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THE

Canadian Agriculturist,

OR

JRNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

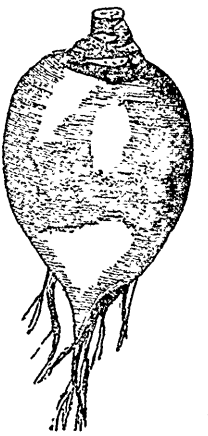
OF UPPER CANADA

L. XIV. TORONTO, MAY 16, 1862. No. 10.

The Swedish Turnip.

introduction of the Turnip as a field crop reat Britain constituted a new and im- t era in her agricultural history. More and cattle, and those of improved quality maintained, more manure therefore pro- and, as a consequence, the grain crops d a proportionate increase. The same have obtained in Canada, wherever tur- l root culture has become established; general rule it will be found that in istricts where the raising of root crops yet found its way, cattle in particular, only small in number but especially in- point of quality.

whole class of what are designated *turnips*, are characterised by certain ve features and qualities, which broadly sh them from the white or common ip. The colour of their leaves is in- of a darker green, almost approaching the root is also more solid, and pos- higher specific gravity. They grow ly, require better land in higher con- d are better able than common turnips severe frosts. They contain less heir composition, and are proportion- nutritious. They are also more fat- n milk-producing, and less laxative mon turnips. Twenty tons of good considered to contain as much nutri- r as twenty-five tons of the average of yellow turnips, or as thirty tons of the average of white turnips.



The common purple top Swede, is an old variety, hardy, solid, and of good quality, and it has always been regarded as well adapted to the climate and soil of this country. This is probably the parent stock from which others have sprung. It is distinguished from the other "purple tops," by the dull red colour of the upper part of the bulb. It is very solid in texture, not apt to run to seed, and particularly suited to strong, deep soils. It grows deep in the ground, and the crop consequently appears to the superficial observer to be less than it really is, while the case is reversed with the improved variety. The annexed sketch (fig. 1.) presents a correct view of the shape and appearance of this old and much approved variety.

Mr. Skirving of Liverpool, (England) has distinguished himself in raising new and improved varieties of the Swede; his *Improved Purple Top* has attained to a high reputation, and is more or less cultivated wherever Swedish turnips are grown.

Fig. 2.

The annexed cut (fig. 2.) will afford a correct view of a good specimen of this sort. It differs from other "purple tops" in the more oblong shape of the bulb, having a large neck, standing more out of the ground, and consequently, in this climate, requiring to be taken up early, as being much exposed to frost. It is a good variety to sow in shallow or hard dry soils. In the former case it produces a better crop than any of the other varieties of Swedes, in consequence of the slight hold it requires of the ground; and, in the latter, it swells out on the surface, and when lifted there is not such an adhesion of earth as with the deeper seated roots; a circumstance of great advantage in a wet season.

Laing's Improved Purple-top Swede.

(Fig. 3.)

In Lawson's *Agriculturist's Manual* the author says of this turnip, "that it differs from all hitherto known varieties of swedish turnips, in having large cabbage-like leaves, which, by their horizontal growth, form a thick covering to the soil, thereby materially checking the vigour of autumnal weeds." This peculiarity of shape will be seen in the annexed cut, (fig. 3) where both the leaves and bulb are seen in their natural condition. We have seen excellent crops of this variety raised in Canada, but we question whether for ordinary field culture it is equal to the common or Skirving's Improved Purple-top; certainly it will not yield so large a wieght. Of all the class of Swedish turnips *Laing's Improved* is unquestionably the best suited for domestic use. Its size, form and quality admirably adapt it for the table, and it should therefore be preferred by market gardeners to all other sorts of Swedes. *Matson's Swede* somewhat resembles Laing's in its mode of growth, being remarkably neat and trim in its appearance; both grow late in the fall, and consequently are not so well adapted to a climate like ours, so peculiarly subject to early autumnal frosts. But these sorts have been found quite hardy, good keepers, and but little liable to run to seed. This latter circumstance, by the way, greatly depends on purity and change of seed, good cultivation, and the character of the season.—The *Green top Swede* is considered to be one of the oldest varieties, and had formerly a high reputation, which Lawson considers it would have maintained —had the same care been given to its cultivation and the selection of roots grown for seed, as have been devoted to the Purple tops.

The following table is compiled from the results obtained by the writer of the article on Turnips in *Morton's Cyclopædia*, in experimenting on the growth of different varieties of Swedes, in 1848. The land on which they were grown is a good black *trap* soil, dry and easy to work. The foregoing crop was oats, after clover and rye-grass cut once and then pastured. The manure for the turnip crop consisted of sixteen double cart-loads of well rotted compost, (straw, yard dung and rich mud) per acre, and, in addition, from four to five bushels of bone-powder were strewed in the drills above the dung. The seed was sown on raised drills, at the rate of 3 lbs. per acre; the young plants all brairded well, were thinned about the 20th of June, and the crop raised in the end of October.

Name of Variety.	Produce per imperial acre of clean bulbs. tons.	cwt.	qrs.	lbs
Common Purple Top Yellow Swede,	22	11	2	24
Skirving's Improved do	19	15	0	1
Fettercairn Purple Top do	18	7	1	8
Laing's do do	14	0	1	5
Common Green Top do	21	12	0	16
Fettercairn's do do	14	16	1	8
Green Top White Swede	14	8	3	18
Purple Top do do	16	13	1	13

The two latter varieties are described as being of inferior quality, many of these bulbs being principally composed of their roots and matted fibres, and the weights in the table above for these two sorts are probably higher than they should have been, in consequence of the practical difficulty experienced in cutting the roots and fibres away from the bulbs. All the other varieties were of excellent quality.

Although the climate of the British Islands is from its moisture and absence of excessive heat much better adapted to turnip culture than Canada, yet we have seen in this country heavier crops than are indicated in the preceding table. From 800 to 1000 bushels per acre was no uncommon thing to meet with on the farms of those engaged in the turnip competitions that so materially tended to give an impetus to this department of Canadian husbandry during the last few years. A Thorough prepararation of the soil, judicious manuring, with a plentiful application of pure seed from proved stocks, and proper after culture, will in general secure a good, paying crop of turnips here as well as in the old country. The root competitions to which we have referred, show indisputably the valuable results which may be obtained in Canada by a vigorous application of the proper means. Our advice is,—in turnip and root culture particularly, to attempt no larger a surface than can be managed in the most thorough and perfect manner.

Flax Culture.

Messrs. Editors. Is there any way that one of the six Flax Cleaning machines, coming from Belfast to Canada West, could be located in Prince Edward County. Our county is not famed for flax culture, for although I have repeatedly shown samples of flax and seed at our Society Show the judges, (except one trifling 25 cents,) never allowed me any credit for it. I cultivated flax in the North of Ireland for the Belfast market for twenty years, and knowing the value of the seed for calves raised less or more for the last twenty years in this country for the seed alone. I have never been able to get machinery to clean the fibre; it would not cost over $60 or $70 to make the rollers and shaft, with the scutching handles made to be attached to and driven by a horse power of a threshing machine. I am well acquainted with all the processes it has to undergo, except the steaming, which may be preferable to watering, especially in this changeable and extreme climate. The best flax I ever raised in Canada I got nicely watered, and then lost it by three days of warm moist weather. It is more ticklesome to guage in watering and grassing here than in the North of Ireland, some more to weed and pull, and in an average of years about four inches shorter. These are the drawbacks; but on the other hand the cheapness of the land in Canada may make it as remunerative to grow here as there, and if so, I am sure it will pay better than wheat, if we only get the machinery in operation to dress it well. No one should sow it on new land. It needs to be as near one length as possible, therefore the soil needs to have been thoroughly wrought, moderately rich and clean. My seed has got foul with yellow top, if you can get a barrel of good seed sent to Picton before the first of May, with a good prospect of means of clean fibre, please do so, and oblige,

Samuel Anderson.

Picton, April 14th, 1862.

[As our correspondent is not far from Kingston he will probably be able to take advantage in some way of the scutching mill placed at that city by the government.—Eds.]

Cure for Turnip Fly.

No. 1. Recommended by Mr. Fisher Hobbs to the Royal Agricultural Society of England.

Take 1 bushel of fresh white ashes, or Fine wood ashes may be used instead of gas ashes.

1 bushel of fresh lime from the kiln.

6 lbs. of sulphur.

10 do of soot well mixed together, and got to as fine a powder as possible, so that it may adhere to the young plant. The above is sufficient for two acres when drilled at 27 inches, to be applied early in the morning when the dew is on the leaf, with a broadcast machine or sprinkled with the hand carefully over the rows. If the fly continue troublesome the process should be repeated, always when the plant is damp. In light land it is best to make the drills on the flat, the ground being well prepared to receive the seed.

No. 2. Another remedy by the same.

Take 14 lbs of sulphur.

1 bushel of fresh lime.

2 do of road scrapings, or a substance of good-

mould where road scrapings cannot be obtained, per acre, mixed together a few days before it is used, applied very early in the morning, or *late* at night; in the same manner as directed in No. 1. using the horse hoe immediately after.

J. B. M.

Dairy Management, and the Cultivation of Mangel Wurzel.

We take the following abridgment of the proceedings of two important Societies connected with Agriculture in London, from the *Irish Farmers' Gazette* of April 19th, and which will be found to contain much useful information of general interest and application.—

Those circles of the agricultural world which have their centre in London had last week a more than usual amount of pleasurable excitement, arising from the discussion of subjects connected with their profession. The ordinary monthly meeting of the Central Farmers' Club took place under the presidency of Mr. Charles Howard, on Monday, the 7th, inst., at which Mr. Dumbrell, of Ditchling, Sussex, introduced the subject of "Dairy Management;" and at the weekly meeting of the Royal Agricultural Society, Mr. Freere, Editor of the Society's *Journal*, opened the way for some tolerably useful remarks on the cultivation of mangel wurzel; both very seasonable subjects, and, in the case of the Central Club, possessing furthermore the merit of novelty, nothing immediately relating to it having been previously brought before the club. Professor Voelcker, indeed, as our readers are aware, had recently, at a meeting of the Royal Agricultural Society, expressed his views as a scientific man on the subject, but it remained for the central to pronounce upon its practical bearings.

In doing so, however, it was chiefly the milking properties of certain breeds, and the best manner of feeding milch cows, which were discanted upon; whilst the actual manufacture of dairy products—butter and cheese—was very slightly attended to. Now, in a discussion on dairy management, this was almost like acting the play of Hamlet without the part of Hamlet; for, surely, the manufacture of butter and cheese form a most important part of the circle of subjects which may be comprised under the general head of dairy management. We confess therefore, feeling somewhat disappointed; because, when we found the subject named as one which would be brought forward at a meeting of the Central Club, we hoped to have the pleasure of reading the experience of some practical speakers from the best dairy districts. And, assuredly, the extraordinary difference which exists in the qualities of each of these products of the dairy would have afforded ample room for inquiry, some qualities of butter being positive luxuries, whilst others are not good enough to grease a cart wheel; and then there are the rich, mellow English cheeses, which actually melt in the mouth, and, on the other hand, those hard, horny, kinds which might serve as wheels for wheel-barrows, but as an article of food are like the celebrated skim milk cheese of Suffolk, of which it has been said that it "was so hard, that the pigs grunt at it; dogs bark at it; but neither of them dare bite it."

With reference to the milking properties of the different breeds, Mr. Dumbrell was in favour of the Channel Islands or so called Alderney cow as the best for butter making, ranking the Ayrshire next, and recommending a cross between these two breeds as producing a very valuable animal. Mr. Little of Wilts, coming from a cheese-making district, advocated the short-horn, believing that "nothing looked better or more promising than a fine herd of short-horns feeding in the open pasture. Mr. Ellis, of Guildford, another short-horn advocate, would "venture to say," in opposition to Mr. Dumbrell's opinion of the Alderneys, "that there were other breeds which, taken as a whole, would be found equal, if not superior, to the Channel Island breed for the purpose under consideration," having "know some cows of the Ayrshire breed which were, in his opinion, more profitable on the whole than the Channel Islands cow. He considered that the first cross between the short-horn and the Channel Islands cow produced a very useful animal for dairy purposes, although, perhaps, it might not "give so much butter as a pure Alderney it was very profitable, arriving early at maturity, and having many good points belonging to the short-horn breed." Mr. Coleman had found that a herd of sixty or seventy Hereford cows did not produce enough of butter and cream to supply the large demand for these articles at Woburn, the Duke of Bedford's seat, where Mr. Coleman is farm manager, and he now keeps a herd of Herefords for breeding or suckling purposes, and another herd, polled Suffolks, on account of their yielding an immense quantity of milk. He had found that crosses between the Hereford and Ayrshire and Hereford and Alderney "improved the feeding qualities of both the Alderney and Ayrshire, while it did not much affect their milking qualities." With respect to the short-horn, he allowed that no breed had a greater tendency to fatten, but in their case "it often happened that the better the pasture the smaller the quantity of milk." Mr. Middleton, Cuttleslowe, Oxford, who had kept the best kind of common cows in the midland counties at one time gave his experience of pure short-horns as dairy, cows in the following terms:—

"About sixteen or seventeen years ago he considered whether he could not do better by purchasing some pure-bred animals, and there

breeding from them. Accordingly he bought five heifers of Collings' blood (the parent stock or Bates and Booth), and has since bred exclusively from them, and treated them as common cows up to the present day, from time to time purchasing first-class bulls to use with them, and then rearing their calves upon skimmed milk; and he believed that they gave as much milk and butter upon fair treatment as the common cow, but perhaps did not hold it quite so long when they got near calving time. As a set off against that, he sold his bull calves at 6 or 7 guineas, at 10 or 12 days old, and some at a higher figure, to farmers and others; and the result was that he, in conjunction with a few of his neighbours, who have partially adopted this practice, had been the means of improving the breed among the farmers; in fact, the whole of his neighborhood was tolerably well off for good bulls. His own opinion was that the short-horn was not only the best dairy cow, but also after she was dried and barren, the best grazing cow into the bargain, and that the better they are bred the bettter they feed; and we have Professor Voelcker's experiments in corroboration of the fact that pure-bred short-horns yielded as much milk and butter, within a fraction, as the common cow. In conclusion, he remarked that in advocating the claims of the pure-bred short-horn cow as a dairy cow, he did not intend it as an advertisement, to his herd of short-horns, because they were milkers as well as graziers, but for the simple fact that the Alderneys had been put forward as the best dairy cow; and also to disprove the allegation in the *Mark Lane Express*, a week or two back, that 'pedigree animals are just now getting into bad odour,' because some people will stuff, pamper, and spoil valuable breeding animals for the purpose of exhibition."

This is just such language as we would expect Mr. Tynte, of Tynte Park, to use, were he called upon to speak of the best description of cows for dairy purposes; keeping, as he does, a large herd of high-bred cows solely for the dairy and finding it profitable to do so. In one point, however, we think Mr. Tynte would not agree with Mr. Middleton, namely, that short-horns, perhaps, do not hold their milk quite so long as "the common cows" when near calving time; for the Tynte Park short-horns are not only profitable milkers, but some of the highest bred of the cows, of Booth blood, scarcely ever become dry.

Referring to his system of keeping mich cows, Mr. Dumbrell asked the meeting to forgive him on this part of his subject, he shou d "mount hobby." His system consists in tethering his cows during summer, instead of allowing them to range over the pasture. The cows are staked down at equal distances, each animal having a range of 16 feet. They are moved frequently, from 12 or fourteen times a day when the grass is short, only a small portion being given at each time, not more than twelve or eighteen inches, the object being to prevent the cows from placing their feet at any time upon the grass they are about to eat, so as to avoid waste. The cows have water twice a day, and he finds that 8 or 10 statute acres of fair meadow land, pastured in this manner, are generally sufficient "for 25 cows from the time they leave the stall until after haymaking." During summer, when the flies are troublesome, they are tethered only at night, getting rye, vetches, and clover in their stalls under cover during the day. Towards the end of autumn, as the weather becomes cold and wet, the cows must be taken into the stables at night, "lying out in wet weather being detrimental in every way to dairy stock, but no weather," he says, and let our readers in the dairy district mark his words—"no weather is so injurious to the produce of milk, besides being likely to cause abortion or slinking, as white frosts, and the greatest care should be taken that cows in calf should not feed out at that time." Mr. Dumbrell spoke of the merits of the drumhead cabbage as food for milch cows during the early part of winter, being highly nutritious, and assisting the colour of the butter; he follows the use of it with that of swedes, then mangels, spring rape or late sown turnips with rye, bringing the cows on until the grass is ready for a renewal of the tethering system. Of that system he has had 18 years' experience, and although much ridiculed at first, is now adopted by many of his neighbours.—One of these, Mr. Wood, spoke highly in favour of Mr. Dumbrell's mode of tethering cows, stating although at one time he had a very poor opinion of it, experience had made him quite a convert. The other speakers, however, were not inclined to follow his example and become converts to the system, although some of them allowed that it might answer in the case of cows of the Channel Islands breed, which were brought up to it as calves.

Mr. Dumbrell had not found the use of artificial food, such as oil-cake, meal, grains, profitable, but others said they used it regularly, and found that they were paid by the use of it; Mr. Coleman even stating that very few who kept a dairy, "whether of short-horns, Herefords, Alderneys, or any other breed, could supply really good butter without a small portion of one of those articles, "viz, cake or meal.

With regard to the indoor management of the dairy, Mr. Dumbrell recommended that a sustained temperature of 56 degrees should be kept up during winter, by means of hot-water pipes; that the milk pans should be of tin, oblong, with rounded corners; that "butter to be perfect should be churned every day," that the cream should not be in a state of decomposition before being churned; that scrupulous cleanliness be attended to in every part of the management;

and that in order to produce good butter there should be a succession of fresh calving cows.

Such were some of the principal points attended to in the course of the evening; but before closing this section of our subject, there were some remarks made both by Mr. Coleman and the chairman which we cannot refrain from giving. Mr. Coleman said "that very few farmers paid people properly to look after the dairy;" that "unless the whole system of a farm were dairying, the work seemed never to be done in a proper manner, and hence it was that the dairy was so much abused and so frequently giving up;" and the chairman, Mr. O. Howard, referring to the great point upon which successful dairy management hinges, said:—

"Speaking as a tenant farmer, he would observe that the successful management of a dairy depended very much upon the ladies of the establishment. They might buy the best cows for milk that they could possibly obtain, and might also feed them with the very best description of food, but if the eye of the mistress was not directed to the dairy, very little good would be accomplished. On his talking over this matter with an old fashioned friend of his some time since, and asking him what system was pursued in his parish, his friend remarked, "There is very little dairying now—we have no dairy ladies." Now, he (the chairman) was at a loss to conceive how it could be beneath any young lady whose lot had been cast in a farm-house, to notice the diary. There was no more necessity for her in the dairy than there was for the husband on the farm to perform menial duties; but it was highly desirable that the mistress should have a practical acquaintance with and devote some attention to its management."

We omit the numerous and hearty "Hear, hears" with which these remarks were met; but, whilst they show that dairy farming is an occupation in which determined bachelors should not engage, they also show that a farmer's wife or daughter will never be demeaned in the estimation of sensible people when they take an active part in the management of what is really their particular department. And for the opinion of any other class of people farm-house ladies should not care "two rows of pins."

We now turn to the proceedings at the weekly meeting of the Royal Agricultural Society, where the cultivation of mangel wurzel was discussed. Mr. Freere had made what he termed "a slight experiment" to ascertain the comparative value of "Lawson's artificial guano" and ordinary Peruvian guano as manures for mangel. The season proved unfavourable, and the weight of the crop obtained only ranged from about 15 tons to 22 tons per acre. This "slight experiment" did not, therefore, afford information of any practical value, and the rambling and somewhat incoherent remarks with which he followed up his statement were equally devoid of interest.

Mr. Holland, M.P., was in favour of autumn instead of spring manuring for mangel, evidently referring to the use of long farm-yard dung; and alluded to experiments reported by the late Mr. Pusey, in an early number of the society's *Journal*, when the inference drawn was "that it is more profitable to use some artificial manures in conjunction with dung" in mangel cultivation "than to use either singly."

Mr. Cantrell had grown mangels on the same piece of land four years in succession, giving the land a slight dressing every year, "and every year the roots increased in size." Mr. Peel had grown mangels six years in succession, obtaining good crops all the time, and a friend of his had even "grown mangel on the same piece of land for 17 years in succession, and that land is now being sown with mangel again."

The Chairman, Sir Edward Kerrison, M.P., brought forward reports of two sets of experiments in mangel cultivation, which had been made by his farm bailiff, Mr. Horn, the one in 1856, and the other in 1860; and as those experiments are of considerable practical value, we gave them in full for the benefit of our readers:—

EXPERIMENTS IN 1856.

The following experiments were conducted on a poor gravelly soil, in order to ascertain the effects of artificials applied loosely on each. Crop sown the 21st of May, and raised the 12th of November, 1856:—

No	Manures per Acre.	Produce, tons c.
1.	20 loads well-prepared stable dung, and 4 cwt. of guano	23 16
2.	20 loads well-prepared stable dung, 4 cwt. of guano, and 5 cwt. of salt	30 12
3.	20 loads well-prepared stable dung, 1 cwt. of guano, 1 cwt. superphosphate, 1 cwt. blood manure and 1 cwt. salt	25 10
4.	40 loads of dung	21 3
5.	2 cwt. guano, 2 cwt. superphosphate, 2 cwt. of blood manure, and 2 cwt. salt	20 0
6.	7½ cwt. guano	17 1
7.	12 cwt. superphosphate (Lawes')	14 1
8.	13 cwt. blood manure	15 0
9.	1½ cwt. guano, 1½ cwt. superphosphate, 1½ cwt. blood manure, and 1½ cwt salt	19 1
10.	5 cwt. guano	12 1
11.	8 cwt. superhcsphate	11 1
12.	8 cwt. blood manure	12 1

This shows most distinctly, as has been described by different speakers to day, that a combination of farm-yard manure with some species of artificial manure is generally the best method of obtaining the greatest amount of mang

EXPERIMENTS IN 1860.

The following experiments were conducted on the crops of 1860, in order to ascertain which manures raise the greatest weight per acre of mangel, in conjunction with farm-yard dung Field, a light soil; seed drilled on 27-inch ridges first week in May. Dung applied in the ridges at the time of sowing; the artificials sown by hand over the dung to ensure equal distribution. Crop stored in the second week of October.

No.	Manure per Acre.	Produce. tons	cwt.
1.	20 cart-loads of good dung	16	4
2.	20 cart-loads of good dung, 2 cwt. guano, and 4 cwt salt	28	14
3.	20 cart-loads of dung, 5 cwt. blood and bone manure, and 4 cwt. salt	24	9
4.	20 cart-loads of good dung and 2 cwt. guano	21	15
5.	20 cart-loads of good dung, 4 cwt. superphosphate, and 4 cwt salt.	22	10
6.	20 cart-loads of good dung and 4 cwt. salt	20	4
7.	20 cart-loads of good and 4 cwt Lawes's superphosphate	18	10
8.	20 cart-loads of good dung, 4 cwt. Lawes's superphosphate, and 4 cwt. salt	21	10

The advantage of using salt in mangel cultivation is clearly shown by these experiments, the application of 4 cwt. or 5 cwt. per statute acre resulting in an addition of from 4 to 7 tons in the weight of the crop. Sir Edward's crops are drilled at 27 inches, but Mr. Peel began with that width, and then got to 30 inches, which he found too small; extending the width, therefore, to 32 and finally to 36 inches, believing that if it is wished to grow roots weighing 16 or 18 lbs. each, they cannot be developed to that size in rows of much less than three feet apart.

Such were some of the principal points brought out in the discussion, and we cannot avoid congratulating the society on the success which has already attended the open weekly meetings. Ample encouragement has been given for persevering in the course recently adopted; for although the peg on which the discussion may hang, as in this case, may not be itself of much value, yet it serves to draw out the results of experience from all parts of the country, and that is of importance.

Straw as Food.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It is only in modern days that the value of straw has been fairly estimated. As long as our ancestors were content to feed their live stock in yards—that were strictly straw yards—or winter them in cold impoverished pastures, straw was valued merely as a means of affording a bare subsistence, during the dreary months of winter, to the half-starved inmates of the homesteads. The dung thus produced was of necessity poor, for the days of oil cake had not arrived: artificial food was then rarely thought of: although everything was sold *off* the farm, nothing was returned to it; in fact, if nature had not helped the farmer in a way he never even suspected, his soil would have been in time utterly exhausted. All that the tiller of our soils then knew was, that when his fields became so impoverished by growing continued crops of the cereals, that these ceased to be remunerative, he had only to leave them for some years to grow a crop of either the self-sown grasses, or those produced by sprinkling the seeds from his hayloft over the land. In this way he used to say that "the land gets *rested*." He never suspected that, during this resting, as he unmeaningly called it, the soil and the grasses were slowly absorbing from the atmosphere its carbon and its ammonia, and enriching the soil with organic matters, which gradually became sufficient in amount to again support, for a season or two, crops of corn.

When, however, root crops were introduced into the field, and oilcake into our homesteads, then began to be properly appreciated the real use of straw, as a nutritive substance. It is true that the best admixture of these is not always carefully ascertained. A capital lecture on this subject, observes Mr. J. C. Morton, in his valuable edition of "Young Farmers' Calendar," was lately given by Mr. Blundell, of Burseldon, before a Hampshire Farmers' Club. As he truly enough remarked, straw must be more valuable as a feeding material than when used for littering the pens of animals; but to make it so, it must be consumed with roots, oilcake, meal, and other feeding materials. He found that dairy cows in the winter months, if fed on large quantities of roots, particularly mangolds and carrots, refuse to eat straw almost entirely, and become very lean; but they will always eat a full portion of sweet well harvested straw, when they get a moderate allowance of roots—say, for an ordinary-sized cow, 15lbs. of mangold three times a day, the roots being given whole, just in the state they come from the store heap. Again, calves and yearlings, being fed roots in the same way, will eat a large quantity of straw; and when they have been kept under cover, I have had them in first-rate condition for many years past. Also, fatting beasts, when they get a fair allowance of roots, say 65 to 70 lbs per day, with from 3 to 4 lbs. of cake or meal in admixture, will then eat straw with great avidity, and do well and profitably. It is however often the case that bullocks receive 100 lbs. or upwards of roots per day, with a large quantity of cake or meal, often 10 or 12 lbs. each per day. They will then not look at straw, and are obliged to be fed with hay. The result of this is, that the cost

price of these quantities and kinds of food is so considerable, that the animals do not yield a profit to their owner.

The amount of straw consumed by stock, and its nutritive properties, have for some time engaged the attention of the Council of the Royal Agricultural Society. In the twenty-first volume of its Journal, p. 54, is given the prize essay of Mr. H. Evershed, on the uses of straw on a farm. Its author is of opinion that, although it is a common plan in grazing districts, where roots are scarce, to feed store cattle on about 20 lbs. of straw and 3 lbs of bean meal, yet that they do better on straw, with roots instead of meal, even when the supply of roots did not exceed ½ cwt. per head per day. Cattle wintered on straw and meal only become "hide bound," with staring coats. In a note upon this paper Mr. Frere calculates the average production of straw per acre to be 2½ tons, or 250 tons from 200 acres of corn. He reckons that not more than 4 cwt. of straw enters into the composition of a ton of farm-yard manure; the remainder being, excrecrements 6 cwt., rain-water 10 cwt. The composition of staw chaff by a cart-horse he places as at least one ton per annum; cattle, 1 ton 1 cwt.; per annum; for sheep on a farm of 400 acres he assigns 8 tons of straw-chaff yearly. On an arable farm of 400 acres, therefore, Mr. Evershed calculates that there is required for the fodder of 50 head of large stock, whether horses or beasts, at least 50 tons; for sheep, 8 tons; for storing roots, when wheat is reaped, waste from thatching, making foundation of stacks, &c., say 5 tons; total 63 tons of straw.

As regards the quantity eaten by the stock, Mr. Evershed adds: "It is an interesting fact that well-fed cattle, kept in open yards, will eat more straw during the winter months than other cattle kept under the warm shelter of a roof. The careful manager saves his stock of bean straw until the cold weather sets in, knowing that at that season its bitter flavour will be disregarded. During the winter of 1859–60 I compared the quantity of mixed hay and straw chaff eaten by six oxen, fattened in a warm cattle-house, with that consumed by cattle of the same age and breed in an adjoining yard. Each lot was fed alike in respect of corn and roots, and as much chaff was given as they would eat. Those in the house ate 14 lbs., and the others 18 lbs. daily, showing a difference of nearly a fourth less carbonaceous food required by cattle when kept in a condition of artificial warmth." In the experiments on fattening cattle at Woburn (*Jour. Roy. Ag. Soc.*, vol xxii., p. 216), in six experiments, during eight weeks, on 44 oxen, fed in boxes, of an average weight of 1,470 lbs., there was consumed per head weekly about 43¼ lbs. of cake or corn, 110¾ lbs. of clover hay chaff, 377 lbs. of roots; in all 531 lbs of food. There was used besides 133 lbs of litter. Total feeed and litter, 664 lbs. The amount of fresh dung produced, 575 lbs. The dry substance of the dung was 156 lbs., that of the litter only 105¾ lbs.: there was therefore a gain of about 50 lbs., or nearly one-half, upon the litter used. The dry substance of the food and litter together was, however, 276 lbs., yielding in dung 156 lbs., or only 56½ per cent. of the total; 43½ per cent. of the dry substance of the food and litter were therefore either stored up as increase, expended by the animal in respiration, &c, or lost by the decomposition of the manure. To produce 1 ton of fresh box dung, there were consumed 168 lbs. of cake or corn, 431 lbs. of clover-hay chaff, and 1,496 lbs. of Swedes; in all 2,068 lbs. of food, besides 518 lbs. of litter, making a total of 2,586 lbs. of food and litter; this contained 1,075 lbs of dry substance, and the ton of dung 608 lbs. but we must not fall into the common error of confounding together as food the straw of all kinds of cereals. Neither must we fail to consider the very material difference in value between the straw of the same grass, harvested at different stages of its growth, or in varying degrees of ripeness. These points Professor Voelcker, in his recent valuable paper on the composition and nutritive value of straw, has elaborately examined; as he observes (*Jour Roy. Ag. Soc.*, vol. xxii., p. 382), "Many farmers form much too low an estimate of the feeding value of every kind of straw, except pea haulm. On the other hand, the views of others respecting the nutriment contained in straw are so unmistakably exaggerated that, with some degree of justice, they are made a laughing stock at the market-table. The main anxiety of the first-named class seemed to be how to tread into manure all the straw grown on the farm; that of the second how to stuff stock with all the straw at their disposal: the creed of the former being that neither little nor much will do their cattle any good, whilst the latter hold that any appropriation of it for litter is an intolererable waste.

"The intelligent agriculturist, however, knows full well that whilst wheat, oat, and barley straw when cut fine into chaff possess a certain feeding value, particularly when this bulky material is combined with some concentrated or more readily digestible food, they are not the less essential on the generality of farms to the production of good farm-yard manure. On most farms, indeed, the want of straw is felt much more on account of the difficulty of preserving the most valuable constituents of the liquid and solid excrements which arises from an insufficient supply of litter, than because an economical substitute of this kind of bulky food cannot be found."

But the professor feels evidently that there is much yet to be learnt with regard to the condition of the straw, the way in which it is produced, and its varying nutritive quality; for he adds, in his opening observations of its chemical com-

position, "As straw contains only from 14 to 17 per cent. of moisture, there is in it about as much solid matter as in meal and other kinds of dry food, although it is considered to be worth only from 20s. to 30s per ton.

"The bulk of straw, however, includs a large proportion of woody fibre, which, if digestible at all, is only partially assimimated in the system. Still, assuming that not more than one-third of the weight of straw is digested by cattle, and probably less by horses and sheep, and granting that the assimilable part is not food of the most nutritious character, straw will still have to be regarded as a more economical feeding material than any other which can be supplied. It is undoubtedly a fact that some practical feeders are in the possession of the secret of converting considerable quantity of straw into beef. What this secret is, perhaps, is not known to themselves. It may be that the combination in which straw is given, or the preparation to which it is submitted before it is placed in the feeeding-troughs, has something to do with the success that attends its use; but it is yet more probable that on farms where straw is largely and economically cut into chaff and given to cattle, its condition, from early harvesting and other influences, is better than in other localities where the practice prevails of allowing corn to become over-ripe before it is cut. In consequence of this mischevious practice, straw gets more woody and less digestible than it would have been had the corn crop been cut earlier. Several analyses" of the Professor's, to which I shall presently refer, "show how much the composition and nutritive value of straw depend on the condition in which it is harvested Indeed, the differences in the composition of somewhat under ripe and over-ripe wheat or oat straw, are greater than the variations which may be noticed on comparing with each other the composition of wheat, oat. and barley straw. It would appear that in certain districts each varity in its turn becomes superior as food—each kind is preferred and exclusively retained for that purpose; whilst in other districts each is consumed for litter. Moreover, the natural preference shown by stock for one kind or the other affords a practical evidence that the farmer in each case may have a good reason for the choice which suits his locality. We must therefore always expect to meet with great diversity of opinion amongst practical men respecting the nutritive value of wheat, oat, and barley straw. That pea-haulm is too good to be trodden into manure is admitted by all. When properly got in, pea straw is, indeed, a valuable feed substance. With respect to the nutritive properties of bean stalks, again, great diversity of opinion prevails—same considering them almost as nutritious as clover hay, and others only fit for litter."—*Farmer's Magazine.*

(To be concluded in our next.)

English Agriculture:

AS SEEN BY AN AMERICAN.

We find the following interesting sketch of English agriculture during winter and spring in the Chicago *Prairie Farmer*:

EDS. PRAIRIE FARMER:—The first impression of an American of English agricultural life is exceedingly interesting. No doubt it would be as much and more interesting for an Englishman to look for the first time upon an Illinois prairie in its state of nature, a sea of living green, and to look upon the same scene again in a state of cultivation, upon a field of corn of a thousand acres, inclosed by a pine board fence instead of the English hawthorn hedge.

The thought has occurred to me that I should like, now and then, to give you my impressions of rural and agricultural life in England, as they may first be formed and as I may mature them from after observations and more reliable information. There may be something profitable to be observed from the contrasts. Two such nations as England and the United States cannot thrive within the knowledge of each other, without furnishing profitable lessons from their respective experiences, if they are willing to take lessons in that way. There are certain ideas which each nation, from the nature of their circumstances, must more thoroughly work out; thus England understands better the use of coal and iron, the working of the mines, the art of pottery, &c., because they are within the range of the nation's calling. For the same reason we are ahead of the English in the use of timber, its manufacture from the tree in the forest to the last finish of it in the beautifully constructed house. England knows nothing of our magnificently constructed machinery, such as the saw mills of Saginaw and Green Bay, and the multitudinous inventions for planing and manufacturing of the lumber into doors and sash, mouldings, &c., simply because she has not the timber thus to manufacture. But she has led us in the tubular bridges, crystal palaces, and iron ships, simply because she has the iron and glass, and not the wood.

Thus in agricultnre, England has been forced to the highest perfection of science, in the art of production, in order to wrench from the overpopulated soil the capacity to feed the people. The United States must more and more imitate her in this regard, not only to develope our productive capacities, but for the profit of labor as well. It has been the necessity of the case which has made the West call for the reaper and thrasher, and the grain elevating warehouses of Chicago It was the necessity of the case, high price of labor and great demand for clothing, or the use of the needles, which called for the invention of the sewing machine in America. The low price of labor, the easy supply of the demand of the needle, from the poor women who

could earn their bread only by the interminable stitch, forbade that it should be discovered in England. But all these machines, having been invented and made available with us, are now slowly making their way into England.

It is well for the American to learn what he profitably can from English experience in farming. When we see how fast the capacity of the land in the West is running down, how uncertain almost all our crops are becoming; and when we see over what obstacles of climate, and upon the taxation of its fertility for past ages, with what abundance all crops are raised, and with what certainty they can be relied upon in England—it seems to me our Western farmers can learn these lessons too soon.

There is one fact that should always be remembered when we think of the English farmer—the high price of agricultural products here, and the necessity which compels the English farmer to make the most of his land—and that is, his land rent. Agricultural products are virtually taxed with a land rent, per acre from $5 $15 per year. What proportion of cultivators are actual land owners, I am not yet able to state, but I am told that most farmers are land renters, paying to the lanlord an amount of rent of from one to three pounds, sometimes much more, according to the available and productive state of the land. Think of a farmer paying for rent, clean cash, as much as will buy him a farm in Illinois, each year! As an encouragement to the idea of the Western farmer sometime having a permanent market for his products in England, he must remember, as an offset to the freight, how much English farm products are encumbered *by this enormous ground rent.*

Now let me reproduce to the mind of the western Farmer the picture which English cultivation has produced upon my mind, from my first appearance here, the last month in autumn, up to the last in April—agriculture in winter, while in Illinois your ground has been hard with frost or covered with snow. The first surprise is in looking out upon the face of the country at any time in winter, to see grass and vegetation, excepting on the trees, in a perpetual green. This is in a latitude of 51½ degrees against 42 degrees in Illinois, (the latitude of Chicago,) or nearly 700 miles farther North. Bristol geographically ranges nearly with the latitude of the southern point of Hudson Bay, a locality so far north as to be thought worthless on the Western continent for any agricultural purposes. But on this continent, on an island surrounded by the modifying influences of the seas and oceans, the temperature is so mild that vegetation is in a semi-state of growth the year round.

Farm work is done here all through the winter. January is the great month for grain sowing; February the ground is prepared for root crops; March, the season for young vegetables; and, though this season is wet and backward, the farmers almost despairing, gardens are blooming in green; the cabbage plants, cauliflowers, and the hundred and one kinds of "greens" making one think of Illinois Junes. The wheat fields are growing, yet badly affected by the wet; the grass is forward, (and oh! how beautifully green the fields look, and about the 15th of April, men were mowing one of the Bristol parks or squares, shearing a fleece of green down about two inches in length. In fields, gardens, and yards about the dwellings of the city, flowers of all hues and degrees of beauty, are putting forth their captivating appeals for admiration. Such is the difference of the state of seasons between the Eastern and Western Continents. I write this letter in the latter part of April; it will be read in Illinois in the latter part of May or first of June, six weeks later; and thus, let the reader fill the picture of contrast in his mind, of what you are then, and what was before us six weeks previously; and what has been the scenery before us the whole winter long. The ground has never frozen hard enough to freeze the turnip tops, or rob the old garden crops of last fall of the green life-like looks.

Perhaps sometime I may paint a picture of the rural scenery of England—and fill in some of the details of farm life, and how they do things here. Such a description may be in season at any time.

A few words as to the present state of farm work, must suffice for this first letter.

The season has been very wet, I am told. I judge so from the fact that it has rained almost every day since the first of December last. One man, boasting of the good weather of January, *said they had fourteen fair days in the month,* and that was an unparalle'led streak of good weather. These fair days have been so unfair to me that I have not observed them. I really have no distant recollection of more than four or five fine days, and they all occurred in April. As the consequence of this wet, the prospects of the crops has been seriously damaged. Work was pretty much stopped on land, since the first of March, to the middle of April. The wheat plant is rank where the land is in a high state now growing spindling and turning yellow from excessive moisture. In consequence of this the farm interest took a panic, and the price of wheat came up, in view of the possibility of failure. But recently there has been a favorable turn, a few of the good days have come and last Sabbath, our good minister returned devout thanks for the cessation of the rains, and for the sight once more of the smiling sun. And yet, notwithstanding this apparent deluge, as you may think, I have not yet seen one hard rainy day, raining in earnest and done with, as in America—but we have an excessively fine kind of rains, which will soak everything wet, it hardly seems to come down in drops.

The whole atmosphere is in a state of suspended superabundant moisture. Some wo-

say, it is weeping weather. Umbrellas are always in order—and it is a great perplexity to know when to carry them up, or when down. It would suit me better, if the weather was more positive, more rainy when it rains, and more fair when it is fair, which is the American style. But it has just occurred to me, that the weather was not made especially on my account.

Bristol, England, April 19. Z. E.

On the Aeration of soil.

By M. Jæger.

M. Daniel Hooibrenk, gardener at Heitzing, near Vienna, announced, in 1859, a new system of culture, stated to ensure a more vigorous growth than can be induced by any other means. This consists in placing in the earth pipes or air channels pierced with holes, which permit the air to penetrate throughout the mass of soil traversed by the roots. According to the inventor of this system, its advantages are numerous and important: he points out the following:

1. The strongest clay soils, under the influence of currents of air transmitted through the pipes, are divided by thousands of small fissures and has rendered friable, so that roots can easily penetrate them. The depth at which the pipes should be laid depends on the nature and consistence of the soil.

2. After the soil has been aerated by means of the air-pipes, the vegetation of plants growing on it becomes more active, especially in the cases of grain crops and vegetables. The roots finding the soil in a finely divided state penetrate deeper than usual, and are consequently safe from the vicissitudes of temperature which take place near the surface.

3. The looseness produced by the circulation of air in the soil causes a rapid absorption of rain water, and prevents caking of the surface. On the other hand, during long-continued drought, the roots, owing to the great depth to which they have penetrated, are not exposed to the trying effects of the external air, and are enabled to obtain a supply of moisture which they could not do near the surface.

4. The air pipes passing through sour soil causes the sourness to disappear, so that where only bad herbage previously grew, the finer grasses can be produced. These good effects are more particularly observed in swampy or marshy ground, which may thus be changed into fertile soil.

5. The soil, being always kept porous by the circulation of the air, can be more easily worked; and from its openness preventing the accumulation of water, cultivation can be commenced earlier in spring.

6. Plants grown on soil thus improved produce a great mass of roots, and consequently, being very strong, they require more space. There is no need to sow so thickly as usual; and hence a considerable saving of seed is effected.

7. Manures are much more energetic in their action in soil that is aerated in this way than in that which has not been so treated; the reason of this being, according to M. Hooibrenk, that the aereated soil is more uniformly moist throughout its thickness, and that being the case the decomposition of the fertilising substance is more rapid and uniform.

In short, the inventor of this system states that double and even triple the produce may be obtained from land so treated. This increase soon repays the expense of laying the air pipes. He also states that in the culture of the vine the ripening of the fruit is greatly accelerated, and the quality improved. Such assertions could not fail to be received with doubt by many. Careful experiments were therefore made to test their truth by Messrs. Fitchner & Son.

The field in which these experiments were conducted consists of a bed of loam or sandy clay (*argilosableuse*) from 13 to 16 inches deep, resting on a subsoil of rounded pebble-stones like those in an adjoining brook. On the other side of the field is another brook, about 6½ feet lower. This difference of level, taken in connection with the stony subsoil, made it doubtful at first whether the beneficial action of the air pipes would not be owing to their acting as drains in carrying off surplus water. The field contained rather more than 1½ acre, and had been in cultivation since 1852, but yielded only indifferent returns, at most about six to one of seed. Messrs. Fitchner placed four air pipes at the depth of 3 feet across the field. Their internal diameter was nearly 2½ inches. The field thus prepared was divided into a number of beds, at right angles to the direction of the air pipes, and extending to the portion of ground not furnished with the apparatus. Of the four pipes first laid down, two were joined by a communication pipe, and the mouth of one of them opened into the ash pit of a furnace, whilst the other extremity terminated in an air tank, the sides of which were of masonry.

The surface of ground furnished with air drainage was half an acre and 22 poles. The furnace at the end of the pipe was intended to show that the atmospheric air could reach the fire by passing through the soil. To prove this the opening at the further extremity of the pipe was completely closed, and also the furnace and ash-pit doors, in such a way that no air could reach the fire to support combustion except by passing through the soil under which the pipe leading to the furnace was buried. The fire, however, burned perfectly well throughout the day. To burn ten pounds of wood in 2½ hours would require 8,000 cubic feet of air, and this would have to traverse 108,000 lbs. of soil be-

fore it could reach the furnace. A similar circulation, though less active, must take place whenever there is a difference in the temperature of the air in the drains and that of the atmosphere, and from observations that have been made it has been found that a difference of this kind takes place at least once in 24 hours.. M. Jæger remarks that wherever a furnace exists, its fire may be usefully employed in fertilizing by means of air tubes, the adjoining ground; and that gardeners might thus make good use of their hothouse furnaces for improving borders and other parts of their gardens.

The advantageous action of atmospheric air in passing through the soil is due to the fact of its losing a portion of its oxygen, and thus giving rise to the formation of a larger portion of carbonic acid. To determine the changes effected in these respects, Messrs. Fichtner have analysed the air contained in the tubes comparatively with that of the atmosphere. They found, after several days' uninterrupted heating by the furnace, during which time the circulation through the soil had been rapid, the air in the tubes had exactly the same composition as that of the atmosphere (21 per cent. of oxygen, and 79 of nitrogen), and contained in 10,000 parts 12 80 of carbonic acid. Two days after the fire was not kept up the air in the tubes had only 20·85 per cent. of oxygen. and contained 20·99 of carbonic acid in 1000 parts, and from four to six days after the fire was let out, they found 20·71 of oxygen and 35 72 of carbonic acid ; six or eight days after, 20·08 per cent. of oxygen, and 35·73 per 1000 of carbonic acid. During these experiments they only found 4 parts of carbonic acid in 1000 of the air in the atmosphere.

The produce of the aerated soil, even taking into account the effect due to the working of the soil in laying the pipes, was considerably increased during the first and only year in which the results are known. A particular increase was observed in the yield of sugar beet. On the estate of Totis in Hungary, where similar experiments have been made, very encouraging results have been obtained. It is, however, impossible as yet to state anything precisely respecting them, and before we can draw conclusions we must wait till the experiments which are being made shall have been carried on for a sufficient length of time.—*Gardeners' Chronicle.*

Warranty of Soundness in Horses.

The subject of warranty of soundness in horses is one which cannot fail to possess a peculiar interest to those of our readers who, either as agriculturists or sportsmen, are amongst the lovers of horse flesh. The manner in which horse doctors differ on the important matter of soundness is illustrated at nearly every trial in which the question is involved, and is perhaps as high an example as can be adduced of the unsatisfactory nature of professional evidence—not less striking even than that of the mad doctors themselves in the celebrated Windham lunacy case. Mr. Litt, veterinary surgeon, has addressed to the editor of the *Edinburgh Veterinary Review* a long letter on the subject, in which he advocates with considerable boldness and spirit, as the only satisfactory solution of the difficulty, the entire abolition of the law of warranty. We give a few extracts :—

"A rather large experience of more than twenty years, during which I have had some not unfavourable opportunities for observation, has led to the conclusion that, so long as the present most absurd law and custom of warranty exist, so long will the evils that arise from them—the expensive law-suits, the contradictory professional swearing, and the injury and disgust which necessarily follow—continue to exist also. The great aim, then, it appears to me, of everybody who takes an interest in horse-flesh—lawyers excepted, of course—ought to be to seek to bring about the abolition of the law of warranty altogether. Everything that leads in this direction may be recognised as wise and serviceable; and I believe the effect of a thorough inquiry into the various bearings of the subject can scarcely fail to point to this conclusion. Not that I conceive any attempt to amend the law or the operation of the law as it stands much less than Quixotic, but simply because I consider that the more it is investigated, the more clearly will its injustice and its absurdity be made more apparent. Show how injurious is the law in itself, and how unwise the custom of warranty, and something may probably be done towards their abolition; for it is in this alone, according to *my* view of the case, that we can reasonably look for any very manifest advantage to arise. I feel assured that no man having given a warranty is safe from injury. He has made himself amenable to a law, of all laws the most absurd and most unsatisfactory, and he has no right to be surprised if he should chance to reap the natural fruit of such a course. A very worthy man whom I knew well some years since, a farmer and at one time a large breeder of horses, understood these things so well, that when he sold a high-priced horse with a warranty he always put the money in the bank, and allowed it to remain six months without reckoning it to his account. If, at the expiration of that time, he heard no complaint of the animal, he then considered himself at liberty to make use of the money, but not sooner. By this means, and by making it a rule to request the immediate return of a horse that had been warranted by him, of which the slightest complaint was made, he managed to steer pretty clear of the law ; and though he was once exposed to some annoyance and expense, I am enclined to think this plan was a wise one, and I recommend all who can afford

under the like circumstances, to follow his example. The proverbial uncertainty of the law has unquestionably its highest illustrations in what are called horse causes. Looking back to my own observation and experience of such cases, and speaking necessarily with a peculiar knowledge of their merits, I have no hesitation in saying that the verdicts have been quite as often on the side of *wrong* as on that of *right*, and that, therefore, the law itself is as frequently, in its operation, productive of serious injury as of reasonable justice. This is no extravagant assertion, but a deliberate conviction at which I have been compelled to arrive on a mature consideration of facts. What is more, I always endeavour to force it on any one who may happen to consult me on a question of disputed soundness, and I am enclined to think not without effect; for, though I now examine more horses than I ever did, I have not been engaged in a case of this kind in any court of law for more than a twelve month. To feel that one is in the right is doubtless a very noble and very dignified sensation to entertain at any time; but woe be to the man who is foolish enough to fancy that in an action at law, and when the dispute is about the soundness of a horse, the question of right is likely to have the slightest weight in the decision. I believe he can nurse no greater delusion. For this is undeniable that the law itself is mainly to blame. All definitions of legal unsoundness are vague and imperfect, and admit of endless quibbling and dispute. Veterinary surgeons may differ in opinion; but what then? The authority of all the veterinary surgeons in the world will not weigh a single grain in the balance against the dictum of some famous lawyer, who whatever might have been his attainments in other respects, could have known absolutely nothing about the diseases of a horse."

Mr. Litt then goes on to illustrate his position by some cases in point, which will be better understood by professional than general readers. One of these is as follows:—

"Or take another instance—one of the last cases of the kind with which I have had anything to do. Some of the readers of the *Review* will perhaps remember it as that of Drury *v.* Hopwood. It was tried in London in 1860, and may be briefly explained as involving the much-vexed question of spavin or no spavin. The plaintiff purchased two horses in Liverpool, and took them afterwards to London, where he used them a few weeks without any particular cause of complaint. Being desirous of parting with them, however, they were offered to a dealer, who agreed to purchase them at a given price if Mr. Mavor passed them as sound. They were accordingly examined by Mr. Mavor, who declared them both to be *spavined and lame*, and they were, in consequence, returned to Liverpool. Here they were submitted by the defendant to the examination of some of the highest veterinary authorities in the place—of Mr. Ellis, Mr. Lucas, and Mr. Bretherton, all of whom were of opinion that they were altogether *free from any appearance of spavin, and that they were quite sound.* Fortified by such opinions as these, the defendant refused to take the horses back, and they were again sent to London. In corroboration of Mr. Mavor's opinion, those of Mr. Field, Mr, Spooner, and Mr. Varnell were also obtained by the plaintiff, and the horses were sold at Tattersall's, and bought back by an agent of the defendant. Shortly afterwards they were again sold, but at different times and to different persons, and *each* at the time of sale examined by a veterinary surgeon, the one by Mr. Payne, of Market Drayton, the other by Mr. Kettle, of the same place, neither of whom, I believe, knew anything of the history of the animals, but both of whom failed to detect any appearance of spavin. Some time afterwards, and shortly before the trial, they were examined also by me, and I may here say emphatically, for myself, that, in my opinion, the hocks of both these horses were perfectly free from any appearance of spavin or any trace of disease of any kind. At the time of trial, one of the horses, then the property of a gentleman of high position in Staffordshire, to whom he had been sold, it may be mentioned, for a larger sum than that given for him originally by the plaintiff, was brought to London, and the coachman who drove him gave evidence to the fact of the horse having been regularly used in his master's carriage, and of his perfect freedom from all sign of lameness. The animal was also brought up for the inspection of the jury themselves. I need not say that the evidence was of the most contradictory character—Mavor, Field, Spooner, and Varnell, on the one side, and Ellis, Lucas, Bretherton, Payne, Kettle, and other less important witnesses, on the other side. Nothing reflecting more seriously on the character of professional evidence can possibly be conceived. The judge—Mr. Justice Erle—summed up rather, I think, in favor of the defendant; for he remarked somewhat pertinently that as the horses had, since they left the plaintiff's possession, been sold for more than he had given for them in the first place, and were shown to be still worth the money, although they had never been subjected to any veterinary treatment, he (the plaintiff) who was suing for damages had suffered no damage, except by his own act of parting with the horses in the particular manner he had done. The jury were locked up a considerable time, but eventually found a verdict for the plaintiff. I must resist any temptation to comment at much length on this case, excepting in so far as it illustrates the absurdity of the law itself. Where such authorities as these differ in professional opinion could any jury—it may be, of twelve men, not one, of

whom, perhaps, was ever on horseback in his life—be expected to deal out justice? Is justice in such a case not a mere matter of chance, or, perhaps, rather a matter of locality? A London jury naturally attaches more weight to the opinions of men like the professors of the London College and Messrs. Field and Mavor. A jury in Liverpool, or, perhaps, in the provinces, would, I think, have found a different verdict on the same evidence. You yourself may probably think that the weight of authority leans to the witness for the plaintiff; whilst I, on the other hand, may value the sound practical knowledge and varied experience of those of the defendant considerably the highest. "Who shall decide when doctors disagree?" What amount of reasoning can remove the evils, of which this case is only a sample; for many others, quite as bad, may be quoted? I think it must be admitted on all hands that the case is hopeless. The limb (of the law) is terribly, incurably diseased, and there is no remedy excepting in amputation. Try to get rid of it altogether."

The effect of such occurrences as these it will easily be seen must to some extent operate injuriously on the production or first-class horses The burnt child dreads the fire, and the breeder who has once found himself involved in a horse case will very likely turn his attention in future to stock of a less hazardous description. Mr. Litt does not forget to notice this fact:—

"All this is bad enough, but worse remains to be told. The greatest of all the evils that spring from this condition of the law is unquestionedly the effect produced on the breeding and rearing of first class horses generally. It is not too much to say that many of the largest and best breeders of such animals have been deterred by it from this most important pursuit. I speak only of circumstances witnin my own knowledge, when I say that it is not easy to estimate the injurious influence of the law of warranty in this direction. Of all the causes that have tended of late years to bring about the scarcity of half-bred horses of the highest quality—for, I think, the fact of this increased and still increasing scarcity will hardly be denied—this is certainly one of the most potent, and it demands, therefore, a more serious consideration, on this account alone, than has hitherto been accorded to it. And, for all this evil to individuals and to the community, what is there in the law of warranty really of compensatory good? You hint that it is chiefly of advantage to the dealer, as affording him too many pretexts for fraudulent attempts to obtain back a portion of the purchase money, and I have myself known more than one instance of the character you relate. There can be no doubt that it does very often serve the purpose of enabling—not dealers only—but many other persons besides—to repudiate a bargain which they have begun to repent. It is idle to speak of it, therefore, as a protection to the public; for it is the very reverse. They require no such protection. It is sufficient for the law to protect the public against fraud, and men ought to buy horses as they buy other things. If they have not sufficient confidence in their own knowledge of an article they wish to purchase, they ask the opinion, and are guided by the advice, of some one peculiarly qualified to judge of such matters. In the matter of horse-flesh here is a profession, whose members have made this qualification almost a special branch of study. Against false and fraudulent representations on the part of the vendor, be he who he may, let the law be as stringent as you like; but until it ceases to recognize that mischievous thing called a warranty of soundness, I fear there can little good be effected. With these sentiments it will be seen I am not of opinion that it is very important to discuss the question of what ought or ought not to be considered unsoundness in a strictly legal sense. I have had some experience in horse causes, and I have never found much weight attached to veterinary opinions on this subject. As a general rule, I have found that everything of the character of disease, no matter how slight or insignificant, has been held to be an unsoundness, and that to be compelled to admit the slightest deviation from a perfect normal structure of parts was always fatal to any attempt to establish the soundness of an animal."

With such a condition of the law, it is no wonder if often an undeserved amount of odium is made to rest on the shoulders of the examiner. Some of our friends may feel interested to know what one so well qualified to speak as Mr. Litt has to say on this part of the subject:—

"It often happens, however, that the veterinary surgeon—and this is a point that is especially worthy of mention—feels himself compelled, by the absurd state of the law, to give certificates of unsoundness in cases of ailments of so light a character that even he himself scarcely thinks them merited. I was requested a few days ago, for example, to examine, after purchase, a valuable horse, bought by a gentleman in the country for a friend in London. There was, in the inner surface of the head of one of the large metatarsal bones a slight exostosis, quite insulated, as it were, and seeming unconnected with the hock joint. He was not lame in the slightest, nor likely to be from such a cause. It was the most insignificant thing possible to the eye, and my general rule, in such cases, is to point the thing out to the purchaser and advise him to take a special warranty in connection with it for a given time. He, however, I had no such privilege. I was simply asked to give a certificate, and I had no resource but to say "Unsoundness from bone spavin;' for, had I refused to do this, in all probability somebody would have done it when the horse got to London, and the consequen-

of my refusal might have been a job for the lawyers. If our employers insist, therefore, upon an absolute *yes* or *no* to the question, 'Is my horse sound in point of law as well as in fact?' it is best for all parties that we should say *no* at once, if there is the very least deviation from a healthy condition; for we can do no greater wrong than to lead them into law. There was a time when I was inclined to stand more firmly by my own views of soundness, in opposition to what I considered unjust and empirical dogmas; but I have had reason to think differently. My opinion that a slightly ragged condition of the frogs, in the hind feet of a mare, was not sufficient cause of unsoundness, on one occasion induced the gentleman who had sold her to defend an action that looked like a mere attempt to repudiate a bargain. The mare had never been lame—at the time of the trial her frogs were sound and firm, although they had undergone no treatment, beyond being kept dry, and a little ragged horn cut away—and my views were supported by several veterinary surgeons of considerable standing; but the authority of Mr. Baron Parke on the subject of thrush was too much for us. Since then I have been especially careful not to differ from such very practical gentlemen as those barons of the law, where there is any danger of a collision, although at other times I prefer to exercise my own opinion, with, I think, rather more of justice to all who may happen to be concerned."

The able editor of the *Veterinary Review* fully endorses Mr. Litt's views. The old Roman law which is still in vogue over the dominions of our most gracious Queen, he reminds us, has been gradually abandoned over the continent of Europe. The French law, for example, regards all palpable defects as necessarily to be seen by the buyer; but if intermittent diseases are discovered, which could not have been observed at the time of the contract being closed, the horse can be returned. This reduces the cases of breach of warranty to a very few, which refer rather to positive frauds than to anything else. "In drawing attention," it is added, "to Mr. Litt's excellent communication, we wish to express a decided conviction that, as the law of warranty stands, no gentleman can submit to its uncertainties and injustices. In signing a deed a person is supposed to understand thoroughly the purport of its contents; but if a contract regarding a horse pronounced sound is signed, it is impossible for non-professional men, and often difficult for a veterinarian, to know if he is subscribing his name to that which may stand the test of a searching enquiry. Admitting that horses should be purchased with the advantage of mature judgment to assist the uninitiated, and that a warranty of soundness must not be relied on, we think it is perfectly proper to retain the law of warranty as far as price is concerned. Agreeing, therefore, that the rule *caveat emptor* should be respected, there are many defects such as gibbing, shying, kicking, crib-biting, vicious to shoe or to clean, running away, &c., which might be provided against by warranty, just as much as coloured goods may be warranted fast-coloured. As the opportunities of testing for such vices are very limited in buying, it is expedient to protect the purchaser, at all events until he can have had ample means of trial. There can be few who look upon the warranty of horses as at all advisable or satisfactory; and as the law is certainly very defective, amendment, if not complete demolition, should be insisted upon. It is well known that horse-breeding is rendered so precarious by the practice of warranty as to deter persons from rearing colts. Mr. Litt specially refers to this; and we think our keen sportsmen, who pay so dearly for weight-carrying hunters, and agriculturists, who might profit largely by a safe trade in horses, should lend a helping hand, and insist on better legislation of the subject under notice. If we ask veterinarians to take up the subject warmly we must also instruct the public, and it is to be hoped that the agricultural and sporting press may assist us in framing a new system, as favourable to the farmer as it would be to the public at large.—*Mark Lane Express.*

Cultivation of the White Bean.

For years we have earnestly advocated the more extensive cultivation of the white bean as a field crop on American Farms.

The great need of American agriculture is a good "fallow crop"—some plant that will stand our hot, dry summers, enrich the soil, and allow the use of the horse hoe to clean the land during its growth. A plant, in short, that shall occupy the same place in our rotation as the turnip does in English agriculture.

The white bean comes nearer to this than any other plant yet introduced. If the beans are consumed on the farm—as turnips always are in England—their cultivation would add materially to its fertility. There can be no doubt on this point. All the leguminous plants—including clover, peas, vetches, beans, etc.—contain large quantities of nitrogen, and this when consumed by animals or plowed under, is converted into ammonia—the very thing which we must need for the growth of the cereals.

Let us then grow beans. No crop will pay better. When prices are good, as at present, they can be sold; and if prices fall, they can be fed out on the farm with advantage.

In regard to their cultivation we have written so much in previous volumes that little need be added at this time. They are generally grown on warm, light soil, but will succeed on almost any soil if properly cultivated. For this, as for

all other crops, the land should be well underdrained, either naturally or artificially. The land may be plowed in the fall and again in the spring, and made clean and mellow before planting; or a clover sod may be turned over, and the beans planted at once. The common "white medium" is generally considered the most productive variety, but the White Mountain or Marrow yields nearly or quite as well, and brings a better price. It is a little larger, rounder, plumper and handsomer, and is gaining in popular esteem.

They may be planted in hills 2½ feet apart, and 15 to 18 inches apart in the rows, dropping five to six beans in each hill; or they may be drilled in with a machine, in rows 2½ feet apart, and a single bean 2 inches apart in the rows. The latter, perhaps gives the larger crop, but the former requires less labour in hoeing, etc. In this section they are usually planted the first week in June.—*Genesee Farmer.*

Benefit of Hogs among Fruit Trees.

The principal object I had in buying the farm I now live, on was the fine orchards of fruit. They were then in a very thirifty condition, loaded year after year, with large crops of fruit; but when we came to picking and packing, we were obliged to throw out large portions of them on account of the worm holes and curculio stings with which they were more or less affected, rendering them unsaleable and fit only for cider.

The lower orchard, (the orchards are divided by a public highway,) I have for several years past used as a hog pasture, with very satisfactory results. The apples which were heretofore wormy and knotty, are now as fair, smooth, and free from blemish, as one would wish to see. I allow my hogs and pigs, (the more the better,) free access to the orchards the year round, except a few days in October, while gathering and packing the apples. It is seldom apples fall before they are ripe unless something ails them, and that *something* is usually an apple worm or a curculio, and as the pigs are not very particular about their diet, all goes down with a relish, thereby destroying millions of troublesome insects which could not otherwise be got rid of.

The hogs kept the orchard thoroughly plowed and manured without any assistance from me; kept down the grass and weeds, rendering the orchard much thrifter than could be done with broadcast cultivation, as the hogs do not disturb the roots, but a plow would, besides the inconvenience of working among trees, where you are liable to do more harm than good.

My upper orchard I am obliged to mow, and one would be astonished at the comparative quantity and quality of the fruit in the two orchards. The difference in quantity is as six to one, and the quality 100 per cent.

The pear and cherry trees enclosed in the orchard in which the hogs run, are loaded every year with crops of fruit which would make an amateur's mouth water—while on trees of the same varieties just across the road can only be found knotty, wormy, unpalatable specimens. Now I can no more afford to be without hogs in my orchard, than I can afford to be without fruit; for without one I should be almost certain to be deprived of the other, and by adopting this course I seldom fail of having a good crop, and *never* fail of finding a ready sale at remunerative prices, even when there is a large crop.

If any of the readers of your excellent journal are skeptical on this point, let them try it for a term of years, and I believe their skepticism will vanish with the increase in their crops.

J. P.

Oswego, N Y.—*Country Gentleman.*

Agricultural Intelligence.

Spring and Summer Horticultural and other Shows.

Hamilton Horticultural Society, 1st Show May 24.

Niagara Electoral Division Society, at Niagara June 27th.

Kingston Electoral Division Society, Horticultural Show, at Kingston, July 2nd.

Provincial and State Shows, 1862.

Upper Canada, at Toronto, September 22—26th.

Lower Canada, at Sherbrooke, 17th, 18—19th September.

New York State, at Rochester, September 30 to October 3rd.

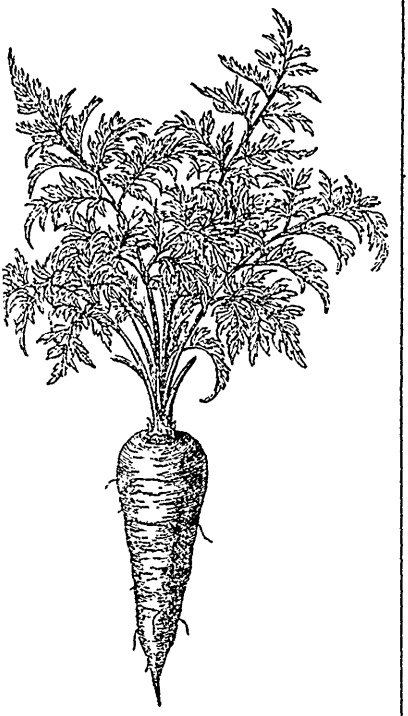
Illinois State, at Peoria, Sept. 29 to Oct.

STOCK FOR CANADA.—The *Helen Dougl* of Annan, Capt. Maxwell, sailed from Ar Water-foot for Quebec, on Monday last, and h on board the following stock, which has b purchased in this country by Mr. Simon Bea of Markham, C. W., a native of this place: entire thorough-bred horse, called Young I Bird-catcher, late The Heir, by Grey Plover, of Irish Bird-catcher—dam by Caronna, ou Repartee; two Short-Horn heifers, and two b calves, purchased from a good stock near D mahagow; 40 Leicester and Lincolnshire sh selected from one of the best flocks in Linc shire; two sows and one boar from Yorksh and poultry, dogs, &c. The horse was p chased by Mr. Beattie in Ireland.—*Ann (Scotland) Observer.*

COMPARATIVE VALUE OF OATS AND ROOTS. Four and two-thirds pounds of oats are estimated by analysis to contain a little over one pound of Flesh, muscle and fat forming principles; to equal that it will take, of carrots, nearly nine lbs.; of Aberdeen turnips, near twenty lbs.; and of Swedish turnips, near seventeen pounds. It will be seen that the difference is greatly in favor of oats.

Horticultural.

The Early Short Horn Carrot.



The early horn carrot is the principal kind used by gardeners on both sides of the Atlantic for early crops; and it is considered the best variety for table use. It possesses a very fine flavour, and commands a ready sale in market. It should be sown early, but we have seen good crops of it produced in Canada in backward seasons like the present, when sown as late as the middle of May. The above cut will afford an idea of the general appearance of this valuable esculent.

For later crops the Altringham and long orange varieties are commonly cultivated; they yield a heavier produce, but are not equal in firmness of texture and delicacy of flavour to the early horn. Of late years other varieties of early carrots specially adapted to table use have been introduced, but the early horn continues to maintain the precedence. The short yellow, obtained from seed by Mr Vilmorin of Paris, has in Europe a good reputation, and the violet of that seedsman is said to be a large and exceedingly sweet variety, sent to him from Spain.

The long red is usually raised by farmers for feeding stock; but the white or Belgian carrot is now generally cultivated in fields for agricultural purposes, and, when properly managed, yields very heavy crops. For horses in particular, the carrot is excellent.

Carrots of all varieties are easily raised in Canada; they thrive best on a light, rich loam, which should be deeply cultivated; and if farm yard manure is used it should be well decomposed and *thoroughly incorporated* with the whole of the active soil. The seeds have numerous forked hairs on their borders, by which they adhere together, and therefore should, previously to sowing, be rubbed between the hands, and mixed with dry sand in order to separate them as much as possible. The seed being exceedingly light should be sown only in calm weather, carefully covered by the rake, and the surface compressed by a light roller. It is expedient often to test the vitality of the seed previous to sowing, by mixing it with fine sand in a heap, occasionally watering it for two or three weeks; this, however, should be done very early in the season, that germination may only be slightly advanced before finally committing the seed to the earth, otherwise the plant would be weakened. For a bed 4½ feet by 30 feet, one ounce will be requisite, and the same for 150 feet of drill or row.

Grafting Fruit Trees.

An excellent little work on the "*Science and Practice of Gardening*," has just appeared in England from the able pen of Geo. W. Johnson, Esq., one of the highest authorities in Europe on Horticulture. The following is a portion of the author's observations on grafting. We shall again refer to this very useful manual:—

peared in England from the able pen of Geo. W. Johnson, Esq., one of the highest authorities in Europe on Horticulture. The following is a portion of the author's observations on grafting. We shall again refer to this very useful manual:—

for in such case the Green Gage would be altered by its Plum stock, and the *Nonpareil* by its Crab stem. So far from this being the case, the old gardener's maxim—'The graft overruleth the stock quite,' in consonant with truth, though it is to be taken with some reservation. The graft prevails and retains its qualities, yet the stock has the power of influencing its productiveness as well as the quality of the fruit. Thus, a tree having an expansive foliage and robust growth, indicative of large sap vessels and vigorous circulation, should never be grafted upon a stock oppositely charaterised, for the supply of sap will not be sufficient: illustrations are afforded by the *Codlin* never succeeding so well on a Crab, nor a *Bigarreau* on a wild Cherry, as they do on freer-growing stocks. Indeed, we have no doubt that every tree and shrub succeeds best, is most productive, and most free from disease, if it be supplied with sap from roots and through a stem of its own peculiar kind. This is evident to common sense; nor would any scion be grafted upon a stock of another species or variety, if it were not that such stocks are most easily obtainable, or for producing some alteration in the habit of the plant, or to fit it for some particular soil.—For example, our choicest Cherries are grafted or budded upon the wild Cherry only because of its being easily obtained; and every one must have noticed the frequently occurring consequence, an enlargement, appearing like a wen, encircling the tree just above where the graft and the stock joined—the growth of the former having far outstripped that of the latter. But the stock has some other influence over the sap, besides limiting the quantity of sap supplied to the scion, an influence not only arising from the size of its vessels, but from its susceptibility to heat. It has a further influence over the scion by the sap becoming more rich, indicated by its acquiring a greater specific gravity in some stocks than in others, during its upward progress. The specific gravity of the sap of a *Black Cluster* Vine stock on which a *Black Hamburgh* had been grafted was, when obtained six inches from the ground, 1.003, and at five feet from the ground 1.006; but the same *Black Hamburgh*, growing upon its own roots, had specific gravities at corresponding heights of 1.004 and 1.009. This increase is of great importance to a tree's growth when the quantity of sap passing annually through its vessels is considered. The exact amount of this it is perhaps impossible to discover, but its extent may be appreciated by the quantity of moisture their roots are known to imbibe, and by the facts that a small Vine-branch has poured out 16 ozs. of sap in twenty-four hours; a Birch tree a quantity equal to its own weight during the bleeding season; and a moderate-sized Maple about 200 pints during the same period."

Culture of Melons.

It is a great object to get melons early. This cool, richest and most luscious of all herbaceous fruits, to be fully appreciated should be eaten in the hot weather of July, August and early September. They may be started in the hot-bed, provided some means be contrived by which they may be lifted and transplanted to open ground without disturbing the roots. Some plant over a piece of turf in the hot-bed, which may be carried with the plants to the open ground; others in small open baskets, which may be set with the plants in the hill, the roots being able to push through the interstices in the basket; and others again in a shell made by excavating a large turnip, which soon rots in the ground or may be removed after the plants are carried to the hill. In this climate, however, it is easy, with a little care, to raise melons sufficiently early in the open ground.

A light, rich, sandy soil should be selected. In the lack of such a soil, it will be well to supply a bushel or two of sand to each hill. The soil should be deeply dug, thoroughly pulverized and enriched. A little finely pulverized chicken or pigeon manure, mixed with the soil of each hill, will be found an excellent stimulant. A frame, a few inches high, around each hill, may be covered with glass or mosquito netting, and will be a great protection to the plants from cold winds, frost, or the striped bugs. Eight or ten seeds should be planted in each hill, and after they are safe from insects, should be thinned out to two or three.

The greatest difficulty in point of success in melon raising, is in obtaining and preserving the seed pure. The varieties of the melon readily mix with each other, and if you save your own seed, without great care, you will soon have no good melons.

The fruit, the first year will not show the mixture; the second year it will be quite apparent, and the third year may be worthless. To preserve the seed pure, it is not safe to plant nearer than ten rods of any variety with which they can mix. When you have planted a good variety where it is safe from admixture, save seed enough to last for years. Melon seed improves with age until five or six years.—*Valley Farmer.*

The Dairy.

From the Ohio Farmer.

How to make Cheese.

have been a cheese-maker for fifteen years, I thought that at the opening of this year I ld give the readers of the Ohio Farmer the eft of my experience in cheese-making. first thing necessary to success in cheese-ing is

A Good Grass Farm,

here timothy, red-top, clover, and other tame ses abound, instead of the harsh, coarse, grasses. These latter will not yield the ntity nor quality of milk that dairymen want. this is well settled and admitted.

Good Cheese Houses.

fter the grass and comfortable houses for k and tenants, come convenient and com-able cheese-houses for making and curing the ese. These save much unnecessary labor.

Good Cows.

here cannot be too much care in selecting s for the dairy, as one good cow is worth poor ones.

Milking.

lmost every one can milk, yet there is no of cheese-making done with less care and ntion than this, nor is there any part which ht to be done with greater care and precision milking. It is usually done (in this coun- in a muddy yard, and at very irregular pe- s; sometimes before light in the morning; etimes after dark at night; sometimes at 9 ock in the morning, or 4 in the afternoon; etimes by one milker and then by another; in my judgment is all wrong. The cows ld be driven to the barn at regular hours, ning and evening; they should all be put the stables and milked by the same person y time; don't change milkers, but have dy milkers for the same cows. A cow d not only be milked by the same person, at the same hour, but she should be milked e same time. In order to do this. there ld be no noise, or talk, or play, among the ers. I cannot urge this caution too strongly on it depend the profits of cheese-making.

long should Cows be kept from pasture.

ot over one and a-half to two hours. Most is time is necessarily consumed in driving d from the pasture, and in milking. Thus three to four hours each day of the cow's time for grazing is used up. The rule is, e as expeditious as possible; upon it de s the success of cheese-making.

Scrupulous Cleanliness.

ould be observed in everything about the dairy-house, milk-pails, place of straining milk, whether in the vat or elsewhere. All dirt, mud or standing water around or near the place of making cheese should be removed, and none permitted to stay in the presence or near the place of keeping milk or making cheese. There is not known to me any production, animal or vegetable, so sensible to impressions from surrounding circumstances as milk, cream, and butter; hence arises the necessity of keeping everything around the dairy as sweet and clean as possible. No person who lies in bed until his evening milk sours, or who is not careful about his milk, can possibly make cheese of the first quality. Very much more ought to be said upon this part of the subject, and very much more attention ought to be given to it by nearly every one of our dairymen. Next in order comes

Preparing milk to receive the Rennet.

This is done in ways almost without number, with very nearly the same result. All kinds of vats are used, like all kinds of cooking-stoves and mowing machines, every one thinking his own the best. I have always used the one made by Jameston & Co., of Warren, Trumbull county, Ohio, and like it very well, (perhaps it is not the best.) We strain our evening's milk into this vat, and manage, by using cold water, to extract the animal heat from the milk as soon as possible, in order to have it retain its sweetness until morning and to obstruct the rising of the cream. In the morning, what cream does rise is removed, and the morning's strained into the vat with the evening's milk, which cools the whole together, when a fire is started in the furnace of the vat, and by heating the water, all the milk is heated together to 84 deg., when a sufficient quantity of the rennet, with just enough good, nice coloring is added, to turn the milk to a firm curd, and give it a shade as near the color of butter as possible.—I should have said, that in the cheese making season we do not make any butter; therefore the cream taken off in the morning, as mentioned above, is heated to 120 deg. Farh., and turned back into milk at the time of putting in the rennet, and all stirred together. This is left to stand from thirty to forty minutes, or until all has thickened to a firm curd. One word

About the Rennet.

The Rennet should be well prepared. and great care should be taken to preserve it and keep it sweet. I am very certain that rennet changed, tainted, or in the least sour, is very injurious to cheese.

Management of the Curd.

When the milk has hardened, (as above described,) I take a curd knife composed of five blades, known as D. G. Young's curd knife, (which I am sorry to say is not in general use in this country,) using it as directed by him, which is, to hold the knife upright, drawing

it forward and back carefully, until the curd is cut into blocks of about one-half inch square. Start the fire slowly in the forenoon. Let it stand ten or fifteen minutes, then use the knife again very carefully, so as not to start off the cream, or as the common saying is not to start the white whey. Great care should be taken not to mash the curd, so as to make the whey come from the cheese, as this is the cream; therefore, the best of milk. It is thus carefully worked and carefully heated until all comes to 92 or 94 degrees of heat, when the fire is put out and the heating process stopped, and we call it scalded sufficiently for any cheese in any time of year, if cut as fine as it should be, and worked in a proper manner. I use the curd-knife until curd is as fine as desirable, which should not be larger than peas. The curd is then left to cool, still stirring it to hasten the cooling. When thoroughly cooled, the curd is put to press.

The Press.

A good press is indispensible to good cheese-making, and presses are like many other patents, very numerous. But, in my opinion, a press should be able to press at least two thousand pounds, especially for a large cheese. A cheese must be well pressed, and still not pressed so as to make it salvy, which is sometimes the case, and very much injures the cheese.

How to Press.

We always press a cheese two days. It is left in the press one day without being disturbed. When my next day's cheese is in the press, I then turn my cheese, made the day before, into a clean, sweet strainer, and it is pressed with nearly or quite double the pressure of the first day. When I desire a cheese of from eighty to one hundred pounds weight, I apply seven hundred and fifty or eight hundred pounds pressure the first day, and about fifteen or sixteen hundred the second day.

Capping and Dressing.

When the cheese is taken from the press, it is immediately dressed in a shirt of cotton—thin cotton called capping or sacking, made for this purpose. We cap them all over, especially our heavy cheese; they are then scalded over with boiling water to make the sack adhere closely to the cheese; we press lightly under the press for a few minutes, when it is taken to the dairy-room and left without greasing for eight or ten days, that it may dry, and the gas which it still contains may escape. There is then a coat of warm grease put on it to prevent its molding, (it should then be turned daily before greasing.) It should then be placed on a clean, dry shelf or table, and turned every day until well cured.

Dairy-Room Ventilated.

The dairy-room should be well ventilated, airy, light dry room, in order to cure cheese it should be. Notwithstanding, many of dairy-men, and even in some sections of Engl dairy-men say the room should be kept close dark. This appears to me to be un-natural almost everything requires air and light in or to have beauty and perfection.

I have made cheese nearly for fifteen ye and have never found it a difficult matter sell cheese made and cured as above, at the highest market price. Sixty cows have b our number for three years past. It is not boast, but it is said by cheese-buyers that I my cheese, last season, the highest of any in this country.—*Silas N. Jones, North Bl field, Turmbull Co., O.*

Domestic.

Packing Eggs for Long Journeys.

The only safe way of packing eggs is—1st Get a large hamper or box—put on the direct card before packing—make holes for screw the lid on; let there be no hammer used, only screws and screw-driver. 2nd. Procur box or hamper of such capacity that, w placed inside, you will have three or four inc space each way. Get some hay, which pull pieces, separating to some extent, then a lo old newspapeas, cut up into lengths. To ceed (we suppose you have got the eggs) each into the paper, twisting the ends of paper sideways like a lady's curl wrapt up in ordinary curling-paper, thus: egg, thin downward; paper; place some hay in the b then a layer of eggs in paper, then hay, and on until the box is full; screw the lid on, some hay in a box, then in another box, and round, and at top, and fasten down. If scre such as are used for stair-rods, were fastened to the four corners of the smaller box, and t a string tied from them to the four corners the other box, all might be safer; also, if large box, when filled, were swung in like on board ship; but I do not think this is ab lutely necessary, though advisable. The obj of using the paper is, it keeps out dust, and the ends acts as springs, as does the hay. Bran and corn are bad, as they much dust in both, and fresh air is kept a from the eggs; but the greatest fault is, t and the eggs pack into so solid a mass that th is not enough elasticity, and the consequence the constant jars, so to speak, break the delic membrane suspending the yoke in the shell, the egg is "killed." Perhaps the following may be of use in the matter of packing eggs long distances: the Dutch pack the plover's e for the English markets in strong wooden bo with the husks of buckwheat, and we sel have much breakage after the roughest pass

rough handling in transmission. They begin covering the bottom of the box with a thick ... husks, and so on till the box is ... then fill in with husk, and pretty tightly put on the lid. With the exception of an accident now and then, we don't have more than five ... hundred broken on the average throughout the season.

The Poultry Yard.

How to make Hens Profitable.

... J. C. Thompson, of Staten Island, who has an interest in all branches of husbandry, pursues them with success, has contributed the following valuable observations on the keeping of poultry to the *American Agriculturist*. He has added since the publication in that ... radical a postscript for the *Evening Post*.

Most families in the country, and on the skirts of cities, think they must keep one or more pigs to use up the offal of the family—or because it is the 'custom of the country.' Having tried pigs and become disgusted with the trouble, labour, expense, filth and noise—to say nothing of the inferiority of pork to eggs and poultry—I abandoned the former for the latter; the result has been quite satisfactory, and after several years trial, I feel confident the advantage lies decidedly in favor of poultry. Here is my year's account: January 1, 1861, stock on hand, 70 fowls, of which fifteen died during the year from unknown causes, leaving me 52 layers. From these I obtained in January, 320 eggs; in February, 439; in March, 681; in April, 959; in May, 835; in June, 801; in July, 603; in August, 603; in September, 421; in October, 332; in November, 286; and in December, 410. Total, from 52 hens, 6,925 eggs—which sold, in bulk, to seven barrels, as a barrel packed for market contains just about 1,000 eggs—About 8 eggs from the Leghorn or black Spanish breeds, weigh a pound. My 6,925 eggs therefore, weighed 865 pounds. Allowing the hens to weigh 5 pounds apiece, they each laid, by average, three times their weight in eggs alone. As they hatched full a hundred chickens the weight of which, when ready for the table, would have been 1½ pounds each, the whole amount of food produced was over a thousand pounds, notwithstanding I killed off part of the stock in June, July and August, depending on young hatched chickens, which began to lay in August, to keep up a supply of eggs and replace those killed off. When we consider the pounds of food (of the very best kind) produced in a year from so small a stock to start on, and then, too, the stock left whole at the end of the year, the advantage of poultry over pigs can be seen at a glance.

To produce 1,000 pounds of pork will require a vast amount of labor, a vast quantity of food, and any quantity of noise—giving fresh food for only a short time and salt food for the balance of the year—and the stock not left whole to start on again, as in the case of poultry. The product in eggs was more than 6,925, perhaps over 7,000, as I detected a boy that had access to the hen-house for some time, in stealing them. The number named was actually collected. My stock is principally Leghorn; and it now costs $3 per month to feed 75 head. As some may desire to know how the hens are managed, I send a brief description.

"The Hen-House.—Mine is a lean to—10x16 feet—10 feet on the rear and 8 feet front, facing the south. A barn stands on the east and a shed on the west end, with a glass front, for a shelter and a feeding place in cold and wet weather. The roofs of both project three or four feet, which keeps the ground dry in front and about the entrance. The back and front of the house are lined or double boarded, and the front has three glazed sashes—furnished with inside shutters—a ventilator 16 inches square is placed in the roof with a valve hung at the bottom, to close more or less, as may be required, in cold and stormy weather.

"Roosts.—A frame is made and hung to the rear of the house, which can be set at any desired inclination; the roosts are placed lengthwise on the frame, ladder-like, about 18 inches apart. As all fowls seek the highest roosts these are filled first, and others in succession. This brings them close together in cold weather. In warm weather the frame must be levelled to make them scatter on all the roosts and keep as cool as possible.—The floor being concreted, it is easy to clean, keeps out rats, and makes it dry. Under the roosts I place fine charcoal [a poor plan to use charcoal—Ed.] or dry earth, or muck to absorb the droppings; a few shovelfulls added each day keeps the house free from any bad odor. The rest of the floor should be covered with sawdust, dry earth, chaff or cut straw, for in cold weather, hens like to keep their feet dry and warm. Neither coal nor ashes should be put in the house, as they act on the manure and decompose the uric acid, thus wasting the ammonia, and making the house offensive.

"For Nests.—Use butter or lard tubs (which can be had at the grocer's for six cents each) set on shelves at the ends of the house, one or two feet from the floor—portable nests (with glass eggs) are best.—They should be often cleaned and supplied with fresh straw or hay. The grease on the tubs is a remedy against lice. Greasing the roosts at all the places where they touch the frame, and in fact, the inside of the house and roosts, with any kind of soft grease or fish oil is certain to destroy them, as they cannot live a moment in grease. A paint brush or

white wash brush can be used for applying the grease, which should be done early in the spring, and again in summer, if it appears to be required.

"MODE OF FEEDING.—I give only sound grain; no other should be used. A variety is not objectionable. My standing dish is wheat screenings; this is always by them in a box slatted up at the sides for the purpose as a feeding box. In winter scalded corn meal or ground corn and oats is given to them cold in the morning; but the main food must be hard grains. They must be well supplied with finely cracked oyster shells, gravel and mortar, and green food in winter. Mice consume two or three heads of cabbage. They get bread scraps from the table, soup, meat, etc. In summer, grass, lettuce and cabbage are furnished daily in adundance.—they will consume a great quantity.

"YARD ROOM.—The permanent yard is 50x50 opening into a grazing and rambling lot of 50x100, also used as a plum orchard. The fence is only 5 feet high, and by feeding well and clipping the feathers on one wing, there is no trouble in keeping them at all times within the yard.

"SETTING THE HENS.—To insure good healthy chicks, the hen should be set in March, and certainly not later than April. By having portable nests, when hens desire to set and become fixed in the habit in the setting season, they can be supplied with eggs (the date of setting marked on them in ink or pencil,) and any number of nests moved to a room for the purpose, which must be kept closed, and well supplied with food and water. The nests may all be set side by side, for if the hens should all leave their nests at once to feed, when they return they will each take a nest, although they may change places. This arrangement insures their setting steady, as they are not compelled to wander off for food, but return quickly to the nests and keep up the warmth of the eggs, and thus bring out strong chicks. By setting a number at one time, if some hatch half broods they can be put together with one hen. When a setting hen looks pale about the head it is evident she is lousy; clean and wash the nest, grease the hen under the wings, on the back and rump, wash the eggs in warm water, and return to the nest.

"TREATMENT OF CHICKS.—When first hatched they must be fed on bread soaked in milk; after three or four days, feed with cooked or scalded Indian meal three times a day; but finely cracked corn or wheat screenings, should be always within their reach; also clean water. The hens with chicks should be kept in coops for several days, the coops kept dry and clean and placed in sheltered places. With such treatment not five per cent, of chicks will be lost. In conclusion let me say, the secret of success is this. They must be young, well fed and cared for, and small numbers—12 to 25—pay much better proportion than large flocks.

J. C. THOMPSON,

"Tompkinsville, Staten Island, N. Y.

"P.S.—Since writing the above I find 75 hens will eat six quarts of Indian corn a day, helping themselves to it, that is, a peck to a hundred hens. The test was made on Indian corn, that being the staple food for poultry."

The Apiary.

Bee Pastures.

Old and experienced beekeepers tell us that there is such a thing as overstocking a country with bees. That you can get too many bees on your pasture as easily as you can get too many cattle or sheep for your pasture. This, undoubtedly, is sometimes the case. It is, therefore, an object of some importance to enquire into the subject and endeavor to find out in what way bee pastures can be increased in any way. A little study into their habits and wants will put us on the right track.

We believe bees do not stop to enquire into the genus or species of the plant, shrub or tree on which they feed. They are not very particular whether it be on lowland or highland. They have been known to cross the water five miles from hives on the main land to flowers at a distance from them, on an island. Their chief enquiry therefore seems to be the instinctive one whether the flowers and fruits within their reach contain honey or not. The earliest bee pasture that we can furnish them in Maine, is maple sap. In warm days of our early spring, and before any flowers have put forth in our latitude, you will often see bees flitting about the sap troughs at the foot of maple trees in sunny situations, on the surface of the stumps of maple trees that have been cut down during the winter, and from which the sap oozes out. It would not, therefore, be a bad plan to set small shallow vessels of maple sap in the vicinity of the apiary early in the spring, from which the bees might sip and separate the honey.

The next earliest source of food for the bees among us, is the willow. The several varieties of the willow blossom earliest, perhaps, of anything, and from these blossoms the bees collect not only honey, but farina. It is, therefore a subject for bee keepers to not only preserve the willow, but to set them out in moist, wet places, if for no other purpose than for early pasture.

The red maple and the elm come next in blossom, and bees also visit them for the purpose of obtaining honey and other substances which they work up in their operations of the hive. By this time quite a number of shrubs and flowers have come into blossom, such as

ep pear, (*aronia,*) the plum cherry, and
pecially the apple and pear. All of these
ne so many sources of food to the bees.
yet, the basswood throws out a profusion
wers, and the bees are always found
dantly around them when in blossom. It
ld be well to have more of these trees out
ces and road sides. They are highly orna-
al as well as useful for bee pasture.
e locust, or yellow locust, is another tree
h grows rapidly and blossoms profusely, of
wers of which bees are very fond. These
ld be more extensively cultivated, though
borers sometimes make sad havoc with

all the flowers it is thought that of the
e cover is most acceptable and most pro-
re of honey to bees. This is a native of
country and will grow almost any where,
cially if it be encouraged by sowing a little
er on it.
ck wheat is often sowed for no other purpose
to afford pasturage to bees
addition to these, the other flowers of the
and the gardens all add to the extent of
ee pasture, and should all be multiplied and
rated wherever they can be conveniently.
e Russians sometimes cultivate quite exten-
y the common borage of the gardens for the
f bees, thinking, and probably not without
e, that it affords a good supply of honey,
h is easily obtained by the bee. Perhaps
e of our readers can think of other sources of
to bees, the cultivation of which would
ge the *area of honey* and make it worth the
ile to cultivate them.—*Maine Farmer.*

Veterinary Department.

(Conducted by A. Smith, V. S.)

Bots in Horses.

EDITORS CANADIAN AGRICULTURIST.—Under
above head of page 154 of the "Agriculturist"
receipt, which it is said will generally afford
f in five or ten minutes. Feeling much in-
st in arriving at a right conclusion in this
er, I last year sent you an extract from
att & Skinner's work on the horse, wherein
s stated that bots, while they inhabit the
ach of the horse cannot give the animal
pain: that they cannot be removed by any
cine that can safely be administered, and
in due course of time they come away.
have had some experience with horses for
ast twenty five years, and occasionally (for
of a better) have been obliged to be my
horse doctor; but I never yet saw a case
ffering from bots. I have heard of most
ordinary cases, such as the stomach being
through, and I was recently positively as-
d by an intelligent person that he had lost a fine young horse from bots, where there was no symptom of the cause twenty-four hours before death, that he did not make a thorough examination after death, but that he found the wind-pipe full of bots.

I now address you under the hope that some of your readers who have had experience in such matters will state which is the correct treatment; to endeavour to expel them or to let them take their one course.

BRIAR.

REMARKS.

The mucous membrane lining the stomach of the horse, is divided into two portions, a cuticular and villous. The cuticular is on the left side and is continuous with the cuticular lining of the oesophagus; this coat is covered by thick scaly epithelium and is thrown into folds, which folds disappear when the stomach becomes dilated. The mucous membrane of the right side is called the villous, and this portion, the true digestive stomach, the mucous membrane is thick, soft and pulpy.

Bots occur chiefly amongst young horses, grazing on damp coarse pastures, shaded with trees. The female fly deposits her eggs on the shoulders, legs, or other parts of the body within reach of the animal's tongue, by which they are carried into the mouth and thence to their common *nidus,* the cuticular portion of the stomach. It is the cuticular half of the stomach that bots inhabit generally, and from this circumstance, that they are fastened to a part not very sensitive, bots do not give rise to such pain and irritation as is frequently imagined.

The larva, or worm, being hatched and lodged in the stomach, immediately clings by means of its tenacula to the cuticular coat which it pierces. and so pertinaceously does the bot adhere, that it will frequently suffer its hook to be broken rather than quit its hold.

This larva is found very difficult to destroy and resists the action of most medicines, but there are certain times when they pass out, and and then their removal can be expedited by certain medicines. An easy remedy is to rub down in hot water about three drachms each of aloes and assafœtida, and when the solution has got cool add to it an ounce each of turpentine and sulphuric ether; repeat the dose every second day for a week, leaving out the aloes if the bowels become too open. Along with such

treatment it is necessary to give good food and a change of diet.

When bots only exist in small numbers they are generally harmless, when a multitude they prove detrimental to digestion, by absorbing part of the juices necessary for that process.

Percivall in his work on diseases of the horse mentions that he recollects of hearing Professor Coleman say, that he knew of a case where bots appeared to have destroyed life, since after death the coats of the stomach appeared eroded in places, as well as the diaphragm, and some of them had made their way into the cavity of the chest.

Inflammation in Animals.

A LECTURE BY PROFESSOR DICK, OF EDINBURGH.

(Concluded from Page 118.)

In the previous lecture we pointed out that in t e web of a frog's foot, in which, from its transparency, the various processes which take place in it can be perceived with considerable facility by means of a microscope, the flow of blood through the minute vessels or capillaries becomes slower and slower, and at last comes to a complete stand-still, notwithstanding that the latter are dilated beyond their usual dimensions; and offer, therefore, apparently at least, less mechanical resistance to the onward passage of the blood than usual. We further pointed out that this remarkable stagnation of the blood in a part about to become inflamed is not due to any primary alteration of the blood corpuscles, in as much as these bodies exhibit no deviations from their usual properties in the vessels before they arrive at, and after they left, the part about to become the seat of inflammation, so that the cause of the remarkable tendency which the corpuscles show to adhere to each other and to the walls of the vessels, so as to cause stagnation of the circulation, must be looked for in some alteration which has taken place in the surrounding textures.

In order to understand the nature of the alteration which first takes place in the textures of a part about to become inflamed, so as to cause stagnation of the circulation, it will be necessary to notice the remarkable movements which take place in certain cells, called pigment cells, of the frog's foot, and which appear to have been first noticed by Brucke, of Vienna, in 1852, but more recently and more correctly by Mr. Lister in the Philosophical Transactions for 1858. It has been long known that the frog is capable of changing its colour under certain circumstances—becoming dark when placed in a dark place, and assuming a brighter hue when placed in the light. This capability of the of changing its colour, although possessed certain extent by all the species of the f sppears to be best marked in the tree f Now, the lighter or darker hue of the fr different times is due to changes in the pig cells above mentioned. These cells are di buted, in great numbers in the substance of true skin, and, in the web at least, are situ also on the walls of blood-vessels On exa ing the web with the microscope, and direc attention to the pigment cells, they are see be black bodies consisting of a central tion, from which processes of various radiate. On more careful examination cell is found to consist, like all other of a delicate yet firm and elastic membr enclosing in its central portion a round o less body, called the nucleus. The nu is usually situated in the centre of the but sometimes it is found placed more to side. In addition to the nucleus, the cell tains a transparent, colourless fluid, in w float an immense number of minute part which, when viewed singly, have a brow tint, but when seen aggregated in groups sent a coal-black appearance. The proc which proceed from the central cell like contain fluid and coloured particles, so that are not solid outgrowths of the cell wall may be regarded, as in truth they are, the prolongations of the cell itself. These pro es, where they arise from the central portio the cell, are usually of considerable breadth as they pass outwards they soon ramify and up into numerous slender, thread-like p which anastomose or become continuous similar prolongation from neighbouring c All these processes, even the most minute, are low, and consist of a delicate membrane, co uous with that of the central cell, and are f with a colourless fluid, in which coloured part float. It follows, therefore, that the con of the central cell can pass readily into the ious processes which radiate from it, and *versa* the contents of the processes may, u other circumstances, pass into the cavity o cell. Moreover, owing to the processes of cell anastomosing freely with similar proce of neighbouring cells, the contents of one may mingle with those of other cells. doubtful, however, whether this actually take place, but at all events we have here markable series of tubes, along which the ment particles and the fluids in which the suspended may move, quite independently the circulation. It is very probable, if not tain, that the contents of all cells und changes similar to those which will be descri immediately, but owing to the absence of co ed particles and the consequent homogen appearance of their contents, the movem annot be demonstrated. It is different,

with the pigment cells. The dark pigment les contrast strongly with the surrounding ess fluid and cell membrane, so that any ion of position which they may experience very easily observed.

have already remarked that the frog is e of changing from a dark, almost black, a comparatively light appearance, and rse; and this is effected by a change of n of the pigment molecules in the cells. the pigment granules are aggregated together in the cavity of the cell so as under the microscope, a more or less spot, the colour of the frog is light; diffused through the cell, and in part h the tubular processes, the colour is ; and when the pigments are still further through the various ramifications of , so that comparatively few remain in the portion of the cell, the colour of the almost black. Of course, there are some hich are never of a dark colour, but we find that, without exception, the colour frog is darkest the more diffused the pig- nules are through the tubular process- e cells, and lightest the more concentrat- are in the central portion of the cell. supposed by Brucke and Von Wittich en the pigment was aggregated in the portion of the cell this was effected by ening or contraction of the processes of in which it was diffused, but this sup- was first shown to be erroneous by Lis- . *cit.*) On careful examination we find pigment moves from and towards the portion of the cell quite independent of ge in the form and dimension of the its processes. On the contrary, the granules appear to be under the influ- a force or forces which reside in the part of the cell, while at the same time e place to a certain extent under the e of the nervous system. If, for ex- the frog be excited by laying hold of it cause it to struggle, the pigment imme- becomes collected in the central part of and the animal turns pale. Again, if l is brought from a dark place, and to a bright light, the same thing takes ce as has been shown by the light stimulat- pigment cell directly, but by reflex action, the medium of the optic nerve. In this stimulus of light is conveyed by the op- es to the nerve centres, and is thence re- or sent to the nerves of the skin, and y exciting the pigment cells to action, concentration of the pigment in the central cell. Concentration of the pigment ven cell may, besides, be occasioned by itating the part either mechanically or cal re agents. On the other hand, dif- the pigment into the processes of the s to take place when the parts are in quiescence, and seems to be caused by the particles having a repellent action on each other, which comes into operation as soon as the attractive force which is seated in the centre of the central portion ceases to be exerted with intensity sufficient to keep the granules together.

Having thus endeavoured to describe as briefly as possible the nature of these pigmentary movements, let us next consider them when a part in which the cells are seated has been irritated to such a degree as to cause inflammation. We have already seen that one result of irritating a part to such an extent as to give rise to inflammation is to cause viscidity of the blood corpuscles, and in this way to hinder the circulation, notwithstanding that the calibre of the vessels is greater than usual. If now we irritate strongly a small portion of the web of the frog's foot by placing a drop of turpentine or a little mustard on it, we shall find a remarkable difference in the behaviour of those pigment cells which are seated directly under the irritant from those which are situated at a little distance. Let us suppose that at the commencement of the experiment the web is dark and the pigment consequently diffused throughout the processes of the cells, we shall find that while the pigment still remains in a state of diffusion in those cells which are placed nearest the irritant, it becomes concentrated in those cells which are further removed from the irritant, and on which the irritant acts with comparative mildness. On continuing to watch the web, it is found that no movements take place in these cells which are situated at the point of the irritation. The pigment granules remain in the same state as they were at the moment of the application of the irritant, while the surrounding cells which were more gently stimulated exhibit movements of their molecules as usual.

It may now be asked what is the cause of the stoppage of the molecular movements in those cells seated at the point of irritation. We have seen that the molecular movements are in all probability caused by a force which resides in the centre of the cell. We are, therefore, forced to the conclusion that the movements in question are destroyed by the irritant acting so strongly as to paralyse the central force. If the irritation, however, has not been too great nor too long applied, the central force recovers its power, and the pigment again exhibits its usual movements; at the same time, the part begins to swell from the formation of the fibrine and the effusion of serum, and the various signs and symptoms of inflammation ensue. Bearing in mind that what takes place in the pigment cells likewise takes place in all the other cells of the part, we come to the conclusion that the ***first stage of inflammation consists in paralysis of the functions of the part***, and it is owing to this that the blood corpuscles, which flow through the part, become viscid, and stop the circulation; in the same way as they become viscid, and adhere to each other when removed from the ves-

sels and placed beyond the influence of the vital action of the textures. When the irritation has been so great as to cause *permanent* paralysis of the functions of the part, then mortification or death ensues. When the irritation has been more gentle, the part resumes after a time its functions, but in a disordered manner so as to give rise to the various phenomena of inflammation. The degree of these subsequent disorders is determined partly by the nature of the part, and partly by the amount of irritation and consequent paralysis of the functions of the part which has taken place When the irritation has been slight, the reactionary phenomena will, *cæteris paribus*, be correspondingly mild; while if the irritation has been severe, suppuration, ulceration, &c., will take place, and the structure of the part will be destroyed to a greater or less extent.

Scab.

We are apt to congratulate ourselves that scab, with many other evils, has disapeared before the improved practice of modern agriculture. But although usually comparatively circumscribed in all its attacks in this country, it is apt from time to time to spread, and occasion much trouble, expense and loss. Extensive graziers inform us that many of the English hill sheep are this spring infected, and that much care will be required to prevent the evil extending with the distribution of the stock which generally takes place during the next three months. Even as far south as the Cotswolds the plague appears, and large graziers and dealers assure us that they will take no sheep home without a full and explicit warranty of soundness.

Scab, as is now well ascertained, is nearly allied to mange in dogs and itch in man, and depends upon the presence of minute creatures—a species of *acarus* or mite—which burrow in the skin, causing the familiar distressing itchiness, the inveterate rubbing, and the irritable pimpled skin, which, as the disease proceeds, becomes scurfy, bare, and scabbed. The unfortunate Highlandman of immortal fame, irritated by the "Scottish Fiddle," as it is technically styled in the north, blessed the Duke of Argyle for his considerate erection of rubbing posts, and the sheep afflicted with scab make an equally liberal use of all objects against which they can rub, and in this manner the *acari* are frequently deposited, and transferred to the next visitor. The *acari* are of two sexes; the females, however, are the most active and troublesome, burrow at once in the skin, leaving as the mark of their entrance only a minute red speck, like the point of a pin. In eight or ten days a little swelling appears, which gradually softens and becomes pustular, and by the fifteenth or sixteenth day breaks, and allows the escape of the female, who appears with her brood of from eight to fifteen young ones clinging round her legs. These soon distributed, bury themselves in the s and if uncl ecked multiply with great rapi Warm weather is especially favorable to t propagation, and hence the spring weather g sally aggravates and increases the compl and even causes its re-appearance in those c which seemed during the colder months to perfectly cured. Troublesome and provokin every case, scab is especially so amongst e and lambs; for not only do the dressings dist and annoy the ewe, but the offspring are quently weakly, thrive badly, and soon show mistakeable evidence of the disease.

Shepherds often understand tolerably well treatment of scab, and various dressings ar good repute. A mixture of tobacco water, of tar, and soft soap is very effectual, and, any other applications, must be well rubbe It does not answer now to adopt the old scription of allowing the "salve to sink to sair;" it must be applied with smart and gent friction. Four ounces of tobacco in in hot water, a pint of oil of tar, a pound of a pound of soft soap, will, with the additio water, make a gallon of dressing, or qua sufficient for three score of ordinary sized sh A mixture of mercurial and iodine ointm or an alternate dressing of each, is also a application, but must be used with cautio pecially in damp weather, as the mercury i to become absorbed, and cause slow poiso During the past month a gentleman in neighborhood lost five ewes, which died rently from the unduly liberal use of mer ointment applied for the cure of scab. U the rest of the flock, these five had been sl ed to a second dressing, and the shep naturally anxions to get rid of the pest probably too liberal with his remedy. weather, moreover, was afterwards wet, might possibly facilitate the absorption o poison and aggravate its injurious effects the system. The animals gradually becam thrifty and weak, lost flesh, and dwindled fo or six weeks, when four died, and one, bei hopelessly ill, was killed. We are told th only notable appearances were wasting paleness of the flesh, "soft rottenness" o liver, and in the uterus a dead, swollen, pu putrid lamb. Cases of this description they are by no means uncommon, ought to der farmers more careful than they are i use of remedies so potent as mercurial oin The articles mentioned by no means exhau list of agents employed in scab. The old ined sulphur ointments or liniments are use, but not very trustworthy; solution of ride of lime, or bleaching powder, is also r mended, but is less effectual than solutio arsenic, corrosive sublimate, chloride of z the other remedies already advised. In ad to the medical treatment, entire separati

sound from the tainted stock, must of course, strictly enjoined, and as the acari, deposited on the bark of trees, or on other such objects, in mild weather retain their vitality for some no sound sheep should, for at least a fortnight, have access to the fields from which the bed stock have been removed.—*North British Agriculturist.*

Miscellaneous.

The Horse-Hair.

Professor Agassiz's interesting paper on "Methods of Study in Natural History," the last of the series in the *Atlantic Monthly*, tells this anecdote of an animal known to almost all country boys:

A gentleman from Detroit had the kindness to give me one of those long, thread-like worms (*Gordius*) found often in brooks, and called horse-hair by the common people. When I received it, it was coiled up in a close roll at the bottom of the bottle, filled with fresh water, that contained it, and looked more like a tangle of black sewing silk than anything else. Wishing to unwind it, that I might examine its entire length, I placed it in a large china dish filled with water, and proceeded very carefully to disentangle its coils, when I perceived that the animal had twisted itself around a bunch of its eggs, holding them fast in a close embrace. In the process of unwinding, the eggs were carried away and floated to a little distance. The animal finally stretched it out to its full length, which was half a yard, I sat watching to see if this singular being that looked like a long, black thread in water, would give any signs of life. It at once immediately it moved towards the bunch of eggs, and, having reached it, began to twist itself through and through the little white mass, passing one end of its body through it, then returning to make another stitch, as it would till the eggs were at last entangled again in the intricate net-work of coils. It seemed to me almost impossible that this care of offspring could be the result of any instinct of affection in a creature of so low an organization, and I therefore separated it from the eggs, and placed it at a greater distance, when the same action was repeated.

In trying the experiment a third time, the number of eggs had become lessened, and a few of them dropped off singly into the water. The effort which the animal then made to recover the missing ones, winding itself round and round the mass, but failing to bring them into the fold with the rest, because they were too small, and after all efforts to secure them, when once separated from the first little compact mass, convinced me that there was a definite purpose in the attempt, and that even a being so low in the scale of animal existence has some dim consciousness of a relation to its offspring. I afterwards unwound also the mass of eggs, which, when coiled up as I first saw it, made a roll of white substance about the size of a coffee-bean, and found that it consisted of a string of eggs, measuring more than twelve feet in length, the eggs being held together by some gelatinous substance that cemented them and prevented them from falling apart. Cutting this string across, and placing a small section under the microscope, I counted on one surface of such a cut from seventy to seventy-five eggs; and estimating the entire number of eggs according to the number contained on such a surface, I found that there were not less than eight millions of eggs in the whole string.

Management of Dogs.—Dogs kept constantly in the house must be let out four or five times a day for a few minutes, otherwise it is cruel to punish them for want of cleanliness. All dogs, whether long or short haired, are better for being brushed once a day; it conduces to the health, and greatly increases the comfort of the animal. A dog who is well brushed regularly, seldom requires washing, and is never infested with vermin; but if the dog is to be washed let it be done with yokes of eggs and not with soap, which irritates the skin, inflames the eyes, and by temporarily depriving the skin of its natural oily secretion, makes the dog extremely liable to be chilled afterwards The washing with the yoke of eggs may be managed as follows:—Let the dog stand in an empty tub, rub the yolks of two, four, or more eggs by degrees into his coat, adding lukewarm water a little, until the dog is covered with a thick lather. When it is well rubbed in over the whole coat, pour clean warm water over the dog till the egg is entirely washed out. The advantages of this process are, that the dog's coat does not lose its glossy appearance afterwards, and that the whole operation can be performed quickly and quietly, and without any splashing of water or rough handling. To remove fleas, take enough soft soap to rub into the whole coat of the dog; add to this a teaspoonful more or less, according to the size of the dog, of spirits of turpentine; rub this mixture well into the roots of the hair, adding a little warm water to make it reach the skin. Let this remain on for a quarter of an hour, then plunge the dog into a warm bath, and rub off the mixture with the hand. Care should be taken not to let it get into the eyes, and to wash it completely out of the skin.—*House Dogs and Sporting Dogs; by J. Meyrick.*

Gossip about Coaches.—The Egyptians used a car or box, upon wheels, and the word "cach" is supposed to be of Hungarian origin. In 1294 the citizen wives of Paris rode in them. The oldest (used by ladies) were called whirlicotes, or open cars. The mother of Richard II. rode in one; and in 1474 the Emperor Frederick III.

went to Frankfort in one. Stow says William Boonen, a Dutchman, in the sixteenth century introduced coaches into England; while Strutt, in his *Manners and Customs of the English*, says that Walter Ripon in 1555, made for the Earl of Rutland the first coach in England. The Duke of Buckingham, in 1619, was the first to have a coach drawn by six horses, but he was eclipsed by the Duke of Northumberland, who drove eight in ridicule. State coaches gilt are mentioned in 1609. Charles I, had one, and specimens can now be seen in the Lord Mayor's. "Gingerbred," and her Majesty's gilded one-Stage coaches gilt are mentioned 1664, and Sorbiere(1664-70) says he went in one from Dover to London, "drawn by six horses one before another," but this is what we should now term a waggon. Fosbroke gives a list of thirty different kinds of coaches, and our friend Taylor in 1623 writes that he heard of "a gentlewoman who sent her man from Charing-cross to Smithfield to hire a coach to carry her to Whitehall; another did the like from Ludgate-hill to be carried to see a play at the Blackfriars." In 1634 one Capt. Bailey established the first hackney coach stand in London. He set four coaches with men in livery by the Strand May Pole, and this example being soon followed by others, a writer of the time adds that "sometimes there are twenty of them together, which disperse up and down," and he frequently adds, that "everybody is much pleased with it."—(Garrard) In 1636, there were more than 6,000 hackney-coaches in London, a proof of the public's appreciation; but in 1660, Charles II issued a proclamation forbidding their stopping in the streets, for that they must be hired from the stables, &c. The *Weekly Register*, December 8, 1773, tells us that "these hackney gentlemen who drive about the city and suburbs of London, have by their overgrown insolence obliged the Government to take notice of them." The *Gentleman's Magazine* records, that on September 23, 1751, a man ran a coach wheel from the Old Bailey to the eleven mile-stone at Barnet and back in three hours fifty-one minutes, for £50. He had four hours to do it in. By statute 3rd Geo. I, c. 7, sec. 2, 800 hackney coaches were licensed at 5s. each weekly.—*City Press.*

POTATO BLIGHT.—M. Lemaire advocates coal tar as a preservative against the potato blight. He incorporates two parts of coal tar with 100 parts of dry and loose earth, and strews this mixture over the ground to be planted with potatoes, after which the field is ploughed or dug in the usual way. In this manner the coal tar is buried to the depth of 20 centimeters or thereabouts, and the potatoes planted in it thrive perfectly, and are never attacked with the blight. Mr. Lemaire has also made the discovery that potatoes planted in a part of the same field, which had been purposely left without coal tar, contracted the disease at the same time that the others were free.—*Galignana.*

A LIVING FROG FOUND IN COAL.—The follo is an extract from a letter received on We day last in this city, by John Russell, from the manager of his Try Nicholis Col Com Tylery, near Newport:—'Our men i heading in the rock vein coal yesterday, M 10, in the fall of coal in the face of the hea found in a hole in the pricking, in the top c coal and in the nine-inch bed of coal, a frog. The hole was not more than 3½ inc diameter and this found in a soft ho There is a slight hollow over the coal wh was found. It began moving about as so it was released, but seems larger and more l to-day. It is kept shut up in clay to ex the air from it. Now this is 200 yards b the surface, where this little thing was found I do not suppose any one can form an idea long it must have been there. I intended ing it kept for you until you returned'—(Sig L. W. Rees. [Mr. Russell is going to se the Great Exhibition a block of coal, be ten and eleven feet long, selecting the pie which the frog was found, the *locus in quo* b exactly in the centre and the block will b cut out that the frog and its strange dwe will be clearly shown in front]—*Worcester Chronicle.*

SUNSET AMONG THE ICEBERGS.—The bo open to record. The sun on the rugged hi Labrador, a golden dome; Bell Isle, a r blue mass, with a wavy outline, rising fro purple main pricked with icebergs, some a white, others flaming in the resplendent s like red-hot metal. We are sailing quietly eagle on the still air. Our English friend heard singing while they walk the deck, and off upon the lonesome land where their ho waiting for them. All that we anticipate the sunset, or after-sunset, is now present. ocean, with its waves of Tyrian dye laced silver, the tinted bergs, the dark blue inlan and brown headlands underlie a sky of un able beauty. The west is all one paradi colours. Surely, Nature, if she follows mourner on the footsteps of the fall, also re jubilant and glorious to the scenes of R Here, between the white light of day an dark of the true evening, shade and bright like Jacob and the angel, now meet and w for the mastery. Close down among the gl purple of the rugged earth, beam the bri lemon hues, soon deepening into the ru orange, with scattered tints of new straw, li ly-blown lilachs, young peas, pearl and bl termingled. Above are the royal drapery the twilight skies. Clouds in silken thread skeins; broad velvet belts and ample folds as night, but pierced, and steeped, and e with flaming gold, scarlet and crimson, co deep as blood, crimson fleeces; plumes with pink, and tipped with fire, white fire. all this glory lies sleeping on the shore, o

ear shore of the great ethereal ocean, in the
s of which are melted and poured out ruby
ire, and emerald, pearl and gold, with
ing moist blue of human eyes. The pain-
ses with speechless, loving wonder; and I
er to myself, "This is the pathway home
immortality of bliss and beauty." Of all
rs of the year, this may be the birthday
King-of-day, and this effulgence an imperial
ss through the grand gate of the west.
the soul follows on in quiet joy, dreaming
dy ones waiting at home, and lovely ones
ed, waiting with Christ! Here comes
rondrous lines of Goethe, marching into the
y with glowing pomp: "The setting sun!
nds and sinks—the day is over-lived.
er he hurries off, and quickens other life.
at I have no wing to lift me from the ground,
ggle after, for ever after him! I should
erlasting evening beams, the stilly world
e, every height on fire, every vale in re-
the silver brook flowing into golden streams.
ugged mountain, with all its dark defiles,
not then break my godlike course. Al-
the sea, with its heated bays, opens on
raptured sight. Yet the god seems at last
away. But a new impulse wakes. I
on to drink his everlasting light—the day
me and the night behind—the heavens
and under me the waves. A glorious
! as it is passing he is gone." Here
the last touches of the living colouring,
the purple waves around the vessel.
the icebergs hang their pale and spectral
piercing the depths with their mimic
and giving them a lustrous, aerial appear-
The wind is lulling, and we rise and fall
ly on the rolling plain. "The day is
into the later twilight, and the twilight
e solemn darkness" No, not into dark-
or in these months, the faint flame flicker-
night above the white ashes of day from
t circling around to the north and east,
nlight and the starlight and the northern
ll conspire to make the night, if not more
than day," at least very lovely. A
duskiness drapes the capes, beneath the
cliffs of which lies half entombed a
d iceberg, a ghostly wreck, around whose
hite ruins the mad surf springs up and
broad its ghastly arms. Softly comes its
aning, and blends with the plaintive melo-
the ocean. Hark! a sullen roar booms
the dusky sea—nature's burial service and
eral guns. A tower of the old iceberg
cape has tumbled into the billows. We
presently into the cabin for prayer, and
st scene closes on the coast of Labrador.
Lewis Nobles' Iceland.

ENTION OF SEA SICKNESS.—Let a person
board, when the vessel is bounding over
es, seat himself, and take hold of a tum-
dly filled with water or other liquid, and
at the same time make an effort to prevent the liquid from running over by keeping the mouth of the glass horizontal, or nearly so. When doing this, from the motion of the vessel, his hand and arm will seem to be drawn into different positions, as if the glass were attracted by a powerful magnet. Continuing his efforts to keep the mouth of the glass horizontal, let him allow his hand, arm, and body to go through the various movements—as those observed in sawing planing, pumping, throwing a quoit, &c.—which they will be impelled, without fatigue, almost irresistibly to perform; and he will find that this has the effect of preventing the giddiness and nausea that the rolling and tossing of the vessel have a tendency to produce in inexperienced voyagers.—*Athenæum*

THE JAY'S VOLUBILITY.—One of the most remarkable peculiarities of the jay is the volubility of their sounds. The alarm note the bird utters on the appearance of danger, or even of a stranger in its haunts, is extremely harsh; but it has a love note peculiarly soft, "yet so low and apparently cautious, that it seems whispering to its mate, as if to hide their affections and labours from the other tenants of the grove. Even then it is very imitative, and though it does not attempt the songs of the warblers, it is very adroit at bleating, screaming, neighing, and in short, imitating all the harsher sounds." Bewick says: "We have heard one imitate the sound made by the action of a saw so exactly, that though it was on a Sunday, we could be persuaded that the person who kept it had not a carpenter at work in the house Another, at the approach of cattle, had learned to hound a cur dog upon them, by whistling and calling upon him by name. At last, during a severe frost, the dog was excited to bite a cow big with calf, when the poor animal fell on the ice, and was much hurt. The jay was complained as a nuisance, and its owner was obliged to destroy it." Mudie, another careful observer, remarks: "Words in which the letter r occurs are soonest learned, not only by the jay, but by most birds that can be taught to articulate." That is easily accounted for by the unyielding nature of the mandible which forces the air to come out between the upper part of the tongue and the palate, on which that trills. A man cannot easily pronounce the r in any but Northumberland fashion, if he grins the while; and those who use the tongue simpering and softly merely touch, but do not pronounce it.—*Cassell's Popular Natural History.*

ORIGINAL ANECDOTE OF BURNS.—As Lord Crawford and Lord Boyd were one day walking over the lands in Ayrshire, they saw Burns ploughing in a field hard by. Lord Crawford said to Lord Boyd, "Do you see that rough looking fellow across there with the plough? I will bet you a wager you cannot say anything to him

that he will not make a rhyme of." "Done said the other; and immediately going up to the hedge, Lord Boyd cried out, "*Baugh!*" Burns stopped at once, leant against the plough, and, surveying his assailant from head to foot, he quietly answered—

"It's not Lord Crawford, but Lord Boyd,
Of grace and manners he is void—
Just like a bull among the rye,
Cries "Baugh!" at folks as he goes by."

The wager was of course won.

Editorial Notices, &c.

Provincial Exhibition at Toronto, 22nd to 26th September, 1862.

In our last issue we were unable to announce decisively the exact days on which the Provincial Exhibition would take place this year, in consequence of it having been discovered that the days which had been chosen by the Board were the same as those selected by the New York State Society for their show at Rochester this year. As it was, of course, desirable to to avoid a collision of dates if possible, some correspondence, as stated in our last, took place with a view to a satisfactory arrangement.

As it appears from the correspondence that the New York Society had published their list, and made various arrangements which would render it exceedingly difficult to change their days, the Upper Canada Board of Agriculture, after full consideration of the subject, decided that our Show should take place one week earlier than first intended, viz., during the week, commencing on Monday, September 22nd. The Exhibition will accordingly be held at Toronto, this year, on the days above stated: 22nd, 23rd, 24th, 25th and 26th September. It would be seen in our last that the rules or regulations connected with the Exhibition have been remodelled and amended, and some new prizes offered. We shall have some remarks to offer on these points on another occasion.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Secretary.

Toronto, 1861.

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