

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Additional comments:/
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
										✓	

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison



The Field.

Change of Seeds—Especially Wheat.

The importance of change of seed in growing cereals cannot be too strongly urged. Change has almost invariably been found beneficial, even where it has only been from one township to another, or from sandy to clay land. How much more advantageous, then must it be to import seed grain from Europe to Canada. The British Agricultural papers are filled with advertisements of new sorts of wheat, obtained usually from hybrid seed. The hybridizing of cereals, especially peas, has for many years received the special attention of English horticulturists. There are parties who take great pains in this peculiar branch of horticulture, and they find their immediate advantage and profit in so doing. The varieties of seed peas are increasing yearly, and some of them are perfect marvels of size and abundance of yield, combined also, with improved quality. In Canada, enterprise of this nature has not been very much indulged in, but there is no reason why we should not profit by other peoples experiments. It is especially desirable that we should import some of every variety of new wheat advertised. It is absolutely impossible to form an opinion as to which kind will succeed best here, without actual trial, and to introduce one or two varieties at a time, would take a generation to test and determine which is best for immediate adoption. Nothing but tried generally and simultaneously all over the Dominion, will result in satisfaction. We have only to look back on the disasters attending on the failure of our potatoe crop, to be at once alive to the advantages of frequently importing change of seed. For many years, potatoes were a dollar a bushel. This ruinous price was due altogether to failure caused by defective seed. It is well nigh certain that the seed was extensively worn worn out by growing from cuttings for a long succession. Under this process, some choice kinds, as for example, the Pink Eye, became extinct for years. New varieties were grown from sprouts from seed by means of grafting, and in every conceivable way. Hundreds of sorts thus originated were condemned, as not fulfilling all the requirements of a good potato; but some were retained as the best amongst them, and we now have plenty of excellent potatoes at 80 cents a bag (of 1½ bushels) whereas they used to cost nearly three times that price. One such practical fact speaks volumes.

There can be no doubt that the diminished crops of our great staple which have so discouraged our farmers of late years, are partly to be attributed to a decline in the quality of the seed, owing to successive sowings on the same kind of land and amidst the same climatic conditions. The grand cause of this evil is poor raising, but poverty of seed has had

something to do with it, and while we advocate the best possible system of culture, we cannot urge too strongly, the use of new and choice varieties of seed. This matter has often been brought before our Local and Provincial Agricultural Societies, and occasionally a move has been made by them in the right direction. This is certainly one of the most legitimate ways in which they can expend money and put forth effort. We hope the Government Model Farm, when it once gets into operation, will do good service in testing new seeds, and drawing public attention to such as are worthy of general introduction. But our farmers ought not to wait for or depend upon societies, public bodies, or government institutions. There are multitudes of them who have made money and got before hand. Honest pride in their calling, business energy, and patriotic feeling, should impel them to do what they can in the way of importing and testing new seeds. The same enterprise which leads our stock men at so much risk and expense to import valuable animals, should be manifested by our grain growing farmers in their special line of things. It will pay them to do it.

Here then is an inviting field for the energetic and public-spirited farmer. It is comparatively unoccupied, and there is ample room to "go in and win."

Large Yields of Wheat from Artificial Manures.

A table, showing the produce of nineteen different descriptions of wheat, grown by J. B. Lawes, Esq., on his experimental farm, at Rothamsted, after highly manured roots (carted off), and all manured with superphosphate and nitrate of soda, also that of some of the same descriptions in previous years:—

	Bushels of Dressed Corn per Acre.				
	1863.	1869.	1871.	1872.	1873.
1. Red Wonder.....	51½	54½	51	31½	43½
2. Burwell (Old Lammas)...	4½	48½	50	34½	41½
3. Bristol Red.....	—	54½	57	29½	44½
4. Red Nursery.....	41½	49½	55	54½	45½
5. Red Langham.....	—	57	49½	54½	43½
6. Welly Ear (W. to).....	51½	57½	47½	7½	42½
7. Harcastle (White).....	—	—	—	—	40½
8. Golden Drop (Lod. Hallett).....	—	—	—	32½	50½
9. Hunter's White, Hallett's.....	—	—	—	56½	32½
10. Victoria White, Hallett's.....	—	—	—	34½	40½
11. Original Red, Hallett's.....	—	—	—	7½	35½
12. White Childham.....	41	46	45½	28½	38½
13. Cassy's White.....	—	—	—	—	41
14. Golden Bunch Chaff (B. H.).....	—	—	—	51	39½
15. Botes Prolific (Red).....	—	—	51½	54	42½
16. Club Wheat (Red).....	—	—	—	—	47
17. Browick (Red).....	—	—	51	35½	40½
18. Red Chaff (White).....	—	—	—	32½	37
19. Chul Wheat (Red).....	—	—	—	25½	40
Means.....	42½	51½	49½	31½	42½

The above tabularly-arranged yield of wheats, of various kinds, has a great interest for Canadian farmers, as showing what may be done on exhausted soils in England. Unfortunately for us in Canada, artificial manures are somewhat too expensive, as yet, to come into general use, but we are glad to learn that a company has been formed in Montreal, solely for the purpose of collecting and utilizing the city refuse and sewage, and by careful manipulation to make a manure sufficiently good to bear exportation to home

markets. When this is done, we may hope for artificial manures at a reduced price. At present we must turn our attention to home manufacture, and the only source individually open to us, that has anything like certainty about the cost, and quantity as well as quality, is in the direction of stable-feeding and fattening stock, combined with increased protection and care in saving both the liquid and solid portions of the home-produced fertilizers.

If all the liquid and solid excrement from one ox is carefully saved and protected, carried out and applied to the land, the increased crops obtained before this one dressing is exhausted, will fully equal ten dollars in value. Indeed, we believe this is a low estimate. An acre so manured, will, in all probability, yield double its former returns, for at least three years, and whether a man gets fifteen bushels of wheat or thirty, twenty bushels of barley or forty, or a ton of hay or ten, from each acre so treated, will make (on a large acreage) a very considerable difference in the profits of the farmer as a whole.

We cordially commend the above statement to the careful consideration of our intelligent, enterprising agriculturists, being persuaded that higher farming is the true road to more profitable farming.

Defects in Farming.

A Cleveland correspondent of the *N. Y. Tribune* writes very sensibly on the above topic as follows:—

The question, Does farming pay? may be answered as positively yes as no, and no as yes. The whole thing, in my opinion, hinges on the man. Put a genuine farmer upon a poor piece of soil, and he will bring it into a good state of productiveness, if there is any element in it. If swampy and cold, he will underdrain thoroughly, and make it bloom as a garden, if sterile from over use, he will, by aid of green manures and other fertilizers, bring it up, and make it give returns annually while under the process of renovation; but put a poor manager on the best farm in the country, and he will plan it so as to make the investment scarcely profitable. Now, I propose to point out some of the most important mistakes made by the unsuccessful. Many farmers do not appear to realize that the results of projects may frequently be very accurately foretold by reasoning and the use of figures, and that oft times the expenditure of money and days of hard manual labor may be saved, and the same end accomplished; in short, that calculation is better than hard work. Hard labor is not always attended with profit. A man may be diligent and frugal all his life and die poor, while another who labors less, with equal advantages, may enjoy life by the liberal use of accumulating means, always have plenty, and leave a handsome inheritance to those who are dependent upon him. In the latter case it is not good luck, but the result of bringing into daily use the reasoning as well as the executive faculties, through all departments of

his industries. Let this be called brain-farming, book-farming, or what it may, it is really mathematical farming—the use of the pencil with the plough. Before any project is entered into, it is well to count the cost, and figure out the probable results. It is an easy matter for a dairyman near a cheese factory to see that every calf raised upon his farm, at the expense of two gallons of milk per day, costs him at the end of the first three months at least twice the weight of the animal, unless, perhaps, it be one of uncommon promise and blood. Yet all dairymen do not realize it. It is equally evident that the keeping of two fully developed work-horses perpetually upon a farm, where not more than ten days' labor with a team is required in a year, is incurring a risk and heavy expense, and, of course, a loss; yet it is practised by thousands. I might enumerate cases of this kind to almost any extent, but the object is simply to show the necessity of more thorough investigation in all minor, as well as prominent points, in the pursuit of farming.

A majority of the farms throughout the country are not paying three per cent. annually on their estimated values, and still these farms are year after year kept under the same routine of management. A low per cent. is returned by tillage, when higher could be obtained by grazing; others give a meagre income by grazing when tillage would pay bountifully. Others are used for mixed farming when especially adapted to some certain brands. Mixed farming, in the broad sense of the term, is adapted to but few localities, and there is wisdom in the arrangement. One branch of husbandry well followed makes efficiency in that line, and the interchange of products facilitates the growth of enterprise, and gives a healthy tone to all departments of home industry. Then the first thing which farmers should do is to determine by experiment to what their lands are best adapted, taking nature of soil, convenience to market, &c., into consideration, and then make the particular line or lines the leading feature of their avocation, regardless of their particular tastes respecting the different branches. Because this matter is not thoroughly settled may be attributed very many of the failures in farming.

A continuous shifting without taking notes of results is as unprofitable, and perhaps more so, as sticking to an unremunerative line. Some men are always moving by the influence of a fluctuating market, as the mercury in a thermometer by the influence of the temperature. It would take a sudden turn upward, there is a headlong plunge for sheep, high prices paid, and dairy cows sold at a sacrifice, and vice versa. It requires a number of years to get well established in any line of husbandry. If in dairy or wool-growing, the herds and flocks must be sorted and re-sorted before either is brought up to a proper standard of excellence, and the sacrifice of frequent changes is more than generally realized.

Another very great defect in agricultural pursuits is the very general habit of always being behind the work. It must be evident to every one that the man who begins early to make selections for spring sowing, getting those seeds which are best adapted to his soil and latitude, and those which will yield the greatest return per acre, will succeed better than he who delays all this, and makes no effort to secure them until the soil has been fully prepared. In the latter case, ten chances to one if poor seed is not finally used, and meagre returns made.

Some farmers complain that they are always behind with their work on account of not being forehanded enough to carry on their premises independently; that they have to help their neighbors in seed time and harvest before attending to their own farm interest, in order to procure funds and help to do their work with. Now, the man who gets into this rut is destined to remain there just so long as he has not resolution enough to extricate himself by a change of practice. Than to live in such a condition

of servitude and self-robbery, he had better pay four times the real value of seed tools and help, and mortgage to do it, and then keep fully up to time. Here and there all over the country, let the season be what it may, will be found every summer inferior fields of grain, the result of bad seed or late sowing, and spindling corn from late planting. In winter will be found upon these farms poor stock, because fed upon hay which was not cut until it had lost nearly all of its nutritious element. The loss attending such management as this one year should be a lesson to the one who suffers by it, but it is not, for, as before stated, he thinks that his circumstances will not allow of a different course. The husbandman who is always behind time in his farm operations is, in addition to the inconveniences alluded to, subject to the tricks of sharpers in the commercial world. As soon as any article of produce is marketable it must, through the ever-pressing demand for money, be sold, its prices range as they may, and this subjugation of a class has an effect more detrimental upon the produce market than any other influence brought to bear upon it. So a whole community is affected by the inadvertency of a class.

How and When to Sow Clover.

F. P. Root, of Sweden, N.Y., writes on this subject to the *Rural Home*, as follows:—Experience has taught me that seeding on spring grain is very unreliable. The season is too far advanced before spring grains can be sown to make clover seeding safe, and on lands where winter grain can be grown I would never attempt seeding on any other. Early sowing has proved most successful, and has seldom failed where the land has been in good condition. Exhausted soils and lands not well tilled cannot be relied upon with safety, neither is a clover lay turned under and sown to winter grain as good for seeding as when other crops have intervened. The best preparation for seeding is when winter grain is sown following a spring crop, and the land is well tilled and clean. It is better if the surface is uneven as left by the seed drill. And the best time for sowing is usually in the month of March, before the frosts of spring are over, as then the freezing and thawing of the surface will work the seed into the ground, and the spring rains will be sure to bring it up. I know that sowing thus early is objected to by many farmers, fearing that the late frosts of spring will kill the young plant; but I am not aware that the plant is ever killed by frosts, though I have heard this objection to early seeding. During a lifetime, I have often sown clover in midwinter with good success, and we usually see young clover in spring come up on the field where seed had been cut and shelled on the ground the fall previous. But even if we allow that late spring frosts will sometimes kill the germ, the occasions of such frosts are so rare that it is hardly an argument to offset against the dangers from drought in late seeding.

Seed sown after the ground has become settled and firm will not grow unless several successive rainy days follow, which may or may not occur. After the seed springs up, the more rapid its growth the safer it is against early droughts, and to promote this an application of about 150 pounds of gypsum per acre should be given it, and it should be sown as soon as possible after the ground is settled, so that early rains may dissolve and bring it into connection to impart its earliest effect to the young clover. Farmers often fail by sowing plaster too late, and some object to sowing on wheat in spring, that it keeps the wheat green, causing it to shrink; but if sown in proper time it will have no late effect on wheat, and will be almost sure to save the clover. I have never known any perceptible effect of plaster on wheat sown in spring, after a practice of it for more than twenty years, but have always been satisfied of its great benefit to the young clover.

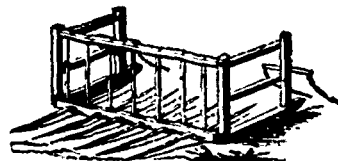
The amount of seed necessary to be sown per acre to insure a good seeding is an important enquiry, and a point on which farmers widely differ. Ten pounds of good seed per acre is sufficient to cover the ground well if evenly sown, and all grows, and twice that amount is no better if it fails to come. Care is necessary to have the seed evenly sown, just as important as the sowing of grain, though it is often heedlessly done, some portions of the ground often receiving no seed, and other portions a double quantity. The operation of hand-sowing is quite difficult, and none but an experienced hand can distribute the seed evenly. The clover sowing machine is a great improvement in the perfection of work, as well as in the saving of labor. The machine is a cheap, simple thing, but of much utility.

Agricultural Implements.

The Hay-Sweep and Fork.

It is not a little strange that this useful article is not much more extensively used throughout the country than it is.

The farmer is now enabled, by means of the various appliances, to have his crop cut and raked together or tossed, with a very large saving both of labor and time; yet the amount of loading and unloading still to be done in the field and mow, taxes his energies to the very utmost. Every one who has ever pitched on or off a wagon ten or twelve tons of hay in a day, can bear evidence to the fact that no labor is more fatiguing. The Hay-Sweep is designed to supersede a great portion of this work.



THE HAY-SWEEP.

By the aid of two or three men, two boys and three horses, from twenty-five to thirty tons of hay can readily be packed away per day—with the assistance of the Fork, of course. The Sweep was invented by a Mr. Smith, of Macedon, N.Y., many years ago, although it is as yet apparently so little known.

It is essentially a large, coarse rake, with teeth projecting both ways like those of a common revolver; a horse is attached to each end, and a boy rides each horse. The horses are driven, one on each side of the wind-row, and the rake, coming after them, scoops up the hay as it moves along.

When 500 pounds or more are collected, they draw it at once to the stack or barn, and the horses, simply turning about at each end, thus causing the gates to make half a circle, draw the teeth backwards from the heap of hay, and go empty for another load—the teeth on opposite sides being thus used alternately.

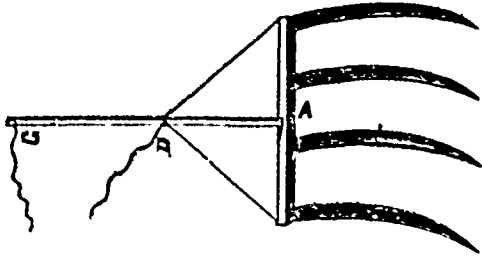
The dimensions of the Hay-Sweep should be as follows: Main or breast bar, a piece of common 4 inch scantling 10 feet long, the one above, the same length and a little lighter. These are about 3 feet apart, connected by 6 or 7 upright wooden bars, 1 1/2 inches square, or thereabout. The teeth are flatfish, 1 inch by 3, and about 5 feet long, or projecting 2 1/2 feet on each side of the centre beam. They must taper, of course, towards the ends so as to run easily under the wind-row. A gate, swinging half way round on very stout hinges, is hung to each end of the rake, and the whistle-trees are attached to these gates. The gates are made, each of two pieces 3 feet long, of common 3 inch scantling, united by 2 bars of wood 1 by 2 inches, and a third at the bottom 3 inches square, and tapering upwards like a sled-runner.

The whistle-trees should be attached a little above the middle of the gate, and so adjusted that they may be raised or lowered as required.

The importance of this simple contrivance will be appreciated from a short calculation. In the first place not a moment is lost in loading or unloading. 2ndly. No attention is needed save that of two little boys to ride the horses. 3rdly. Suppose the horses walk 3 miles per hour (slow travelling), and travel, say a quarter of a mile at each load, they will draw 12 loads of 500 lbs. each, or 3 tons per hour, or 30 tons per day of 10 hours, leaving the men wholly occupied in raising and packing, by the aid of the third horse and the Fork.

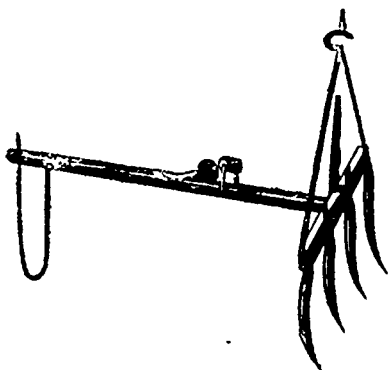
The use of the last mentioned article also is not nearly so much appreciated as it ought to be when we consider not only its labor-saving, but its expeditious qualities as well. The effective force of a horse has

been proved repeatedly to be about five times that of a man, and if a man takes half an hour to unload a ton of hay, it follows that a horse should accomplish this in six minutes. Such is the fact.



The simplest form of the Hay-Fork is illustrated by the cut. A, the head is about 2 feet long and 2½ or 3 inches square (hardwood). A. G., the handle, is from 4 to 5 feet long, firmly fastened or mortised to the head, and kept fast by bands of thin iron, bent around the head, and extending a few inches up both sides of the handle. The fork-prongs are made of good steel, about half an inch thick at the head, 20 inches long and 6 or 8 inches apart, with nuts to screw them up tight. An occasional rivet should also be placed transversely through the head to prevent the prongs from splitting in heavy work. The rope is attached to staples at the ends of the head. The rope D, extends over a tackle block attached to a beam or rafter, near the peak of the barn, about 2 feet within the edge of the hay. The rope then passes down to the bottom of the door-post, under another block, and to the outside of the barn, where the working horse is attached to it. A small cord, G, is attached to the end of the handle, by which it is kept level as it ascends over the mow. The cord is then slackened and the weight of the hay tilts the fork, discharging its load. The horse is then backed up for another fork-full; the only labor of the workman being to drive the fork into the hay and keep the cord steady. The labor saving of this article will thus be seen to be such that the workman sets out fresh and vigorous for his next load.

The length of the handle sometimes makes it difficult to use this fork under low roofs, and another improvement has been introduced whereby the head of the fork only is tilted, leaving the handle in its horizontal position. A hinge joint is placed at the connection of the head and handle, so that at any moment, by a jerk on the cord which passes up through a bore in the handle, the fork is dropped, and its load deposited. Its weight also causes the head to fly back again, resuming its former position, ready for another forkful.

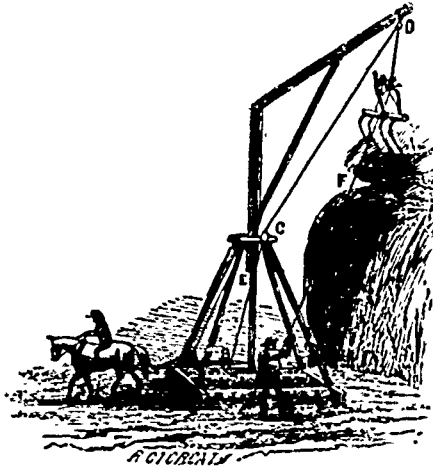


The rope suspending the fork should be fastened to the highest portion of one of the rafters over the mow, and a smooth board should be placed vertically against the face of the mow for the hay to slide on as it ascends.

The fork just described is one of the best in use. It has unloaded a ton of hay in three minutes, and over a beam 22 feet high in about nine minutes.

Another form of the same fork, but with a shorter

handle, and thereby more easily available under low roofs, is illustrated by the accompanying cut,



which also shows the general arrangement of the rope and tackle in building stacks by means of the "Stacker," or "Hay-Elevator."



Hay-Carriers.

One of the main inconveniences of the Hay-Fork is that its position is to a certain extent fixed, preventing the distribution of the hay over the different parts of a broad bay. Several persons are, therefore, employed to spread the hay as it is rapidly discharged by the fork.

To obviate these inconveniences, the Hay-Carrier has been invented, by means of which the hay can be carried 50 or 100 ft. horizontally, and in any direction. It consists of a track of 2 by 5 inch plank, fastened by strips and tuppenny nails to the rafters, a few inches below the ridge of the barn. A hay-car runs along this track; a rope runs through it and through a catch-pulley attached to a horse hay-fork, then back to the car again; the other end passes back to the end of the barn and returns through pulley wheels to the barn floor; to this end the horse is attached.

By a peculiar arrangement of the car, it is held in position on the track, over the load to be unloaded until a forkful of hay is elevated to it, when it is liberated from its position and the fork made fast to it in one operation; then it moves off on the track quite easily, and as fast as you please. The operator, by pulling a cord, trips the fork, and the horse, turning around, walks back again to the starting place.

This operation is so expeditious that 300 or 400 lbs. of hay may be packed away at a distance of 40 or 50 feet from the load, in a minute.

Time spent in sharpening tools and putting implements and machines in perfect order, is time bestowed to the very best advantage.

Grasses and Forage Crops.

Hungarian Grass.

A correspondent who subscribes himself, "A Young Farmer," says:—"I have heard a great deal about Hungarian Grass, and am anxious to try it. But an experienced farmer who professes to know, tells me that it is sure to spread over the farm, and become as troublesome as fox-tail. I would be much obliged if you, or some one who can speak from experience, would give me a little information about it.

Hungarian Grass is a forage plant somewhat resembling Millet, so much so that it is sometimes called Hungarian Millet. It was introduced into France in 1815, where it has been largely cultivated, being apparently well suited to the soil and climate of that country. It is thought to be more nutritious than common Millet, and is valuable both for green and dry fodder. It grows and matures in about the same time as common Millet, and when allowed to ripen, yields from twenty to thirty bushels of seed per acre.

Hungarian Grass has some qualities which would seem to render it particularly suitable to this climate, and yet, from various causes, it has failed to come into general cultivation. It germinates readily, grows rapidly, and withstands drought remarkably well continuing fresh and green, when other vegetation becomes parched and withered-looking. When rain comes after a dry time, it quickly takes a fresh start, and grows with great vigor. It throws out a number of succulent leaves, and is a good plant to sow for green fodder, provided it can be used in the early stages of its growth, for when it gets old, cattle do not care for it. It must be cut before it approaches ripeness if wanted for hay, as it makes poor reedy stuff, scarcely better than timothy saved for seed, when suffered to mature.

We are inclined to think this grass does poorly in some localities, and that this is one reason why it is not more extensively grown. But no crop succeeds well everywhere, and it is well to ascertain by actual trial, what is adapted to a particular soil and locality. Hungarian Grass attains its best growth in land of rich quality and somewhat firm texture, though it often does well in rather light and dry soils. It may be sown broadcast or drilled in, and its culture is precisely the same as that of common Millet. From twelve to twenty-eight quarts of seed are sown to the acre, the quantity being determined by the fineness or coarseness of the desired product. The thicker the seeding, the finer the grass will be. The land should be well harrowed before sowing, and gone over with a very fine-toothed harrow, or with the roller only, after sowing. If the soil is very mellow and the seed can be sown just before a heavy rain, there is no need for either harrowing or rolling after sowing.

This is not one of the earliest of green forage crops. It must not be sown until danger of frost is over in the spring. Hot weather is required to force it along. In this and in some other respects, it resembles Indian Corn. From the fact that it cannot be sown earlier than Corn, and in view of the quick growth and great yield of corn as a green fodder crop, some prefer to cultivate Corn; still, where circumstances are favorable, Hungarian Grass is, without doubt, a profitable crop. A correspondent of the *Country Gentleman* some years ago, detailed his experience in growing this grass for four successive seasons, and stated that he "never failed to have tremendous crops." He added, "I can show positively, that I have raised five tons of cured hay to the measured acre." He recommended it highly as a winter food for horses, and on the whole considered it the most valuable grass crop he could grow.

But farmers differ as to the value of this product. Some have a prejudice against it from an idea that it

is injurious to certain kinds of stock. A while ago some statements went the round of the agricultural papers, to the effect that this grass fed to horses, caused stiffness of limbs, and all the symptoms of founder. Sensible editors expressed their doubts as to the correctness of these statements, and an intelligent correspondent of the *American Agriculturist* wrote as follows concerning the matter: "I think more horses are injured by a want of Hungarian Millet, than by the use of it. I have kept horses and cows upon the hay left after threshing it. They eat it better than herd grass, and cows keep in better condition on it, than on other hay. If horses are allowed to eat it with the seed on, they will be likely to leave the hay, and the effects will be the same as feeding them exclusively upon other grain, as oats or corn. The seed weighs about fifty pounds to the bushel, and is very hearty. I think a ton of the hay, cut before the seed is ripe, is better than a ton of coarse clover or herd grass. We can raise twice as much Hungarian Grass as we can of the common grasses, and it succeeds on sandy land, where other kinds fail. I sowed a piece in May last, on pasture land, and the yield was three and a half tons per acre before threshing. It gave thirty bushels of seed per acre. I think it would be a good plan in improving upland meadows, to plough and sow with Hungarian Millet, and seed with timothy, mowing the Hungarian the first season, and the Timothy the next." We doubt the wisdom of the bit of advice given at the close of the communication just quoted. Hungarian Grass is such a dense-growing plant, that it smothers everything else, even weeds, and is in this view of it, by no means a bad cleaning crop. We should expect a poor "take" if we seeded down with it.

Our correspondent need not be alarmed lest this plant should become a weed. There may be some varieties of it that possess sufficient vitality to be troublesome from self sown seeds, but this is not its general characteristic. On the whole, we recommend "A Young Farmer" to try his hand at growing this grass. Experiment only is satisfactory, decide whether it is adapted to his land and location. When he has made fair and full trial, we shall be glad to get his experience to publish in this journal for the benefit and guidance of others.

Facts in Soiling.—What to Sow and How to Grow It.

Mr. George Waring, the excellent manager of Ogden Farm, at Newport R. I., lays down the following programme for a herd of twelve cows:

1. Early the previous autumn, sow three acres of winter rye, to be cut the next spring, from May 15 to June 15.
2. Early in April, sow three acres of oats, to be cut from June 12 to July 1.
3. Late in April, sow two acres of oats or barley, to be cut from July 1 to July 15.
4. Early in May, sow two acres in oats or barley, to be cut from July 15 to Aug. 19.
5. Middle of May, sow two acres of oats or barley, to be cut from August 10 to Sept. 1.
6. Middle of June replant plot No. 1 with corn, which is to be cut from September 1 to Sept. 20.
7. Early in July resow plot No. 2 with barley, to be cut from September 20 until roots and cabbages come in, which is usually October 1 to 15.
8. In September three acres of plots Nos. 4 and 5 are to be sown in winter rye for the next spring's use.

Mr. Waring's experience demonstrates two general principles:

1st. The earliest abundant food will be secured by the use of winter rye.

2nd. The best and most abundant food for the later summer and earlier autumn time will be secured by the use of Indian corn.

An experiment was made last year by the officers of the Agricultural College of Pennsylvania to determine the amount of food per acre. Seed was planted May 15, at the rate of seven bushels per acre, one-half drilled, in drills two and a half feet apart, the other sown broadcast. On the 20th of August began cutting, and on the drilled part gathered 31,000 pounds, or 17.44 tons per acre.

Hungarian grass is a quickly turned food for cattle; On the same farm three pecks were sown per acre on the 21st of May, Aug. 2—seventy three days after

planting—it was gathered and dried, making 5,804 pounds of excellent bright hay, which the horses and cattle ate with a relish, liking it fully as well as they did the clover.

Joshua Quincy's method of soiling is as follows: May 20 to July 1, feed cut fodder from early clover, rye or orchard grass.

July 1 to 31, cut from oat field which was sown in April.

August 1 to 31, feed sown corn, planted from May 1 every ten days.

September 1 to 30, recut the oats on field No. 1, also feed one acre late corn, sown in June, every ten days.

October to November, feed tops of vegetables. After December to next May, feed hay and roots, turned and finely cut or cooked.

Lucerne is most valuable for soiling. It requires no re-seeding every year. The first year it yields two crops—June and September. In succeeding years it will yield four crops each season—June, July, August and September—about a ton per acre from each mowing. Most of its nourishment comes from the atmosphere; hence it is an enriching crop as a green manure.

The following will be found a good practical schedule for a herd of cows. For green feed during summer sow:

- 1 acre early rye the previous fall.
- 1 acre early oats.
- 1 acre sowed corn, May 1, resown August 15.
- 1 acre cabbages.
- 4 acres Lucerne.
- 2 acres sugar beets and mangels.

10 acres.
For winter feed, cut hay from ten acres of clover or timothy, and roots from three to five acres additional. As the ground becomes more and more rich, the feeding capacity of each acre will be increased, and in time doubled, so that twenty acres can easily maintain twelve to fifteen head the year round. All the manure must be returned as a top dressing.

The Grass Tree.

Among the anomalies of Australia is a singular growth of the forest that deviates as much from a tree as a kangaroo from the ordinary types of animals, although it is called a tree. The grass tree grows in rocky places unfavorable for other vegetable productions. Absolute barrenness is a spot where the plant flourishes best, apparently, though elements must abound there which are appropriate nourishment. A mass of grass-looking fibres gradually rise out of the ground.

From day to day there is an increase of bulk and height very much resembling an elevated tuft of long grass, gracefully falling off from a central shaft. Those pendant threads are leaves. Very soon, from the top of the pile, a slender stalk shoots up perpendicularly from four to ten feet, terminating in a spike, that is sought by natives for spears, being hard and somewhat elastic. Within the pith is an article of food. In the rude and savage condition of indigenous Australians, the grass tree furnishes a weapon of extraordinary usefulness for meeting the circumstances of a barbarous state of society. Without it no other equally efficient instrument of defence against enemies or for contending with ferocious animals is at their command. What says science in reference to this provision in favor of savages?

Saving Corn-Stalks and Tops.

I am in the habit of saving tops and sowed corn every year, and find no difficulty about it—a great deal less than in pulling fodder and saving it. My time for cutting sowed corn, is when it matures.—This can be ascertained by chewing it—if sweet, it is ready to cut. Tops can be cut one or two weeks before the fodder is ready to pull. My plan is to cut and shock up all the same day. If rain threatens, it can be shocked as fast as cut. Let a hand take up an armful of tops or cut corn and place the butt ends down, at the same time another hand places down his armful at a suitable distance and leans the tops of the two together, then keep on placing armfuls around the shock until it is of sufficient size, then place a hand around the top and draw them together. Cap it off by placing three or four small armfuls around and above the top of the shock, butt ends up; they should be placed evenly around, and secured by a hand around the top of the butts. If the tops are wet when put up you need not be uneasy, the air will dry them, and they will cure just as well as that which is put up dry.—H. B. in *Southern Cultivator*.

The Dairy.

EDITOR—L. B. ARNOLD, OF ROCHESTER, N. Y., SECRETARY
THE AMERICAN DAIRYMEN'S ASSOCIATION.

Handling Newly Drawn Milk.

The treatment milk should receive immediately after being drawn from the udder may differ according to the purposes for which it is to be used, whether for butter, or cheese, or market. But the practices and opinions of dairymen in regard to what constitutes the proper treatment of new milk for these several purposes are very diverse.

If it is to be used for butter-making, the less it is hauled and agitated the better; and it may, or may not, require airing, according as it is to be placed afterwards for the cream to rise. If it is to be placed in a milk room that is kept at an even temperature of about 60 degrees, and ventilated so that the air will keep pure, no airing or stirring or other cooling need be done than to set it in appropriate vessels in such a room. This is the very best treatment it can receive, and gives the least trouble as well as the best result. But very few private dairies, or factories even, have such a room, though it is not very difficult to build such an one, or to regulate its temperature by an adjacent ice room from which cold air can be admitted or withheld as desired.

Some would prefer cooling milk suddenly with ice water, even for such a room. But such a sudden reduction of the temperature of new and warm milk is not desirable. It condenses the animal odor and retains it too long in the milk. It becomes mingled with the cream as it afterwards slowly escapes, and modifies its flavor, and the keeping qualities and flavor of the butter. Animal odor, like the odor of vegetables, passes off best when warm, and the higher the temperature the quicker it escapes. If the milk has any strong smell either of animal odor or the scent of turnips, cabbages, onions, garlic, or strong weeds, it had better be set in a vessel of water and heated to 130 or 140 degrees, when most, if not all such scent will be driven off. All such odors come from the essential oils of the vegetables eaten, and which become volatile and readily fly away by heating.

If the milk room cannot be kept as low as 65 degrees, then the milk had better be cooled by the use of cold water before it is set away, and the lower it is reduced the better, for otherwise it will sour before the cream rises, and thus do more hurt than the retention of odor. In such a case it ought to be aired before or while cooling.

Where small dairies are kept, the conveniences for keeping milk for the cream to rise are often very imperfect. They are either in a cellar where the air is confined and impure, or in an upper room which is not protected against the variations in temperature. To subject milk to the changes of our variable climate while the cream is rising, or the butter, after it is made, is to spoil its peculiar qualities that constitute it a delicious luxury that will command a high price, and to reduce it to the level of common or inferior goods, which, instead of being sought after, must crowd its way to the hands of the consumer. It will pay every farmer who keeps half a dozen cows to build a milk room that will be proof against the changes of the weather, one from which he can shut out the heat, and that he can warm up with a stove when too cold.

It need not necessarily be very large or expensive, but it should be tight enough to guard against both heat and cold. It should have flagging for a floor, double walls, and be high between joints. A cheap milk room that we know of was built fifteen or twenty years ago for 30 cows as follows:—an excavation was made at the east end of the farm-house 18 inches deep and 20 feet long by 18 wide, with the north side of the excavation on a line with the north side of the house. This was supplied with a good drain, a floor of flat stones, and surrounded by a double wall three feet high, laid in mortar, with an air-tight space between them. On this wall was placed a wooden frame boarded up with tight joints on the outside and plastered inside, leaving an air space between the walls. The windows were double and the ventilation ample, reaching from the flagging to the floor over head. The south end of this room is protected from the rays of the sun by a churn-

room and shed for a horse-power to do the churning with, and the east side by shade trees set for that purpose. It was a cheap structure, but it was well planned and has answered the end for which it was built. It might, perhaps, have been better if it had been supplied with running water, but it has done very well without it. In the hottest weather the doors are kept closed during the day, and the mercury never rises over sixty-five, hence ice or running water is hardly needed. Soft water from a well that is cool (about 50) is used for washing butter, and is considered sufficient. In cold weather, a small stove prevents the temperature from falling below sixty.

This cheap and most economical room has held the milk for more than fifty tons of fancy butter since its erection, and is operating satisfactorily still. The butter from this farm sold last fall at one sale for 50 cents a pound at home, when the very highest quotations in New York city for best butter, including creamery, was only 40 to 41 cents. This is no better than its average sales. It was never sold less than 5 cents above the highest quotations, and sometimes as high as 15 and even 20.

The proprietor of this farm (the man whose dairy barn was illustrated in a previous No. of the C. F.) is located in Western New York, about 300 miles from the city, whence buyers, like magnets, are attracted to his products. He has not the advantages which some have who live near large cities and can send in their butter every day, or while fresh and new, and who, perhaps, by the fancy or caprice of some individuals or houses, can get 75 cents or \$1 a pound for goods which, if offered without a name, could not be distinguished from hundreds of other samples that sell at no such figures. He is a plain unassuming farmer, entirely unknown to fame, and scarcely beyond his own immediate neighborhood, and therefore sells his butter without any prestige or display, simply on its merits. Being made as it is remote from market and put up in plain firkins for long keeping without the use of any ice or running water, or costly buildings or apparatus, or any display of extraordinary wisdom or skill, but simply by the use of plain practical common sense, we quote the example with no little satisfaction as a complete demonstration that any dairyman, no matter how far inland he may be, nor how plain or unvarnished himself or his premises, if he has the cows and the where-with-all to keep them and a well of good water, has within his reach the means of making gilt-edge butter, for all the rest depends on himself. It affords a full refutation of the excuses which men are in the habit of making to themselves for sending to market butter below par instead of above, thinking honestly enough perhaps, that they cannot have a cool even-tempered milk-room, or make the best butter because they lack ice or running water, and are too far from market to have their goods sell well. This example and others which might be cited, ought to encourage dairymen to aspire to similar excellence, and to assure them that gilt-edged butter is confined to no spot.

Of course such butter cannot be made unless every step in the process is made with care and skill. One wrong practice would be fatal to fancy butter, for a wrong step once taken in butter-making can never be recalled nor wiped out. Its effects will run through the entire lifetime of the butter. Other useful lessons might be gathered from the practices in this dairy, and we shall probably have occasion to refer to it hereafter.

What is said of Butter.

When a wholesale dealer is questioned as to the proportion of really fine butter he receives in his consignments, he replies "five per cent." A larger proportion than this comes to market as grease. The grocer will tell you that of all his stock good butter is the most difficult to procure, and costs him more time and trouble to select. We know there is no good reason why this should be. Here and there scattered widely apart throughout the country, we know farmers who make excellent butter, which would be classed first quality in the market, and next door to those are neighbors who make trash unfit for food. On the counters of country stores may any day be seen rolls of butter most widely different in color, flavor and texture. One farmer is careful and cleanly, his wife keeps her dairy sweet and her pails and pans perfectly pure, another keeps a foul stable, milks in an unclean fashion, has rusty feed and foul water for his cows, while his wife is equally careless in her duty. How can the butter in these two cases be other than widely different in quality and value, *Massachusetts Ploughman*.

Milk for the Cheese Factory or Creamery.

If milk is to be taken to a cheese factory or creamery it ought to be put to airing and cooling as fast as it is drawn, so that by the time the milking is through with it will be ready for a start and in good condition.

The method of doing this, described in a former No., viz., turning it into an elevated tin reservoir with a bottom perforated with small holes just enough to let the milk run through and fall into a vessel below as fast as the milkers have occasion to empty their pails is sufficiently effective, and occasions the least trouble and expense. To do this it will not be necessary to buy anybody's patent right. A broad-bottomed tin vessel, either round or square, that will hold three or four pails will do. We have used a square tin box holding four pails full, perforated with a fine steel punch till it would pass the milk as fast as desired. It worked well. It is desirable that the holes be distributed as evenly as may be over the bottom of the vessel. The can in which the milk is to be carried to the factory will answer for a receiving vessel, and the farmer can arrange them for himself without any directions. It will only be necessary to caution him to place them where nothing but pure air will touch the milk. If every dairyman who carries milk to a cheese factory would take upon himself this trifling chore, for it would be nothing more than a chore, that need not occupy more than fifteen minutes extra time at each milking, as we know by experience, the improvement it would produce upon the cheese of the Dominion would be astonishing. The defective flavor of Canadian cheese and its want of keeping quality discussed at the last Ingersol Convention, and so much regretted, would nearly all be wiped out at once. Defective flavor and a tendency to premature decay in cheese, undoubtedly come from a variety of causes, but the chief one is the retention in the milk of the so-called animal odor, which is always objectionable, and in hot weather so intense as to do serious injury to the milk, and to the cheese (or butter) which may be made from it. Nearly all the tainted milk and floating curds would be at once done away with, if the milk was well aired at the farm before starting for the factory. Airing is of more consequence than cooling for this purpose, but both are desirable. The next best thing to airing at the farm is ventilating the milk on its way to the factory by means of openings in the cover of the can. We have devised a very simple and cheap tube arranged with stoppers, so that air can pass through it either out or in as the milk in the can sways to and fro, without any danger of its dashing out of the can. It has been stated before that at common summer temperatures animal odor is slowly formed in milk. When warm milk is agitated it forms rapidly, and unless it is allowed a chance to escape it accumulates in the top of the vessel containing it and becomes very intense and offensive. Every milk carrier who takes milk to a factory in a closely covered can may satisfy himself of this by suddenly lifting the cover from his can on reaching the factory, and scenting the odor which will escape. It will be found very disagreeable and nauseating. Of course, confining such an effluvia with the milk saturates and befouls it, and going into the cheese produces its certain effects. And these effects are so plain and disastrous, and the remedy so easy, that it seems strange that dairymen will be so blind to their own interests, and slow to adopt any reform. But A says he will air and cool the milk if B will, and B will do it if C will, but C says it is no use for him to go into an improvement unless the rest of the patrons do, and so no start is made till it is done in convention and by a general resolve. The increase in the quantity of cheese which milk that is cooled and aerated will make over milk that is not, which all observers agree in putting at five per cent., is more than enough to pay all the trouble and expense, to say nothing of improved quality. Milk should always be carried on springs and protected against the heat of the sun, and if it is going to a butter factory or creamery, it is better to carry it in cans with small tops, and to fill them entirely full so as to prevent agitation as much as possible.

The Doings of "Old Creamer."

The Jefferson Co., N. Y., *Journal*, June 12, publishes the following:—"Old Creamer" astonishes even her owner this week. It is safe to say that the cow has scarcely an equal in this country or the world. She is nearly full-blooded Ayrshire, weighs about 1,100 pounds, is a handsome animal, and carries a bag that, for size, equals any thing we have ever seen. Crowds gather from far and near to see her, and many of our citizens have been present to witness the impressive ceremony of milking and weighing the milk. Follow we give her wonderful record for the past week. Can it be beaten in the world?

I handed you a statement of the amount of milk which the Ayrshire cow, "Old Creamer," gave me for the week ending Monday evening, June 24, 1873, which was, upon an average, over 81 pounds per day. I now desire to hand you another, for the last week ending last evening, June 30th, 1873, which is an average of 92½ lbs. per day, as follows:

1873	At 5 A. M.	At 12 M.	At 7 P. M.	Total
June 3.....	27½ lbs.	31½ lbs.	29 lbs.	87½
" 4.....	28½	31½	31½	91½
" 5.....	29 (estimated)	31½	29	89½
" 6.....	29½	33	31½	93½
" 7.....	31½	32	32½	96½
" 8.....	32	31	33	96
" 9.....	32½	32½	33	98
	210	219½	219½	649½

June 10th, morning's milk 33 lbs.

I think there is no one, who has seen the cow, that doubts her capacity or disposition to yield 1,000 pounds of milk in ten consecutive days in the month of June.

I challenge the world to produce, as to quantity and quality of the milk, her equal, with the same amount of feed and care which she has had—the lactometer and scales to be the test.—*S. D. Hungerford*.

Keeping Butter.

While a well in this vicinity was being cleaned recently, a half-pound of butter was found in the bottom as good and sweet as when first made. How long it had been there no one knows. The present occupant of the premises has been fifteen years on the place, and the pump being in constant use there had been no occasion before to have it cleaned. The butter must have been there all this time, and how long before is not known. The outside was of a paler color than that within, but otherwise there was no change.

It is not unknown to good dairy folks that butter will keep well in cool, pure spring water, and some have taken advantage of the fact to preserve butter in close vessels under the surface. But we think it is not generally known that it would keep so long in actual contact with the water. It might be worth considering whether this hint about preserving butter might not be taken advantage of, so as to imitate a regular plan of preserving butter sweet and fresh, until markets or other circumstances favor good prices. It is one of the weaknesses of the butter business that at some seasons prices are ruinously low, and the usual remedy of pitting is not a very good cure.

The water of course must be cool and pure. At a high temperature, such as most water near the surface reaches, vegetable organisms, grow that would soon communicate decay to any organic matter in the water; but there are many places where a lagoon of the proper condition of pure-well water could readily be constructed.

It may not be out of place here to remark, that little hints such as these are continually occurring in almost everyone's experience; but only soon to be forgotten. Yet often if the suggestion be listened to and the thread followed up, one might get on the track of some good idea that would rapidly make a fortune. We think that new inventions require much study; but the truth is most of our best discoveries have been by accident.—*German town Telegraph*.

The cows in Vermont yield an income of \$6,000,000 a year.

A traveller writes from Brazil: "The milkman is a great institution in Rio de Janeiro. His cart is on legs instead of wheels. The cow herself is driven round to the houses to supply the customers, always accompanied by a calf, sometimes a year old, muzzled and tied to her tail."

Horticulture.

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

THE ORCHARD.

Winter Pears.

A young cultivator wishes to know what varieties of winter pears will give a supply from the present time or about the first of winter, for two or three months—such sorts as have been sufficiently tried to be of established character. He has a good supply of autumn pears, but has overlooked those for winter. In answer to this inquiry, we may state that we are now enjoying the Anjou, which is unquestionably the best of the season, the Winter Nels and the Lawrence. These will probably furnish a good supply till about the first of the year—sometimes the Lawrence lasts nearly into February. Very much depends on the manner in which these fruits are kept, and the fitness of the apartments for storing them. Keep the specimens in as cool a place as possible after they are gathered, and before they are placed in the cellar. A cool outhouse, or a suitable apartment in a carriage house, fronting the north, answers a good purpose. A fruit room, built above ground on purpose, is best where there are large quantities to be stored; or, in the absence of this building, an apartment may be divided off by double boarding in some other building, and covering the boxes in which the fruit is packed with chaff or fine straw. This protection will often be sufficient until the time has far advanced into December; and there will be no danger till intensely cold weather sets in, and it will be some days before the frost can pass the barrier of double partitions and the thick stratum of the chaff. After they go to the cellar, keep the apartment well ventilated and regulated to a low temperature above freezing by a thermometer.

We have mentioned the Anjou as the best early winter pear. If kept in a warm apartment, it will ripen in autumn, even as early as the 1st of October; but by keeping cool, according to the mode just mentioned, they may be had even as late as the first of the year. There will be some variations in different seasons. We have known the Winter Nels to ripen fully in November, when the autumn has been warm, but the period was retarded some weeks by keeping the pears in a cool place.

After the Anjou, the Winter Nels and Lawrence, the Josephine de Malines is the best, ripening in January, and keeping till February. Doyenne d'Etampes ripens about the same time, but is not quite so good in quality. It is, however, a hardy tree and good bearer, and is of the whole a desirable sort. The Easter Pear, when it matures well, will keep into April, and ripen into a delicious fruit, but, on the whole, is rather an uncertain sort. Josephine de Malines is poor in some places, but is most delicious and excellent. It grows well on quinces.

We should not omit the name of the *Vire* of Winkfield as an early or mid-winter pear of value. It is a free grower, and a prodigious bearer of the fruit large and fair. It is of a small, when well grown and ripened, of good quality for the table, being pleasant and agreeable, although not rich, but its chief value is for baking and stewing. The principal reason why the fruit is so poor is that it is allowed to overbear.—*Country Gentleman.*

Evergreens Among Pear Trees.

Hon. E. H. Hyde, Vice-President of the Connecticut State Board of Agriculture, planted a number of small evergreens in a circular form around some pear trees, simply for ornament, intending to keep them down in the front of a hedge, and to allow the pear trees, "for effect," to appear above them. The plan was neglected after a while—as many such plans are—and the evergreens soon outstripped the dwarfs, and towered up above and nearly encircled them. It came to be noticed after a while that while the pear trees away from the evergreens were irregular bearers of rather inferior fruit, those within the circle were almost invariably prolific, and the fruit was of superior quality. There was no other apparent cause for this result than the influence of the evergreens, hence the inference in favor of protection would seem to be a just one.

This discovery, however, is not a new one. The influence of shelter belts on fruit trees, as well as on farm crops, has long been known and taught by enter-

prising horticulturists, but like other improvements not yielding immediate revenues, people have been slow to adopt the plan. There is not a particle of doubt as to their good effects both for shelter and for beauty. An orchard of any kind interspersed with them would, without doubt, yield better returns, even with one-quarter or one-third the space given to evergreens. Their pyramidal shape makes the shade they cast comparatively small, hence that is a slight objection. It is hard to occupy space at the expense of necessary convenience, they can be clipped, headed back or sheared into almost any form, and their density of foliage may be increased thereby. If largely planted over the country as screens, shelter belts, or only interspersed here and there through orchards and farms, they would not only exert a special protection on adjacent orchards, and vastly beautify the landscape, but would effect a general amelioration of the climate, which would be a universal benefit. The culture of evergreens is only in its infancy as yet, and every fact or incident tending to promote taste or inquiry in that direction may justly be regarded as a public benefit.—*Working Farmer.*

What the Community Owes to the Horticulturist.

No person can go over the proceedings of our own, or any other Horticultural Society, as now conducted, and not be struck with the great amount of practical information elicited and communicated in regard, not only to fruit culture, but whatever relates to the beautifying of our homes with shade trees and flowers, and the spirit which influences these gentlemen to come together, from distant points in convention, from year to year, to debate these matters, is so commendable that there is not a class in society that should not recognize and be grateful for it.

Just so far as beauty and utility is seen around a modern residence, in the shape of well arranged and attractive grounds filled with grass and flowers, and the pleasant shade which, in summer, is grateful to the passer-by, in contrast to barrenness and want of taste, that far should every one see the importance of even ornamental gardening; but when we add to this the sight of fruits, which beside their beauty, go to cheapen the supply so acceptable to all, we should then, if no sooner, try to trace effects to causes, and see in every active member of a Horticultural Society, a benefactor to the community in which we live, and even to the race as well.

And we do not believe it is, in many cases, anything worse than thoughtlessness, which makes most men overlook the services thus rendered. To be sure, it is not every one who knows that from the crudest, and apparently most worthless wild growths of the wilderness, have been brought the richest fruits known to modern times, that by patient experiment and watchfulness from day to day, and from year to year, those choice productions have been evolved that now gladden even the least appreciative who look upon and partake of them. But when, in addition to the ordinary care bestowed upon these growths in their native climes and soils, we find men, by unwearied industry, adapting them to our own climate by consulting what is possible in far away Russia, and bringing the best specimens thence to make them successful here we say again, that no need of gratitude is too much for such men, and that the debt incurred by the community should be recognized accordingly.

We hope more and more to see all take an interest in the proceedings of our own Horticultural Society. Demonstrated, as it has been, that some of the best and most acceptable fruits known to the world can be grown here to perfection, let us no longer be dependent upon neighboring communities for our needful supplies when we can, with suitable care, depend upon ourselves.—*Farmers' Union.*

GERMINATION OF SEEDS.—Some curious statements have recently been published in regard to the extent to which the germination of seeds can be facilitated by chemical agencies, especially by ammonia and oxalic acid. By placing them in a solution of the latter substance, they will begin to germinate within one or two days, even after having been kept for forty years, and are then to be planted out in the usual way. Coffee seeds, which are proverbially hard to start, are best forwarded by placing in a covered vessel, containing equal parts of water and of spirits of sal ammoniac, at the ordinary temperature. At the end of the twelve hours the roots will be found to have started, and even the young leaves can be discovered by careful inspection. In 1834 wheat was exhibited to the German Scientific Association, raised from seed found in an Egyptian tomb, 2000 years old. This had been soaked for a considerable time in fatty oil before planting.

THE FRUIT GARDEN.

Manuring the Vine.

The vine has been called a gross feeder, and its roots have been thrust into all kinds of borders, some even full of carrion. Our most successful cultivators, however, admit that such material is unfit for vine culture. From one extreme we are apt to rush into another, which must be equally avoided; for it is obvious that a crop of grapes must needs take a good deal out of vine plants, and that the soil must be kept in good heart to keep up their powers of production. This is the more necessary, as the use of solid manure as a component part of the root run is deprecated. Rich, rank compounds constitute one of the greatest drawbacks to the culture and ripening of out-of-door grapes. Hence the borders can hardly be made too dry, fleet, or even poor. Maiden loam may be even too rich for out-of-door grapes, and may need its strength lowered by a liberal infusion of brickbats, lime rubbish and pure silica. The few bones that may be incorporated with the soil decompose so slowly as to yield up but little food to the roots. All this is favorable, but it likewise necessitates liberal feeding when the first and second swelling of the fruit, stoning and coloring, the energies of the plant are tried to the utmost, and these are the times to apply stimulants. Hence the importance of feeding vines chiefly with liquid food. It is at once available for the roots, and it neither injures the texture nor permanently enriches the earth. There is no better liquid food for vines than house sewage, a liquid compounded of all kinds of waste, enriched with soap-suds and dish washings. Lacking this liquid, watered down to the safety point, with three to one of water, good guano, in the proportions of an ounce to a gallon, also forms a good liquor for vines. And a nourishing corral can be made by placing a bushel of cow's or sheep's dung into a twenty gallon cask, incorporating them thoroughly and diluting them, as they are drawn for use, into fifty gallons of vine drink. The chief point in this mode of feeding is to give enough to reach every root, and to give no more again until the roots are dry. With thorough drainage beneath, and a border full of roots, there is no fear of vines in full growth having too much water. Of course, however, out-of-door vines cannot utilize or convert so much moisture as those under glass, and some judgment is needed to nourish vines wisely with liquids. Solid top dressings constitute one of the simplest and best modes of manuring vines. They keep out the drouth and furnish strength at the same time. A mixture of crushed bones sprinkled over the surface, or a thin coating of superphosphate of lime or guano, forms a useful top dressing; but the best of all is a coating of from 2 to 6 inches thick of half-rotted farmyard manure or house excreta treated with dry earth and stored up dry for a year. The latter especially has a wonderful influence upon vines, and is probably the richest and best of all vine manures. So admirably is this adapted for grapes, that if any one would start a vineyard in connection with Moule's dry earth-closet system, he ought to make a fortune. The great point with out-of-door grapes is to steer a middle course between excessive feeding and impoverishment, so that vines may be furnished with strength sufficient to finish their crops without becoming too gross or strog.—*The Garden.*

On the Formation of Vine Borders.

The formation of vine borders is an operation that should be performed with care, judgment, and forethought. The vine is a plant of many generations if favorably circumstanced, that is, if the conditions favorable to prolonged health and vigor of the roots can be maintained, and the atmospheric requirements are attended to; with skill the plant is slow to decline from mere age. In some notable instances the vine is found to maintain its vigor and fruitfulness to a very old age unimpaired, producing heavy crops of the sweetest fruit, if not the largest in bunch and berry, up to the present time, after having been subject to the management of several generations of men. Hence the importance of preparing well the borders in which vines are to be grown. There are not many cases where the soil and subsoil are so well adapted to the growth of the vine as that any kind of preparation may be dispensed with before the plants are planted in it. Even where the soil is all that could be desired, the drainage is generally, if not always, defective, and this is a point of the first importance. Not only should ample means be provided for carrying away the water that falls upon the border, but

also for the prevention of evil from springs rising above the level of the base of the border. For this purpose good drains should be laid across the border, and a capacious leader along the front. If the bottom is naturally cold and wet, it is well to concrete it to the depth of 4 or 6 inches, in order to prevent the roots from penetrating beyond the prepared soil. This is less necessary if the subsoil is naturally warm and good; but in any case it is expedient to place a layer of broken stones over the drains to the depth of 9 inches or a foot. The bottom should slope outwards at an incline of not less than 1 inch to the foot. The depth of the border may be from 2 to 3 feet, the former depth at the front, the latter at the back, and the width will be ample if it is twice the width of the house—that is, the outer border should be as wide as the inner one; and whether the vines be planted outside or inside, the front wall of the house ought to be built on arches, so as to allow the roots to spread over all. The vine flourishes best in rich fibrous loam, largely composed of sandy or gritty particles. This is best procured from old pasture, the soil to the depth of about three inches being the best portion, and it should be cut, and allowed to lie till frost occurs sufficiently severe to drive down wire-worm, which often abounds in such pasture, to a depth beyond the cut sods. Then the sods may be carted and stacked for use. The soil is better to be stacked for five or six months, afterwards it may be chopped down and thrown in ridges, with the view of adding other necessary ingredients to the mass. During the chopping process, a quantity of lime rubbish, crushed bones, &c., should be incorporated with the soil. Mr. Thomson, in his admirable treatise on the Vine, gives instructions on this point which cannot be surpassed for soundness. He says "To ten carts of this soil add two of lime rubbish—old plaster is preferable, as it contains hair, itself a good manure—ono cart of thoroughly charred wood, including any wood ashes that may be amongst it, one cart fresh horse-droppings, 4 cwts. broken bones about 1 inch square, and, if to be had, 2 cwts. horn shavings may be added. Have the whole mass turned over several times, but always in dry, if possible frosty weather before it is wheeled in to form the border. This, I can guarantee from my own experience will form a safe and fruitful vine border. The addition of more manure might give stronger canes for a few seasons, but they would be much more liable to suffer from excess of wet in winter, and when it is considered how easy it is to feed the roots of the vine with liquid manure at the seasons when it is most required, I can see no reason, but the opposite, in favor of making vine borders so rich as some advocate. When the soil is what is termed clayey loam, I would add the same ingredients to it, with the addition of two cartloads to the ton of burned clay, which acts as a mechanical disintegrant, and keeps the particles of clay from getting too close together, and so preventing the entrance of air into the soil or the percolation of water through it." Of burned clay, Dr. Lindley, in his able work, the "Theory and Practice of Horticulture," speaks to this effect:—"Why burned clay should be better than that sort of soil in its ordinary condition is sufficiently obvious—its texture is changed. In its natural state it is so adhesive that air cannot get into it. It also offers great mechanical opposition to the passage of roots through it; and hence it is exclusively inhabited by a coarse and worthless vegetation. Burning changes all this; the particles of clay lose their adhesiveness, and this gives a new character to the soil, which offers freedom to the entrance of air and exit of water, and which crumbles beneath the advancing roots of any race of plants; but that is not all the difference between burned and unburned clay; the roots of plants which it previously contained were unable to decay, and are now by fire reduced to saline constituents, and so enrich the soil. Moreover, the burned particles of clay acquire the power of absorbing ammonia from the atmosphere, and holding it within their pores till showers fall and wash it into the land, where it immediately acts as a nourishing food for plants.—*North British Agriculturist.*

Cherry Culture.

Among the early fruits of the season none are more acceptable than the cherry. As with strawberries, so with good ripe cherries, almost everybody likes them; but to grow them everywhere successfully is a very difficult matter. We are going to show, however, that very much depends upon skill or mode of culture. Where we find a man who has made the culture of any variety of fruit a specialty, giving his chief attention to a particular kind of fruit, experimenting for years, in a climate like ours, we are prone

to believe he has learned something that everyone don't know.

Training the Cherry Tree.

With this view of the subject, we introduced to our readers the practice of Mr. Wm. C. Gieger. This gentleman has made the growing of fine cherries a specialty, and has been eminently successful, and yet, the first question a person would be likely to ask on seeing his cherry trees, would be—Why don't he

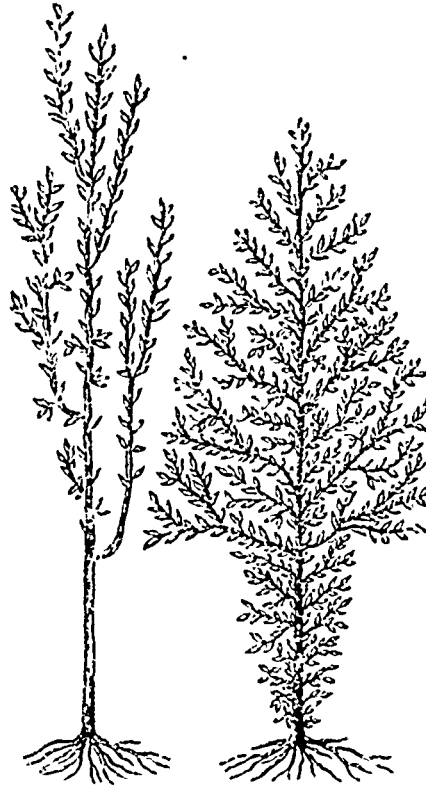


Fig. 1.

Fig. 2.

trim up his trees, and make them look like something?

All who have attempted to grow cherries know how prone the trees are to make an enormous upright growth, almost destitute of side limbs, and generally producing a tree of which Fig. 1. is a type. It is common to give to cherry trees in this climate a low trunk, better to shade it from the effect of the sun's heat, but still it is common to trim to a smooth trunk from two to four feet from the ground.

The method so successfully pursued by Mr. G. is quite the reverse of this, as indicated in Fig. 2. To commence with his mode of culture, we begin with his seedling trees which he procures at one year old from six to eight inches in height. These are set out, headed back and make a growth sufficient for budding in July or August a few inches from the ground. These trees at one year old from the bud, and two from the seed, are then set out where they are to stand, and now comes in the first of the peculiar treatment they are to receive.

Every bud upon the entire length of the body is allowed to grow and produce a shoot, and when these shoots or limbs—all but the upper terminal one—have attained a length of six or eight inches, they are checked by pinching out the terminal bud; the effect is to convert them into fruit spurs. This practice is continued up to the point where it is desired to have the tree form its top, which in Mr. G.'s practice has been from 2½ to 3 feet from the ground, though in future he will adopt 2 feet as the rule.

At this height the side shoots may be even a foot in length, but by being frequently pinched in, are almost entirely fruit-bearing spurs. In forming the head of the tree, a similar practice is adopted, except that now as in Fig. 2. the side shoots are allowed their full length, but the one central shoot which should always be maintained in cherry trees, is checked in its upright growth when 18 inches long, by pinching the terminal bud. This has a tendency not only to cause a spreading habit in the tree, but it also causes a thorough ripening and full maturity of the wood.

The next year and the next, the same course is pursued, at any and all times pinching in the terminal buds when they have reached a length necessary for the perfect symmetry of the tree, as in Fig. 2. The rationale of this method is this, the side shoots along the trunk of the tree to its first regular limbs, serve

to shade the bark from the intense heat of the sun, so that there is never a "sun scald" of the bark so injurious to all trees, both from direct cause and from the borer which always attacks the tree if at all, in those dried sun scalds.

Another excellent effect produced by the growth of these side limbs, is the strengthening of the trunk of the tree, giving it enlarged size and vigor, every leaf adding its quota to the direct growth of wood. As an offset to what may, by some be deemed an object because of the growth of these trunk limbs, we offer this, that as many as three pounds of as splendid cherries as the tree can grow, are produced upon these fruit spurs below the regular limbs or branches forming the head of the tree.

As regards the simple matter of form, we cannot even see that Fig. 1. with its smooth-trimmed, naked trunk, has a particle more of beauty about it than Fig. 2. although it has always been the fashionable cut and trim for orchard trees. When the top of the tree becomes large, these side shoots from being much shaded, naturally drop off, but leaving no large scars or wounds as where the knife is injudiciously used. Mr. G. never uses the knife in giving form to his young trees, but relies entirely upon his fingers and the pinching-in process.

We commend this method of culture to the attention of those who have found it difficult to grow the Heart and Bigarreau cherries.

How to Avoid Risk from Frost.

The frost of the 4th and 5th of last month (April) were said to be the most severe ever felt at that season in this part of the State. The thermometer on the morning of the 5th, at Anaheim, was down to 28° Fahrenheit, which is the lowest point it has reached at any time during the past three winters, and then on not more than five or six occasions. Therefore it is safe to conclude that anything which escaped injury, on this occasion, might be considered safe in the future.

Previous frosts have been partial, affecting only certain vineyards and parts of vineyards, and no facts were developed upon which to base a theory; but this was general, no vineyard escaped, but some were much more seriously effected than others. A close and earnest investigation developed the following facts:

The vineyards protected by thick ledges of trees were the most severely frosted, and "per contra" those more open to a free circulation of air, were the least severely frosted, those near buildings or planted among fruit trees, (trimmed up so as not to prevent a free circulation of air) entirely escaped.

The Anaheim vineyards for greater convenience of cultivation are trained low, rarely raising more than two feet above ground, this I am certain is a mistake, for I have long observed that the closer to the ground, the greater the damage from frost. In proof of this I noticed that vines trained upon trellises, in the open vineyard, to a height of from four to six feet, entirely escaped, whilst the surrounding vines trained low as usual were all badly frosted, with the exception of the difference in elevation the conditions were exactly the same, there were several instances of this with in all cases the same result.

The frost was much less severe on the mesa or table lands, which is owing to the elevation, the low-lying lands are always the worse frosted.

My young tomato plants growing in boxes raised three feet from the ground, were scarcely touched and not materially injured, proving a wise foresight in raising them up; the volunteer plants growing on the ground were killed.

In one instance a small plot of low-trained vines that were pruned very late escaped without material injury, but late pruning is objectionable on account of bleeding, which weakens the vine, and if a very late frost occurs will do no better than early pruning, besides the winds start early and the vineyards must be ploughed, which cannot be done until pruned.

The facts I have stated seem to indicate clearly that high training is an effectual security against frosts, let them come early or late, and in this case early pruning seems to be no objection.

I would advise training on trellises to the height of about six feet, by so doing I am certain that double the ordinary crop of grapes can be raised from the same vines, and the only difference in cultivation is more hoeing and less ploughing. Any regularly planted vineyard can be trellised one way, at an expense of about \$50 per acre, viz.

Inscrub 2½-inch pickets 7 feet long into the ground 12 to 15 inches, in the intervals between the vines in the row, and fasten to these pickets three split, slats, with composition or galvanized iron nails, and to this train two strong canes from each vine. After the

first season all trouble will be at an end. At this place the cost of lumber, etc., would make the expense about fifty dollars per acre but as it would double the crop of grapes, the excess of the first crop would repay the outlay. And during succeeding seasons the current expenses would not be materially increased, whilst it may be true, as all danger from frosts would be removed. If the observations and experience of other persons are at variance with mine, I hope they will make them public, as my only object is to do it truth, a free discussion is the proper way to get at it; if on the contrary the observations of others confirm mine, then so far as frosts are concerned, by adopting the high training system, grape growing can be reduced to a mathematical certainty. —*Rural Press.*

Process of Drying Fruit in the Sun.

There are many processes of drying fruits, the most common being on scaffolds in the sun. It is unnecessary here to describe the process—all are familiar with it—but we will call attention to a few which none who would make success of drying fruits in the sun, should overlook. It is that nine times out of ten, if fruit thus dried be packed away without the necessary precaution of scalding, it will be ruined with worms in less than one month after the packing. We would therefore lay it down as a rule always to be followed, when your fruit, of whatever kind, is sufficiently dry, dip it in boiling water for at least half a minute, after which again expose it to the sun or place it in an oven until the surface water has been evaporated. It is then ready to pack or send to market. Besides insuring against danger from worms, this scalding will greatly improve the quality of all dried fruit however it may be dried.

Artificial Processes.

A process invented and patented a few years ago in Maryland has been used very successfully. The machinery used consists of a tunnel five feet square and fifteen feet long, in which the fruit, after being prepared by peeling, etc., is placed for drying on shelves, one above the other. The air at the bottom of the tunnel is then heated by means of pipes to about 180 degrees—at the top it will be about 120. By means of machinery the shelves are gradually passed down through the tube, and when at the bottom, having been dried sufficiently by the heated air, are discharged into a receiver ready for packing. This is a simple and quick method of drying, and it is claimed to be superior to the sun process, inasmuch as the fruit is not in the least fermented. All the natural flavor is therefore fully preserved, so that the fruit has all the freshness of green fruit.

Another process may be described as follows: The fruit is cut up in thin pieces by machinery, and then placed upon galvanized wire cloth in a close room that excludes all dust and insects. A heated current of air is then forced through it by a powerful exhaust fan, which completes the drying process in from four to six hours. Fruit dried in this manner commands fifty per cent. more than sun dried fruits of the same varieties. This latter process is very economical and effectual, and we would recommend those who have any quantity of fruit to look to it.

Canning Fruit

The popular mode of preserving fruit of late years is by canning and excluding the air so as to prevent the tendency to decay. Any means by which the air can be effectually excluded from fruit will preserve it in the same condition but we cannot the time the air is excluded, any length of time a thousand years. The most common vessel used for this purpose is the tin can. This is probably the cheapest, but for all fruits that have a considerable acidity glass is much better. Fruit acids act upon the tin and thus the fruit itself acquires a disagreeable tinny taste, and becomes actually injurious instead of beneficial as all fruit should be to health. —*Sacramento Record.*

Uses of Grapes.

Men can live and work on grapes and bread. The peasantry of France, Spain and Italy make a very satisfactory meal in this way, and of the wholesomeness of the diet there can be no doubt. Medical men constantly recommend the use of grapes for their patients. To sit under one's own vine has, in all ages, been considered the acme of rural happiness—an emblem of peace, a symbol of plenty, and a picture of contentment. That pleasure, though perhaps not in all its fullness, may become the heritage of thousands in these temperate climes. Neither our latitude, longitude, nor erratic climate forbid the growth of the grapevine throughout the larger part of the country. In many districts its fruit will ripen

perfectly. In almost all it would ripen sufficiently to be useful for eating. Ripeness of grapes are universally esteemed. No one tires of them. If any one declined to eat their own grapes or grew more than were needed for home consumption, there is a ready market in most neighborhoods for grapes at from four pence to a shilling a pound according to quality.

Thus a flourishing vine on the gable end or front of cottages might make or save the rent many times over. I know many cottage gardens in which the vine or vines are not only their chief ornament, but the main source of profit. These might be multiplied up and down the country to infinity. There need be no fear of an excessive supply, neither are ripe grapes so perishable as most other fruits. Cut with a piece of wood attached, and placed in bottles of water, or even suspended in a dry room, the ripe fruit will keep good for months, and even improve by keeping. —*The Gardener.*

MANURE FOR HORTICULTURAL USE.—Nitrate of ammonia, 400 parts; biphosphate of ammonia, 200; nitrate of potassa, 250; chloride of ammonium, 50; sulphate of lime, 60; sulphate of iron, 40. These ingredients are pulverized, well mixed, and kept in well closed dry bottles. Sixty-five grains of this mixture are dissolved in one quart of water, and to each plant (in pots or in open ground) is given weekly a dose of from 400 to 1,200 grains, it is best to pour the liquid in the saucers in which the pots are placed. This is highly recommended by Jeannel, the French horticulturist.

NUTRITIVE PROPERTIES OF APPLES.—It is stated that by a careful analysis it has been found that apples contain a larger amount of phosphorus, or brain food, than any other fruit or vegetable, and on this account they are very important to sedentary men who work their brains rather than their muscles. They also contain the acids which are needed every day, especially for sedentary men, the action of whose liver is sluggish, to eliminate effete matters, which, if retained in the system, produce inaction of the brain, and indeed, of the whole system, causing jaundice, sleepiness, scurvy, and troublesome diseases of the skin.

THE KITCHEN GARDEN.

After the ground is in readiness to receive the seeds, one of the first of our vegetable list that will claim attention will be the

Lettuce.

Unless a frame is used for starting plants earlier than can be done in the open ground, it will be very desirable to select some well-sheltered spot, fully exposed to the sun, where the ground absorbs and retains the heat, and having prepared it thoroughly according to directions already given, and marked it off into drills with the marker, the seed may be sown evenly in the rows and covered lightly with fine soil.

The secret of having lettuce tender and brittle lies in securing rapid growth, which can be done only where there is sufficient warmth and moisture. If the weather be dry, the plants will be stimulated by an occasional watering with tepid water. After the plants have begun to grow nicely, they may be thinned out and the surplus plants set out six inches apart each way. Cabbage lettuce will head well in the seed bed if allowed sufficient room, but they usually head more uniformly if transplanted, and seem to be in less haste to run up to seed. They do not head well if grown so late that the heads are not formed before the hot weather of summer; if it be desired to have lettuce head then, the plants should be set on the north side of some building or high board fence where they will be shaded as much as possible from the intense heat of the sun.



A well-formed head of lettuce should resemble the cut here given. When grown like this, the inner leaves will be well blanched, tender and sweet. The Cos varieties do not form such cabbage-like heads; they are more conical, not solid, and do not usually blanch well without being tied up. Of the cabbage varieties which we have tried we give the preference on the whole to the

Drumhead or Malta.

It remains some time in head without running to seed, and the heads are large, compact, tender, nicely blanched in the centre and of good flavor.

All the Year Round

Endures both heat and cold well, and forms small close heads.

Crown Dutch

Is tender and of good flavor, but the heads are not very solid, and it does not endure heat very well.

Tennis Ball

Is exceedingly well adapted to forcing under glass, the heads are small but very compact, and blanch finely. It does not answer well in hot weather.

Nonpareil

Is, on the other hand, one of the best summer varieties, enduring the heat remarkably well, forms fine compact heads, well blanched, tender and fine flavored.

The Paris White Cos

Is the most popular of the Cos varieties, the heads blanching tolerably well without tying, very brittle and enduring the summer heat.

Probably some of our readers are willing to take the pains necessary to have this most acceptable spring salad a little earlier than it can be had by first sowing the seed in the open ground in spring. So then we say select a nice piece of rich, friable soil, and having prepared in it a bed for the seed in the usual way, sow some of the more hardy sorts, such as the Brown Dutch, Tennis Ball, or Hardy Green Winter, about the middle of September. In about a month after prepare some cold frames, in other words hot-bed frames with sash, but without any hot-bed, or bed of fermenting manure to generate a bottom heat. Place these frames where they will be protected from the sweep of wintry winds, after having first prepared the ground on which you place them, by the requisite tillage and manuring, to receive the young lettuce plants. Into these frames transplant the lettuce. A frame three feet by six will hold six hundred plants. As the weather becomes cold protect them with the sash, being careful to draw it off in mild days. As the severity increases cover with dry leaves, but remember that the plants are sufficiently hardy to endure twenty degrees of frost, that is 12° above zero, and therefore the quantity of leaves must not be so great as to keep the plants too warm, lest they damp off. As soon as the ground can be worked in the spring the plants should be taken out of the frame and planted out in some warm well sheltered spot, and cared for as if raised from seed that spring. A few plants can be left in the frame, and by drawing on the sash in chilly weather and at night, a few heads may be cut in advance of those in the open ground.

Do Plants Exhale Carbonic Acid.

Plants have commonly been thought to differ from animals in the gases which they secrete; the animals parting with carbonic acid, while the plant gave out oxygen. Dr. J. C. Draper, of New York, however, maintains that all living things, whether animal or plant, absorb oxygen and give out carbonic acid; and that the life of the plant is one continuous drinking in of oxygen gas. Having grown plants similarly nourished in the dark and in sunlight, he found that all the same parts were produced in both cases almost at the same time, and that the slightly slower evolution of the series grown in the dark is marked by a slightly smaller weight, while the same plant measured by night and by day grows slightly faster in darkness than in sunlight. The roots of plants grown under both circumstances throw out the same kind of excrement. Therefore, as the evolution and weight and root-secretion agree, he urges that the carbonic acid has been in both cases thrown off as a consequence of growth, and has never been absorbed by the roots and then given out a vapor from the leaves. In conifers and fungi, which, like seedlings grown in the dark, never give out oxygen, he appears to think that the carbonic acid they seem to give off is really only the carbon of the air left around the plant as a consequence of the rapidity with which the oxygen is absorbed; and when plants are producing their flowers and seeds, the rate at which they seem to part with carbonic acid is greater than with many animals at any time. Oxygen is given off only from the green parts of plants and trees—the leaves, twigs, and young shoots; and only when the sunlight is falling on the leaves. Dr. Draper's argument might have been made even more convincing if he had availed himself of Boussingault's experiments, which showed that carbonic acid is decomposed day and night, by green leaves, in the ratio of one part by night, to about sixteen parts by day. —*Home Journal.*

THE FLOWER GARDEN.

Garden Design.

A Small Rose Garden.

The annexed illustration is a representation of an instructive little Rosery designed for a villa garden. Though small, there is, however, plenty of variety in it, and there is, too, no want of room for comfort in inspection of the beds or for passing a friend on the walks, which are of Grass. The beds are designed so as to leave large spaces of Grass at their extremities, so that there may be ample accommodation for visitors without crowding, and these little patches of lawn set off the opposite beds to advantage, while from both lawn and walks are nice views of the surroundings. These are indicated by arrows, which show how a pretty nook or peep is obtained both by looking into and out of the Rosery. Of course, in

trary, have a full and open design. The two projecting masses serve to cut off the garden from too full exposure to the lawn, and in one of these, also, Roses are planted. The views from this little Rosery to the lawn are very picturesque, though the place is small, level, and formal in the outline of the ground. Some fine Cedars and other trees, and an open lawn, however, make up for deficiencies. The plan, it will be observed, has the additional advantage of a bird's eye view. So that not only is it accurate as a plan, but as the plants are depicted in it on a small scale, the type of vegetation in each part may be recognized. Then, again, the names and not references are given, so that the plan is easily understood in all its parts. This is the second example we have given of a new and, as it seems to us, greatly improved style of garden plans. It will we trust, lead to much improvement in garden design, as we hope by its aid to give plans of all the best designed gardens in this or other countries.

It is much to be desired that the plan of planting other choice subjects in the usually half-bare beds, as shown above, was generally adopted, as by its means

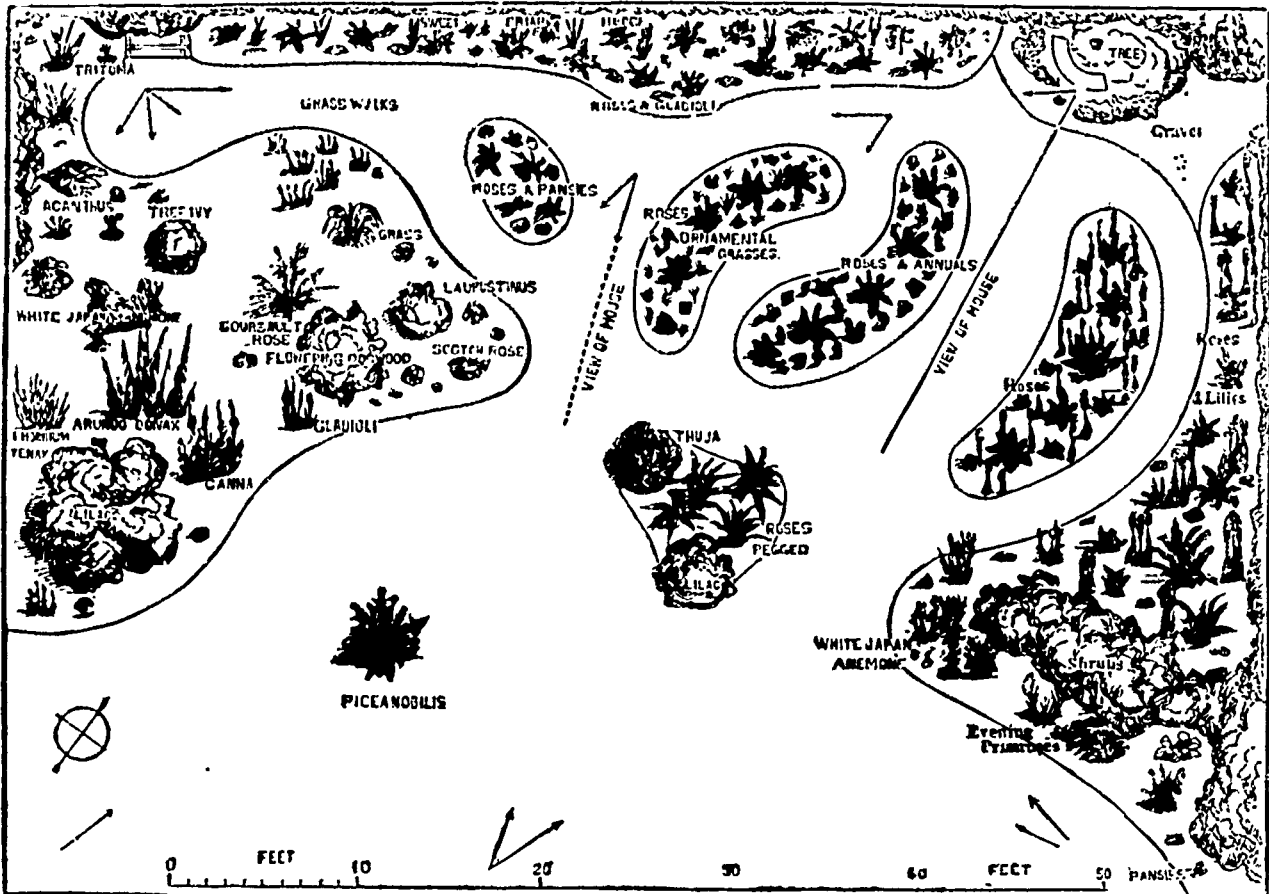
Turf is, perhaps, one of the most useful of all edgings. But its breadth should not be less than about 15 inches in a dry climate. But a wide margin of turf of blue grass, is, perhaps, the prettiest and most useful of all edgings in good sized gardens, and wide walks; it is durable if dressed often with rotten manure, and well watered.

Several other herbaceous plants are used as edgings at times, as pinks, primulas, primroses, polyanthus and others, as well as a whole host of annuals. But these are rather apt to have a temporary existence compared with those we have before named.

Double and single violets make tolerably good edgings, but certainly not such neat, compact and well defined ones as are required. Some small leaved sedums seem to answer pretty well in this respect.

Wherever there is a particular kind of plant available for this purpose, it is perfectly right to use it, and as soils and climates differ, as well as tastes, it is better to have a choice of objects. Now as to other things.

Stone edging, dressed stone beading, showing about three inches above the ground, and less than



every instance the form of such a Rosery may be varied; its level may rise or fall, the entrances and exits may be anywhere, upon the principle of providing Grass walks and interspaces. One of the chief advantages of a Grass walk is its saving of room, and there is no edging to obstruct wheeling or other operations. The plants are on their own roots, a system of culture which possesses several advantages; one may, for instance, peg them down on the bed or let them grow up naturally; or, in short, the treatment may be annually varied according to taste. Another point worthy of observing in the annexed plan is the mixing of Roses with plants of other descriptions, such as Roses with ornamental Grasses, Roses with Gladioli, Roses with Lilies, and Roses with choice annuals. Than such combinations as these nothing could be more delightful. Mignonette may be sown broadcast through Roseries with the best results; but not too thickly, for, though it delights in a Rose soil, it is apt to exhaust it too much. On the left of the plan larger spaces have been left than on the right, so as to afford an opportunity for a show of fine-foliaged plants together with innumerable little gems in the foreground. In planting such a garden as this, avoid narrow slips of border, and odds and ends of beds not bigger than tea-trays; on the con-

many other beauties may be added to the Rosery. The culture of Gladioli or choice Lilies and the like here and there in the more open spaces between the Roses would not be detrimental to the production of the finest Roses in any appreciable degree.—*The Garden.*

Edgings to Walks.

An edging of some description is as necessary to a walk as a frame is to a picture; fortunately, also, there is a greater variety of materials suitable for edgings than for walks—the latter depending so much on the local productions of the place; whereas edgings are often formed of living plants, which vary considerably in appearance and effect. A few of the most common in use may be mentioned here, as well as some other things in use in like manner.

Box edging is well adapted to most soils and climates.

Gentianella, next to box (where the latter thrives well) is generally much esteemed, particularly for its bright blue flowers. This also likes rather a moist soil, and frequent rains, and will not answer well here, although it will do better in our climate than the dwarf box.

Double Daisies make a neat edging, but do not bloom very long, and they cause some trouble to keep them within bounds.

Lemon and common thyme are also occasionally used for edgings, but they are only fit for wide walks, and in places where nicety of outline is not regarded.

that in breadth, look remarkably well, when correctly placed, to do which it ought to be on a slight foundation of stone or brick work. But this will not be adopted except by persons having "long purses."

We do not admire fancy tiles, which are sometimes used. They seldom look well. They will suit best a formal city garden.

Flints and small boulders, or pebbles, of something like a uniform size, and partly imbedded into the ground, make a tolerably good looking edge for a time. But they are liable to get loose, and soon become discolored. Shining stones, also, look well for a time, but are liable to the same objection, as is also the shingles gathered on the sea coast, or from rivers.

Oak boarding, or plank, is sometimes used for kitchen gardens of large size. But even oak is perishable and expensive in the first instance; otherwise, its appearance (when painted) is good.

Ironwork is generally too expensive. Slate edgings are too thin to look well, and when thicker are very expensive on this coast.

Good hard kiln bricks certainly make the best and cheapest of all edgings besides the living ones, or where there is too much shade. Curved lines may also be made as well as straight ones, and are alike available under trees and in the open ground, and they may have a live edging of moss *sedum* planted by the side of them, or, if desired, allowed to cover them entirely. They certainly form the firmest and the best of edgings, short of those more expensive articles, manufactured expressly for the purpose.—*Rural Press.*

Correspondence.

To Insure Heifer Calves.

On this point a skilful breeder of our acquaintance writes:—"Many farmers wish to breed heifer calves from favorite cows. To accomplish this nothing more is necessary than to watch carefully when the cow is in heat, and before milking her, to take her to the bull. Five times out of six, the resulting calf will be a heifer. The rule however will not work so well when the opposite sex is required. If the rule fails under some cases of management, the cause is due to not taking the cow in time, as the instances from which the above rule are taken were in constant trial for ten years, during which time a large dairy of heifer calves was reared from two or three favorite cows. It seems that the full udder causes the sex to be pretty nearly determined, as even if partially relieved by milking, the desired result is not by any means so likely to follow."

The Chinese Yam.

A correspondent at Bryantown writes to us concerning this vegetable, at the same time inquiring where the tubers may be had. He refers to a communication which appeared in the CANADA FARMER for 1868, at page 177, speaking very highly of this esculent.

We are not aware that any one in Canada has made any thorough experiment with it. The late Judge Harrison used to grow it, and once expressed himself to the writer as well pleased with it as a vegetable for the table. It is many years since this Yam was introduced to the agriculturist of America, and there is much less said about it now than there was shortly after its introduction. The natural inference is that it has not realized the expectations then entertained. We do not know where the tubers may be had, but would advise our correspondent, if he wishes to give it a trial, to write to some of the seedsmen in New York.

Pine Borers.

(To the Editor of the CANADA FARMER.)

Sir,—I have three second-growth pine trees in my grounds, which to my horror and consternation I have watched dying slowly, with no perceptible cause. I now discover that "borers" are girdling the trees with the greatest assiduity, keeping up a terrific "scrunch" day and night. Please say whether borers are the cause or effect of the sickly condition of the trees—that is, whether the insects attack healthy trees.—Yours, &c.

A SUBURBAN.

REPLY.—So far as our observations have extended, the Borers do not attack perfectly healthy trees. It is usually in some place that has been injured that they first effect a lodgment and from thence they bore into the sound and healthy parts of the tree. We are inclined to the presumption that from some cause the trees have become unhealthy, or they have received some bruise or injury, hence the presence of Borers. Yet it would be going very far indeed to say that Borers never attack perfectly healthy pines, yet we believe it is not their custom. If the trees have first become unhealthy, we should be inclined to look for the cause in the deposit of saline matters near the roots of the trees. Even a slight deposit of salt, such as might be derived from the excretory fluids of dogs or other animals, quadruped or biped, might be sufficient to cause ill-health in the trees. Cherry trees are very sensible to such saline deposits.

R. M.—An article on the subject will appear in our next issue.

Weight of Hay by Measurement.

In answer to our correspondent from Black River, who desires a rule for weighing hay by measurement, there are several things to be taken into account, viz., 1st, the kind of hay, as some kinds are heavier than the same bulk of others; 2nd, new hay is about one third heavier than the same bulk of old hay; and 3rd, that hay of all kinds tends to pack more closely the longer it lies, and, consequently, a cubic foot of newly-packed material will be very considerably lessened in bulk a month afterwards, though it may still weigh the same. As a general rule, average timothy hay newly packed on the load, or in the mow, requires 600 cubic feet of space per ton. To find therefore what quantity of hay can be contained in a given space—a stable-loft for instance, we take the dimensions as follows. Suppose the loft to be 30 x 40 feet, and the height of the eaves above the loft 3 feet, we get 30 x 40 x 3, equal to 3600 solid feet as the contents of that portion of the loft above the eaves. Adding this to the 3600 feet already found, we have 7200 cubic feet, and this divided by 600, gives 12 tons as the capacity of our stable-loft. Other calculations are similarly made, remembering however, that if the hay is old, and has lain packed a long time, then 600 solid feet should weigh, not a ton, but a *third more* than a ton, and so on.

Starting a Henhery.

A correspondent states that he intends starting a henhery, and wishes to know. (1) How much land would be required for a run of 500 hens. (2) Of what size should the hen house be to accommodate that number. (3) The best mode of constructing such a house. (4) The quantity of food necessary to supply that number of fowls for one year. (5) What profits may be expected per annum. (6) The best breed to keep. To satisfactorily answer these questions, our correspondent should supply us with much better information than that furnished. Mr. Warren Leland of New York, a very extensive poultry breeder, never allowed over 100 hens to an acre of ground. In this case they were allowed free range daily, and no green food supplied. A very much smaller space would suffice if carefully attended to, and kept clean and well supplied with green food. We have kept successfully six Brahmas in a house 4x6, feet with a yard 6x10 feet attached. On pages 13 and 90 (this series) will be found plans of poultry houses, with the information as to the number of hens each will accommodate. By no stretch of imagination could we answer the remaining questions. The quantity of food consumed will depend on the breed of fowls kept, for instance Hamburgs will not require nearly so much food as Brahmas, Cochins &c. The profits will mainly depend on the economical management of the poultry yards. If the chief object be the production of eggs, much of the profit will depend on the market in which the eggs are sold; if chickens, the same remark also applies. The breed of fowls to be kept must be governed by the purposes for which they are kept, if for the production of eggs, then the non-sitting varieties will be the best, if for chickens, the Asiatics and French breeds will be preferable.

J. F. PATER.—The pipe must be protected from severe cold to prevent the steam from condensing too rapidly while in transit. It must also be inclined somewhat so that by a tap or cock at the lowest point, all the condensed steam (water) may be drawn off when done steaming. For the same reason the cock should remain open when the apparatus is not in use. We shall refer to this subject again.

THE CANADA FARMER

IS PUBLISHED

ON THE 15th AND 30th OF EACH MONTH,

AT

One Dollar and Fifty Cents Per Annum,

FREE OF POSTAGE.

It is sent to Great Britain and Ireland by mail, for six shillings sterling, per annum.

No subscription received for a less term than one year, commencing from the month of January. THE CANADA FARMER is stereotyped, so that copies of back numbers can always be had.

A limited number of advertisements are inserted at twenty cents per line for each insertion. There are twelve lines in one inch of space. Advertisements under ten lines are charged as ten line advertisements.

All letters and money orders are addressed to

THE GLOBE PRINTING CO.,

TORONTO.

Agents wanted in every town and village in the Dominion to canvass for subscribers. Liberal commission allowed. Send for circular stating terms.

The Canada Farmer.

TORONTO, CANADA, AUGUST 15, 1873.

Agricultural Education.

In view of the probable early opening of the long talked of Ontario Agricultural College, the present seems a fitting time to say a few words about the education of farmers. It has too long been the current idea that any sort of an ignorant person may take to farming, and such contemptuous epithets as "clown," "boor," "clod-hopper," "country-whacker" and "plough-tail follower," indicate but too surely the low mental attainments which are commonly considered characteristic of this class of people. That there are many highly intelligent and well-informed farmers, it were folly to deny, but that these are greatly in the minority, must be plain to all observant minds. It is not unfrequently the case, that farmers possessed of a large amount of general information, well versed in political matters and the news of the day, are sadly deficient in those branches of knowledge which relate to their own particular calling. In other walks of life, and especially in commercial circles, you often find men "thoroughly posted" as the phrase is, in their own line of things, who know little or nothing of the great outside world; but in agricultural circles, it is by no means rare to find a large amount of general intelligence, allied with a strange and unaccountable ignorance as to matters of rural economy. And it is no libel upon the farming community to affirm that, as a rule, their education is greatly behind the times. They lag in the rear of the world's progress.

It is not so very surprising that this should be the case in a new country like ours. Many, perhaps most of our farmers, came here to find an asylum from poverty and hardship. They did not seek escape from work, but they sought a sphere in which their work would accomplish more than mere humanity from starvation. They wanted to own a home, to secure independence, and to place their children in a position superior to what they had themselves inherited. It was a noble ambition. But its indulgence involved much self-denial, severe toil, close application, and long perseverance. However anxious many of them may have been to secure for themselves an early or later education, stern fate forbade them. "Chill penury repressed their noble zeal." The "bread and butter struggle" demanded all their en-

ergies, and absorbed all their time. Nobler aspirations must be repressed. The cravings of the mind must give place to the more irrepensible requirements of the body. Deficiencies thus occasioned, call rather for sympathy than reproach.

But another state of things has come about. The first hard struggles incident to a new country are over. The forest has melted away before the woodman's axe. The stumps have disappeared, and the "clearing" has become a "farm." "Shanties," "log houses," and "log-barns," have been superseded by comfortable dwellings and commodious out-buildings. Plowage has given place to comfort and abundance. The Canadian farmer wheels it to market and church in a modern and handsome vehicle drawn by a fine team of horses, instead of jumbly slowly along in an ox-cart. The mower and reaper do the work of the back-breaking scythe and cradle. Sewing-machines and pianos have crept into the house, and the girls disport themselves in the latest fashions. The railroad whistle, whose shrill sound means near markets, can be heard in almost every rural homestead.

In such altered circumstances, the apology for ignorance which might properly be made at a former period, is no longer applicable. Nor was there ever so great a need for the thorough education of farmers as there is now. A new and enterprising generation has come on the stage. Our common schools have roused the fire of intellect and ambition. Young Canada is aspiring, self-reliant and resolute. But the farm seems a limited sphere of operation. Its monotonous round of toil is humdrum and wearisome. Moreover the virgin soil, exhausted of its original resources, and not properly replenished by intelligent culture, does not yield its increase as of old. Farming is evidently a slow-coach way of making money. There are not the same chances as there were when the country was new, when land was cheap, and when a young fellow could begin with little, and work his way up to competence and wealth. There is no great charm about going back into the bush, and fighting over again the battle with the woods and stumps, which a former generation found so tough and hard a contest. Moreover the positions of honor and influence in our land, are mostly held by others than farmers. The highway to distinction lies through the lawyer's office, or the merchant's counting-room, rather than through the wheat-field, and the barn-yard. And so the young man, born and brought up in the country, sighs for another and more promising sphere of action. He resembles the classic "Norval." Like him he can portray his father as

— "a frugal swain
Whose only care was to increase his store,
And keep myself, his only son, at home."

Like him, too, he has heard of distant scenes, that fire his ambition, and he is discontented until he finds himself in the midst of them.

Every body knows that there is a constant exodus of young men from the country to the town, that while agricultural laborers are scarce, there is a continual over-plus of candidates for apprenticeship to the "dry goods business," for clerkships in lawyer's offices, and for situations as book-keepers and the like. The walks of rural life are deserted, and those of town and city life overcrowded. Instead of settling down amid the quiet domesticities of the country, our young men rush about amid the feverish excitements that haunt our great business centres. Now and then one returns to the fields and groves "a sadder and a wiser man," but more become involved in a variety of entanglements, or fall a prey to temptations of one kind or another, while but few achieve even a moderate success, and fewer still the brilliant success which lured them away from the plough.

Now it requires no labored argument to prove that all this, the discontent with country life, diminished crops, the alleged unprofitableness of farming, and the feverish desire of young men to escape from

the farm to the shop and office, are great evils, pregnant with disaster to a country mainly dependent on agriculture, as the basis of its prosperity. And we do not hesitate to say, that the remedy is to be found, chiefly, in a good sound agricultural education for the rising race of farmers. Let us emphasize here, the expression *agricultural* education. For it is not general education that will meet the want. This may only aggravate the evil, instead of curing it. For, with the idea which so extensively prevails, that a well-educated man has but little scope on a farm, the inclination will very naturally be, to go where there is more and better scope for him. We have an admirable common school system, which is carrying enlightenment into all, even the newer parts of our land. But among the hosts of young men who take the full benefit of this wise provision for universal education, and pass up from the district school to the high and grammar schools, and thence to the University or Col'ge, how many seek to fit themselves for farming, and in due time return to rural pursuits. Let the history of the agricultural professorship in our noble Provincial University, and the records of its classes, furnish the answer.

Agriculture should not only be a prominent study, but the prominent study in all our district schools. It should have a conspicuous place in the teaching of our high and grammar schools. And then, instead of being huddled in as a solitary professorship, among a number of others in an institution, the greater part of whose pupils are looking forward to the "learned professions" as they are called, and where the student of agriculture is always regarded by his associates as of lower grade, and inferior caste, it should have a College all to itself, where the principles and practice of scientific agriculture, together with such studies as naturally ally themselves with the farmer's calling, can be specially and thoroughly taught.

Farming is, in itself, considered as respectable a calling as can be named. In the virtuous independence it tends to foster, it is superior to many that might be named. Much of the contempt with which it is too often regarded, is due to the want of intelligence and refinement found in connection with it. In this day and age of the world, it will not do for farmers to ridicule the "ologies," deride "book-farming," and make light of agricultural education. They will only keep their class down, and drive the brightest of their children to other pursuits by taking this course. They should rather determine to be abreast of the times; to elevate their business to an acknowledged equality with any other; and to make their own rank, among the learned professions, for there is no avocation pursued by mortal man which opens a wider or more inviting field of enquiry and research, than that of the farmer. In the study of soils as to their geological history, chemical composition, and scientific management, &c., of plants with their endless diversities; of animals as to their characteristics, varieties, uses, and improvement; of the insects that are beneficial or injurious to vegetation; of the mechanical forces connected with the implements and machinery of the farm; of the peculiarities of climate and weather, as they effect crops, and many other things that might be specified, there is not only an inexhaustible but most attractive domain of thought and investigation. It may be true that where "ignorance is bliss," 'tis folly to be wise," but "ignorance" is not "bliss" on the farm. The farmer will pursue his calling with far greater satisfaction if he understands the principles on which he proceeds, and sees in every waving grass-blade, humming insect, or turn of the weather, an object of intelligent interest, than if he plods along oblivious of every thing but the toil of his hand, and the sweat on his brow. And if "ignorance" is not "bliss" on the farm, neither is it prosperity. The most well-to-do farmers in the world, are those who

best understand their business. Multitudes of these in the old world, not only make a living, but get rich, under a rent burden which seems, and would actually prove, absolutely crushing to an average Canadian farmer. There is an imperative demand just now in this country for a higher style of farming, and if it is to be met, as we trust it will be, one of the essential things to be done, is to adopt means and measures for giving the rising youth of our land, a thoroughly good agricultural education.

The Supply of Horses in Great Britain.

A Parliamentary Committee has recently reported to the House of Lords on the scarcity of horses complained of in the old country for some time past. The existing scarcity is accounted for, not in the diminished production, but by an increase in the demand. This is explained partly by exportation abroad, and partly in view of the fact, that the British stock breeder obtains "increased profits on sheep and cattle, which from being more certain and more rapidly realized, are doubly attractive to the farmer as compared with those obtained by the breeding of horses." The increase of population and wealth at home results in a demand for more horses. A variety of suggestions were laid before the Committee, and the general conclusions come to are thus briefly summed up in the report:—

"The first, that Government should keep stallions of its own in various parts of the country, is open, they think, to grave objections. The Government would thereby be put in the invidious position of competing with private owners of stallions, and would probably come ultimately to be considered as responsible for the supply of stallions in the country.

"Secondly. It has been urged that, the unsoundness of travelling stallions being a great evil, there should be an examination by Government inspectors of all stallions covering other than the owner's mares. There is, indeed, some such system in France, where, as Col. Conolly explained to the Committee, "stallions of private individuals, approved by the Administration des Haras, are exempt from all tax. Those, on the contrary, which are not approved, pay 400 francs per annum." Nor can it be denied that the object, if attainable by these means, is greatly to be desired. There is not, however, the requisite machinery in England, and it is questionable whether any compulsory examination would not be regarded as an undue interference with the liberty of the subject.

"Thirdly. It seems practicable that the Government should give or add to prizes at agricultural shows to stallions passed sound which have covered a number of mares, at a certain low price, in particular districts. It is generally admitted that some agricultural societies have done great good in this way, and the Committee would particularly call attention to the simple and successful regulations of the Cardiganshire Agricultural Association, which, with some modifications, might serve a useful model for other societies.

"Fourthly. Any tax operating as a discouragement on a farmer's keeping horses, whether broken or not, should be, in the opinion of the Committee, if not at once abolished, at least considerably modified, while the dealer's license, which does not exist in Ireland, and which only produces £19,175 per annum, should, they think, be altogether repealed."

Public Document.

We have received the Report of the Minister of Agriculture, of the Dominion of Canada, for 1873. Its 185 pages are mainly filled with statistics and returns from emigration agents. The following brief chapter is all that, strictly speaking, relates to agriculture:—

II. Agriculture.

"It was shown in my last report that this Department, although charged by Parliament with the subject of Agriculture, has hitherto dealt with it only incidentally, the necessary organization not having been completed, nor the necessary supplies voted, to make it one of the branches of its administration.

"The subject, however, is of the very highest importance for the whole Dominion. Agriculture is its largest interest; and the wealth of the whole country would be materially increased by a single improvement in its practice. The various Agricul-

tural Societies have rendered great service and promoted many improvements. But it may be contended that a regular technical agricultural education should be afforded; and as was remarked in my last Report, the Governments of other countries have recognized the importance of this truth—notably those of Great Britain, France, Russia and the Federal Government of the United States; and have supplied the necessary aid.

"The subject of agricultural statistics has occupied the attention of the Department. It is in many ways a question of great public importance; and the results of such enquiry are of especial interest in connection with agricultural education and training."

Sheep vs. Dogs.

Another plea in behalf of sheep, as against much worse and worthless canines, comes from Knox County, Tennessee. Out of a flock of thirty-four, a farmer has lost twelve, having left only four ram lambs for sale. To replace this loss with imported stock, he asserts, would cost him upwards of \$1,000. His flock was the principle means of making money for the support of himself and his family. His statement in detail is an interesting one, and worth the consideration of legislators and tolerators of dogs in the sheep-growing regions:

"I would here say that I came to Tennessee through the strong recommendation of American emigration agents. I was assured that I should be protected both in person and property, and here I am, with a family of twelve children and my property, four thousand miles away from my native land—the property, which was my chief dependence, for a time, for the support of my family, swept away at a stroke by a set of brutes which are of no earthly use to any one. I am told I will have my redress in the courts of justice. I have very little hope of obtaining that justice which the case demands, when, as one gentleman at the recent farmer's convention said, the members of the State parliament were afraid to offend their constituents by passing a law to prevent the depredations of such brutes—a pitiable state of things, truly, when public men can be scared by a dog. I think, under the circumstances, it is the duty of the State government to see my loss made up; if not, I hope to see no more in the public press inviting emigration from Great Britain.

The writer manifests a very excusable warmth in the above utterance.

Safe Arrival of the "Duchesses" in England.

We are glad to learn that Mr. Cochrane's valuable lot of Short-Horns, purchased by Lord Dunmore, has arrived in England safely. The following paragraph in relation to them appeared in the *Mark Lane Express* of July 21st:

"Lord Dunmore's more recent purchases were landed in Liverpool last week. They are said to be a splendid lot. Of course we saw them to disadvantage, and where the generality of them are so good, it seems hardly fair to particularly notice any of them, but it would well repay any lover of Short-Horns to go a long distance to see the Duke of Geneva, the Duchesses, three Red Rose heifers, and the Waterloo heifer. The cargo consists of the bull 6th Duke of Geneva, with the following cows and heifers: Duchess 97th, Duchess 101st, Wild Eyes Duchess, Lady Worcester, Winsome Eyes, Wild Eye-bright, Wild Rose, Waterloo (Waterloo), Red Rose of Ben Lomond, Red Rose of the Forth, Red Rose of Lochabar, and Red Rose of Strathlay. The price is said to be something like £4,000 each."

Springwood Sale

We would direct attention to an advertisement in another column of the sale of Lieut. Col. J. B. Taylor's Short-horns, including the 22nd Duke of Airdrie, and 20 females, many of them of Pure Bates' Blood. Also a number of Bull Calves. The sale will take place at Springwood, near London, on Friday, 12th September, at 2 o'clock p. m.

American Pomological Society.

In our issue of June 16th, of the present year, we called attention at some length to the approaching annual meeting of this important society, to be held on the tenth of next month in the city of Boston. We are glad to learn that the Ontario Fruit Growers' Association are taking steps to have the fruit capabilities of this province represented, and we trust that such a collection will be forwarded, as will open the eyes of our friends across the border to the real merits of this, as a fruit producing country. We understand that some of our leading fruit growers intend being present, so that we shall be represented personally as well as by choice horticultural and orchard products.

Farming in Illinois.

Mr. S. M. Smith, secretary of the State Farmers' Association of Illinois, gives the following not very flattering account of the condition of things in that great State. He says:—

"The majority of the Farmers of this State have hard work to support their families. Year by year new mortgages are given to pay new debts, and it is the exception rather than the rule for a farmer to be saving anything. At least one-half of the farms in this part of the State are mortgaged for money borrowed at 10 per cent. interest, and the majority of them will never be redeemed. Yet let it be known that a man in this village has \$1000 to lend on first-class security, and he will have a dozen applications before night!"

To our certain knowledge, the farmers of Canada are doing much better than that, if they do live under a monarchy.

Agricultural Intelligence.

CROP REPORTS.

Nova Scotia.

We are now able to furnish a pretty full report of farm, garden and orchard crops throughout the Province, from information collected by members of the Central Board of Agriculture, in their respective counties.

Hay Crop.

It is obvious that we only require a week or two of good weather to enable every farmer in the Province to fill his barn with excellent hay.

Potatoes.

There will be no want of good potatoes this year, should the disease keep off.

Roots and Vegetables.

The early part of the season was very trying to these, and some districts have suffered more than others. Between bad seed and bad season, there are large blanks in many vegetable gardens, but wherever the young plants came up and survived, there is now a luxuriant growth.

Grains.

In Shelburne, barley, oats and corn are "growing finely." In Queens, grains of different kinds, so far promise well. In Annapolis, grain fields give good promise, but corn is somewhat backward. In Digby, oats, barley and buckwheat are "all looking well." In Cumberland, an increased area of oats was sown, which "look finely;" twice as much barley as usual was sown, and buckwheat also looks well. In Antigonish, the barley "looks very well," and will prove an average crop. In Cape Breton there are complaints of drought.

Fruit.

Dr. Hamilton thinks "it is difficult to say what the fruit crop will be," but it will be much below the usual average in King's County. As the apple crop has failed in England this year, and we have not very encouraging reports from the States, it is probable that our fruit-growers will get prices sufficient to make up to some extent for the scanty crop that is now anticipated. We have seen no indication in the Halifax market that cherries have been abundant. Plums also do not promise well. Garden strawberries have grown large, but the wet weather has given size at the expense, to some extent, of flavor, yet it has been a very good season for this fruit.—*Telegraph, St. John, N. B.*

Ontario.

Our farmer friends are involved in the fall wheat harvest, and report this crop will afford a large yield, and the grain of excellent quality. *Expositor.*

The St. Catharines' *Times* is of the opinion that there will be a fair average crop of apples in the Niagara District this fall, and a large yield of peaches and grapes. Plums and peaches will be scarce not more than half the usual quantity.

MOUNT FOREST The fall wheat harvest has fairly commenced in this neighborhood, and so far as we can learn, promises a very fine yield and an excellent sample. Spring wheat, oats and peas present an encouraging appearance, and if nothing happens to retard their progress a plentiful harvest will follow. —*Examiner.*

Fall wheat itself, taking the Province as a whole, will be fully an average crop. Out of 106 places which reported, we find that 48 put fall wheat down as above the average crop, 32 said it would reach the average, and only 26 that the yield would be below the average and poor. Judging by these returns, from the more hopeful reports of the press, and from considerable personal observations, it is certain that the crops have wonderfully improved during the past five or six weeks, and that there are now good grounds to hope that, if nothing unforeseen occurs, the harvest of 1873 will disappoint the fears indulged as to its unsatisfactory character. Spring-sown grain, turnips and grasses have recovered sufficiently from the drought to be far more abundant in the yield and weight than could have been expected from their appearance early in July. It has been estimated by experienced observers that these crops have been improved 25 per cent. in yield by the late rains, which means a net gain to the country of a sum of money which will be appreciably felt in all its financing and business, public and private, for the next year.—*Monetary Times.*

THE CROPS IN NEW BRUNSWICK.—We gather from our correspondence that the crops never looked better or the promise of an abundant harvest brighter, than at the present time. Grain and root crops, as well as the potato crop, are reported to be entirely free from blight, rust or disease of all kinds, while the hay crops as is well known, save in isolated places, are very heavy. "All sorts of crops," writes our correspondent at Norton, King's, "are in a flourishing condition;" and the same remark applies with equal truth to every other part of the Province that we have heard from.—*Colonial Farmer, N. B.*

U. S. CROPS.

The crop prospects in the southwest are reported as extremely favorable.

Kansas does forty per cent. better this year on her wheat and corn crop than last year. Her people will have a good time over their fat harvest.

Inverness Great Sheep and Wool Fair.

The market has been a good one for the sheep sellers. There has, indeed, been a decline from the prices of last year, which were exceptionally high. The buyers lost considerably from last year's purchases, owing to the failure of the turnip crop and the consequent dearthness of all feeding stuffs, together with the prevalence of foot-and-mouth disease. On this occasion they held back for some time, and hesitated to make offers. The fall on widders has been from 3s to 5s, on ewes somewhat less, and lambs nearly maintained the high prices of last year, as this description of stock is likely to be scarce in the north of Scotland. In wool little has been done at the market. Compared with last year, there has been a fall of from 8s to 10s per stone on laid Highland wool; on white Highland from 6s to 8s. There have been few sales in Cheviot wool, and such as have taken place are from 6s to 8s below those of last year. Half-bred wool is at present 36s to 42s, being from 5s to 6s below last year's prices.—*Inverness Courier.*

Galashiels Horse Show.

A fine show of draught horses was held at Galashiels yesterday under the auspices of the Selkirk and Galashiels District Society for improving the breed of draught horses. There were seventy entries, and many of the animals showed splendid parts, and it was pronounced to be one of the best district exhibitions witnessed for many years.

Livo Stock Sales.

KENTUCKY SHORT-HORN SALES.—Twelve public sales of Short-Horns including 755 head, were announced to take place in Kentucky from July 29 to August 9.

SALE OF SHORT-HORN BULL.—Messrs E. & J. Smith, of Rochester, Wis., as we learn from the *Omro Union* have recently sold the Short-Horn bull Gen. Sheridan, to Messrs. Howard and Towers of Omro.

SHORT-HORN SALE IN ILLINOIS.—From telegraphic despatches we learn of a sale of Short-Horns from the herd of James N. Brown & Sons, well known breeders in Illinois, on July 30, resulting in the sale of 49 animals for about \$12,000. The highest prices paid were \$1,125 and 1,050.

SALE OF SHORT-HORNS IN OHIO.—R. R. Seymour, on July 21 sold 57 Short-Horns at Cintheo, Ohio. The *Ohio Farmer* gives the list of prices and purchasers, from which we make the following summary: A half interest in the 3rd. Duke of Oeneau, was sold to John Montgomery, for \$3,300. This is not included in the statement below:

41 Females	\$15,000	Average \$365.87.
16 Bulls	3,965	" 247.81.
57	\$18,965	" \$322.72.

SALE OF IMPORTED JERSEYS.—July 15 at Philadelphia eight imported Jersey heifers each two years of age, and two young bulls, also imported, were sold at auction for \$2,135, an average of \$213.50 each, the heifers averaged \$233 each, total range in price between them only being \$20; the highest price being \$250, the lowest \$200. —*Ec.*

SALE OF THE HERD OF MR. HANDY, IN KENTUCKY.—The attendance was good, many buyers from Iowa, Missouri, Illinois and Indiana being present. The day was very fine, and Capt Kidd, the auctioneer, was in his happiest mood. The following summary is from a list of prices, which appeared in the *Lower Homestead*.

45 Cows and Heifers	\$14,188	Average \$315.
17 Bulls	2,770	" 163.
62	\$16,958	" 273.

THE THORNDALE SALE at Millbrook, Dutchess Co., N Y., of horse stock belonging to Mr. Edwin Thorne, took place on June 12th, as announced. A fine day favored the occasion, and a large gathering of the substantial admirers of live stock was the result. The bidding was not enthusiastic except in occasional instances. The highest price attained was \$1,030 for *Molly Quick*, a fine mare by Rysdyk's Hambletonian, out of Nelly Cammeyer by Cassius M. Clay, with a fine filly foal by Thornedale at her side. She was worth all she brought, and more. The bargain of the sale was the ch. mare *Mischief*, by Edsall's Hambletonian, dam by Durland's Bolivar. She was struck down to Mr. A. H. Gilbert, of Derby, Ct., for \$215. Average on 31 head, \$317.94. Total, \$10,810.

U. S. Poultry Shows 1873.

Connecticut, Hartford	Nov.	18,	21
Eastern Ohio, Youngstown	Dec.	17,	17
Maine, Portland	Jan.	15,	16
Massachusetts, Boston Music Hall	Feb.	1,	11
Michigan, Detroit	Dec.	17,	23
Middlesex County, New Jersey	Feb.	11,	13
Monmouth County, New Jersey, Freehold	Jan.	7,	10
New England, Worcester	Jan.	29,	22
New Hampshire, Manchester	Feb.	11,	15
Northern Ohio, Cleveland	Jan.	23,	19
Pennsylvania, Philadelphia	Dec.	5,	13
Western New York, Buffalo	Feb.	11,	19
Western Pennsylvania, Pittsburg	Jan.	11,	18
Winona County, Minnesota, Winona	Dec.	26,	28

Items.

The Huron Agricultural Society propose holding their Exhibition this year in the Village of Kincardine, on the 2nd of October.

It is reported from Ottawa that 2,000 families from Wisconsin are making arrangements to settle in Manitoba.

The wheat corner in Chicago has terminated, and Young & Company, of Montreal, are reported to have cleared \$125,000 by the transaction.

NEW SPRING WHEAT.—The first car load of New Spring Wheat from Illinois was received at Chicago, July 26, four days later than the first receipts in 1872.

TONS OF HONEY.—The *Fredericton Reporter* says:—Mr. Joseph Heron, Nashwanak, expects this year to take from his apiary not less than *two tons* of honey. He has now 135 hives, which are rapidly increasing, and which he finds the most profitable stock on the farm.

A PROLIFIC PLANT.—We were shown this morning by the market clerk a wonderfully prolific pea plant, grown by Mr. E. Davis of Guelph Township. It contained no less than 114 pods, which would yield about 570 peas from the single plant. *Mercury*

The U. S. Department of Agriculture has ordered 400 bushels of wheat from France and an equal quantity from Chili, embracing all varieties of winter wheat. The cargoes are expected to arrive about the first of September, and will be distributed in season for fall sowing.

We learn from a Manitoba paper that Mr. Kenneth McKenzie, (formerly of Eastlinch) of Rat Creek, brought in from Ontario and Minnesota one hundred and ninety-six head of superior horned cattle and a number of fine horses. A few more farmers like Mr. McKenzie and we would do.—*Mercury*.

BETTER TRADE. The Woodstock *Review* says that the resolution of the North Norwich Farmers' Club demanding the system in vogue in that country of paying the cream for all classes of butter, is being met with a determined opposition over the country. Other farmers' associations are following in the footsteps of the Norwich one.

GUELPH MONTHLY FAIR.—The Fair this morning was very dull as it usually is the case in August. There were but few cattle on hand, and these not generally of good quality, owing chiefly to the deficient pasturage lately. Business was slack, and we heard of but few sales. Beef cattle ruled from \$2.25 to \$4.60 live weight. We noticed a fine pair of working oxen on the ground, six years old belonging to Mr. Andrew Wilson, of Guelph Township, for which he was asking \$140.—*Mercury*.

HINTS TO THE PROVINCIAL COMMITTEE.—A Correspondent of London *Free Press* thinks the time allowed for Provincial Exhibitions is too limited to do justice either to the exhibitors themselves or the general public, many of whom come a considerable distance. He admits there is a difficulty in the way of providing feed for live stock; but believes it would be a great improvement if everything displayed in the Crystal Palace could be arranged on the preceding Thursday or Friday, so that the judges may finish on Saturday, and the doors be thrown open to the public on Monday morning. This arrangement would probably lessen the crushing so painfully felt Wednesdays and Thursdays, and besides, the railroads would not be so hard pressed.

An exchange says that within the last fortnight a new kind of potato bug has made its appearance in the county of Kent, which promises to be fully as destructive as the old one. They are striped like the ordinary bug, but about three times its length. They also possess long legs, with which they travel off with remarkable celerity the moment a person approaches the hill. They are numerous and voracious, while their activity makes it almost impossible to kill them. The worst of it is, that they do not confine themselves exclusively to the potatoes, but they seem able to make a meal of any ordinary garden vegetable that comes in their way. Their first appearance was noticed in Romney about two weeks ago, but they have since reported themselves at Wallaceburg and other places through the county.

FATAL ACCIDENT.—On Wednesday evening of last week a lad nine years of age, son of Mr. Wm. Woods, jr., of Mornington, was working with a horse and hay-rake. The horse took fright, ran away and upset the hay-rake; one tooth ran into the boy's left side and another the right side. Dr. Philip was sent for and found about five feet of the bowels protruding from the wound on the left side, and the wound on the right side extended into the liver and stomach. The doctor returned the bowels, dressed the wounds, and did all that was possible to alleviate the boy's sufferings, but at the same time informed the parents that the wounds were fatal. The boy only survived twelve hours after receiving the injuries.—*Listowel Banner*.

CAUTION TO REAPERS.—At Burgh, Lincolnshire, the man in charge of a reaper on the farm of Mr. Wm. Baker, of Welton, stopped his horses to pick up a rabbit, a lad named Charles Grayson, aged ten years, mounted on the leading horse. The horses set off at a gallop, and the poor boy was thrown among the knives, and literally cut almost into fragments. Both legs (the right twice over) and the left arm were severed from the body, which itself was fearfully mutilated, one wound traversing the whole length of the left thigh into the abdomen. Mr. Walls, of Burgh, was immediately sent for, and Dr. Walker, of Spilby, was afterwards called in consultation. Under such terrible circumstances, however, surgical aid was of no avail, and the poor sufferer sank at 11 p. m., five hours after the time of the accident.—*Ec.*

Breeder and Grazier.

The Breeding and Management of Short-horn Stock.

BY A PRACTICAL MAN.

At the present time, when the breeding of Short-horns is greatly on the increase, little apology is required for the remarks on their treatment which we are about to offer. I shall not enter into any enquiry as to the source or origin of this breed of cattle; suffice it to say that at the time I write, Short-horns are justly recognized as the best pure breed of cattle in the United Kingdom, and command the most money at our public and private sales. Indeed the breeding of Short-horns is not confined to farmers who breed them for profit, nor to noblemen and gentlemen who breed them for pleasure, or for exhibition at our national shows: it takes a place in our great commercial system, and has become a commercial pursuit. The demand for first-class animals to export to the United States of America, to Australia, and to all parts of Europe has exceeded the supply, and resident agents of our transatlantic breeders are always ready to purchase good Short-horns for future shipment. Special accommodation is provided on board the steamers and ships which carry these valuable animals. Captains are preferred who take an interest in the preservation of animal tribes; and such is the extent and variety of some cargoes of live stock now sent abroad, that the vessel may not inappropriately be styled a "Noah's Ark."

In several parts of England, but more particularly in the North, calves are allowed to run with their dams, and suck at pleasure; care being taken that the dam has a sufficient supply of milk for the calf, and that the udder is sucked out clean, or drawn, once a day, to prevent disease. Calves will thus run with their dams six or eight months, and some are only taken away when the cows require drying previous to calving; by this time the calves have gradually weaned themselves. My objections to cows suckling their own calves are, that the cow is not so likely to come in season whilst the calf runs with her, and time is lost in breeding; and if the cow's milk should fail, it is difficult to wean the calf from her, after it has sucked eight or ten weeks, or induce it to suck another cow; and that in the winter months the majority of homesteads have not the requisite accommodation for cows and calves to lie together in shelter. Neither do cows take kindly to be milked by hand, after calves have run with and sucked them. The system I adopt and prefer is, to take the calf from the cow when it is three days old, put it in a warm and well-littered pen, and teach it to drink from the pail, giving it new milk direct from the cow twice a day. In two or three days the calf will learn to drink, the cowman carefully holding the pail to its head, with his fingers in the calf's mouth; and if it keeps in health, there is no further trouble in the matter. The calf should be fed at the same hour morning and evening, as nearly as possible, say 5 a. m. and 5 p. m.; and if two or more calves lie together, they should be tied up separately for an hour after being fed, or they will contract the habit of sucking each other, which is apt to produce flatulency and skin diseases, which renders them dirty in appearance. Should the calf be the first produce of a heifer, I let it suck her for ten or twelve days, and then remove it, as I think the heifer allows her milk to come more freely after being sucked for a few days, and there is less risk of disease in the udder. In the spring of 1856, a favorite cow calved five weeks before her time: the calf was small and weak, and unable to stand or to suck its dam. However, I procured an infant's feeding bottle, with india-rubber nipple, and directed the cowman to feed the calf with new milk by means of this bottle, giving it a small quantity every two hours for the first three days, increasing the intervals of feeding as the calf gained strength. The cowman or his mate sat up several nights to feed the calf, and in three weeks we were able to dispense with the bottle, and had the satisfaction of seeing the calf drink from the pail. At fourteen months old this calf was sold by auction for more than 90 guineas. The bottle used was a glass one, and care should be taken to keep it sweet. Another case was similarly treated, and with equal success, so far as raising the calf until it was a month old. Being winter, for the sake of warmth, I let the calf lie with its dam, which had uncut hay in her manger. Finding the calf dead one morning, when it had been seen alive and sucking late at night, we carefully examined it, and detected a ball of hay lodged in the throat. I have no doubt the calf had

eaten the hay, and having fallen asleep before it had passed the food into its paunch, the hay had suffocated it. When calves are born before their time, they sleep a great deal, and are only roused by cold or want of food. Calves cannot be too well littered, and their pens should be sheltered and warm, with good ventilation above. The floor of the calf's pen should be on an incline, to allow the urine to drain away, and the hot dung should be thrown out of the pen at least three times a week, and in confined places daily. At four months old the calf is gradually weaned from new milk by adding scalded linseed, which has been previously ground, beginning with a pint at each meal, and increasing the linseed until the milk is entirely withdrawn. The calf will drink linseed freely; and if the season is winter it will be desirable to continue feeding with it until the calf is turned out to grass in May or June. I give a simple mode for preparing linseed tea for calves. One and a half lbs. of linseed will make five gallons of tea. To one and a-half lb. of ground linseed add a gallon of hot water—not boiling. In cold weather let it stand twenty-four hours, in warm weather twelve hours. Then add four gallons of water, and give it to the calves at the temperature and about the consistency of new milk. A six months' calf will drink six gallons per day, given at twice. When four months old, the calf should have a little sweet hay cut into chaff, and a handful of ground oats mixed with it; also a few slices of swede turnips, or if of the *Fibruum*, a few slices of wurzel daily. The proportions of food may, of course, be increased with the growth and condition of the calf; but the increase of turnips or wurzel should be very gradual, and not exceed one gallon per day up to eight months old, nor one peck per day up to twelve months. When calves are first turned out to grass I think it desirable to house them at night, give them hay, and two lbs. of linseed cake per day. Nor would I withdraw the cake after the calves remain out at night, as I find it keeps young stock in health, and their skins and coats in a fresh and blooming condition. Many writers advocate the use of pea-meal made into porridge for calves, and pea and bean meal, mixed with chaff, for yearlings. I have no wish to detract from the value of peas and beans as fattening food, but my experience proves that they are not proper food for young stock, more particularly for young heifer stock. I have little doubt that many cases of sudden radigestion and consequent inflammation, of "hoven," of diseased knees and joints, and stiff fore-legs, are the fruits of indulging young stock with peas or beans in some form or other. Oatmeal may be largely given without fear of the consequences, and if the animal does not progress so rapidly as you wish, you will have the satisfaction of retiring to rest under no apprehension of finding your favorite Short-horn "blown up" and "a body" in the morning.

I have a decided objection to young stock being tied up during the winter. If possible, five or six yearling heifers should be housed, in a warm and well drained yard, with a roomy shed to feed in, and to shelter them from heavy rains and storms. Half a bushel of cut swedes, with sweet oat straw and hay mixed and cut into chaff, and from two to three lbs. of linseed cake per day, will keep the heifers in a fresh and thriving state. If hay is plentiful, the straw should not exceed one-third in proportion. If hay is scarce, and straw abundant, a little ground oats might be mixed with the chaff, and the hay and straw cut up in equal portions. Food should never be given in excess, and stock should clear out their mangers before they have a fresh supply. Should one of the heifers drive the others from the manger, and monopolize the oil-cake, the lot may be tied up for half an hour to ensure each animal having its share. The heifers should have the dirt cleaned off them daily; for if allowed to accumulate, the dirt adheres to the hair, which is eventually scraped off the animal, rendering her hind-quarters as bare of hair as a clipped horse. The growth of long and silky hair, and the preservation of it, is a peculiar art in the "getting up" of Short-horns for our national shows, and taxes the skill of first-class exhibitors to the utmost. Lice are frequently to be found on heifers at this age, and the stock should now and then be carefully examined, and the vermin destroyed. It is an error to suppose that lice are only found on animals which are poor and dirty. That cattle are more liable to vermin, and to diseases of the skin, when in a dirty and starved condition, I allow; but I have frequently found lice on heifers which have never known the cravings of hunger, and which have been kept as clean and as sweet as carriage horses. The best application to destroy lice is a strong decoction of tobacco-water, boiling the rankest tobacco you can procure. To one lb. of tobacco add eight gallons of water; boil and stir it, when a little cool, pour in one pint of brown spirits of tar and one lb. of soft-soap, stir all well up, and apply it when cool. Let

a man effectually rub this mixture into the heifer's skin, more particularly on the neck, shoulders and rump ends, which are the parts usually infected by lice. The heifer should be kept in a shed until she is dry, and the mixture must not be washed off. A rub with a soft brush, or wisp of straw, the following day, will restore the natural appearance of the coat, and the disagreeable smell soon passes away. Mith mercerrial ointment can be applied in bad cases to destroy lice, but the ointment irritates the skin, and causes the hair to come off, so that I prefer the tobacco mixture, even if two dressings are necessary. The horns of heifers between one and two years old also require attention. If they are not growing so handsomely as desired, let them be well filed on the inner side towards the forehead, and repeat the filing every two or three months. If the horns are long, saw off the top ends, and file the points into shape. I object to the use of steel screws to horns, and giving them a turn daily to bring the horns forward, as they are rendered thick towards the root by this process, and a thick horn is more objectionable than a wild horn, or one that turns backwards. When the weather is at all favorable, the heifers should be turned into a sound pasture for a few hours during the day. A cold bracing north wind will not hurt them, but I shall avoid exposing them to a biting east wind, or to a cold rain. Heifers exceeding twelve months old will be coming "in season" usually every three weeks, and they should be removed from their fellows, and shut in a loose box till they are quiet, or a broken horn or slipped hip may be the result. Some breeders put their heifers to the bull at 15 months old, others at 20 months, and others not sooner than two years old. If a heifer is strong and healthy, I prefer serving her at the age of 20 months, provided she would be down calving at a favorable time of the year. It is desirable she should calve in May, or early in June, as the heifer then has the advantage of having a summer's run at grass, and the season of year is most favorable for a cow and calf. July and August are objectionable months for heifers to calve in, owing to the heat that usually prevails, and the greater tendency to inflammation after calving. For this reason I should let a twenty months' heifer pass for two months before I put her to the bull, rather than she should calve in the hot weather. A heifer served at 15 months is liable to be checked in her growth, and frequently proves a mean little cow, a heifer served at 20 months old is more likely to stand to her hulling, and to be a regular breeder afterwards, than one which is two years old before she is bulled, and with good keep the growth of the former is not checked. The two years old heifer will be getting fat, if well bred, and frequently is very troublesome to get to breed. Of the means to be employed to ensure a heifer being in-calf, I will speak presently. A cow usually goes 280 days, or 49 weeks, with calf. Should she exceed this time she generally produces a bull calf. Assuming, then, that our heifer, 20 months old, is served and in-calf on the first of August, she will be due to calve on the ninth of May following; and if all goes on well, she will keep her time within three or four days under or over that date. A "calving-table" is given annually in that useful work, "Johnson and Shaw's *Practical Almanac*"; the calculations are made for 49 weeks, and a reference to this table will save time in calculating dates. After the heifer has calved six weeks, if she is healthy and strong, she may again be put to the bull; and as soon as it is ascertained that she is in-calf, which will most probably be the case if she passes six weeks after being served without coming in season, I should advise her being gradually dried of milk, and put the calf to nurse. This will give the heifer a good rest, and by the time she is again down calving will have recovered her condition, and grown into a fine cow. But the heifer should not be dried until it is ascertained as correctly as possible that she is safe in-calf, as a heifer so dried is very difficult to be afterwards got with calf.

Similar shelter and yard-room to that suggested for yearlings is also desirable for heifers in-calf. From three to six can be together, according to the size of the yard and shed; but they should have room enough to move about freely. If such yards with open sheds do not exist, the heifers should be in separate boxes at night, and be turned into a fold-yard or paddock during the day. A mixture of hay and sweet barley or oat straw cut into chaff, from half a bushel to a bushel of sliced swedes, given at twice, and three lbs. of linseed cake per day, is my usual winter food for heifers in-calf.

The linseed cake can be entirely withdrawn when the heifer is within three months of calving, if she is in good condition, and has a tendency to lay-on flesh; but if otherwise, this moderate quantity of oilcake will help to keep her bowels open, and her body healthy, without making her gross. I should

prefer reducing her supply of dry food, and mixing brewer's grains with the chaff, to take off the oilcake altogether. In February I substitute wurzel for swedes, mixing the roots at first, and I do not exceed three pecks of wurzel at the two meals. In turning heifers in-calf together in a yard for the first time, they should be watched to prevent fighting, and any vicious animal should be removed; the sudden attack of one heifer upon another is quite sufficient to produce the "slip," which is so serious a drawback to the breeding of Short-horns. The constant use of linseed cake, in addition to roots and mixed chaff, for winter food, may be considered expensive feeding for breeding heifers, especially by those breeders who turn their young stock into open yards for the winter, and give them a few turnips and straw only. That heifers will live on this low diet I do not deny, but they will not thrive; and linseed cake not only improves the condition of the animals, but it keeps them in health, and heifers when so fed are always fit for a purchaser's inspection. At no age does the Short-horn show to greater advantage than from 18 months to 3 years; therefore it is sound policy to keep the heifers in a fresh and blooming state, that the breeder may ensure a high price if he has such stock to part with. Heifers can seldom be turned out to grass in the spring before the 1st of May; it is not desirable to leave them out for the night until all fear of frost is over, as much grass is checked and destroyed by stocking too early. Heifers are generally housed for the night by the 1st of October; but the weather must entirely guide the breeder in this matter. In fine and mild seasons, stock may remain in the fields until November, whereas heavy rains in the month of September may render it necessary to house your stock before Michaelmas day. The autumn of 1857 was remarkable for mild and dry weather, and for the great abundance of grass, enabling the breeder to let his choicest animals remain in the pastures day and night (with the exception of two or three days) until the last day of the year. In such a season, which we may not again witness for many years, I should prefer leaving the cattle in the fields to keep them in the best arranged yards, as there is no food equal to grass for breeding cattle, and they should have it whenever it is to be obtained. When the grass is deficient in quality or quantity, the stock can have a little hay or linseed cake given them in the yards or fields; but I would on no account deprive them of exercise in fine weather, let the time of the year be what it may.

If loose boxes and yards with open sheds are so necessary for the young and active stock, how much more essential are they for our heavy and sometimes unwieldy cows! and how frequently do we find them with a swelled knee, a bruised breast, or a slipped hip! The two former evils are the consequences of keeping them tied up; the latter is not unfrequently caused by the cow turning sharply round on being untied, and slipping down on the smooth brick floor of a cow-house. A cow-house is certainly a convenient place for cows to be in whilst they are milked; but all breeders who study the health of their cows will afterwards have them turned into yards, with a good shed in it, to shelter them from storms. I am persuaded that if cows were thus treated, we should have fewer complaints of pure-bred Short-horns being so tender, avoid thick knees, bruised breasts, the extremes of heat and cold, and preserve the rough shaggy coats which are so much admired and esteemed by our best breeders. Some cow-houses which I have visited have been so confined for space, and crowded with cows, that the animals are constantly in a heated state; and I have seen the hair *shorn off the backs of cows*, owing to the profuse perspiration they were generally in. The unhealthiness of such places is sufficiently obvious. If we must have cow-houses, let them be large and well ventilated. The cow should have ample room to rise and lie down; and though her hind-quarters want to be a trifle lower than her fore-quarters, her rump should not drop into a gutter, as is too often the case. The drainage of the shed should be properly attended to; the roof should be high and thoroughly ventilated. The draining and ventilating of buildings intended to contain a considerable number of animals is now so well understood, that no erections need contain hot or foul air, if proper precautions are taken.

Our heifer is now near calving her second calf, and, having been dried some months, she is fresh. Advantage should be taken of every fine day, should it be the winter season, to give her a run in the field if only for two hours. If she is not a cow which will exercise herself, I should advise her having gentle exercise for at least an hour a day for two or three weeks before she is due to calve. When very fresh, and the season of the year warm, she can scarcely have too much exercise; but the cow must travel her own pace, nor must she be driven in the heat of the sun. A

mild dose of physic once a week will also prove beneficial in such cases, but I am not an advocate (as a rule) for bleeding cows when near their calving time. I have known cows heavy in calf fed for exhibition, which have afterwards calved safely, and in warm weather. The cow is then driven out daily by a boy, who gives the animal a half-mile walk the first journey, and gradually increases the distance to five or six miles a day. Frequent doses of mild physic are also necessary, and are sometimes given on alternate days for a fortnight.

We must now assume that the heifer instead of being in-calf, breaks her bulling, and comes regularly in use. In this case, about a week before the heifer is coming into season, we should bleed her, give a strong dose of physic—chiefly sulphur, Epsom salts, and treacle—and exercise her for an hour after putting her to the bull. Should this treatment fail, let her pass once, and serve her at the end of six weeks, keeping her on low diet; giving two or three purging drinks, and plenty of exercise between. A change of bull is also desirable—particularly from an aged to a young bull—and to take special care that the cow is willing to receive the bull. I am inclined to think that many cows are served at the wrong time, and if they are shy breeders, the proper period of getting them in-calf is missed. To save time, when the first symptoms appear, the cowman puts the cow into the bulling stocks, and makes her have the bull, if she is willing or otherwise. This practice cannot be too strongly condemned. If the bull is not savage, nor unsafe to have his liberty, he should be turned loose into a yard with the cow, and if she stands quietly, he may serve her well once, and then be removed. But if the cow will not stand well, it is better to wait an hour or two, and again put the bull to her, when she probably will be more ready. The breeding properties of cows vary. Certain strains of blood I have noticed which breed alternate years only, successive generations following suit. Other tribes produce a live calf annually, and you may reckon safely upon the daughter "standing" and breeding as regularly as her dam. I need scarcely say how desirable it is to preserve and cultivate those strains that are most prolific, and to discard the shy breeders, unless their merits will compensate for the loss of time. The most difficult cases to deal with are cows which have calved prematurely. The cow must have one or two cleansing drinks given her, and be allowed to go full two months beyond her proper calving time, before she is again put to the bull. If she is not quite clean and healthy, more time must be allowed her, and her body kept well open and cool. In the year 1855, six cows of a herd under my care, at different periods cast their calves. Of these cows, by pursuing the treatment here described, three resumed breeding, and produced live calves at maturity in 1856. One ceased to be in a breeding state, and was fattened. Another came regularly in season, was bullied at intervals for eight months, and did not stand. She was then sent to a distance, on foot, ran the round of several bulls, returned home, and was in use the same week; was served by a young bull, and stood, and produced a live calf at maturity, having lost 12 months' time. The sixth cow was similarly treated, but she never stood; and after exhausting the patience of ourselves and our bulls, she was sold barren. This cow differed from the preceding, inasmuch as she usually went six weeks between her bulling seasons, and I have known her to go nine weeks. Of these cows, one cast calf in the middle of January; two in February, within nine days of each other; and being tied up together, and fellow-cows, I had reason to believe one affected the other; a fourth slunked in April, a fifth in June, and the sixth in December. I could ascribe these mishaps to no particular cause beyond the one I have spoken of. If a cow which has calved prematurely does not come in season regularly—that is, every three weeks—I should have little hope of her breeding again; and should no special value be set upon her, it will be better to fat her at once. I should by no means discard a cow immediately, which has cast her calf, as I have known many which have subsequently bred with great regularity. The means employed by some persons to get cows to breed, almost exceed belief; the folly of the expedients being only equalled by the cruelty and torture to which the cow is subjected. Amongst other expedients to overcome nature's difficulty, which I have known to be tried, are—forcing the cow into a deep pond, after she had had the bull, and keeping her up to her neck in water for half an hour, swathing her rump and shape up tightly with cloths, and stopping her evacuations for six hours, a man standing guard over her, placing four 50 lb. weights across the cow's back, two either side, again swathing her, and not allowing her to lie down for several hours; and literally putting hot irons to her shape, immediately after she has been bullied. For the sake

of humanity, I hope these cases are few and rare. I should indeed be astonished if cows treated thus ever bred.

We must now consider the causes of cows casting their calves, and the possibility of preventing this misfortune. A cow seldom gives much warning that she is going to cast calf, sometimes only two or three hours, and rarely more than twelve hours; so that if any certain means of preventing her slinking were known, it is too late to apply them with much hope of success. Indeed, the cow is generally so quick in this operation, that our first warning is finding the calf. This circumstance leads me to believe that the cause is usually sudden and the effect immediate. Cows in-calf are particularly susceptible of fright, and some cases of slinking have so quickly followed storms of thunder and lightning, that I have been confident fright occasioned by the storm has caused the cow to cast her calf. A fright by strange dogs I believe to be a frequent cause of this mischief. Fortunate is the Short-horn breeder whose farm is not contiguous to a town, and whose fields are not intersected by public footpaths. These "charming walks" for people with troublesome little dogs are I fear productive of much mischief to our breeding flocks and herds. The involuntary start which a cow gives when a gun is fired near to her, is another proof of fright, and this should be carefully avoided and guarded against. Some cows are vindictive and savage towards their fellows: such should not be turned out with in-calf cows, as the fright occasioned by a sudden attack of a savage cow may produce abortion. The sense of smell is particularly acute in a cow, and no carriage, butcher's offal, or dead game, should be thrown into yards cows are turned into, or remain in or near to pastures where cows frequent. Wounded game, dying and putrefying in the hedges or fields, may frequently be the unknown and unexplained cause of cows casting calf, as it is well-known that the smell of putrid flesh will produce abortion. Pigs should not be killed in the cows' yard, nor blood of any kind thrown where a cow can get at or smell it. The slaughter-house of a homestead should be as far removed as possible from the cows yards and sheds. Cats should not be poisoned about premises, as they stench horribly when dead, and they may lie under the cow's nose, for aught we know. Cows advanced in calf should not remain in wet undrained pastures, or lie in wet yards. I do not think with Skellet "that the smell is of a vegetable nature" which offends the cow, but when cows are constantly out at grass, a variety of circumstances may at one time or other produce the "fright" to which I am far more inclined to attribute slinking. A further cause for cows slinking, not thought of in the time of Skellet, may be found in the journeys by railway which of late years have been so frequent. There can be no doubt that railways greatly facilitate the removal of cows from distant parts of the country, and gentlemen frequenting public sales, prefer buying cows in-calf, because they hope soon to have live produce. How often are they disappointed! The cow when purchased is probably six months gone with calf: she is shaken and frightened by her railway travelling; is perhaps turned into a field with a dozen cows, strangers to her, by which she is well hunted; is differently fed if kept in the homestead, and destroys the hopes of her new owner by calving prematurely. Extreme modes of feeding also tend to produce abortion. We as frequently hear of the cows of cottagers or small farmers casting calf, as those of their more wealthy neighbors. This is probably owing to their cows being turned on a naked, common or barren pasture, where they pick up a scanty living, and not getting sufficient food for nature's requirements, they rapidly waste, the fetus loses its vitality, and abortion ensues. On the other hand, excessive feeding must be avoided, as the cow's blood will become in a feverish and heated state, her body fat, heavy and plethoric, engendering disease, which frequently results in her casting calf. Some of my suggestions for preventing cows shipping calf, or guarding against it, may strike the reader as being simple and unnecessary; but all who have had the care and anxiety of a herd of valuable cows will bear me out when I say, that nothing should be left undone, however simple, which may render your cows safe; for when one "slips," you know not how many may follow, owing to the sympathy in the animal organization; and no treatment, that I am aware of, will prevent the cow casting her calf, however soon her intention is apparent to the owner or his cowman. The slinking of a great number, or an entire herd of cows, within a few weeks, is not so frequent in pure-bred Short-horns as in ordinary dairy stock; and I believe for this reason—the former will be put to the bull at any time of the year, and the cows are in various stages of gestation; the dairy cows, on the contrary, are generally bullied in the month of July, so that they may calve in the spring, and their calves have the advan-

tage of fine weather and abundance of skim-milk. Many of the dairy cows will be in the same stage of pregnancy, and if, as I suspect, cows are more liable to cast calf at a particular period of gestation, the disease rapidly spreads through the herd, should an unlucky cow set the example. I have observed that cows are most subject to slip their calves from the 32nd to the 38th week of their pregnancy; at this period, therefore, they cannot be kept too quiet, whether they are in the homestead or in the field. I have many times bled cows, and given them laxative medicine, when the first signs of slinking appeared; but only in one case have I unsuccessfully checked the disease. The heifer in question, which threatened to slink a month before she was due, ultimately calved eighteen days before her time; the calf lived, and both did well. In the above case, I bled the heifer at once, gave her a mild dose of physic, bran mash and warm drink, and kept her in a quiet and retired place until she calved. As this heifer had cast her first calf when she was only four months gone, the danger was the greater of her slinking the second time. I extract from "Skellet on the Parturition of the Cow" the symptoms of slinking, which I have found very correct:—"Whenever a cow shows any symptoms of slinking, the first step should be to separate her from the rest of the herd, and to cut off all communication that may endanger this accident spreading. The first symptoms of slinking are known by the udder suddenly filling, giving a flush of milk, by the shape showing a red appearance, and turning loose and flabby, and the ligaments or couples on each side of the rump giving away to a certain extent. When these appearances take place, the cow, after removing her to a place by herself, should be narrowly watched, in order to give every assistance, as well as to prevent the accident if possible." Cows in-calf should at all times be kept quiet. I do not advise their running in rich feeding pasture, up to the knees in grass. I consider second-rate pasture good enough for breeding cows; and if they have to traverse the field for their food so much the better. A constant supply of pure water in the field is indispensable. When the herd is turned out to grass in the spring, the yearlings should be put into one field, heifers from two to three years old into another field, cows in-milk into a third, and the dry in-calf cows into a fourth. Nor should the cattle on any account be collected into one pasture when the owner or his visitors wish to inspect them. The utmost vigilance on the part of the men cannot prevent fighting and accidents when this is done.

Owing to the great heat which at times prevailed in the summer of 1857, I deemed it advisable to house the cows during the day, and the animals were thankful for the shelter. This course would probably be preferable to providing a shed in the field, for the cows to run under, as the flies might torment them, and cause the strong or vicious cows to gore the weak ones.

(To be continued.)

The Origin of the Duchesses.

A writer in the *Mark Lane Express* gives the following history of one of the most fashionable and valuable strains of short-horned cattle. He says:—"As this Duchess tribe has become so famous, and sells at such enormous prices, I may here give a few particulars regarding it. The first of the family we hear anything of was bought by Charles Colling from the Duke of Northumberland's agent at Stanwix in 1784, for the modest sum of £13 sterling. She was a massive, short-legged cow, of a yellowish red color, with the breast near the ground. She had a wide back and was a great grower. Colling called her Duchess, and had often described her to Bates as a very superior animal, particularly in her handling; and told him he considered her the best cow he had ever seen but that he could never breed so good an one from her. She was descended from the old stock of Sir Hugh Smithson, of Stanwick. Thus Bates bought from Colling one of the descendants of this cow in 1804 for 100 guineas, being the same I have mentioned as being such a fine dairy animal; and he bought another at Colling's sale in 1810. For the latter he paid 183 guineas, and styled her Duchess First; and from her all the present family have descended. Bates tells us he was induced to select this tribe from having found that they were great growers and quick feeders, with fine quality of meat, consuming little food in proportion to their growth, and also from finding that they were great milkers.

Poultry Yard.

Hints to Poultry Exhibitors.

The season for holding fall exhibitions is now at hand, a few words therefore to intending exhibitors may be in season. The prize list of our Provincial Exhibition demands that each pen of birds must consist of one pair—a cock and hen—it will be necessary then for the exhibitor at this show to pay strict attention to color and markings as well as the other necessary points which all exhibition birds should possess. In all classes of fowls shape, carriage, and markings should be well considered. But in some varieties these are of greater value than in others. In all the Asiatic breeds, size is one of the principal points sought after, next shape, carriage, and feathering.

First on the prize list comes the DORKING, to which are awarded two sections, one for White the other for Colored. In both sexes of White Dorkings the comb, face, deaf-ears, and wattles should be brilliant coral red. Legs white, or white with a very pale pinky shade. Plumage all over a pure snowy white; the cock's upper plumage as free from any shade of straw as possible. In Colored Dorkings the hackle and saddle of the cock should be white or straw, more or less striped with black, the back should have various shades of white, black and white, or grey mixed with maroon or red, wing-bow white, or white mixed with black or grey; wing coverts or bar, black glossed with green; while the secondaries should be white on outer web, and black on inner web. Breast and under parts black, or black mottled with white, and occasionally with red. Tail black, richly glossed, sometimes mingled with white. The hackle of the hen should be white or pale straw, striped with black or greyish black. The breast a salmon red, each feather tipped with dark grey verging on black. The rest of the body should be nearly black, the shaft of each feather showing cream-white, and each feather being slightly paler on the edges. On the wings the feathers are somewhat different, here the centre of the feather is a brownish grey ground, covered with a small rich marking, and surrounded by a thick lining of the black. Tail also nearly black, the outer feathers slightly pencilled. In both varieties of the Dorking, two defects are, coarse head, faulty comb, fifth toe not perfect in form and development; the claws on the feet, lead color, crooked breast, and want of size, general symmetry and condition, and the disqualifications are, wry tails or any other deformity; total absence of the fifth toe; legs of any other color but white or pinky white, or with any vestige or sign of feather-combs; or the color of two hens not matching in the pen, and to the colored variety may be added, other than rose combs in either sex, and any colored feathers in plumage.

COCKS are allotted three sections, one for Cinnamon or Buff, one for Partridge, and one for White or Buff variety should be as nearly as possible as follows: Breast and under parts any shade of lemon-buff or cinnamon, it must, however, be even and free from mottling. Head, hackle, back, shoulders, wings, and saddle any shade of deeper and richer color, which harmonises well, lemon, gold, orange, or cinnamon; the wings to be perfectly sound in color and free from mealiness. Tail still darker in tint, but as free from black as possible, except in the darker buffs and cinnamons, in which black is not objectionable, white in the tail very objectionable in any color except Whites. The color of the body of the hen may be of any even shade, free from mottled appearance. Hackle of a deeper color to harmonise, free from black pencilling or cloudiness, cloudy hackles being especially objectionable. Tail as free from black feathers as possible.

Birds must match in the same pen, and in matching different sexes the hen's body-color must match that on the cock's breast and lower parts. In both sexes the beak should be a rich yellow, comb, face, deaf-ears, and wattles brilliant red, with as few small spiky feathers as possible. Eyes should match the plumage as nearly as possible. Legs a bright yellow with a shade of red between the scales. In the Partridge variety the cock's hackle should be rich bright red, or orange red, with a dense black stripe in each feather. Back shoulder coverts, and wing-bow rich red, wing coverts metallic green black, forming a wide and sharply-cut bar across the wing. Secondaries a rich bay on the outside web, which is all that appears when wing is closed; black on the inner web; end of every feather black. Primaries very dark-bay on outside, dark on inside web; saddle rich red or orange red, same as hackle. Breast, under parts, thighs, and leg feathers glossy black. Tail black, white feathers not a disqualification but objectionable. The hackle of the hen bright gold, with a broad black stripe in each feather, the marking extending well over the crown of the head, rest of the plumage a brown ground color, distinctly pencilled over in a crescentic form with rich dark-brown or black, the pencilling being perfect and solid up to the throat, the leg-feather to be pencilled as the body. In both sexes the beak should be yellow, Comb, wattles, &c., as in Buffs. Eyes bright red. Legs yellow, of a dusky shade. In White Cochins, in both sexes, beak rich bright yellow. Comb, face, &c., as in Buffs. Eyes pearl or bright red. Legs brilliant yellow. Color of plumage all over a pure and perfect white. The defects in all classes of Cochins are bad head and comb; want of hackle, cushion fluff and leg-feather, vulture hocks, bad shape or carriage of tail, white in tail, (where objectionable) Primaries out of order, curved toes, stain of white in deaf-ear, faulty color or marking, want of size, general symmetry and condition. And the disqualifications are birds not at least tolerably matched. Primary wing-feathers twisted on their axes, utter absence of leg-feather in either one or more birds, badly twisted or falling combs; legs of any color but yellow or dusky yellow; black spots in buff; brown mottling (if conspicuous) in partridge-cocks, or pale breast, destitute of pencilling in hens, crooked backs, wry tails, or any other actual deformity.

BRAHMAS, Light and Dark, have each separate sections. The general characteristics of this breed having already been given, it will be sufficient to note each variety separately. The head of the Light Brahma cock should be silvery white, hackle white striped with black as distinctly as possible; saddle feathers either white or lightly striped with black; tail and tail coverts glossy green black, except the two top feathers which may or may not be laced with white; rest of the body a pearly surface color with grey under-fluff, seen when plumage is ruffled; the secondaries being white on lower edges and black on the inner; and primaries black. The shank-feathering white, more or less mottled with black. The head of the hen silvery white; hackle white heavily striped with intense black, the tail black except the top pair, which should be edged with white. The rest of the plumage same as in the cock. In both sexes the beak should be a rich yellow with or without a dark stripe, comb, face, deaf-ears and wattles brilliant red, with as few spiky feathers as possible. Eyes red. Shanks a brilliant orange yellow. The color of the head of the Dark Brahma cock should be silvery white, hackle white, heavily and sharply striped with black, and as free from white streak in the centre as possible. Saddle feathers the same. Back and shoulders silvery white except between the shoulders where the feathers should be black laced with white. Upper wing butts black, bow silvery white; barglossy black; secondaries white on outside web, black on inside; the end of

every feather black; primaries black except a narrow white edge on outside web; breast, under parts, and leg-feathers glossy black, as intense as possible; fluff black; tail black; shanks a deep orange yellow. The head and hackle of the hen silvery white, heavily and sharply striped with black, the marking to extend well over the head; tail black, the top pair edged with grey, rest of the plumage a silver-grey, accurately pencilled over in a crescentic form with steel grey, the breast to be perfectly marked and free from streaks up to the throat, the leg feather to be pencilled as the body; shanks deep yellow. In both sexes, beak yellow with dark stripe; eyes red, comb, face, wattles and deaf-ears brilliant red, as little obscured by feathers as possible, the beard or feathers under throat not to exceed moderation. The defects are bad head and comb, scanty hackle, want of cushion, fluff and leg-feather, vulture hocks, bad shape or carriage of tail, white in tail, primaries out of order, pale legs, curved toes, stain of white in deaf-ear, splashed or streaky breasts in dark; or black specks in light; shank feathers (in dark hens) not pencilled as the body; want of size, general symmetry and condition. The disqualifications are, birds not matched, primary feathers twisted on their axes, utter absence of leg-feather, pinky legs, large red or white splashes in dark birds, or conspicuous black spots in light, round or crooked backs, wry tails, crooked bills, knock-knees, or any other bodily deformity.

(To be Continued.)

Feeding Fowls.

To keep poultry economically and well, care and attention must be exercised in the feeding of them; a correct system is therefore of the first importance. The purposes served by taking food into the body are the production of animal warmth, the provision for the growth and waste of the body, and the supply of fat. A portion of the food consumed passes off in the process of breathing, or the consumption of carbonic acid; therefore a larger supply of warmth-giving food is necessary in winter than in the summer season—hence food which contains oily and fatty substance, sugar or starch are more suitable in cold weather than in warm; these are called carbonaceous foods. The waste arising from the movements of the body also require to be repaired, and for this purpose a different kind of food has to be supplied, and this is usually termed flesh forming substances or nitrogenous food, and must contain the element nitrogen; beans and peas largely supply this. The health and growth of young fowls depend largely on the quality of food given; a due supply of bone making and saline materials is therefore necessary; if this is wanting in the food the bones become soft, and strength fails. How often is this to be observed in leg weakness in young fowls especially these of the larger breeds. It will readily be seen then, that not only to raise young fowls well, but also to keep them in proper health, a knowledge of the different materials of which food is composed should be known and understood. Any poultry keeper may learn this from food tables supplied in different poultry books already published, and therefore unnecessary to reprint here.

The quantity of food to be given varies according to the breed of fowls kept; some breeds will eat twice as much as others, and hens eat more when laying than when not laying. Fowls should not be fed more than three times a day at most, and never more given to them at one time than they would pick clean up and with an appetite. No fixed scale of quantity can therefore be given with any degree of certainty; there is however a simple rule which if observed will answer pretty well. Adult fowls may have given to them in the evening, if kept in confinement, as much grain as can be lifted in a woman's hand, palm downwards; in the morning, if fed with soft, food a round

ball about two or two and a half inches in diameter, and in the middle of the day, half the quantity, if of grain, given at night. The smaller breeds such as Hamburgs, &c., should have proportionately less.

The best standard soft food is ground oats, if procurable; barley meal will make an excellent food, and if mixed occasionally with potatoes well washed, turnips, beet or mangold-wurzel, so much the better; this food should be given only in the morning, and then warm, especially in the winter season. Buckwheat as a grain is excellent food, and when fowls get accustomed to it eat it readily, so is good barley and oats; peas, beans and Indian corn, may also be supplied; but as already mentioned to supply only such wastes of the body as these materials are capable of. Spiced food is frequently recommended by poultry writers, some advocate the giving of raw onions at least two or three times a week, with a good supply of cayenne pepper in their soft food; others advocate the use of different condiments, all of which are largely made up of stimulants of various kinds. There is no doubt, all kinds of spiced food, materially tend to hasten maturity, whether it be to the chicken, the pullet or the hen that they are supplied. Chickens when thus fed when young, will attain to larger size and lay earlier, commencing at about four months old, and hens will be stimulated to winter and early spring laying, but breeders will do well to bear in mind that the continuance of stimulating fowls beyond a reasonable time will result prejudicially to both old and young fowls. It cannot be denied, however, that when judiciously and moderately given, used at certain times only, such food is highly beneficial. If given to chickens when fledging, it greatly assists in this, to them, exhausting process; and when given to drooping fowls has marked effect, quickly restoring them to their former healthy condition. It is a good thing, too, to give stimulating food to old fowls in cold or wet weather and when moulting, and to hens that do not lay in due time in early spring; but in any case when the desired effect is produced, spiced food should be discontinued, and the usual plain food be again restored. In old birds, if given too frequently or continued beyond the time already mentioned, it produces diseased organs, and in pullets stunted growth. In the care of chickens of all the larger breeds, the longer maturity can be postponed, the larger the birds are likely to be, and no matter what may be said to the contrary, the same feeding which produces forced and rapid growth during the very early period of chickenhood, will of necessity, if continued beyond this, result in stunted, because precocious adults—large size and early maturity cannot be had in the same bird—they are incompatible. For many purposes then it is well to have stimulating food always on hand, or the means by which it may be prepared at a moment's notice. The following condiment mixed with oatmeal will be found highly beneficial: Take of ground allspice 2ozs.; ground black pepper 2ozs.; ground ginger 1 lb. and brown sugar 1 lb.; mix together and add to the usual food in sufficient quantity to cause a slightly sweet and hot taste. When prepared it should be kept in a well corked bottle, ready for use when required. Very much of the profits of the poultry yard, then, depend on the proper feeding of fowls; inattention in this respect leads to more than half the disappointments of loss, to poultry breeders, and tends to produce disgust in the minds of others. Food must be given regularly and in moderation, not too frequently, nor yet too much at a time; in this consists one of the great secrets of profitable and successful poultry breeding.

It has been ascertained, by careful experiment, that the average weight for a dozen of eggs is twenty-two and a half ounces. The largest eggs weight twenty-four ounces per dozen, and the smallest only fourteen ounces and a half.

The Selection of Turkeys for Breeders.

The rule among the great majority of farmers is to breed only from yearling turkeys, and these generally are birds of the second litter. As we try to get at the reason of this practice, divers old wives' fables are offered in explanation. One is, that large gobblers are apt to crush small hens. If large hens are suggested as a remedy, we are told that large hens are apt to break the eggs. If it is shown that the eggs of large turkeys are larger and stronger, and likely to fare quite as well as small eggs under a small hen, we are told that it is not as well to breed from a cock the second year, or from two-year-old hens. When pressed to relate their experience in that line, they have none, but they heard of somebody that used an old cock, and the eggs were added. The real reason of breeding from young birds, in most cases, is that the farmer grudges the few extra pounds of poultry that he has to feed through the winter; The difference between a dozen good birds fit for breeding and a dozen of the second litter, is some sixty or seventy pounds—worth twelve dollars or more. If he markets that poultry he is sure of the money. The cost of keeping large birds in good condition is also more. So he tries to believe that the keeping of the refuse of the stock is good policy. This we know to be a very bad practice. Nothing on the farm pays better than poultry, and turkeys stand at the head of the list, if they can have good range, and not disturb the crops of neighbors. Turkeys do not reach their full size until their third year, and we believe we can get larger and stronger birds from full-grown stock than from yearlings. In the year 1871 we bred from a large Bronze gobbler, a late summer bird of the previous year, weighing twenty-five pounds, and from yearling hens with few exceptions. The gobbler was from a very large pair, weighing 62 lbs., and gave us a fine flock. We kept over the gobbler and most of the hens. He had increased his weight to thirty and one half pounds without extra feed, and some of the hens reached eighteen pounds. The result is a much larger flock of turkeys, and they are heavier October 1st than the flock of last year November 1st. This would indicate an average difference of three pounds or more by Christmas in favor of breeding from two-year-old birds. Pairs weighing forty pounds at seven months are much more numerous than pairs weighing thirty-five pounds last year at the same age. The turkeys have had the same care, and the difference in growth seems to be owing simply to the fact that the breeders were of larger size, and more mature. We kept over three late cock-turkeys, October chicks, hoping they would make large birds the second season. In this we were disappointed. Nearly all the spring birds have outstripped them by four or five pounds. The best of the late gobblers only dressed 11 lbs. at Thanksgiving, when he was about fourteen months old. Of course, seven months' feed and the care were lost. We propose to keep the same breeders the third year, unless we can find something heavier. With a cock weighing 35 lbs and hens weighing 20, we think we shall surpass the very satisfactory results this year. We are confident that nothing pays better than large first-class birds to breed from. Reducing this turkey experience to maxims, we would say: 1. Never breed from late turkeys if it is possible to get better. 2. Never breed from yearling turkeys if you can get two-year-olds. 3. If you must use yearlings, get a cock weighing from 22 lbs. to 28 lbs., and the larger the better, if he is well formed and handsome in plumage. 4. Large two-year-old cocks weighing 35 lbs. and upwards, are cheap at almost any price for which they can be procured. They will leave their mark upon the whole flock, and the influence of such a size will be seen for several generations. No birds yield more readily to skillful breeding than the turkey, and we are glad to recognize the influence of our Poultry Societies in its improvements.—*American Agriculturist.*

Washing a Fowl for Exhibition.

"After my old birds got used to it, I found I had hardly ever to use the straps at all, but when put on the saddle they would keep quiet of themselves. Finding such ease and comfort in the plan, I took to giving my best birds a daily washing of face, head and feet; and they became so tame and used to it that they would allow me to pick them up in the yard at any time except when feeding. One old cock in particular—a great pet of mine—which had been used to the saddle for two or three years, on my projecting it for use from the old dresser in my stable, used to jump on the dresser top, and give a lusty crow and flap of the wings, as much as to say, 'Now for a good wash.' He would then eye me inquiringly, which I took to mean, 'Are you going to put me on?' and if I still hesitated, would step on to the saddle and then wait a

few minutes in a sort of forlorn mood, till at length he brightened up and called to me just as if to his hens, at the same time making sham pecks at the pad, as if thereupon lay a most delicious morsel if I would but come and see. I waited one day to see how he would conclude the ceremony without a wash. After various marchings up and down the old dresser, off and on to the saddle, calling, crowing, &c., it terminated in his attempt to mount or rather descend to the saddle without assistance. The attempt, I must say, was a very sorry affair, for after trying to first put down one leg and then the other for a score of times, he made an indescribable attempt to slip down both at once, which brought him quickly to the floor. He was on his feet in a moment, looking round wrathfully indignant; when his eye caught the saddle and he flew at it as if at another cock, with his spurs in the air. Being too high he did not reach his aim, but found himself on his tail again; when he rose in a rather stately but subdued style, and slunk off the scene, looking thoroughly disgusted with me, the saddle and himself."—*From Wright's Illustrated Book of Poultry.*

Shall We Begin With Eggs or Fowls?

This question is often asked by those who are about to commence breeding the better sorts of poultry. The most desirable fowls are always high priced; and to give from \$20 to \$50 for a single pair of birds seems a pretty large investment of capital. The eggs are cheaper, though still dear in comparison with market eggs. The question is a fair one, and worth looking at. In starting a flock of pure-bred turkeys, if we commence with eggs, they will cost \$12 a dozen, at least, if you can find a breeder who is willing to sell them. They have to go through the hands of the expressman, and it is currently reported that eggs are sometimes broken or damaged on the passage. But if they arrive safely, and are put immediately under a setting hen, you may get a half-dozen chicks, and, with fair attendance, raise them. At the end of the season you have only half turkeys enough to start a flock with, if you have a good range. Twelve dollars will buy a good pair of pure-bred turkeys, if ordered early in the season. The hen will lay for the first setting about eighteen eggs. If these eggs are taken from her and put under hens, she will very soon lay a dozen or more for the second setting. If the eggs are properly cared for, and turned daily while they are in the house, they are quite sure to hatch. It is safe to calculate upon thirty eggs from a good bird, and a flock of a dozen or more the first season. The balance is altogether in favor of buying the fowls. There is little chance of being cheated, for, if the birds do not suit you, you have your remedy at once. But you do not know what is in the eggs until the end of the season. The best safety package for the transportation of eggs yet invented is the ovary of the mother. It is quite rare for fowls, properly boxed, to be injured in transit. They can be sent across the continent with about the same safety as across a county. It costs but a little more to buy good fowls, and you generally gain one season.—*W. Cleft, in Poultry Wc. Id.*

Poultry-Houses for the Farmer.

The cheapest way to build a fowl-house, and give the greatest amount of ground room (which is what counts with poultry) is to make but one roof and have that meet the ground. The building should be nine feet wide at the under-pinning, and nine feet high at the highest part. This gives as much floor room for the fowls to move about in as if the walls were high on all sides of the structure, and with great economy in building materials. There should be twelve doors in the building besides the small openings under the windows for the use of the fowls, and the ventilator near the peak. Three board doors in each end, the tallest being for the attendant to enter, and the other two for ventilation in extremely hot weather. The doorways of the board doors are furnished with another set of doors made of lath.

When the board doors are all open in hot weather and the lath doors shut, there is a fine circulation of air, and when the house is to be cleaned the lath doors as well as the others may be all opened. It may seem as if there was an over-plentiful allowance of doors, but we have tried as many to a building with satisfaction. There is nothing we hate worse than a hot, pent-up house for fowls in July. To make the house as warm in winter as it is cool in summer, keep all the board doors closed but one, and have a packing of straw between each lath door and the corresponding board door, excepting of course, the tallest pair of doors, where the attendant enters.—*Ex.*

Entomological Department.

The Canker Worm.

The committee of the Essex Agricultural Society made the following report, showing a cheap and perfect guard against the ravages of the canker worm:—

It is believed by our committee that no plan of protection that has yet been devised, is so good as that practised half a century ago, of tarring the trees; the great difficulty attending which was the necessity of applying it so often.

A great improvement has been found by substituting printer's ink, which does not dry so readily. The best method of applying the ink is to take a strip of tarred paper six or eight inches wide (a year old is best) and tack it around the body of the tree, after scraping off the roughest of the loose bark, and filling up any irregularities of the tree with cotton batting or tow. The paper should be put within one or two feet of the ground, to prevent cattle from rubbing off the ink and besmearing themselves (as they will if they have the opportunity), and also to keep the female grubs as low as possible; for they will often, when being obstructed by the ink, back down and deposit their eggs below, even without impregnation. Instinct teaches the males to seek their mates higher up the tree, in order to have the eggs deposited near where the young will find food.

The ink should be applied with a brush near the top of the paper, so that it may not run down upon the bark of the tree, which causes injury to it by attracting an unnatural amount of heat from the sun. In some instances where ink has been used without any paper, the tree has been killed. The paper should be removed from the tree after the season is over, as it makes a harbor for various kinds of insects during the summer months.

It is contended by many that the eggs deposited in autumn never hatch, and therefore it is useless to apply the ink until spring; but it is known that many, if not all such do hatch; and therefore, in order to have it effectual, it is necessary to commence in the fall and apply the ink as often as it dries upon the surface, varying from three to ten days. It should also be applied just as the eggs hatch for the purpose of catching any worms that may have hatched below the paper, although it is doubtful if the young worms would live so long without food as it would take them to ascend as far as the branches.

It has been found that if from any neglect of using the ink there are worms upon the trees about the first of June, by a sudden jar of the branches they will spin down, and immediately start for the trunk to ascend. A fresh application of the ink will catch them.

Where an accurate account has been kept of the material used and labor performed, it has been found that the cost of protecting an orchard by this method is not over ten cents per tree, which is so small an expense that no one can make it an excuse for allowing his orchard to be destroyed, or even a single crop of apples.

Fall ploughing has been practised as a protection against the canker worm by some of the committee for several years with perfect success, discovered accidentally by noticing that a part of an orchard which was ploughed in the fall entirely escaped the effects of the worm, while the portion of it not ploughed was eaten bare. All will admit the importance of ploughing and carefully cultivating an orchard, and if by doing it in the autumn the orchard will be protected from the canker worm, a double incentive is offered for this system of cultivation.

The committee feel warranted from experience and observation in recommending as an effectual, cheap and simple protection against canker worm, fall ploughing where practicable, and the use of tarred paper and printer's ink where ploughing is not admissible. *London Weekly Advertiser.*

Squash Bugs.

Three years ago a neighbor had a very fine patch of Hubbards on a farm where I think there were never any pumpkins raised. After the vines had covered the ground, and the young squashes were setting, giving promise of an abundant crop, the leaves began to curl up and die, and in a short time the whole patch was dead, "root and branch." An inspection of the vines showed them to be completely covered with the large squash bug.

The next spring I planted about an acre of Hub-

bards, and the fate of my neighbor's vines induced me to watch mine closely. The bugs soon made their appearance, and I went at them with thumb and finger. Almost invariably where the bugs were I found their eggs deposited on the under side of the leaves, and often the eggs would be found where apparently no bugs were, but a careful search would generally bring them to light. The eggs I destroyed by tearing or pinching the leaf on which they were deposited.

As the season advanced I found occasionally a leaf literally covered with small, whitish insects, which proved to be the young bugs, hatched from eggs that I had failed to find. I searched the vines carefully twice a week for several weeks, and succeeded in saving the crop. The number of bugs destroyed did not seem to be very great, but the quantity of bugs taken from the vines was, I thought, very large, and I have no doubt if I had let the bugs alone—or even if I had killed the bugs and left the eggs—I should have lost my crop.—*Correspondent, Country Gentleman.*

Peter Huber, the Naturalist.

He peopled with ants his garden, the terrace of his house, his study, his tables, which were turned into kind of hives, and, lest his new dwelling might be unsatisfactory to the ants, and in order that they might keep at work in it, he made rain and fair weather for them; his rain-making consisting in rubbing his hand for hours, at a time over a wet brush. In brief, he supplied them so richly with tempting dainties and weather contrivances, that at last they wanted nothing better than their chance home, a bureau-drawer.

Did he not even cherish the fantastic notion of bringing up the larvae of his ants, by feeding by hand? We cannot resist him for his attachment to these little thinking bugs. He meditated long over one decisive experiment—nothing less than the question of setting two colonies of ants at war on the floor of his study. He hesitated and lingered to awake the *casus belli* which should be the signal of slaughter; he devised pretexts to adjourn the dreadful scene. "I thought over this experiment for a long time," he says, "and I constantly postponed it, because I had grown very fond of my captives."

This recalls one of Reaumur's sayings. He observed with what celerity humble bees rebuilt their nest of mud after it has been opened to examine the inside, an intrusion which these insects allow much more patiently than honey-bees do, and he adds: "If the mass from above is thrown down pretty near to the foot of the nest, as one would naturally do without even thinking that it ought to be done to save the insects some trouble, they very soon busy themselves with putting it back in its place!" To save the insects some trouble! What a love for Nature the eighteenth century had, and how differently things are done nowadays! *The Popular Science Monthly.*

The Apiary.

Our Second Swarming.

I told you, I think, that I was quite satisfied with my first experience in "natural" swarming; so well satisfied was I, indeed, as to resolve never to have another.

But I could not make up my mind to at once destroy all my queen-cells but one, in the old hive. There were divers reasons for this.

How should I select the right one? Nature—if Darwin is right—would see to it that the fittest embryo princesses should be preserved for queenly rule. For her unerring law should I venture to substitute the mere blind chance which any choice of mine must be?

I had never heard the pipings of a young queen. Should I deprive myself of this pleasure—the pleasure of listening to an entirely new sound?

I had, withal, considerable curiosity to know how the bees would wish to manage affairs for themselves. Should I forego the chance of learning something respecting their plans? of studying their caprices? Of course I should have my own way in the end. (So little had experience taught me.) Of course I should keep the closest watch—but might I not wait a little?

The days went by. I waited and watched, and meanwhile such numbers of baby bees crept forth from their little cribs in this hive, that I began to ask myself if another colony might not be taken from it without the slightest risk. Ere long I had assured myself that this might be done.

Not willingly did I postpone this division until the oldest princess had made her appearance upon the stage. It was a case of necessity. I had no hives—was daily expecting some. That I chanced to be in such a predicament was not my fault—but to explain how it chanced would, I fear, be tedious both to you and to me, dear reader.

On the morning of June 12th, the pipings of the young queen were clearly to be heard, together with replies from a still prisoned sister princess. It was interesting, and I was highly pleased to know that the bees were of the same mind as myself in regard to their separation. But there was need of prompt action, for the morning was fair, and the sun hurried up above the tree-tops without consulting our convenience in the least.

"It will never do," I said to Nellie, "to wait for a hive, yet the hives may be here in two hours. Can't we improvise a hive that will hold at least the nucleus of our new colony for that length of time?"

Searching for a box in garret, cellar and barn, we finally found one, which we surrounded and darkened with blankets, we (for safety) sat in one corner of the sitting room. To this receptacle I consigned, and snugly covered in two frames—each comb covered thickly with bees, and each having two or three queen-cells.

Returning to the old hive we soon discovered the young princess, too intent upon destroying her rivals to cease piping or to be disturbed in the least by our investigations. Very carefully then did we look over the remaining combs, finding or cutting out five or six queen-cells. Sometimes we accidentally liberated an inmate, but in each case she was promptly secured, and tenderly put under a tumbler along with a drop of honey.

"Now," I said complacently, when we had finished this work, "I believe there is no danger whatever, yet to make assurance doubly sure, we will give them a frame of uncapped brood. Then if the queen should fly out, the bees will not follow her."

About this time Richard had returned from the depot and—yes he had the hives!

But well, "mistakes will happen sometimes in the best of 'manufactories,'" I suppose. As to the outside the hives were well enough, perhaps, but on opening them I found that of all their frames there was not one that I could use. Fortunately I had on hand some frames of my own, which, with some alteration, could be made to do; and at once we went to work at them.

Just then I discovered that the bees in the box were growing restless, had found a hole, and were escaping in a direct line to the window. Hastily transferring their two frames to an empty hive—noticing as I did that one queen-cell had yielded up its occupant—I set the hive on its stand and left them to do as they liked, while I hurried back to my work on the frames. This was not finished when Nellie quietly remarked:

"Cyula, your bees are swarming!"

I supposed it was those I had just been handling, but what was my surprise to find that the swarm was issuing from the old hive, where, as I thought, everything had been left just right with a young queen holding undisputed sway.

Concluding not to repeat the experiment which had resulted successfully with our first swarm, but rather to be sensible and do as other people do, we silently watched them until they were all out, and to our great satisfaction, had clustered on a small bush not ten feet from the hive. The cluster—though quite a respectable one—was not very large, and as there seemed to be a goodly number of bees left in the old hive, I determined to live and swarm and afterward mite them with the bees I had previously taken away.

We hived them ourselves—Nellie and I—gave them what frames we had prepared, and then returned to our work. This was about finished when, to our dismay, we beheld our new swarm once more rushing forth. We were somewhat reassured to see them again clustering in the same place as before. Again we hived them, and this time in a hive properly prepared and fitted with frames. During the operation, the queen fell to the ground. I picked her up and put her in the hive. Fatal mistake! it had been better to have put her under the tumbler. We gave these bees a comb of uncapped brood—we shaded them very carefully from the sun—once more we hopefully and trustingly left them to their own device.

"Why did they leave the old hive in the first place?" asked Nellie.

"Probably we overlooked a queen cell. We must find out as soon as dumer is over," I replied, as we returned to our appropriate "sphere" within doors.

While still at the dinner table, an only too familiar sound was heard. It was—of course it was—our bees leaving for the third time! I knew intuitively that

this must be the final leave-taking, and although when they started for the woods I grimly followed in the wake of Richard and Nellie as far as the fence, it was without a hope or expectation of any kind.

Richard went on through brush and brier, over logs and around the roots of upturned trees—for their course must needs be over the worst spot in all the woods, a place where two years before a small tornado had whirled through. He followed them till he reached the "dark woods"—(I don't know whether this phrase is peculiar to this locality or not; it means pine and hemlock as distinguished from maple, beech, etc). Here, seeing that they rose above the tops of the tallest pines, keeping straight on, he desisted and returned.

And here, I suppose, my already too long story naturally ends. But there is a circumstance connected therewith which I wish to mention because I don't understand it. On looking into the old hive in the afternoon I found, to my amazement, on the comb of uncapped brood put in in the morning, no less than six queen-cells started. All contained eggs but one; and in this was a plump little larva swimming in royal jelly. We at once concluded (perhaps erroneously) that we had not overlooked a queen-cell—that there was no queen in the hive. Without looking further, we took away their fine beginnings and returned them one of the combs I had hung in the box in the morning, on which was one queen-cell intact. (By the way, despite the elopement of my swarm, I determined not to yield the point of having two colonies. I put our nucleus of a swarm with their queen, and their remaining comb, minus its queen-cells, into the deserted but furnished hive. I contracted the space properly, and with a little help in the shape of capped brood, and most excellent work on their part, they have become a very fine young colony indeed.) Next morning I observed a dead queen lying in front of the entrance of the old hive. Looking into the hive in some alarm, I found a very lively young queen.

Now, what puzzles me is this: if those bees had a queen, why, reduce in numbers as they were, did they start a queen-cell? If they had no queen where did the dead queen come from?

Another (to me) curious circumstance connected with the queen at this hive, occurred a week later. Opening the hive to search for eggs, we espied her youthful majesty hurrying about in a very unqueenly way, with a guard, at the same time piping vigorously!

I don't think I ever observed except when her royal majesty was upon the wax path.

CYRIL LINCOLN.

Jubilant Over the Extractor.

DEAR BEE JOURNAL.—This is the best year for honey I ever had, that I have ever known. I lost all my bees but one stock during the last two winters; but was not discouraged, having got two others this summer. One of them is the largest swarm, that I have ever seen. It is two weeks, yesterday, since it was hived, and I have taken over seventy pounds of honey from it already, and the white clover is better now than ever. Of course, I used the extractor. I had to do it or the queen would have had no chance to lay her eggs. I must just say, that they had a little comb to build, as I have plenty of nice, bright worker-comb.

About the extractor, I got the description in the A. B. JOURNAL three years ago, and immediately got up one, and I consider it worth all my subscription to the JOURNAL. I am the only person about here that has one. Some of my neighbors thought it a humbug until this year, when their hives got too full of honey and I slung out a few combs for them, since which time they have changed their tune.

What do you think of the new name for the slinger, that I heard the other day? A party, on being told that he had better get one, asked if it was a *sucking machine*.

As white clover is still in full blast, and there is lots of basswood hereabouts, I expect, in the next two weeks, to throw out about a hundred pounds yet from my large swarm. I have tried Novice's plan of placing one hive above another with this swarm, and like it very much, but the way that queen lays eggs since I commenced to give her room, is a caution. I am almost afraid she will fill both hives with brood, when I shall have to put on a third one to get honey. It's a regular race between her and the bees, as the combs I emptied on last Saturday, and on Tuesday the bees had filled one-half with honey, and the queen the other half of each comb with eggs. I never saw anything to equal it, and a black queen at that. Hurray for big swarms, honey-slingers and the AMERICAN BEE JOURNAL!—Geo. T. Burgess, Lucknow, Ont., July 2nd, 1873, in American Bee Journal.

Poetry.

Improvisations.

BY BAYARD TAYLOR.

Fill, for we drink to Labor!
And Labor, you know, is Prayer:
I'll be as grand as my neighbor
Abroad, and at home as bare!
Debt, and bother, and hurry!
Others are burdened so:
Here's to the goddess Worry,
And here's to the goddess Show!

Reckless of what comes after,
Silent of whence we come:
Splendor and feast and laughter
Make the questioners dumb.
Debt, and bother, and hurry!
Nobody needs to know:
Here's to the goddess Worry,
And here's to the goddess Show!

Fame is what you have taken,
Character's what you give!
When to this truth you awaken,
Then you begin to live!
Debt, and bother, and hurry!
Others have risen so:
Here's to the goddess Worry,
And here's to the goddess Show!

Honor's a thing for drision,
Knowledge a thing for need;
Love is a vanishing vision,
Faith is the toy of a child!
Debt, and bother, and hurry!
Honesty's old and slow:
Here's to the goddess Worry,
And here's to the goddess Show!

—Harper's Magazine.

Miscellaneous.

What Shall We Do With Our Daughters.

- The Davenport "Democrat" sensibly says: Bring them up in the way they should go. Give them a good substantial common education. Teach them how to cook a good meal of victuals. Teach them how to wash and iron clothes. Teach them how to darn stockings and sew on buttons.
- Teach them how to make their own dresses.
- Teach them to make shirts.
- Teach them to make bread.
- Teach them all the mysteries of the kitchen, the dining-room and parlor.
- Teach them that a dollar is only one hundred cents.
- Teach them that the more one lives within their income, the more they will save.
- Teach them that the further one lives beyond their income, the nearer they get to the poor-house.
- Teach them to wear calico dresses—and do it like a queen.
- Teach them that a round rosy romp is worth fifty delicate consumptives.
- Teach them to wear thick, warm shoes.
- Teach them to do marketing for the family.
- Teach them to foot up store bills.
- Teach them that God made them in His own image, and that no amount of tight lacing or Grecian-Bands will improve the model.
- Teach them, every day, hard, practical common sense.
- Teach them self-reliance.
- Teach them that a good, steady, greasy mechanic without a cent, is worth a dozen oily-pated loafers in broad-cloth.
- Teach them to have nothing to do with intemperate and dissolute young men.

TREE PLANTING BY THE SIDES OF RAILROADS.—The Pacific Railroad Company are planting large numbers of quickly-growing trees along the track of the road, and particularly along the sides of the principal cuts. The preliminary work was commenced last season by ploughing up the right of way, 200 feet wide, where a considerable number of acres were planted, and 40,000 trees were set out, which are doing well. On the last year's prepared ground there is room for half a million trees. This year they are to break the ground up along the whole line of their road, each side of which will be planted with Oak, Hickory, Black Walnut, soft and hard Maple, Larch, white and Grey Willow, and Box Elder. In addition, the Land Department of the Company has broken 120 tracts of 15 acres each, at different stations, where they will plant trees intended for the protection and adornment of the villages and towns that are to grow up around these stations. —The Gardener.

A Good Road.

"A good road," says Macadam, "should be nearly flat, i. e., with a rise of only three inches from side to middle in a road 18 feet wide. This provides quite sufficient fall for the water to run off. If made higher, the traffic will be drawn to the centre, three ruts will quickly appear, and more water will then continuously remain upon the roads—and, in a manner, working the greatest possible mischief—than would be the case if the roads were reasonably flat. I will illustrate this in a very simple manner. Let a heavily laden wheelbarrow be drawn up a newly sanded path fifty times consecutively in the same track, and the result will be a rut; but let the same barrow be taken fifty times up the same path, and twice consecutively in the same track, and there will not only be no rut, but the path will be more solid and in every respect better than it was before." With regard to the application of materials, Macadam says, "That they should be laid upon roads in as thin layers as possible, for they seldom wear out, but are simply misplaced by the action of the traffic. If laid on thick, the water runs through them like a sieve, and penetrating to the surface, if I may so term it, there unobserved (but perhaps on that account the more effectually) causes irreparable damage; this specially shows itself when alternate frosts and thaws or continuous rains set in, by the complete breaking up of the roads. Moreover, a road rendered rough for a length of time by the injudicious application of materials, will certainly produce ruts, for the public, naturally shunning the roughest parts, will consequently follow and keep in the first visible tracks, which will soon grow into furrows or ruts. Further, materials should be placed upon roads and allowed time to consolidate, before the winter sets in, and then if the roads be correctly formed they will present a hard level surface impervious to rain, and but slightly influenced by other climate changes."

The Tree.

The town of Perry, in Georgia, abates one dollar of taxes for every elm or water oak that a citizen sets out in the street. This indicates the birth of a very different sentiment from that of the early American pioneer who, naturally enough, perhaps, felled a tree with as little compunction as he shot an "Injan." The elms which so gracefully shelter New Haven that, the poet Willis said, a bad night lay above them without seeing the town beneath their branches, and a certain lovely water-oak in Richmond which all who have seen it remember with pleasure, might well justify the action of the town authorities of Perry. One of the finest eclogues of the tree was pronounced by the late accomplished Dr. Haddock, of New Hampshire. He said: "The tree is easily removed; may be set single or grouped; has an agreeable motion; breaks the violence of the winds, and shelters from the noonday heat; may be made to hide from the view unsightly objects; answers the purpose of expensive architecture, by clothing the simplest building with a lively grace; and, what is enough of itself to recommend its culture, attracts from the forest, where they are preyed upon by natural enemies, numbers of our most beautiful and musical birds, who delight in the security, and I have thought in the society, afforded them by the neighborhood of man."—Farm and Fireside.

Mark Twain modestly denies that he is the man alluded to in the line—Mark the perfect man.

An aristocratic Fifth avenue papa, on being requested by a rich, vulgar, young fellow, for permission to marry "one of his girls," gave this rather crushing reply, "Certainly, which would you prefer, the waitress or the cook?"

A sorrowing friend, writing on the death of an estimable lady, said: She has gone to her eternal rest. His dismay can only be faintly imagined when, upon a "proof" of his obituary notice being sent to him, he read: She has gone to her eternal roast.

"That's where the boys fit for college," said the professor to Mrs. Partington, pointing to a school house. "Did they?" said the old lady with animation. "Then if they fit for college before they went, they didn't fight afterwards?" "Yes," said he, smiling and favoring the conceit; "but the fight was with the head, not with the hands." "Butted, did they?" said the old lady.

Advertisements.

THE FIFTH ANNUAL SALE OF THOROUGH-BRED SHORT-HORNS, At BOY PARK,

Will take place at noon, on THURSDAY, 18th SEPT'R, 1873, When there will be sold without reserve, 40 Cows & Heifers, and 25 Bulls & Bull Calves,

BERKSHIRE PIGS, From the imported stock of Earl Fitzharringe, Col. Kingcott, and Mr. Humphreys, England, that carried off the first prizes last year at the Provincial and London Shows.

TERMS.—Approved note at six months, or discount for cash at the rate of eight per cent per annum. Intending purchasers can inspect the Herd at any time previous to the sale, and catalogues will be sent as soon as ready, on application to the proprietor.

GEORGE BROWN, Brantford P. O.

Boy Park, 15th July, 1873. 10-14

PUBLIC SALE OF SHORT-HORNS, INCLUDING TWENTY-SECOND DUKE OF AIRDRIE

And 20 Females, many of them of PURE BATES BLOOD. Also BULL CALVES—being the entire Herd of

LIEUT.-COL. J. B. TAYLOR, To be sold without reserve, at Springwood, one and a half miles from London, Ontario, Canada, On Friday, 12th September, At 2 o'clock, p. m., punctually.

TERMS—Six months' credit on approved endorsed notes, with interest at 8 per cent. Breeding List on day of Sale. Catalogues now ready on application to JOHN B. TAYLOR, London, Ont. J. R. PAGE, Auctioneer. 10-15-2t.

PUBLIC SALE OF THE NEW YORK MILLS HERD OF SHORT-HORNS.

In pursuance of a determination reached with great reluctance, but forced upon me by the demands upon my time of other interests and pursuits which it is impossible to neglect or curtail, I will offer at Public Auction, on

Wednesday, September 10th, 1873, At 1 o'clock p.m., Without Reserve, my Entire Herd of Thorough bred SHORT-HORNED CATTLE

Including representatives of many of the best known and most valuable families, and numbering Over One Hundred Animals. Catalogues may be obtained of the Auctioneer, Mr. JOHN R. PAGE, Sennett, Cayuga Co., N. Y., or of the undersigned. SAMUEL CAMPBELL, New York Mills, Oneida Co., N. Y. 4t-10-12

TO BEE HUNTERS!

I AM SELLING A BEE SCENT THAT WILL DRAW HONEY BEES for a distance of two miles, and a Guide for Hunting. Full particulars on receipt of \$1. Address to J. W. M., Box 72, ORELLIS, Ontario. 10-15-1t.

GOODENOUGH HORSE-SHOE.



THE CHEAPEST & BEST.

CURES AND PREVENTS ALL DISEASES INCIDENT TO THE HORSE'S FOOT.

JUST PUBLISHED: "RATIONAL HORSE-SHOEING," With plates illustrating how to perform operations, and cure foot troubles. Price, ONE DOLLAR. Send stamp for circular to 10-15-3t. GOODENOUGH HORSE-SHOE, 41 DEY ST., N. Y.

Stammering permanently cured by Bates' Patent Prize Scientific Appliance. They received gold medals at the last London, Paris and New York Exhibitions, and are favorably noticed in the London Illustrated News and Medical Times. For pamphlets and drawings describing the same, address SIMPSON & CO., 45 BOND STREET, NEW YORK

IMPORTANT TO FARMERS.

BONE MANURE.

The best and purest Bone Manure for sale in lots of say 10 Tons, at \$10 per Ton, free on Cars at Hamilton. For further particulars and samples apply to 10-12-1t' BOX 468, Hamilton P. O.

\$5 TO \$20 per Acre. Agents wanted! All classes of working people, of either sex, young or old, make more money, at work for us in their spare moments, or all the time, than at anything else. Particulars free. Address G. STINSON & CO., Portland, Maine.

FARMERS!

USE THE BONE SUPERPHOSPHATE,

MANUFACTURED BY The Western of Canada Oil Lands and Works Co.

It is the best fertilizer now in use. Read testimonials from parties who used it last year.— LONDON TORONTO, 4th CONGRESS, } January 29, 1873.

GENTLEMEN.—I have pleasure in reporting to you the improvement on my land by using the Bone Superphosphate. I gave it a trial on four acres of clay soil, that was completely run out and impoverished. I used the Bone Superphosphate on one lot, wood ashes on the second, and barayard manure on the third, on young grass. The result was decidedly in favor of the Bone Superphosphate, so much so that I shall take a much larger quantity from you on the coming season. I am yours, &c. CHAS. PRIDDIS. London, Ont., Jan. 21, 1873.

GENTLEMEN.—Having used the Bone Superphosphate manufactured by the Western of Canada Oil Lands and Works Company, I can bear my testimony to its excellence as a good fertilizer. I tried it on grass land, celery, and also on the green-house plants. The result has surpassed my expectation, particularly on the celery plants. I can gladly recommend its use to any that have not already used it. I am, yours obediently, JOHN BARRON, Gardener to the Hon. John Carling. SPRING BANK, WESTMINSTER, } March 13, 1873.

GENTLEMEN.—The ton of Superphosphate I purchased from you last season I applied to grass lands, and was well pleased with its effects, notwithstanding the very dry and unfavorable season. I am convinced of its being a valuable fertilizer. Yours truly, JOHN B. TAYLOR. Lot 5, Cox. B., Gore Road, London, Ont., } March 12, 1873.

GENTLEMEN.—The Bone Superphosphate I purchased from you last spring was used on "Corn." The yield was fully one third more where the Bone Superphosphate was used, and was better in color and quality. I expect to derive equal benefit by using it on my wheat this spring. It is the best artificial manure I have ever seen. I am, yours respectfully, GEORGE PLAXTON. WESTMINSTER, Feb., 1873.

GENTLEMEN.—I have used your Superphosphate on grass lawns and on crown crops, flowers, &c., and found it very beneficial. As a fertilizer, there is no question it is the best known to science. Yours truly, W. Y. BRUNTON. Testimonials from other scientific and practical men will be inserted in next issue.

The Superphosphate is put up in good barrels, containing about 225 pounds each. Price, \$10 per ton. It is also put up in bags containing 50 and 100 pounds each at the same price. No charge for bags or barrels. All orders will receive prompt attention. Address, WESTERN OF CANADA BONE SUPERPHOSPHATE WORKS. v 10-9-1t LONDON, ONT., CANADA.

NOTICE TO FARMERS. MANURES FOR SALE.

Lamb's Superphosphate of Lime, \$10 per ton. Half-inch Bone Dust, \$9 per ton. Delivered free of charge at railway stations here. Terms, cash to accompany orders. PETER R. LAMB & Co., Manufacturers, Toronto. v 10-9-1t.

USE PARK'S COTTON WARP!

The best in the Dominion. Full length and carefully numbered. For sale by all Dealers ALEXANDER SPENCE, (Montreal, Agent

CONTENTS OF THIS NUMBER.

Table listing various agricultural topics and their page numbers, including 'THE FIELD', 'AGRICULTURAL IMPLEMENTS', 'GRASSES AND FORAGE PLANTS', 'THE DAIRY', 'THE ORCHARD', 'THE FRUIT GARDEN', 'THE KITCHEN GARDEN', 'THE FLOWER GARDEN', 'CORRESPONDENCE', 'EDITORIAL', 'AGRICULTURAL INTELLIGENCE', 'BREEDER AND GRAZIER', 'POULTRY YARD', 'ENTOMOLOGY', 'APIARY DEPARTMENT', 'POETRY', and 'MISCELLANEOUS'.

THE CANADA FARMER is printed and published by the GLOBE PRINTING COMPANY, at 26 & 28 King Street East, TORONTO, CANADA, on the 15th and 20th of each month. Price one dollar and fifty cents per annum, free of postage. GEORGE BROWN, Managing Director