows to be rather superior to the ordinary run of hay. The last year or two, Hungarian grass has loomed up wonderfully in the estimation of our dairy farmers; and a very large scope of land will be sowed with it the coming season. It matures for cutting in about sixty days, and produces two to four tons per acre—the latter of course on good soils. Three pecks to the acre is the usual allowance of seed. Where a good hay market is convenient, this substitution of Hungarian grass for common hay in home feeding will be a clear additional source of profit.

Dairy Farming in New England.

Edward Manchester, West Winstead, Conn., writes to the *New York Times* thus:—"Many farmers since the terrible droughts of 1870 and 1871, have found the timothy and clover of our best meadows nearly or quite killed out, especially those on dry land with a southern exposure, and producing not more than half a crop. This has obliged many greatly to reduce their stock, and in like proportion their income has fallen off. The question now is, how shall we bring them back to their former yield of hay, and make them bear their former burdens? In this short article I wish to tell how I have succeeded in carrying nearly my usual amount of stock. For two years past we have been using the plough pretty thoroughly, we have taken from five to seven acres each year and turned it over in the spring or during the month of June, and drilled most of it into fodder corn for winter feeding. Our method is to turn it all over nicely, then put on a good heavy coat of manure, harrow it until mellow, then with plough running very light, not getting under the turf, mark it off from two and one-half to three feet apart. A boy then follows with a pair of corn, dropping about twelve kernels to the foot, a man then with a hoe covers quite fast from one to two inches deep. Thus we have at the same time our oxen ploughing, our horses harrowing and hauling manure, man and boy planting. We find the southern white corn much better than our northern kinds, yielding nearly double. We have succeeded in raising from four to six or seven tons of fodder-corn per acre. This we consider equal to two or three tons of good hay. We are wintering about forty cows—about thirty of them giving milk. We kept them away from our hay-mow, with the aid of a little rowen with fodder-corn, until December, and since then have fed our entire stock once each day on the fodder, and have nearly enough to last through March. Our cows are very fond of the fodder, choosing it many times in preference to good hay. They are looking finely and giving a fine flow of milk, though the milkers are fed on grain. We get the corn off as early as possible, then plough the field again, then harrow it thoroughly, sow it to rye, cross-harrow it, sow on timothy and bush it down smooth, putting on clover as soon as snow and frost are off in the spring. In this way we raised on some five acres nearly thirty bushels per acre; also had a fine crop of straw, which sold readily for \$20 and \$25 per ton. The rye we have ground and are feeding the cows, mixed with other grain, the straw paying for the other grain. Thus, instead of reducing our stock or paying all our money for hay and grain, we are able to keep our usual number.

HOW EASILY BUTTER IS SPOILED.—A farmer's wife writing to the *Ohio Farmer* says:—"Of all the products of the farm, butter is most liable to be tainted by noxious odors floating in the atmosphere. Our people laid some veal in the cellar, from which a little blood flowed out, and was neglected until it commenced to smell. The result was, that a jar of butter which I was then packing, smelled and tasted like spoiled beef."

A German paper says that a great portion of the fine flavor of fresh butter is destroyed by the usual mode of washing, and he recommends a thorough kneading for the removal of the buttermilk, and a subsequent pressing in a linen cloth. Butter thus prepared is pre-eminent for its sweetness of taste and flavor, qualities which are retained for a long time. To improve manufactured butter we are advised by the same authority to work it thoroughly with cold fresh-milk and then to wash it in clear water, and it is said that even old and rancid butter may be rendered palatable by washing it in water to which a few drops of a solution of chlorido of lime have been added.

THE INJURY OF FROSTED FOOD.—The *Practical Farmer* says:—"We have been told by one of our most careful dairymen that he has found his cows invariably fall off in their milk when they have free access to frosted pastures. Late in the fall he husbands the thrift and general good health of his cows, obtained from the summer feeding, and tries to keep up their status. On cold nights they are kept in the barnyard, and have besides their bran some sown corn-fodder or a little hay, and are not turned out in the fields till towards mid-day, when frost is melted. It is always better economy to keep cows up to their milk and in good condition, than to recover them after they get below par, or fall off. While a cow well wintered is said to be half summered, it is also true that a cow well summered and up to the time of going into winter quarters, may be said to be half wintered."

Poultry Yard.

PIGEONS.

Their Origin, Variety, and Antiquity.

The domestic or tame pigeons are descended from the wild variety known as the blue rock dove, and form a distinct and separate family from all other birds by the singular manner in which their young are nourished. Formerly some naturalists classed them with the gallinaceous birds, and others with the passerine birds. Unlike the former, however, which are hatched in a very perfect state, young pigeons are born in a most immature and helpless condition. When arrived at a state of maturity they are of moderate size, their legs and feet are small compared with those of the gallinaceous birds, that scratch the earth in seeking for their food—a habit that is never followed by the doves. The general character of pigeons differ greatly from that of the true poultry, in the shape of the feather, the plumage, and the digestive organs, particularly so in the absence of a gall bladder to receive the secretions of the liver. They feed on vegetable substances, grain, pulse, the seeds of grasses, and also on green vegetables. In a wild condition they devour a great number of the smaller animals that frequent neighborhoods on the sea coast. The mode of drinking followed by these birds is very characteristic, the beak is plunged deeply into water and a long draught taken, and the quantity of water consumed by them is very great in proportion to their size. Pigeons usually lay two purely white eggs, in confinement sometimes only one is laid. The young, when hatched, are usually covered with long yellow down, in some of the domestic varieties, however, this down is absent, as in the silvery and dun birds. It is easy, therefore, to distinguish between a young dun and a black in the same nest, the one being naked, the other covered with profuse yellow down. When hatched they are in a very helpless and immature condition, and are entirely fed at first with a soft curdy secretion, which is produced in the crops of the parent birds at the end of the period of sitting. This secretion of "soft food," as it is termed by pigeon-fanciers, cannot be delayed; consequently if the young do not emerge from the eggs on the eighteenth day, the old bird deserts the nest, refusing to sit longer on the sterile eggs. The production of soft food, however, may be hastened a day or two. If a pair of chipped or hatching eggs are put under a pair of birds that have been sitting for sixteen days, their presence will always stimulate the secretion of the soft food, and the young will be duly nourished. The formation of this curdy secretion is a very remarkable fact; it seems determined altogether by the process of sitting; it is produced equally in both parents, though the hen sits for about twenty hours, and the cock usually only four. The mode of feeding has been greatly misrepresented by some writers, it takes place in this way, the young pigeon thrusts its beak into the side of the mouth of the old bird, in such a position that the soft food which is disgorged from the crop of the parent, with a sort of convulsive shudder, is received into the lower mandible or jaw, which is widely expanded to receive it. As the young advance, the soft food lessens in quantity, and the grain and seeds that constitute the nourishment of the parents become mingled with it, and when about eight or ten days old the young are fed with the disgorged grain and seeds only, until such time as they are able to fly and seek their own nourishment.

THE BLUE ROCK DOVE is the origin from whence all our numerous domestic varieties have sprung. It is, says McGillivray, a very beautiful bird, although its style of coloring is less gaudy than that of many foreign species. The general color of the plumage is light greyish-blue, the lower parts being as deeply colored as the upper. Their manners are similar

to those of the domestic pigeons, when searching for food they walk about with great celerity, moving their heads backwards and forwards at each step, the tail sloping towards the ground, and the tips of the wings tucked up over it. In birds as extensively circulated as the Rock Dove, slight local or geographical variations constantly occur. Thus, in India, all the wild Blue Rocks have ash-colored feathers over the rump, whereas the European birds have as is well known, white rumps; then again the Blue birds derived from the Indian birds have, as might be expected, blue rumps. Mr Darwin in his work, "The Origin of Species," says: "If the several breeds are not varieties, and have not proceeded from the Rock Pigeon, they must have descended from at least seven or eight original stocks; for it is impossible to make the present domestic breeds by crossing of any lesser number; how could a Pouter be produced by crossing two breeds, unless one of the parent stocks possessed the characteristic enormous crop? When two birds, belonging to two distinct breeds, are crossed, neither of which is blue, or has any of the above specified marks, the mongrel offspring are very apt suddenly to acquire these characters. To give one instance out of several I have observed: I crossed Fantails, which breed very true, with some black Barbs, and it so happens that blue varieties are so rare that I never heard of an instance in England—and the mongrels were black, brown, and mottled. I also crossed a Barb with a Spot, which is a white bird with a red tail and red spot on the forehead, and which notoriously breeds very true; the mongrels were dusky and mottled. I have crossed one of the mongrel Barb-Fantails with a mongrel Barb-Spot, and they produced a bird of as beautiful a blue color, with the white croup (rump), double black wing-bars, and barred and white-edged tail feathers, as any wild Rock Pigeon."

Among the many enormous varieties of Pigeons, numbering altogether about two hundred,—there are four kinds which may be selected as representatives of the extreme divergences of one kind from another. Their names are the Carrier, the Pouter, the Fantail, and the Tumbler. It will be remarked that the Carrier has a large excrescence on its beak, a comparatively small head, a bare space round the eyes, a long neck, very long beak, very strong legs, large feet, long wings, and so on. The Pouter is a very large bird, with very long legs and beak, and is called the Pouter because it is in the habit of causing its gullet to swell up by inflating it with air, a habit to which all Pigeons have at times a tendency, but in the Pouter it is carried to an enormous extent. The Fantail is a small bird, with exceedingly small legs and very small beak, and is most curiously distinguished by the size and extent of its tail, which, instead of containing only twelve feathers, may have thirty or even more, and some have even as many as forty-two. This bird has a curious habit of spreading out the feathers of its tail in such a way that they reach forward and touch its head, and when this is accomplished it is looked upon as a great point of beauty. The last of the four varieties named, the Tumbler, of which there are several sub-varieties, one of the principle kinds,—and one most prized—is the short faced tumbler. Its beak is reduced to a mere nothing, and affords a striking comparison with that of the Carrier. The orthodox comparison of the head and beak of a thoroughly well-bred Tumbler is to stick an oat into a cherry, and that will give the proper relative proportions of the head and beak. The feet and legs are exceedingly small and the bird appears to be quite a dwarf when placed side by side with the Carrier.

There are differences enough in regard to their external appearance, but are by no means the whole, or even the most important of the differences which obtain between these birds. The points of organization in which the greatest divergencies occur may be summarised thus:—

In the first place the back of the skull may differ greatly, and the development of the bones of the face may vary a great deal; the back varies, so does the shape of the lower jaws vary. The tongue varies very greatly, not only in co-relation to the length and size of the beak, but it seems also to have a kind of variation of its own. Then the amount of naked skin round the eyes and at the base of the beak may vary; so may the length of the eye-lids, the shape of the nostrils, and the length of the neck. There are great differences too in the size of the female and male, the shape of the body, the number and width of the processes of the ribs and development, the size, shape and development of the back bone; the variation in number of the sacral vertebrae from eleven to fourteen. The number and position of the tail-feathers also vary, as do the number of the primary and secondary wing feathers. Again the length of the beak and feet seem to go together, that is you have a long beak wherever you have long feet, and vice versa. The size and shape of the eggs differ, the nature and powers of flight, the so-called homing-birds having enormous flying powers; while on the other hand, the little Tumbler, is so called because of its extraordinary faculty of turning head over heels in the air, instead of pursuing a distinct course; and lastly the dispositions and voices of the birds may vary. Thus it may be seen that in the case of pigeons there is hardly a single particular—whether of instinct, habit, bony structure, or shape—in which some variation or change may not take place, which by selective breeding may become perpetuated and form the foundation of, and give rise to a new race.

In the production of distinct breeds, it is a most favorable circumstance that male and female pigeons can be mated for life; and thus different breeds can be kept together in the same aviary. The success of the fancier in perpetuating the different varieties of pigeons depends on the tendency in the young to reproduce the natural peculiarities of the parents. It is always to be remembered that variations occurring naturally are alone capable of being thus reproduced. Any artificial alteration has no effect on the offspring, even when the same alteration is produced in many successive generations. It is also worthy of remark that the hybrids or mongrels from between all the domestic breeds of pigeons are perfectly fertile.

In conclusion we may say that pigeons have been watched and tended with the utmost care, and loved by many people. They have been domesticated for thousands of years in several quarters of the world. The earliest known record of pigeons is in the fifth Egyptian dynasty, about 3000, B. C. In the time of the Romans, as we hear from Pliny, immense prices were given for pigeons. They were also much valued by Akber Khan, in India, about the year 1600; never less than 20,000 pigeons were taken with the court. The Germans, too, for a very long period have manifested great interest in the rearing of pigeons, and through their persistent labors many rare varieties have been produced, which are known as Toys.

Cost of Food for Hens.

It is very often asked, What is the annual cost of feeding a hen? There are, of course, differences according to the breed; namely, the size, activity, etc.—and particularly generative activity—vary. An egg represents a large amount of nutriment, of the most condensed sort, and a hen that lays two hundred eggs per year will need, say some sixteen or seventeen pounds more of pure nutriment, for this purpose alone, than one laying but half that number. And, of course, every additional ounce of fat laid on your fowl's ribs must go in at the bill (as well as telling in your bills); so that fattening breeds consume more than non fattening ones under equal circumstances. Again, other things being equal, a very active fowl uses up entirely, without accounting for it in egg or fat, nutriment enough, in excess of a quiet one, to pay for her liveliness. Every flap of your turkey's wing costs a grain of corn.

But from a series of painstaking observations, we can say that the average fowl at large consumes not far from a bushel of corn per year. If at large, she supplies herself with green food, and picks up insects, larvae, etc. If kept confined, animal food must be artificially supplied, such a crushed chandler's scraps, chopped sheep's lights and livers, and house scraps; In summer you must add to this, short, tender grass, and in winter raw cabbage or boiled potatoes, or other green vegetables. This, for a year, brings the estimate for the cost of the food of the confined fowl up to the equivalent of a bushel and a half of corn. It will generally be found that when corn varies in price, the cost of vegetables and animal food varies with it; so that this estimate is generally correct.—*Poultry World.*

Thorough-bred vs. Common Poultry.

The question frequently asked respecting thorough-bred poultry by persons who raise for the food market is, "Are they any better than the common sort?" We have heard just these words repeated, we know not how many times, by farmers who depend on taking a basket of eggs along when they go to the grocery, and by mechanics and others who look to their own poultry yards for home supply, but who are not initiated into the mysteries of the numerous breeds in vogue, and at a poultry show could not name half the varieties on exhibition.

"Do you suppose they are any better than the old-fashioned ones?" with a suspicious tone, and an emphasis suggestive of incredulity, as if thinking of the "sundry humbugs,"—willow hedges, combination bee-hives, and similar stock in trade, with which glib-tongued agents are wont to beguile honest people.

The proper answer is neither yes nor no. It depends. A sharp knife is better to cut sticks with than a dull one, and is also worse to cut fingers with. A dull knife even the old-fashioned "Barlow"—is better than a sharp one for children. Unless people know how to use finely-bred poultry, they are best off with the dull "Barlow" kinds. Not only is increased skill necessary in order to use improved breeds to advantage, but there must be a good degree of knowledge at the start, to govern the choice of breeds, while preparing to buy stock. Rushing to an exhibition-room and purchasing whatever variety offers, merely because it is not of the common kind, but "blooded," and up to the "standard," is almost always a sacrifice of money and ends in disgust.

Fowls are kept, mainly, for either utility or ornament. Considered from the first standpoint, the thorough-bred fowls, selected intelligently from the more useful breeds, have a great advantage over the barn-yard fowls, because one breed is remarkable for eminence in some one respect, and another for excellence in another particular. The objects of different owners are different; one breeder wants eggs chiefly, and another wants table poultry. So in raising eggs, one person desires winter layers, as the chief source of profit, and constructs his buildings, and lays his plans to that end, while another is content with cheaper buildings, and aims to secure a great number of eggs at a season when the fowls may roam abroad and be supported, chiefly, by foraging. We might enumerate many variations, in the objects of fowl-keepers, depending on the difference of localities, markets, etc. Now, the barn-yard fowls are not particularly remarkable for anything, as a class, except a degenerate, neglected look, and their unproductiveness; though it is no small thing to be said in their favor that they are thoroughly acclimated, owing to their having been in the country for so many generations, and they will generally bear exposure well, if winter layers are wanted, excelling in that matter, like Cochins and Brahmas, or if a breed is wished that prove as prolific in summer and fall as the Spanish,—the barn-yard fowls are remarkable in neither respect. If steadiness and gentleness as sitters and mothers are desired, or if on the other hand, no sitting at all is wished for, the barn-yard fowls will not fill the requirements. If a very large bird is demanded, substantial enough to almost rival a turkey, or a small-bodied fowl that runs to eggs, as the saying is, rather than flesh, just as the Jersey cow "runs to rich milk," then we must not look to the common fowls. They are moderately useful in everything, and excel in nothing in particular. Human society has progressed through the division of labor. In its early and savage state each individual was hunter, soldier, house-builder, and so on. All callings were followed by all, and as a necessary consequence, none were thoroughly developed. In a civilized state, the watchmaker succeeds by cultivating a delicate touch and sight, and the blacksmith by means of muscular strength. By exclusive cultivation in his craft, each workman is perfected in it and society benefited. Like advantages ensue from the application of like principles to the improvement of domestic animals. Had not the horse become, through careful breeding, adapted to the various requirements of men, we should not have the draught-horse, fitted for the coal-cart, nor the racer bred for speed. What an interruption to business and pleasure, as now followed, would be experienced, if all the horses in the world were to become merely moderately fleet and moderately strong! A flock of common fowls, taken as a whole,

are not remarkable for any good trait in particular; whereas a flock of poultry, each breed has certain qualities that may be depended upon. Some excel in laying, some in the size of their eggs, some in the respectability of their offspring, and some in the beauty of their plumage. There are old-fashioned breeds which are raising chickens in the East, and in the West, for the great quantity and quality of their eggs, and for the great profit they derive from them. We have only to describe what we want most, and by proper selection of breed we may be sure that we have it. *Poultry World.*

Washing Fowls for Exhibition.

The great secret of good washing is to admit the thorough drenching of the birds; the most frequent cause of failure being an attempt to keep the under plumage dry. We were once much amused at hearing one of the most successful and "knowing" men in the fancy—one who rarely shows for his employer now without winning—relate his first experience, when, as a youth of eighteen, he entered a "pen of Whites," on his own account, for a neighboring show. "You would hardly believe it, sir," he said, "but I stopped up all night washing 'em, and they was as black as sweeps when they was done." The following remarks are by Mr. Elijah Smith, well known to fanciers as one of the best breeders and most successful exhibitors of White Cochins. No one could be better qualified to give instruction on this subject, and the following is his method of proceeding:—Take a wash-tub ten or twelve inches deep, oval shape is the best, on account of the bird's tail; let the tub be sufficiently large to hold the bird comfortably. Then take clean soft warm water and fill the tub (or tub) about three parts full, so that the bird when pressed down by the hand in the water will be covered over its back, up to the neck. Then take white soap, and a sponge, and rub it in the water until it is well mixed and you have good suds; and rub the bird well with soap on all the dirty parts, and keep sponging the bird well until you can see that it is quite clean which you will be able to see very plain when wet. Do not be afraid to rub the feathers as it will do them no harm, so long as you will not lay on so heavily as to break them. If the bird is rough in the water, as some that have never been washed before sometimes are, keep one hand across the bird's back and wings, by which means you will easily hold it quiet. Be sure and rub your hand well among the fluff and feathers about the breast.

To wash the head, take it between both hands, and rub it well backward and forward, as if you were washing something in the balls of your hands. Do not be afraid of the water going into its mouth, as the soap and water will do it no harm whatever, but the contrary, as it will tend to clean it out; in fact I have often washed birds when I could not get anything else to cure them of disease, and it has answered remarkably well on many occasions.

When you see the bird is quite clean, then take and rinse thoroughly with clean cold water; put plenty on it until the soap is well out, for if you leave any soap in, the feathers will not come right in a reasonable time. When clear of soap, let them stand to drain a little, and don't be afraid of their taking cold, as the cold water prevents that by closing all the pores of the body; then press as much water off the feathers with your hand as possible, and as I said before, don't be afraid of hurting the feathers, as they will come all right again as they begin to dry, and will begin to web again in the course of an hour. When this is done, take the bird and put it before a nice fire—not too hot, but what we should call a good fire—and keep turning them with the wet part towards it, taking care not to have them so near as to blister their face and combs, as they soon blister after washing. When the birds are nearly dry, you may put them in baskets that have got lined in, such as we use for exhibition; and if night, you may put three or four together, if the basket is large enough for them to lie down in comfortably. By this means it will create a warm steam that will pass through the whole of the body feathers, and cause them to web

beautifully, and the bird will be quite ready for exhibition in twenty-four hours.

If the bird is looking very ill after rinsing, keep it in motion as much as possible, by getting hold of it under the breast with one hand and lifting it up, when it will use its wings freely, and this will cause the blood to circulate; also give one or two cayenne pills, which will warm it as well. This is when you see a bird that goes black in the comb, and looks as if it would die, which heavy birds sometimes do; also handle them pretty freely, as it will do them good, sometimes a bird will faint when put in warm water to wash; in that case I always throw cold water on it, when the bird will recover at once, and after a minute or so you may put it in again, and flush washing it without its showing any symptoms of fainting again.

Many good washers prefer to dry the fowls, after washing, in a cage or box of ample size, littered with clean and well broken straw. This box is to be wired in the front and top, but closed at back and sides to prevent draught, and placed with the open front at just such a distance from an ample fire that a genial warmth may fill the box; but avoiding a scorching heat. We may add that it is in drying that judgment and experience are chiefly required as too strong a heat withers up the plumage and makes it ragged, while too little causes it to hang together and appear draggled; but if the right temperature be hit upon and the soap has been thoroughly washed out, by degrees the plumage fills out, and in a few hours the birds assume their "company clothes." It is to assist this that Mr. L. Smith so strongly advises leaving the birds with a little dampness still in the plumage, the steam assisting the fresh webbing of the feathers. In summer time the cage may be put out in the sun if preferred; but the glare seems to distress the birds much, and we should prefer a fire. Some poultry men are unusually clever in drying fowls, and by holding them near the fire and carefully removing them for a little whenever they appear distressed with the heat, manage to avoid the scorching we have spoken of, and can dry a pen of Cochins in about two hours; but we cannot pretend to give the precise details of such a management, which can only be successfully practised after great experience has been attained. As an example of what may be done by an adept, however, we may relate as within our own knowledge that the writer of the preceding remarks on a certain occasion received back his birds at about ten o'clock in the morning, fed them, washed them, returned them to the hampers all wet as they were, and got off with them by rail for another show at twelve, taking them out and drying them at a fire in a junction waiting-room on his way to the exhibition, where he again carried off the first prize.

Poultry Raising.

I see, through some paper, that M. D. Sord, of France, finds the business very profitable. He commenced with a few hundred dollars, and now employs over a hundred hands in his poultry houses. His product of eggs a few years ago averaged 50,000 dozen weekly, which, with the sale of his early chickens, yielded him \$280,000. His expenses, all paid, were some \$145,000, leaving him a profit of \$135,000 for one year. Why cannot like results be obtained in this country?

In large cities the demand for early chickens and eggs is always large; the price, too, is very good, chickens bringing from \$6 to \$10 per dozen—eggs from 25 to 60 cents per dozen. If poultry raisers could manage to get their chickens into market six weeks earlier, they would bring a much better price. In raising poultry for market it is of great importance to have the best breed. By the introduction of improved fowls, and by judicious crossing, our own native birds can be greatly improved, both in size and weight, at a certain age, and also in number of eggs. By crossing the Leghorns, Houdans or Brahmas with our common stock, they can be greatly improved, either for market or home use.

The poultry house is a matter of great importance in raising chickens. A mere rail pen or some old out-house, is supposed, by some, to be good enough. No one will be successful who makes no better provision for his fowls. The requisites are light, cleanliness, good food, pure water, range, grass, shelter from cold winds and storms, and plenty of gravel and ashes for them to roll themselves in—with these advantages and proper attention, poultry raising would be very profitable. Who, then, will go to work in earnest in this important pursuit in rural life? Whoever does will not only benefit the country, but will richly feather his own nest.—*Rural World.*

Cure for Damp Walls.

What owner of a suburban villa can say that he has never experienced the disagreeableness of dampness in his snug retreat? No matter how well drained the site of the house may be, nor how careful the foundations have been covered with asphalt, there is sure to appear, in some place or other, that atrocious plague spot on our comforts, "a little damp;" and when once it shows itself, it is difficult to drive away. We hail, therefore, with great pleasure a discovery which, to use a hackneyed phrase, will prove "a real blessing to mothers," leaving fathers out of view entirely. A correspondent of the Builder thus announces the discovery:-- "We would direct the attention of your readers to a waterproofing solution, the most effective that we have yet met with. The manufacturers term it 'petrifying liquid.' It is made from a very curious species of silica lately discovered in Wales, in the basin of an extinct volcano, and which now forms the bed of a small lake. This deposit we saw referred to in the Engineering a week or two back. It is silica of the richest quality, containing, when dry, over 90 per cent. of that mineral, and calcined to an impalpable powder, and snow-white. The Silicate Paint Company of Liverpool, who have this deposit in their hands, use it as a base for their paints instead of lead, and a most beautiful glossy paint it makes, setting extremely hard; but the waterproofing solution is invaluable to builders or owners of property that is subject to damp. We have used this 'petrifying liquid' constantly for the last eighteen months, in its transparent and colored state, and it does not matter whether the damp is driven in from the outside through the absorbency of the stone, brick, &c., or arises from the ground. We have found this solution to completely effect a cure, and at a very cheap rate. We have also applied it to newly-plastered walls, and papered on them immediately afterwards, and no sign of damp have we yet perceived.

It appears that this silica, being in such an extremely fine state of division, by this chemical liquid is conveyed into the pores of the stone, plaster, or brick, and combines with any moisture that is already in the wall, when exposure to the atmosphere for a few hours causes it to petrify and return to a flint again. Plaster or brick that has perished it hardens in really a wonderful manner. In this country we have more than our share of moisture, and we have found the 'petrifying liquid' the only permanent cure for dampness. --Scottish Farmer

The Debts of the World.

It is not a very easy matter to discover the actual indebtedness of either Europe or the world; but it is possible to give an approximate estimate of the total liabilities of Continental nations. There are seven European nations which owe upwards of £100,000,000 each. They are:--

Table with 2 columns: Country and Debt Amount. Includes Great Britain (£790,000,000), France (748,000,000), Italy (360,000,000), Russia (355,000,000), Austria (306,000,000), Spain (261,000,000), Turkey (124,000,000).

£2,744,000,000

The debt of the German Empire amounts to a little over £35,000,000. The different States composing it, however, owe in the aggregate about £173,000,000. The liabilities of the Empire may, therefore, be probably placed at about £208,000,000. The debts of the eight most heavily encumbered European countries may in this way be raised to about £3,152,000,000! There are six other countries in Europe which owe their creditors more than £10,000,000, but less than £100,000,000. They are--Holland, Portugal, Belgium, Greece, Roumania, Denmark. These six countries add £214,000,000 to our previous total, and raise the national liabilities of Europe to £3,366,000,000. --Full Mail Gazette.

A little girl who had great kindness of heart for all the animal creation, saw a hen preparing to gather her chickens under her sheltering wings, and shouted earnestly; "O! don't sit down on those beautiful little birds, you great, ugly, old rooster!"

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