

Technical and Bibliographic Notes/Notes techniques et bibliographiques

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

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

- |  |  |
|--|--|
| <input type="checkbox"/> Coloured covers/<br>Couverture de couleur   | <input type="checkbox"/> Coloured pages/<br>Pages de couleur   |
| <input type="checkbox"/> Covers damaged/<br>Couverture endommagée  | <input type="checkbox"/> Pages damaged/<br>Pages endommagées   |
| <input type="checkbox"/> Covers restored and/or laminated/<br>Couverture restaurée et/ou pelliculée  | <input type="checkbox"/> Pages restored and/or laminated/<br>Pages restaurées et/ou pelliculées  |
| <input type="checkbox"/> Cover title missing/<br>Le titre de couverture manque   | <input checked="" type="checkbox"/> Pages discoloured, stained or foxed/<br>Pages décolorées, tachetées ou piquées   |
| <input type="checkbox"/> Coloured maps/<br>Cartes géographiques en couleur   | <input type="checkbox"/> Pages detached/<br>Pages détachées  |
| <input type="checkbox"/> Coloured ink (i.e. other than blue or black)/<br>Encre de couleur (i.e. autre que bleue ou noire)   | <input checked="" type="checkbox"/> Showthrough/<br>Transparence   |
| <input type="checkbox"/> Coloured plates and/or illustrations/<br>Planches et/ou illustrations en couleur  | <input checked="" type="checkbox"/> Quality of print varies/<br>Qualité inégale de l'impression  |
| <input checked="" type="checkbox"/> Bound with other material/<br>Relié avec d'autres documents  | <input type="checkbox"/> Includes supplementary material/<br>Comprend du matériel supplémentaire   |
| <input checked="" type="checkbox"/> Tight binding may cause shadows or distortion<br>along interior margin/<br>La reliure serrée peut causer de l'ombre ou de la<br>distorsion le long de la marge intérieure  | <input type="checkbox"/> Only edition available/<br>Seule édition disponible   |
| <input type="checkbox"/> Blank leaves added during restoration may<br>appear within the text. Whenever possible, these<br>have been omitted from filming/<br>Il se peut que certaines pages blanches ajoutées<br>lors d'une restauration apparaissent dans le texte,<br>mais, lorsque cela était possible, ces pages n'ont<br>pas été filmées. | <input type="checkbox"/> Pages wholly or partially obscured by errata<br>slips, tissues, etc., have been refilmed to<br>ensure the best possible image/<br>Les pages totalement ou partiellement<br>obscurcies par un feuillet d'errata, une pelure,<br>etc., ont été filmées à nouveau de façon à<br>obtenir la meilleure image possible. |
| <input checked="" type="checkbox"/> Additional comments:/<br>Commentaires supplémentaires:   | Continuous pagination.   |

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

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

THE

# Canadian Agriculturist.

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

VOL. XIV.

TORONTO, SEPTEMBER 1, 1862.

No. 17.

## Irrigation.

*Editors of the Agriculturist.*—One object I have in writing to you is, to ask you (as you are supposed to know everything, and to be at all times ready to communicate that knowledge to every one), for information on the subject of irrigating grass land. I have about eight or ten acres of land so situated that a creek might be made to flow over it. It is rather heavy clay, and part of it has only 16 or 18 inches of clay all we come to the solid flag, limestone rock. The water in the creek is rather hard, in consequence, I suppose, of running upon the limestone; is also full of saw-dust from a saw mill on the left lot up the creek. I never saw an irrigated meadow, and as far as my reading extends, it appears to be beneficial only to sandy or loamy soils, when well drained. Now, what I want to know is, would it be beneficial to irrigate such heavy land with such hard water? for I understand that soft water is best. Would the saw-dust be injurious? How near together should the drains be where I could not make them more than 16 or 18 inches deep? Has clay land ever been irrigated with advantage? What work is done in published on irrigation and draining combined, that is adapted to Canada? If you could spare space in the *Agriculturist* to answer these questions, perhaps it might be useful to some of our readers, who may have land that could be irrigated, as well as to

Yours, &c.,  
J. W.

Cambray, August, 1862.

### REMARKS.

Irrigation has been found from time immemorial to act more beneficially on light, porous than on stiff clays, in consequence of the water permeating the lighter soils more freely.

Clay lands, however, have been irrigated with advantage when this operation has been preceded by *under draining*, which when combined with deep or sub-soil ploughing renders irrigation yet more advantageous. Our correspondent's sub-soil being a limestone rock, we presume will readily admit the passage of water through its various interstices; if not, the benefits of irrigation on so shallow a surface soil would be problematical. Impure water is better for irrigation than pure, or rain water. All water found in springs, rivers or lakes is impure; that is, it contains earthy and saline substances in solution. Our correspondent need not therefore be doubtful about his *hard* water, as the hardness is owing to the presence of lime,—carbonate or sulphate,—substances that possess manuring qualities. The saw-dust in the stream would do no harm, unless in too large quantity, when it might interfere with the regular overflow of the water on the surface of the land. It is impossible to give advice about cutting the drains, without knowing how the surface to be irrigated lies, in relation to the stream which supplies the water. They should be deep enough to contain a sufficient quantity of water, and so placed both as to distance and inclination that the fluid can freely and uniformly flow over the whole surface,—Such a surface should therefore be flat, or at least uniformly inclined. If a field inclines different ways it makes it more difficult, sometimes impracticable to irrigate, in a perfect manner. The surface of many of the celebrated

water meadows in Europe, have been carefully prepared by art. Much, however, can be done on uneven surfaces by persons skilled in the practice of the art by what is technically called "catch work." We would advise our correspondent in the first instance to overflow his land in as thorough and inexpensive manner as possible, and watch the results, of which we should be happy to be informed in due course. We know of no work embracing irrigation with draining that is readily accessible, but we may shortly turn our attention to the subject in the pages of the *Agriculturist*.

Eds.

### The Grain Aphid.

EDITORS OF THE CANADIAN AGRICULTURIST.—Considering the office of the *Agriculturist* the best repository of facts relating to Agricultural matters in Canada West, I send you the result of my observation and experience of the insect now infesting our grain fields.

I observed it first on a field of oats of my own, last summer. They were early sown, and the damage done to them was small, — the grain was well filled before they appeared, but I had a bushel of Scotch or Fife wheat sown in the same field, late, which was promising well until the oats were cut, and very few insects on it; but immediately after the removal of the oats myriads of these insects attacked the wheat, and when harvested, the wheat only weighed about 45 lbs. per bushel.

They appeared last year to prefer oats to any other kind of grain, my grain bags could scarcely be forced to take in two bushels weight of oats, while the same bags the previous year easily held two and-a-half bushels each. I attributed the loss to the insect. This year it commenced much earlier, attacking the leaves of the oats before the grain appeared, and now it takes wheat, oats or barley indiscriminately. There is also a difference in the insect itself this year—last year very few of them had wings,—this year they appear all to get wings in a few days after their appearance, certainly within one week. Some writers compare them to the common house or bed bug, but I see no resemblance between the two creatures in this part of the country, except the general color. The Aphid divested of its limbs, to the naked eye, resembles more the shape and size though not the color of the small or male Flea, also a bed in'ester.

Yours truly,

A. HAMILTON.

McNab, 16th Aug., 1862.

Fully one-half of the money value of rape and the best cotton seed cakes is obtained back again in the manure.

### Wool and its Prospects.

[The following article we take from the *Michigan Farmer*, and congratulate our contemporary on his re-appearance, after a short cessation, in a much improved form. The two numbers of the new series that have reached us bear evident marks of talent and industry, and the Journal under its improved management, in a splendid agricultural State like Michigan, must or at least ought, to command a large degree of success.—Eds.]

From a survey, somewhat hasty, or the market, the state of public affairs, and of the other interests that have a bearing upon wool and its value, we incline to the opinion that wool is likely to advance in price than to fall below the extreme rates, that were current during the season of the clip. Why we think so, will be easily understood from the following statement of our reasons.

1. The stock of old wool in the hands of manufacturers and dealers, was far more thoroughly used up than we have known before for several years, at the time when the new clip was ready. The action of the new tariff during the past twelve months had a tendency to set the manufacturers all through the country at work under more favourable circumstances than they have had since 1846; then again, the demands of the Government for supplies for the commissariat of so large an army, with all its wear and tear, had a most important bearing on the consumption of the old stock—and this with an active demand for home consumption stimulated by a remarkable plenty of currency—these causes all serve to use up the stock of old wool. It is gone, therefore, and all that manufacturer can depend upon is this year's clip, a large portion of which, they are not likely to have, for the wool clip of Virginia, Kentucky, Missouri, Tennessee, must necessarily be light, that will seek a northern market, and hence a diminished aggregate supply.

2. The high price of cotton, must have a immense tendency to keep up the price of wool. Already cotton is worth nearly as much as wool and the supply of cotton becomes lessened more and more, wool must of necessity, in a greater or lesser degree take its place. The demand for a supply of wool is likely to be very great before the next year's clip is ready, and we should not be surprised to note that it had gone up nearly a dollar a pound before first of next June.

3. If the army called into the field by the government consumed as supposed, nearly two thirds of the wool clip of last year, we certainly have every reason to believe that now the orders have been issued to double its number for the next nine months, the demand for so

plies of woolen goods for such an immense body of men, as nearly one million, will of itself create a consumption that will use up all the wool that has been produced in the wool growing states in less than six months, and then!

4. As yet no material change has taken place in the prices of wool in foreign countries, but exchange has advanced so that it is estimated that the high rates are equivalent to an advance in the prices of wool of from eight to ten per cent. But the tariff so discriminates, that our own growers must have a material advantage, while it lasts. We fear, however, that the wants of the country will become so pressing, that all the manufacturing interests will demand a revision or alteration of the duties on the raw material, so that a supply for home demands may be procured at rates that will permit a very great increase in the importation.

The above are the principal reasons we have for the belief, that wool is bound upon an upward trip for the next twelve months, and that we think that it would be perfectly safe for those who have clips on hand, to hold on for a reasonable time, at any rate, as it does seem possible at present, that there can be a decline either in the demand or in the prices. Still, it must be borne in mind, that we are at what the people in Washington are pleased facetiously to call "War," and they have been playing at this game in a polite and politic way for the past twelve months. We are not able to predicate what may transpire, should they determine to make war in some other way, than the "make believe" system.

The wool circulars seem to talk very cautiously as to the prices. Walter Brown, of New York, in his August circular, indicates that an advance may be looked for—he says:

"The domestic Wool market during the month of July was extremely active, especially in the wool-growing districts, and the prices still further advanced—the tendency still being upward. It is the opinion of many, that good wools will soon be worth 60c per pound, in the Eastern markets. The great advance in exchange, the high value of specie as compared with our rapidly increasing paper currency, must necessarily influence the prices of Wool, which is a direct representative of specie. The fact that cotton is selling at unprecedented rates, cannot fail to produce its effect on the Wool market. The new call for additional troops will, in due time, bring new and large orders for clothing. Manufacturers are also already doing a successful business, and under the present tariff, have before them the most brilliant prospects. Every thing seems to force wool into a high range of figures, and yet notwithstanding all these considerations, the future is in reality greatly obscured, and the immense uncertainties of war are depressing the minds of the people to such an extent, that it may have a very modifying effect on business, and prevent the natural and full

operation of these apparently active causes."

The prices in the New York markets are quoted as follows, and show an advance during the month of 5 to 7 cents:

Choice selected Saxony fleece, 58 a 60c.  
Saxony fleece, 55 a 57c.  
Full-blood Merino fleece, 55 a 56c.  
Half and three quarter blood fleece, 53 a 55c.  
Native and quarter blood fleece, 51 a 52c.  
Common fleece, 50 a 52c.  
Canada fleece, 50 a 55c.

### Breeding and Rearing Pigs.

[A correspondent of the *American Agriculturist* gives the following as his experience in this important branch of farm management. Will not some of our *Canadian* farmers furnish us with *their experience* also? Eds.]

In selecting my breeding hogs I always pick out the best shaped, most thriving boar pig to keep over for a breeder. For a sow I select a healthy shoat, well shaped, but thin and lank, in preference to a fat and sleek one; my reasons for this are, that the lean sow will produce more pigs, and raise them better than one in high order—the sleek one converts all her food into fat and flesh for her own sides and back, while in the lean one it is converted into food for the young. This rule is applicable to all animals. A cow which shows every rib when i-milk, will bring forth larger and better calves, and give more and better milk than the one which always looks fat enough for the slaughter. My experience fully sustains my theory. My mode of raising hogs which are intended to be kept over, is to have them pigged about the latter part of August, or first of September, and after allowing them to run with the sow from four to six weeks, confine them in a separate pen. When first taken from the sow they should be fed from six to eight times a day, or else they will fall off in flesh, and it will take them weeks to recruit. Their usual allowance at first should be about a pint of milk to each pig, and in order to facilitate the properly attending to them, the milk barrel should be kept standing very close to the pen, from which it can be dipped with a pail with very little trouble, being replenished night and morning with fresh skimmed milk from the dairy. The quantity of each pig should be gradually increased each day according to the growth of the pigs, until they have attained to the age of three or four months, when a regular allowance should be made them; and the number of times of feeding may be diminished. At this time of the pig's life a little grain fed night and morning, will not be thrown away upon him; a little oats or rye, if the pig is in a healthy condition, followed by a pint of corn, which may be subsequently increased to a quart. This addition of grain will tell amazing-

ly in the growth of the animal, as well as have a tendency to keep him in such a condition that when "fattening time" arrives he will be ready for the knife much sooner than a hog fed only on slops without the daily quota of corn, to say nothing of the saving of a good deal more corn than has been used up to this time in the feeding. The milk from the dairy, when weakened by the slops from the kitchen, should occasionally through the week be enriched by the addition of rye bran.

**Sty and Bedding.**—The pen in which hogs are kept should consist of two apartments—a covered and an uncovered one. An excellent manner in which to construct a pig-sty, is to erect a two story frame building, having a part of the under story boarded off for a place in which to keep the slop barrel, reserving the rest for a dry pen for the hogs, and have a pen constructed outside, and communicating with this covered one. The feeding trough should be in the outside pen. In this manner, if the pigs are given a sufficiency of rye straw in the inside pen, and the outside one is kept well supplied with the butts of corn stalks, they will not only make an immense amount of manure, but will keep themselves white and clean, thus refuting the assertion of the filthiness which is continually flung at them. In the upper part of this pen should be kept litter for the bedding of these hogs; or a part of it may be partitioned off for a henery.

I have adopted what I consider a very good as well as an economical plan of getting the upper part of my hog building filled with good littering material. It is this: When hauling in my corn fodder I cut off about two feet of the hard dry butts, which the cattle cannot eat, and leave them bound into small bundles and stowed away in the upper portion of the hog house, to be used as required. These corn butts when thrown into the outside pen are so torn and trampled up that they are converted into good lasting manure, which has not its superior on the farm, and which would be almost entirely lost if fed to the cattle in the fields, etc.

**Fattening.**—When fattening time comes, I generally commence by feeding them the "nubbins," and after two or three weeks, follow them with shelled corn. This I always feed boiled, boiling in the morning what is required during the day, and at night what is necessary for the morning. Feeding thus, brings my work nearly all in daylight. In this way I can make my hogs fat enough for all practical purposes, by feeding them from fifteen to twenty bushels of corn, each, and in slaughtering at sixteen months old, they weigh from four to five hundred pounds. I never like them to exceed the latter figure in weight, for I have no fancy for this overgrown and spongy pork of forced hogs.

One plant of the wild parsnip (*Pastinaca sativa*) gives the same as the above.

## Cultivating Mixed Varieties of Wheat.

Selected samples of distinct varieties of wheat are now generally cultivated in Scotland. It may be questioned however, if the practice has much to recommend it beyond securing a pure variety for sale or for re-sowing. At one time the wheat usually grown was a mixture of a number of varieties of white wheats, including velvet-eared, and occasionally bearded heads. They are districts in England and on the Continent, where a mixture is still preferred. In some instances in England, red and white wheats are grown mixed, from the belief that the produce of grain is on the whole more uniform, and larger, and the sample brings a higher price in the market, than when either the white or the red variety are grown separately. This is the general result in those localities where the wheat crop is liable to become affected with mildew. With more attention to the cultivation of wheat in Scotland, selection has been carried out, and the greater portion of the wheats in cultivation are true to their kinds. It is therefore important to ascertain whether by cultivating genuine or unmixed varieties, the produce per acre is not impaired, and as a consequence the money return less, than when a mixture of varieties are grown. Several eminent physiologists state that a mixture of kinds of any of the seed-producing plants usually yield a larger amount of seeds; and this opinion is very general among farmers where the growing of mixtures of the cereals and leguminous plants are carried out. It is supposed physiologists that the different varieties spread their roots to different depths in the soil, and thus draw a larger amount of the constituents of plant life from the soil. Perhaps something is due to the difference of produce in the different varieties arising from the character of the season, climate, and soil. There are several recorded experiments which support this belief, but more experiments are required to elucidate the question.—*North British Agriculturist.*

## The Atmosphere and the Soil

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

While the rain pours down upon our fields, of late, in unusual quantities, our attention comes more directed to the effect it produces on the soil, and to the good results of drainage. We have, indeed, more than one reason for cultivating such trains of thought: we are everwarded, in these studies, by not only the interesting knowledge we acquire, but by the profitable answers which nature so often returns to our inquiries.

It may, then, be practically useful, if in a wet season, we commune together a little upon these things—if we glance at the origin of copious rainfalls, and consider how much dist

countries unconsciously contribute, in this way, to each other's welfare—before we proceed to remark the results of some recent valuable observations on the effects produced by the presence of water, and the action of the atmosphere, in drained and undrained soil.

It is, indeed, as a writer in the *North British Review* recently remarks, only the breezes of the encircling air which flows above and around us, that makes the whole world kin. The carbonic acid with which to-day our breathing fills the air, to-morrow seeks its way round the world: the leaves of the date-trees which grow around the Falls of the Nile, will drink it in; it will add to the stature of the cedars of Lebanon; the cocoa-nuts of Tahiti, the palms and bananas of Japan, will change it into flowers. The oxygen we are breathing was distilled for us some time ago by the magnolias of the Susquehanna; and the great trees which skirt the Orinoco, and the Amazon, the giant rhododendrons of the Himalayas, the roses of Cachmere, the cinnamon-trees of Ceylon, the deep forests of Central America contributed to it. The rain we have seen descending so copiously was exhaled for us from the warm surface of the ocean—thawed for us out of the icebergs which we watched for ages the polar star.

The amount of that rain, in Surrey (where the average fall is about 24 inches; it was only 19½ inches in 1858, and 22.25 in 1857, was but 20 inches in the last six months of 1859. It has been about 29 inches to December 1, 1860 as will be seen from the following table, which shows—

THE RAINFALL AT CROYDON, 250 FEET ABOVE THE LEVEL OF THE SEA, IN THE YEARS 1859 60.

	1859.	1860.
January .....	0.89	2.45
February .....	0.78	1.00
March .....	1.06	1.88
April .....	2.36	1.55
May .....	2.74	3.05
June .....	1.62	5.81
July .....	4.69	2.65
August .....	1.00	2.99
September ...	4.90	3.00
October .....	3.88	1.97
November ...	2.65	2.75
December....	2.47	to the 18th. 1.43

29.04

With such widely-differing depths of rain, we hardly add, how very interesting to the farmer is the proportion of these varying amounts of rain-water which his land-drains have to let away! This has been carefully determined on different kinds of soil—as on the chalk of Hertfordshire, by Mr. Dickson and Parkes (*Jour. Roy. Ag. Soc.*, vol. v., p. 141); on the limestone formation of Yorkshire, Mr. C. Charnock; *Ibid.*, vol. x., p. 516); and

on the London Basin clay and the gault, by Mr. J. B. Denton (*Ibid.*, vol. x., p. 273); and, in the course of these valuable observations, both Mr. Parkes and Mr. J. B. Denton had their attention drawn to several curious effects produced by the removal of the land-water on the temperature of the soil.

The rain-fall in Hertfordshire, during eight years, is given by Mr. Parkes in the following table in tons. By this record the farmer will see how much the relative evaporation and filtration of the rain-water varies at different seasons of the year, and, as might be reasonably concluded, its annual amount also; and he will note that, in practice, almost all the filtered portion must either be removed by drainage, or will remain as land-water, dissolving the saline matters, and in several other ways impairing the fertility of the soil:

	April to Sept., incl.		Oct to March, incl.	
	Filt.	Evap.	Filt.	Evap.
1836 ..	212	1,023	1,574	330
1837 ..	10	982	693	452
1838 ..	12	1,082	855	393
1839 ..	263	1,500	1,246	159
1840 ..	—	980	829	362
1841 ..	—	1,514	1,437	269
1842 ..	131	1,099	1,059	387
1843 ..	100	1,822	720	538
Mean	91	1,192	1,052	360

Of the several injurious effects of leaving the soil soaking in water, the lowering of its temperature must be regarded as one of the chief. The different temperature of a drained and the adjoining undrained soil was ascertained by Mr. Parkes on another kind of land—viz., the deep peat of Chat Moss, in June, 1837 (*Ibid.*, vol. v., p. 141). He ascertained that, although the constant temperature of the natural bog, saturated with water from 12 inches to 30 feet, was 46 deg., and the thermometer planted in the same substance at 7 inches deep constantly indicated 47 deg., yet that in a portion of the same bog, well drained and deeply stirred, at a depth of 31 inches, it indicated a maximum temperature of 48½ deg., having gradually gained 2½ deg.; and that in such well-prepared soils the action of the atmosphere is much more considerable and rapid than is commonly believed, is shown by the observation made during the same valuable experiments, that, although the temperature of the natural, unstirred soil at a depth of 7 inches, was only 46 deg., yet that the mean temperature during 36 observations of the stirred and drained soil was 10 deg. higher and that after a thunder-storm it rose to 66 deg. The following is the result of their observations:

Temp. of Atmosphere in Shade.	Time of Observation.	Depth below Surface, in inches.			
		21.	25.	19.	7.
June 10. . 70.0	9 A.M.	46.10	48.2	50.0	53.0
15. . 60.4	9 A.M.	47.35	49.8	50.8	52.0
17. . 67.0	9 A.M.	48.0	50.0	52.8	55.8

We have here, as Mr. Parkes observes, satisfactory evidence that the accession of heat was solely derived from meteorological agency—that is from action on the surface, and not from the substratum, as the latter possesses invariably a lower temperature, which must have tended to diminish, rather than to increase, the heat finally acquired by the worked bed.

It is evident, indeed, from these and other observations, that in the month of June rain-water carries down heat, and raises the temperature of the subsoil; whilst the loss of heat by the strata nearer the surface is quickly restored by the sun's rays. And another important effect is also observable in all soils properly prepared to receive heat and water, and permit their descent—viz., that the transmission of accessions of heat downwards continues during the afternoon of the day, and throughout the night, whilst the superstrata (but chiefly from 7 inches upwards) are losing some amount of their heat by conduction upwards and radiation. Such is the influence of good and deep drainage and ploughing upon the temperature of the soils thus improved. But the benefit does not end there; others follow from those operations—advantages which were thus well described by the late Professor Johnston ("Chem.," p. 110): "Vegetable matter becomes of double value in a soil thus dried and filled with atmospheric air. When soaked in water, their vegetable matter decomposes very slowly, or produces acid compounds more or less unwholesome to the plant, and even exerts injurious chemical reactions upon the earthy and saline constituents of the soil. In the presence of the air, on the contrary, this vegetable compound decomposes rapidly; produces carbonic acid gas in large quantity, as well as other compounds on which the plant can live; and even renders the inorganic constituents of the soil more fitted to enter the roots, and thus to supply more rapidly what the several parts of the plants require."

Let us next refer to the limestone soils of Yorkshire. Here we have on record the observations of Mr. Charnock, of Holmfild, near Ferrybridge, (*Ibid* vol. x., p. 516) This Journal was kept during the six years from 1842 to 1848. The following table gives a digest of the results obtained in inches:—

	1842.	1843.	1844.	1845.	1846.
The total amount of rainfall was.....	26.11	24.49	19.0	22.18	25.24
The evaporation from the soil, when saturated with water was.....	30.02	31.19	27.85	31.09	32.28
Ditto when drained....	21.56	20.11	15.40	23.26	18.30
The filtration from the soil, through a drain three feet from the surface, was.....	4.55	4.28	3.60	4.92	6.70

If we examine the clay soil drainage waters, and the effect of their removal from the soil, similar results are obtained.

Mr. J. B. Denton found the temperature of the drained soils, at Hinxworth, at a depth of

18 inches from the surface, was commonly two or three degrees higher than the surrounding atmosphere, and about two degrees higher than that of the undrained soils. One observation of Mr. Denton I have not elsewhere met with. He says, "A remarkable proof of the influence and penetration of atmospheric changes through the soil to the depth of the drains, is seen in the fact that all the outlets discharged an increased quantity of water on the 6th March and 22d April without any fall of rain on the surface, it being observed on each occasion that a very considerable fall of the barometer had taken place within the previous twenty-four hours."

From the following table constructed by Mr. J. B. Denton, from the results obtained by him in the drainage of the Hinxworth estate of Mr. Clut'erbuick, several other useful facts may be gleaned. It shows the rainfall in inches, and in gallons per imperial acre, from Oct. 1, 1856, to May 31, 1857, and how many of these gallons of rain water found their way into the drains from the several outlets. In my abridgment of the tables of Mr. Denton I shall give only the quantities of water delivered from two drain outlets, viz., Nos. 6 and 15—the first delivering the water draining from fields composed of the lower chalk, mixed with clay, gravel, sand, mixed with gault; the last, gault clay, with lime infiltrated.

	Rainfall.		Discharge from Outlets.	
	Inches.	Gallons.	Gallons. No. 7.	Gallons. No. 15.
October.....	1.645	37,215	12,910	—
November.....	1.630	36,872	27,000	303
December.....	1.235	27,935	30,135	5,815
January.....	2.333	52,775	43,855	51,565
February.....	.192	4,345	27,360	9,020
March.....	.820	18,547	8,415	3,310
April.....	1.440	32,566	6,693	6,143
May.....	.750	16,967	4,177	3,413
Total.....	10.015	227,220	160,550	69,931
Difference between the rainfall and the discharge from drains.....			66,670	167,289
			227,220	227,220

The mode of draining both the mixed and clay soils of Hinxworth is thus described by Mr. Denton—

"The mixed open soils were drained by occasional and wide parallel drains (from 4 to 8 feet deep), sufficient to discharge the rainfall and relieve the pressure of subterranean water passing through the soil from the higher grounds to their natural outfalls, at a cost varying from £1 10s. to £3 10s. per acre. The drains in this description of soil were reduced to a minimum in number, on the principle that any excess of work beyond that sufficient to remove excess of wetness would be a waste of outlay; whereas in the gault clay soils—which were drained uniformly by a parallel arrangement of drains 25, and 27 feet apart, 4 feet deep, at a cost varying from £5 10s. to £6 10s. per acre—the reverse principle governed the operations, the number of drains being increased to a maximum consistent

with economy; the object being twofold—not only to remove excess of wetness, but to promote an uniform aeration of the mass of clay above the level of the drains, so as to counteract as much as possible its absorbent and retentive nature.

“The total net cost of draining the 800 acres was £3,357 10s, giving an average cost per acre of £4 4s.”

And the reporter had the satisfaction of adding at the close of his valuable paper that the Clay-land Farm had just been let, on terms ensuring a full return for the capital expended in draining, and other improvements.

The recorded comparative movement of the water in the mixed and the clay soils of Hinxworth are certainly not the least interesting portions of these observations. As might be reasonably expected, Mr. Denton tells us that the discharge from the mixed open soils was much more regular than from the clays. The quantity of water discharged by the comparatively few drains of the freest description of soil during a period of the experiments was 160,920 gallons per acre, out of 227,240 gallons which the gauge showed fell upon every acre drained, while the quantity discharged from the numerous drains of the clays was only 59,936 gallons per acre.

The steady discharge of more than 1,000 gallons per acre per diem from the mixed open soils during the winter—when evaporation is so much less than during the summer—is a fact of considerable importance when considered in relation to the wide extent of similar land requiring drainage. It will be observed, too, that after autumn rains had completely replenished the absorbent demands of the clays, a large portion of any succeeding rain was immediately charged by the under-drains. There was a fall of rain at Hinxworth in October, 1856, of 3.5, and in November of 1.630, equal together a supply to the soil of 74,087 gallons, or 3.0 gallons of water per acre. The drains just began to trickle on the 27th of November, after a fall of half an inch of rain (.540). The test holes in the land showed that the soil was rapidly feeding itself, and that the water-level was rising, had not reached the level of the drains. On the 12th of December the outlets were running 96 gallons per diem per acre, after frequent rains in the early part of the month, of less than a half an inch per diem. On the 13th the gauge showed a fall of .452 (nearly half an inch), and the outlets increased their discharge to 160 to 975 gallons per diem per acre. On the 14th of January, 1857, the outlets were running 125 gallons per diem. On the 10th the gauge showed a fall of .542 (rather more than half an inch), and the discharge from the drains was increased from 125 to 5,150 gallons per diem per acre. How important, adds the reporter, are these facts, in considering the effect

of extended underdrainage on the arterial channels of the country!

The estate of Hinxworth is thus described by Mr. Denton (*Journal Roy. Ag. Soc.* vol. xx. p. 273)—“It lies at the bottom of the chalk escarpment of the London Basin, and covers a portion of the lower bed of chalk, the out-crop of the green-sand, and a portion of the gault of the green sand formation. In several parts a superficial deposit of drifted gravel and sand overlies the older beds. The green-sand separating the chalk from the gault is very thin, and if collected in a distinct layer, would not exceed three inches in depth in its thickest part. The gault has gained a siliceous character where it comes immediately in contact with the green sand. It has also imbibed a calcareous quality by an infiltration of the chalk through the green-sand into its bed; for a wide breadth, however, the gault is denuded, and there, although the green-sand is absent, a very considerable infiltration of lime has taken place, which I presume may be accounted for by the fact that the chalk escarpment rises in almost cliff-like shape immediately at the margin of the gault, and any submersion of the gault has necessarily imparted to it the character of its more prominent and overwhelming neighbor. The nature of the soil is ever of paramount importance in considering the results of any reported drainage operations.”

The following are the analyses of the soils of Hinxworth by Professor Way :

OF THE LOWER CHALK AND MIXED DRIFT.

Moisture and organic matter.....	3.27
Sands and clays.....	24.37
Silica soluble in acids.....	1.23
Oxide of iron.....	1.14
Phosphate of lime.....	0.92
Sulphate of lime.....	0.76
Carbonate of lime.....	68.31
	<hr/>
	106.00.

OF THE GAULT (AT 24 INCHES DEEP).

Moisture and organic matter.....	5.01
Sands.....	0.66
Clay.....	63.26
Carbonate of lime.....	31.07
	<hr/>
	100.00

OF THE GAULT (AT 42 INCHES DEEP).

Moisture and organic matter.....	4.28
Sands.....	0.34
Clay.....	62.97
Carbonate of lime.....	32.41
	<hr/>
	100.00

It is from such careful practical observations that the young farmer will derive the most useful information as a guide to his drainage operations. It is not, it is true, the landholders of the light-soil districts of our island that have to

encounter the expense of land drainage. The question is of but very inferior interest to the skilful agriculturists of the Norfolk sands, the Suffolk crag, and of the great southern chalk formation of Surrey, Hants, and Dorset; but it is of great and enduring importance to the farmers of our extensive clay lands.

It will, we may all very easily discern, be long of increasing importance to the cultivators of such retentive soils. It is to them, in fact, that we must now look for that supply of animal food needed to support a rapidly increasing population; and the greater the advances are made in converting such heavy-soil holdings into stock farms, the more desirable it becomes to render their drainage more complete—*Farmer's Magazine*.

## Agricultural Intelligence.

### Agricultural Exhibitions this Autumn.

#### PROVINCIAL AND STATE.

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

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

New Y. State, at Rochester, September 30 to October 3.

Illinois State, at Peoria, Sept. 30 to Oct. 4.

Ohio, at Cleveland, Sept. 16 to 19.

Vermont, at Rutland, Sept. 9 to 12.

#### COUNTIES.

Stormont, at Cornwall, Oct. 8th and 9th.

North Simcoe, at Barrie, Oct. 1st.

Brockville, at Brockville, Sept. 18th and 19th.

South Simcoe, at Bradford, Oct. 2nd.

Durham West, at Bowmanville, Oct. 9 and 10.

North Lanark, at Almonte, Sept. 16th.

Russell, at Osborne, Sept. 30.

Peel, at Brampton, Sept. 17th and 18th.

North Leeds & Grenville, at Frankville, Oct. 1.

North Ontario, at Prince Albert, Oct. 7th.

East York, at Markham Village, Oct. 9th.

South Wellington, at Guelph, Oct. 10.

North Wellington, at Fergus, Oct. 14.

South Grenville, at Prescott, Oct. 8th and 9th.

West Northumberland, at Grafton, Oct. 15.

Addington, at Newburgh, Oct. 23.

Dundas, at Morrisburgh, Oct. 2, 3.

Niagara, at Niagara, Oct. 9.

#### TOWNSHIPS.

Paslinch, at Aberfoyle, Oct. 8th.

Hamilton Township, at Baltimore, Oct. 9.

Barton and Glauford, at Ryckman's Corner: Oct 2nd.

Camden, at Centreville, Oct. 18.

Vaughan, at Burwick, Oct. 30.

Norwich, at Otterville, Oct. 11.

Portland, at Harrowamith, Oct. 17th.

## The Royal Agricultural Society of Ireland

The annual Exhibition of this national association was held in Limerick, August 6 and 7; and we are indebted to that excellent journal,—the *Irish Farmers' Gazette* for the following report, which will no doubt interest our readers generally:—

It is just sixteen years since the Royal Agricultural Society of Ireland held its annual Show at Limerick; and when we look back to the period, and open a volume of our journal which contains the record of the proceedings, or thoughts revert to the amazing changes which have taken place in this country since that record was written. The first pressure consequent on the appearance of the disease in the potato had been felt, and unmistakable symptoms were even at that season to be found shadowing forth the fearful "coming events" which were to follow, though no one, probably anticipated the full extent of the appalling calamities which actually ensued. Nevertheless there were those present at the meeting who warned their auditors that a very serious pest hung over the country, and the urgent advice tendered by the writer of the report which appeared in the columns of the *Gazette* was "employ the people," for "the poor man's crop was gone," gone indeed—"gone with vengeance;" and those who had the power were assured that to give employment at that juncture would be found profitable to "themselves, the people, and the nation."

This is not the place, nor is it our intention to review the history of our country since the date of the former Royal Show at Limerick, but, occurring as it did just at the commencement of the second chapter of that sad history, would have been almost impossible to avoid alluding to it, when we are now called upon to record the events which have taken place at the very next meeting of the same society held at the same place. And there are other recollections stirred up when we turn back to the report given in our fifth volume. The place who once knew many of those present at the meeting now knows them no more forever; and though might easily name several to whom this is applicable, we shall content ourselves with merely mentioning two individuals who were present, whose opinions were listened to with the profoundest respect, and whose names will be revered so long as British farming command an historian. We allude to the Professor Johnston and James Smith of Dromore, both of whom attended the Royal Show in '46, and in whom the agricultural motto "Science with Practice," was so brilliantly presented. But, on the other hand, we allude to several honoured names still amongst us who were present at Limerick on the occasion, to whom we allude, and who took a prominent part

proceedings; for, amongst the eloquent speakers at the society's council dinners and banquet, we find the names of Sir Robert Kane and of Professor Hodge, the latter as the representative of what was at that time only a promising "morning"—the Chemico-Agricultural Society of Ulster; but which, thanks to the exertions and eminent scientific attainments of its representative, has long since reached an honoured and useful maturity.

But although space does not allow us to dilate on these and similar topics arising out of reminiscences of the former Limerick Royal Show, it may not be amiss to cast a hurried retrospective glance at some of the winning animals of that day, ere we pass on our description of those of the present time. For it was Mr. Mason Hopper's Belville—one of the best show bulls of that or any period—with his small and beautiful set-on head, his immensely broad back, his remarkably wide chest, and deep, very deep, ribbet, which carried off the Purcell Cup and bell, even as he carried off, in the same year, the prize at the Inverness meeting of the Highland and Agricultural Society, and at the Wakefield Show of the English Royal, crowning all triumphs, four years after, by winning, as the champion of any age, at the Glasgow show of the Scottish Society, a £70 sweepstake of silverware, which was most appropriately ornamented with his own medal. The Beau of Killerby—then the property of the Hon. A. F. Nugent—was second to Belville in '46; the other winning bulls in the different sections being Mr. Duffin's Daylight, Mr. Christy's King, Mr. Nugent's Everglass—of the Bustle by Belle tribe—and Mr. M. Harford's Young Star. In the cow class Mr. Nugent was the winning winner with Elspeth, Modesty—the progeny of the late Charleville Gwynne tribe—of Funny Eye, having also his Bundle and her partner Bandbox commended. Rose de Meaux, with the late Mr. St. George Gray took home as a calf of a few days old from the Foxhall in his girth, gave him, amongst others, the prize by Sir John Sinclair, and that heifer, whose name has since become so familiar, took the first prize for him in the yearling class, and Mr. Christy's very neat Vesper, as another specimen of the future success of the Fort Union short-horns, was commended by the judges of the day, Messrs. Torr, Dudgeon, and Abbott. Lord Riverston was there with his short-horns, whilst the Hon. Barry Yelton entered a walk over with his Herefords. Lord Bernis's Geordie, and Mr. Andrew Templeton's Elizabeth, took the bull and cow prizes in the Ayrshires to Ballyleidy, and Mr. Seymour, of his Keillor descended polled Angus cattle, won all in that class. The winning Blessing-Leicesters of modern show were not represented at Limerick in '46, because that well-known flock was not then in existence; but the flock on which that of Blessington was sown

afterwards founded—to wit, the flock belonging to the late Mr. George Moore, of Kilbride—won no less than three out of the four prizes awarded to Leicesters; and for the information of those who have been lately reading in the *Gazette* the accounts given by Mr. Wilson and Mr. Gray, of the "Border Leicesters," and the very practical remarks on the same subject which those accounts have elicited from Mr. Thomas Robertson and his friend, Mr. Jones, we may state that Kilbride sheep were essentially Border Leicesters, carefully selected, by John Murray, from some of the very best Tweedside flocks, and, as the show records of that period attest, the Kilbride sheep were always very fortunate winners.

But we now turn from reminiscences of the past—from things as they were in 1846, to things as they are in 1862. And, although we did not find some of the classes, on Wednesday morning, quite so well filled as we have seen them at former shows of our Royal Agricultural Society, we cannot allow it to be said that there was anything like a failure. Several of the short-horn sections, indeed, presented almost a regular catalogue of winners at former shows, and where this was not the case, the entries, for the most part, showed they had come of winning blood: Booth blood of the best sort—thanks to Messrs. Barnes, Chaloner, and Richardson, those steadfast adherents of Warlabey—being a predominant feature. Failure in numbers there might be, but if so, and although we had it all to ourselves—no short-horns having come direct from the other side—still it was more a failure of "weeds" than of quality. Soubadar, Lord John Russell, Sir Colin, Little Wonder, King of Hearts, Victor Emmanuel, Mickey Free, Queen of Beauty 2nd, Rhoda, Evening, Recherche, Lady of Avenel, Pride of Adare, British Queen, Queen of Beauty 3rd, &c., all winners at one time or other, formed in themselves a rare collection of good things, and aud much more than sufficient to give a high character to any show in the three kingdoms. We miss, indeed, the Ardferd Abbey "cracks" of the Spring Show, Florentine and Bride of Lammermuir, neither of which were entered for Limerick; and our American Cousin, or speaking according to Coates, the Hero of Thorndale, though also on his own ground, was, in like manner, absent. Therefore, doubtless, good reasons for the non appearance or those deservedly high placed animals, but as we do not know what those reasons were we cannot tell our readers, and must rest content with regretting their absence on an occasion when there was such a creditable turn out of the best of the south and south-west.

The flooded fields which met the eye on every hand on the way down afford by no means consolatory prospects of comfort in the show-yards, and certain unpleasant recollections of the Crimean-like mud of Athlone and the incessant

down-pour of the first day of the Belfast Royal naturally arose in one's mind; but we were agreeably disappointed, for although we certainly experienced some very heavy showers, yet the ample shedding of the market place in which the live stock apartment was held, assisted by the nearly as roomy temporary sheds, afforded every possible comfort for the stock as well as of the public, when the latter were compelled to fly for shelter. An efficient local committee, aided by a most zealous and hard-working local secretary, Mr. William Lysaght, had done all that was possible for the accommodation of exhibitors; whilst we need scarcely say that Captain Thornhill was as courteous and obliging as we have ever found him, and Mr. Corrigan, in his capacity as clerk of the yard, just as active as he is when at home in Kildare-street. Of course, the show was honoured with the presence of his Excellency the Lord Lieutenant, who is ever a welcome visitor on such occasions. A large number of the constabulary were also there, chiefly, we dare say, for the purpose of supplying a guard of honour to his Excellency; but it must have looked rather strange in the eyes of English visitors to see fine, stalwart fellows of that force walking sentry, armed with rifles, over sheep pens, short-horned bulls, cocks and hens, and butter firkins; and the sentries themselves seemed to think it all an extremely rich joke, if we may judge from their very good humoured countenances when engaged in that special duty.

The banquet, as is usual on such occasions in Ireland, was numerously attended by many of the principal land-owners and farmers of the country. Notwithstanding the difficulties under which this portion of the United Kingdom at present labours in common with others, a hopeful and encouraging spirit seems to have pervaded the meeting. We make room for the speech of His Excellency the Lord Lieutenant, whose utterances on public occasions are always significant and valuable:—

His Excellency rose amid loud cheers and said—My Lord Clancarty, my lords and gentlemen, I return very sincere thanks to you for the honour you have done me in drinking my health with such kindness. I always feel on these occasions that I had better leave the details connected with the meeting which we are holding to those who must be more competent than myself, from their pursuits and knowledge, to give their weighty authority concerning them. I believe in the show of this year there is very much to approve and applaud, except, indeed, in point of weather (hear, hear). I believe, too, that with respect to the number of cattle exhibited, a county with which I am connected, the county of Yorkshire, may have had some share in diminishing the numbers exhibited on this occa-

sion, the show in that county, which has great attractions for all the north of England, being held in this very week. There can be no doubt that in point of quality there has been a most valuable exhibition of stock, and I believe will be admitted on all sides that just praise is due to the produce of your dairy farms, and your sheepfolds, too. During all my earlier visits to the meetings of the Royal Agricultural Society of Ireland I have been enabled to use the almost unqualified language of congratulation and hopefulness. Seasons had been favorable, produce had been on the increase, and crime was greatly diminished. The Ireland of the present seems scarcely to be the same as the Ireland of the past, and there were hardly any limits to the glowing anticipations we might form respecting the Ireland of the future. In many points on this occasion I am compelled to take a sober and more chastened view—especially with reference to one topic, which I cannot omit to mention, but having done which, I will at once dismiss—both because it is the most painful and one which has only an indirect connection with the object of the present meeting. I allude to the reappearance of crime. Old crimes which we had fondly flattered ourselves had been nearly extinguished and well nigh forgotten, had shown their horrid front amongst our population. Even the soil of this county had been reddened with blood. Though in this county it has been happily avenged—perhaps “happily” was not the word to use—I will say it has been rightfully avenged—(applause)—thus has been brought about, under God, by the fearless and conscientious discharge of their duties by persons concerned—by council, by judges, jurors, the magistracy, and by the constabulary. In mentioning the last body, I must take an opportunity to say that I do not think that all occasions they have been fairly treated. I admit that there may be modifications which would be right to introduce, and to acknowledge the impossibility of their doing all that so many times seems to be required of them—seeing the inside of rooms at a great distance from them, and receiving information which not only will give them (laughter); but know as I do, much they daily do and dare for the maintenance of order and for the safety of life, I consider that some of the attacks which are occasionally levelled against them are scarcely or generously (hear). I need not point out to that agrarian crime, if suffered to remain unchecked, would prove a worse enemy to the progress of agriculture even in its strict and proper sense than either blight, or drought, rain, or storm, or the worst enmity of the seasons (laughter). Of the emuity of the season there has, no doubt, been of late no lack. From the year 1852 to 1858 there have been in this land a series of remarkably favourable seasons. Since 1858 we have suffered from a series of the reverse. In 1859 we suffered from

drought. In 1860-61, and up to the sixth August, 1862, we are suffering from deluge (hear). I might call even as a witness to court that broad and noble stream which flows within this town, so formed by nature to adorn, defend, and enrich the district which it waters, but which of late years has certainly given somewhat of an overplus of its wealth of moisture (hear). Now, these fluctuations of the seasons we have always been liable to in Ireland, and always, I fear, must be. They are mainly owing to the geographical position of the country, which we cannot hope to shift or change (laughter). I am aware that fault has been found with me once and again for dwelling upon the superior adaptation of the country to purposes of pasture and the rearing of cattle, and so seeming by implication to discourage tillage and the growth of crops. Now, no one could refuse to give praise and the growth of crops their proper opportunity and their proper sphere; but surely, it is the part of a prudent man to take things as they are, and to follow the indisputable law of nature (hear). It is undoubtedly true that for late season or two there has been a material falling off in what may be termed the general agricultural income of the country; but it is as usual, and can be proved from authentic documents, that this decrease has fallen upon tillage and crops, whereas the value of stock has actually increased. I am sure you will excuse me in pointing your attention to this subject, which seems to me entitled to your most serious attention; and it appears to me to establish incontrovertibly that in Ireland stock is the most steady and permanent part of rural income (hears). I think we should be quite wrong to consider that the increase of cattle necessarily results to the decrease of tillage. Modern husbandry has introduced stall feeding—stall-feeding increases manure, which is the surest staple-tillage (hear); and I believe it to be true, notwithstanding the decrease for the last few years the value of crops, still, that all the processes and methods of agriculture in Ireland are exhibiting continued improvement (hear). Much still has been devoted to drainage, and whether we consider the character of the crops, the soil, or the climate, there is no doubt that agricultural speculation could not take a more successful direction. The late report of the Commissioners of Public Works shows that in addition on 200,000 acres thorough draining, in part subsoiling, have been carried into successful operation since 1848. The amount expended in the last few years was, in 1859, £603,000; in 1860, £32,000; in 1861, £36,000; in the first half of the present year, £32,000. The County of Limerick alone the gross estimate contemplated and in progress under last improvements has been £188,000, of which £29,000 has been for labourers' dwellings. The average of the other counties, and is always exceeded by Cork

and Kerry. Now, this process of drainage naturally gives room for the introduction of improved implements, such as we saw with pleasure at the show-yard to-day, by which, being enabled to conduct all the operations of agriculture more rapidly, we may render ourselves less dependant on climate or weather, or in the literal words of the old proverb, we may thus be enabled to "make hay when the sun shines" (cheers). I am aware to what disadvantage the cutting of hay and corn and the stacking of turf must be exposed in some of the rainy seasons with which we are so often visited, but I cannot help thinking that by a more vigilant and determined attention to such opportunities as present themselves, even in the most outward seasons, a great deal of that which is now lost might be made comparatively safe (cheers). I have admitted then, that there is certainly something of gloom in the circumstances which have of late surrounded us, but I feel sure that every lesson borrowed both from the past, the present, and the future warns us against giving way to despondency (hear, hear). Even now in many crops, and in many districts, there are manifest signs of progress and improvement (applause). I earnestly trust that fine autumn may give us a turning point in the character of the late seasons. There are some though I cannot pretend to dive into their mysteries, who, from magnetic and electrical objections, feel justified in assuming that they will be able to ascertain more accurately those general laws which regulate the character of the seasons and of the weather; but I trust that in any case the agriculturists of Ireland will profit by experience in the same way in which they so largely did after the disastrous period which intervened from 1845 to 1849. In the remarks which I have thus taken the liberty to address you, I have mainly confined myself, as I was bound to do, to the topics and prospects of Irish agriculture, but both within and without their range there has been of late no lack of disturbing causes. Europe, Asia, and, above all, America, have heaved and are heaving with convulsions. We have sustained one famine in Ireland; we are now suffering in some degree, though in a very mitigated degree, from deficient harvests. The wealthiest district of England seems now all but paralysed by the sudden withdrawal of its most vital element. The commerce of the world has altered his laws and its actions. Steam and railways have changed the whole condition of transit. Such changes, so extensive—such shocks, so violent—defy all calculation; but they should not shake our confidence in Him who gives the sunshine as well as the storm, the fertilizing rain as well as the drought, manna, the milk and the honey, as well as the stony rock and the sandy desert—who from evil bringeth good, and in judgment remembers mercy (applause.)

### Yorkshire Agricultural Society.

The recent annual show of this renowned Society, held in the city of York, appears to have been attended by its usual success. The subjoined report, from the *Mark Lane Express*, will be found to contain much interesting information to our readers:

It was on the Wednesday that the short-horns—the very aristocrats of a Yorkshire show—riveted the gaze of their many admirers; and yet, so far as mere numbers went, there was no formidable array here. In fact, the very entries read rather like “running off ties” than the original composition of open classes. And this was the general character of the York show of short-horns. It was running-off ties. In no class were the entries great, but nearly all the animals were amongst the very best of their breed, and the majority of them as well known as winners. Mr. Stratton, who acted with Mr. Drury and Mr. Thomson of Anlaby, told us it reminded him of his first visit to a York show, some twenty years since, when he saw Bracelet, and Necklace, and Duchess 34th, and Buttercup in the ring, with that famous bull, the Duke of Northumberland, to open the lists. But there were as famous bulls in the yard on Wednesday, and it is long since so generally good a class has been got together:—Royal Butterfly, a winner of the Royal at Canterbury, and of the Yorkshire at Pontefract—Skyrocket, Feversham's grand Leeds bull—a rare, deep great bull from Scotland called Van Tromp, and Victor Emmanuel, also from over the border, and both destined to earn distinction to-day. Then Mr. Robinson sent on his new purchase, the 2nd Duke of Airdrie, the first Duke in Essex, and with some notice even in Yorkshire. The neat Master Buttercup was to be named only in the next degree; and Mr. Wiley's white Sir Charles, with two or three more, completed a class out of which the judges soon selected those they ultimately named for either honours or notice. Their ultimate choice, Royal Butterfly, has worn wonderfully well, and walked away as light and airy and handsome as ever. He does not look near so big as he did at Canterbury, but is a blood-like animal, with nothing coarse or patchy about him. Never was a prize more fairly won; for Skyrocket, sadly disfigured with a large swelling on one of his knees, has visibly wasted, and only still preserves his fine noble outline. There were many fancied Mr. Home's bull would beat him, a long way as he was before the other two commendations. As it is, Van Tromp may succeed to a place, for Butterfly was objected to as having been first at Pontefract, where the Yorkshire meeting was held two years since; and it is even

said that Skyrocket may be disqualified from his having won at an associated show of the Yorkshire and another society, as held at Leeds last summer. Only half a dozen two-year-olds came into the ring, of which the Battersea Gameser was clearly the best, although with a bad rash disfiguring his clear white skin. Mr. Stratton had it more his own way for second with a wealthy beefy bull, but with little of the style or show of Master Frederick, whose beautiful wild, roving eye told immensely against the dull, sleepy expression of his rival. Mr. Fawkes' bull was deservedly commended; and then, over the yearlings, the Battersea awards became more bothered than ever. The third in London was the first at York; the first in London was the second at York; and the second in London was the third at York. But there is no doubt Whipper-in's travels have told on him, for we never saw him show so badly, and people were more inclined than ever to pull him to pieces “behind his back.” It will need all Mr. Tallant's talents, and they are no common order, to get him in form for the sale, which is to be really genuine, and every thing to go for what it will bring. Windsor Augustus, on the contrary, was very even and well covered, and the tenth Butterfly true in his points and fresh in his looks. The awari spoke well for Mr. Carr's herd, who not only bred the best of them, but had a yearling of his own name most deservedly commended. Standing very deep on a short leg, and with a capital twist, a certain thickness of hair rather detracted from Don Windsor's appearance; but even this is something of a warranty for masculine character. The easiest thing of the whole day's work was Mr. Robinson's clever calf placing himself over a rather middling class, with Lady Pigot's alone numbered anywhere near to him. Jeric who has gone on well since Battersea, was so at York previous to the award for a hundred to the Baron Nathusius, who takes him out Prussia.

The short-horn cows and heifers were, anything, more select. In the two senior of aged and three-year-olds with only five each class, there were Mr. Eastwood's Rose, Mr. Douglas's Maid of Athelstane, Mr. Boot Queen of the Vale, Colonel Townley's Rose Lancashire, Lord Feversham's Valetta, Booth's Queen of the Ocean, Lady Pigot Pride of Southwick, Mr. Mitchell's Misset and Colonel Townley's Young Butterfly nearly every one fit to be first. The judges in fact, specially mentioned nine out of ten, while they generally commended classes of two-year-old and yearling heif with ten in the one and eleven in the other. It was thought that the London gold medal cow might have been down calving at W.

by; but Queen of the Ocean never looked better, and we are quite willing to admit that we liked her a deal more in York than in London. Rosette is getting coarse and vulgar behind, and Mistleoe has the same very visible failing; but the other cows were all wearing well and in a capital show condition; while amongst the younger heifers Mr. Douglas got the Queen placed to his liking at last. She has been beaten, however, again since Battersea, at Belford, by Mr. Wood's Bonny Belle, a very near one, only commended by the Royal, and highly commended here; so that out of the three trials the Athelstane beauty has just the best of it. The latter, from the way she has been made up, threatens soon to become cowy, but for compactness of frame and fine points she is now certainly very admirable. Her second here was a wonderfully useful white of Mr. Atkinson's, only a little deficient in quality, while Lord Feversham's Cecilia, the Royal third, Lady Pigot's Victoria, and Roan Knight's Butterfly were included in the general compliment paid to the class. In the next, about the only mistake of the day occurred, where Lady Pigot's handsome Rose-ohle was outplaced for second by one of Mr. Singleton's, for some reason, which to the mere lookers-on was more or less inexplicable, and that almost warranted the bit of temper thrown by her ladyship's herdsman when he indignantly threw away his high commendation. There was but a small lot of calves where Frederick's Farewell, wrongly entered amongst the older heifers, rather annoyingly of her competitors, was suffered to show in a proper place.

The following succinct and admirable rules, published in the catalogue, are worthy of the attention of similar societies: "When the cows and heifers are certified to be in calf, the prizes awarded will not be paid until a certificate of their having had a live calf has been delivered to the secretary. The heifers in class 7 shall be certified to be one month past their bulling. The number of live calves that cows have had shall be certified. The bulls in class 1 shall be certified (at the time of entry) to be sires of live calves; and in classes 2 and 3, that cows are holding to them. In awarding these prizes, the judges will be instructed not to take into consideration the value to the butcher of the animals exhibited, but to decide according to their relative merits for the purpose of breeding." With the first of these conditions, by way of a warning, the press of Hindostan, though entered amongst the breeding cows was not sent, and this is a lesson of itself to such associations as the Northampton, where this fat cow took a prize.

At the dinner (H. S. Thompson, Esq., president of the society, in the chair),

In the course of the evening the chairman gave "Success to the Yorkshire Agricultural Society." This society had now been established since 1837. It was in this month in 1837 when the society first met in York for the purpose of organizing a Yorkshire Agricultural Society. Since that time, of the Council, which consisted of twenty-eight members, sixteen had died, and there were twelve remaining, and out of these twelve eight were still on the council, thus showing that the earlier promoters and supporters of this society had continued to give their support so long as health and strength would allow them. The society had existed for twenty-five years—a quarter of a century—and it would be interesting briefly to review their proceedings, and see what, in that time, they had really accomplished. Before saying what they had accomplished, he might say a few words on what they had not accomplished. They were young and enthusiastic as farmers when they formed that society. In the course of that time they had endeavoured to promote agricultural improvement in every form, but one of the things they had not been able to do, they expected they should have been able to do, was to raise the standard of produce either in the way of stock or crops. He had been a constant attender at the meetings of this society and others, and he must give it as his unhesitating opinion that they had not raised their standard of perfection in the best animals or best crops beyond what they could do twenty-five years ago. He did not wish to be misunderstood. He would say unhesitatingly that the prize animals shown by Earl Spencer, the Booths, Mr. Bates, and others, were as good animals as were shown now by Mr. Booth, Mr. Fawkes, and others. He thought the prize animals were quite as good then as they are now. Well, then in reference to the crops. It was very common to grow five quarters an acre, and it was not unusual to grow six; and what more could be done at this day? If more was grown by any one, he hoped they would come and ask him to see it. He believed they had not raised their standard at all, either in cattle or crops, beyond those days, but they expected to do a great deal in that way. They had a little smattering of agricultural chemistry, and they thought if they knew the land was too rich down went the crop and injured the quality and quantity, and that they would be able to find out what to administer to grow large crops to the acre. What had they done to increase the produce per acre in roots on the best farms and in the best seasons? He had a great friend he often used to go see, who told him he could grow 100 tons of swedes to the acre. He was afraid he was rather incredulous. His friend showed him

some very fine turnips, and he found some that would weigh a stone. It was quite true that it was so. He (the chairman) should say that on the average they would weigh eight or nine pounds; and he said at the time, "What as to the 100 tons per acre?" His friend said it was very easy to make out that there were 22,000 plants to the acre, and if they only weight seven pounds, that made seventy tons to the acre; and if they could only get an average of ten pounds, that was 100 tons to the acre. It seemed very easy, in that way. He asked his friend when he had got one hundred tons per acre if he would be kind enough to let him know. His friend afterwards said it was not that year, the fly had been so bad; another year he said the wire-worm had been destroying them; and a third year he said, owing to the confounded seedsmen, they could not come up well. His friend lived to a good old age, and without growing his 100 tons, or 50. He could not see they were able to grow more to the acre on highly farmed land in a good season than they did then. Had they done nothing? So far from that, he should say it had been proved by facts that there had been no period since the beginning of the world in which such real gradual agricultural improvements had been realized as within the last quarter of a century. They had not increased the maximum, but they had the average very much indeed. Good stock was much more diffused than it was, and it was much more rare to see bad stock. How had these very great improvements been effected? Very much by the change effected in our means of cultivation, and greatly to the improved intelligence of the farmers. During the period to which he had alluded, the whole machinery of the farms had been changed. When they first framed their prizes for this society, they were anxious to make them such as would promote agricultural improvement. What did they offer for the different classes of things? He was surprised to find that they offered £424 for stock, £80 for written reports, about £60 or £70 for miscellaneous things, and for implements, £30. Out of £600 they offered in prizes, £30 were offered for implements. That showed the appreciation of the comparative importance of stock and implements. This year they had offered £250 for implements, and the increase in the number exhibited had far exceeded the proportion of £250 to £30. They had seen the rise of steam machinery altogether. The first steam thrashing machine ever exhibited was at Hull, in 1841. It was the fourth show they held, and many people on that occasion were very careful how they went near that machine, as they thought it was dangerous to be in the hands of farmers. There was a great number

of smocky engines now in their show yard, and the wish was now to get near them whilst at work. Steam thrashing machines, he was happy to say, were now more common than horse thrashing machines. Look at the steam plough. Many present, no doubt had an opportunity of seeing the steam plough at work within the last few days. What was its position at the present moment? He should say the problem of the successful effectual cultivation of the land was solved. They could effectually cultivate the land by steam machinery. As to the question of economy, he thought the cost of the most economic application of that power to this purpose was making rapid progress. Year by year the expense of it, the wear and tear, and other expenses attending the application of steam power was being reduced, and in a few years it appeared likely that steam ploughs would be as common as steam thrashing machines. He did not say that steam ploughing was now in such a position as to render it advisable for farmers to introduce it upon their farms. Land, however, could effectually be ploughed by steam, and in a few years he thought it could economically as well as effectually be cultivated by steam. He felt it was only fair to ask who were the men who brought it to its present position. Steam ploughs did not make themselves, and they ought not to turn their backs on the men who had fought the battles, and brought the question to its present position. The two men who had borne the burnd of the battle were Messrs. Fowler & Smith. In proposing the toasts, he should beg leave to ask the company to drink their healths, and he would now say publicly that he thought they were exceedingly indebted to them. After referring to their perseverance, the chairman said he was happy to tell them that the manufacturers of Mr. Fowler's plough had, since the 1st of January, sent out forty-five complete sets of engines and apparatus, the great majority of which were in the hands of Englishmen. He would next allude to the importance of covering farmyards. He had tried it himself, and having found its great value, he had made one for a tenant at his express request. The greatly improved value of the manure was such, that whoever tried it would never be without it in future, and he felt perfectly satisfied it would improve the means of fertilizing the land fully twenty-five per cent. The cost was scarcely appreciable when they were making farmsteads, but if they had it to do entirely new it would cost about 5s. per square yard. His toast was "Success to the Yorkshire Agricultural Society." They had achieved, he thought, a considerable measure of success, and he thought a set of Englishmen never had a good cause in hand they did not make

answer. The cause they had in hand was one which was worthy the attention and the exertions of Englishmen, for it was no less than that of providing food and employment for the whole nation.

### Professor Cameron's Lecture.

The following is an abridged report from the *Leicester Express* of Dr. Cameron's interesting lecture which he delivered before the County, Kildare Agricultural Society, in Naas Town Hall, on the 29th of July last :

The lecturer commenced with a few introductory observations, in which he complimented the society on the prominent position which they occupied amongst the agricultural societies, and congratulated them on the important results which had attended their recent efforts to extinguish the sale of spurious and inferior manures in the county. He next defined the three great divisions into which all the objects of external nature were arranged—namely the mineral, the vegetable, and the animal kingdom. There are many thousands of bodies, possessing different properties, each distinguished by its attributes from all the others ; yet by the process of chemical analysis all these substances are resolvable into about 66 elementary or simple bodies:—kinds of matter which cannot be resolved into simple forms ; that is, cannot be decomposed. Of these 66 bodies, one-half occur in very minute quantities ; and their functions in the economy of nature are totally unknown. Of the remaining elements a large proportion occurs in but comparatively small quantities, so that, after all, but little more than a dozen raw materials are employed by nature in building up its rich and varied products. The functions of plants were next described. These, said the lecturer, should be regarded as stationary mechanisms, designed by the Creator for the elaboration of lifeless mineral matter into organized structures, capable as being used as food for animals. Plants grow only when exposed to the influence of light and heat, and the various other subtle forces which reside, so to speak, in the sunbeam. These forces are expended during the growth of the plant, and in fact, the development of the vegetable substance is in an inverse ratio to their disappearance. Plants are, therefore not merely stores of organized matter, but also magazines of force. During their decomposition, or the reconversion of their elements into a mineral state, all the force (heat, light, &c.) expended on their production is again set free. It has been proved beyond doubt that matter is indestructible. It is also certain that force or motion is equally unannihilable. We may alter in a thousand ways the form of matter, but its weight cannot be

reduced, We may alter the nature of motion—we can convert magnetism into electricity, electricity into light, light into heat, and heat into motive power, but we cannot utterly destroy any one of these forces. Animals require food in order that they may be enabled to carry on those motions which chiefly constitute vitality. The animal is perfectly unable to organize mineral matter, the substances by which its body is repaired must be but little different in nature from the body itself. Chemical analysis had shown that there is scarcely any difference between those parts of plants consumed as food and the animal body ; so that the latter merely reorganizes the vegetable albumen into animal albumen, and the vegetable fat into animal fat. The constituents of food admit of arrangement into three classes—The nitrogenous, non-nitrogenous, and mineral. The nitrogenous substances are formed of oxygen, hydrogen, carbon, and nitrogen, with minute quantities of sulphur and phosphorus. They alone are employed in the production of lean flesh, or muscle, and the organic or combustible portion of the bones. Hence they are termed flesh-formers. The white of eggs, the curd of milk, the gluten of flour are flesh-formers. The non nitrogenous substances are formed of carbon, hydrogen, and (sometimes) oxygen. They embrace starch, sugar, oil, and the production of heat, and hence are termed heat-givers. The mineral matter is used principally in forming the bones. The lecturer here entered at great length into the subject of the origin of animal heat and motive power, and demonstrated that the greater part of the food taken was consumed in carrying on the processes which give rise to their development. The native of the Polar regions is obliged to use an enormous quantity of fatty food to maintain the temperature of his body, at 100 and even 140 degs. higher than of the air surrounding him. The native of the East Indies, for an opposite reason, uses but little food, and that of a watery kind, the evaporation of the fluid portion of which from his body keeps him cool. Thus, on the one hand, by the process of internal heating and on the other by internal refrigeration, the temperature of the body is maintained at the same point—nearly 100 degs. Fah. Whether the individual be at the tropics or at Nova Zembla, the laws which govern the life of man control with but slight modification that of his "subjects in creation." Animals use food in order to make up for the waste which their bodies are continuously undergoing, and also to maintain the heat which is essential to their healthy vitality. An animal in a constant state of activity will consume more food than another which is in one of quiescence. In cold weather an animal if exposed, will require a larger supply of heat-giving food than it will if kept in a warm place. A beast undergoing the fattening process should be placed in a darkened situation, allowed to be

perfectly quiet, and kept at as high a temperature as is compatible with its health. Under such circumstances the flesh stored by it will cost the feeder far less than if the conditions were of an opposite nature. That by far the greater portion of the animal's food is consumed in developing heat and motion is evident from the fact that an ox will eat  $1\frac{1}{2}$  cwt. of turnips and 5 lbs. or 6 lbs. of oil-cake per diem, and still will only increase in weight by a couple of pounds. The feeder will find it more economical to keep the animal warm, by burning cheap coal *outside* its body, than by burning costly oil or starch *within* it. The best kinds of beasts for fattening (though not for breeding from) are those with large lungs—narrow chested. In such animals, the respiratory process is feebly carried on, and the amount of matter consumed in producing heat is comparatively small. Neither playful or irritable animals should be selected; the quieter—in fact, the more stupid—the animal the greater is its tendency to fatness. The presence of several stout persons prevented him (the lecturer) from applying this principle to the superior animal—man. The food should be adapted to the age of the animal. Calves, and the young of every kind of animal, should be abundantly fed with assimilable food, which should also be highly nitrogenous. During the formation of the bones, the hide, and the hair, much nitrogen is required, because these parts contain a large proportion of that element, and but little fat. When the animal is fattening it should also be supplied with easily digestible food, in which the fatty and starchy constituents preponderate. It was a mistake to suppose that even in these animals the lean predominated over the fat. The recent researches of Laws and Gilbert prove that in the carcass of a lean sheep there is 50 per cent. more fat than lean; in a fat sheep the proportion of fat to lean is as 4 to 1; the carcass of a moderately fat pig contains five times as much fat as lean. It would thus appear that the more fat-forming substances which the food of some animals contains the more valuable it is. In all probability a large proportion of the nitrogenous constituents of oil-cake and bean meal is passed through the animal's body unchanged, the oily matters being alone completely assimilated. In the early stages of fattening, coarse food, containing a large proportion of woody fibre, may be given, and the greater portion of it will be assimilated; but in the last stage of the process, only the most nutritious and easily digestible aliments should be given; for the tendency to the secretion of fat being then at a minimum, and the appetite of the animal being much impaired, it will only consume as much food as will enable it to discharge the necessary functions of life. If, however, the nutriment be of a very tempting kind, it will probably eat in excess, which will contribute to the increase of the animal's weight.

It is by careful attention to such points as these that the finishing of beasts for the butcher can only be economically accomplished. The half fattening of animals is easily enough effected; but the difficulties in the way of fully completing the process appear to be very great; for in Ireland it is seldom profitably accomplished. Perhaps, when the knowledge of the scientific principles upon which the economic feeding of stock depends is more widely diffused this state of things will be improved. The chemical composition of aliments is not alone to be depended upon as a complete indicator of their feeding value. At one time the value of a food substance was estimated by its amount of nitrogen; but that was a mistake. Many kinds of food, more especially young succulent plants, contain large proportion of their nitrogen in an almost mineral state—at all events, in a form not sufficiently organic to admit of its being assimilated by animals. Many substances, to which, according to analysis, possess a high feeding value are practically inferior to other substances of lower analytical value. Rape-cake contains far more nutritive matter than linseed cake; yet no feeder prefers the former to the latter. The causes of the inferiority of such substances as rape-cake and their remedy are important problems, the solution of which would be of great advantage to the farmer. Some of the causes are already known. For example, rape-cake contains in very small proportion a disagreeably flavoured substance, which causes animals to dislike it. By steaming the cake and adding a little molasses or other sweet or flavoured substance to it, the disagreeable flavour is removed, and even fattening animals will readily eat it when it is presented to them in this state. The addition of an equal weight of locust bean (dried and crushed) to rape-cake so completely disguises the strong flavour of the latter, that stock will not only eat it, but, what is of far more importance, thrive upon it. Dr. Cameron next dwelt at considerable length upon the necessity of attending to the mechanical constitution of the food. A great deal of the motive power of the horse is needlessly expended in the process of grinding his oats and hay. If a mare were obliged after a hard day's toil to use her teeth in grinding all the hard grains of wheat required to make a loaf of bread, he would find the process anything but delightful or refreshing. There is no occasion to cook such soft food—turnips and mangels; but inferior, hard, waste out hay and other rubbishy kinds of food are best made use of in a chopped and cooked or fermented state. Such food should only be given to working animals or lean beasts. After expiating for some time on the importance of the subject of his lecture, and suggesting to his hearers the carrying out of certain feeding experiments, the learned Doctor brought his lecture (which was delivered extemporaneously at

occupied nearly two hours) to a close, amid warm applause. The Doctor having stated his willingness to answer questions, several were put to him by the chairman and others, and were satisfactorily replied to.

## Horticultural.

### Cultivation of Window Plants.

The cultivation of flowers in the windows of dwelling houses has been for years rapidly extending in European countries, and it is a source of pure domestic pleasure and rational improvement. In Canada the principal objection urged against the raising of plants in windows is the liability of their being frozen during the intense cold nights, which are certain to occur now and then during winter. This evil, however, can be avoided, or at least greatly mitigated by a little extra care and attention, and we are glad to find that flowers in windows are every year increasing. The following report, condensed from that excellent periodical, the *Gardener's Monthly*, of a recent meeting of the *Pennsylvania Horticultural Society* held in Philadelphia, will be found suggestive:—

Dr. Jack read an essay, detailing his experience in growing window plants, and setting forth his method, which has been quite successful. He said that the subject was one of interest to all who have a love for plants, and especially to those who have not the conveniences for greater indulgence.

The conditions most desired, and the attainment of which has proved the most difficult, are the application of an even heat, and the maintenance of a constant moisture. In order to protect his window plants from an atmosphere too dry, he has pursued the plan of enclosing a space inside of the windows, projecting a case into the room and giving it the form of a bay-window. This is indeed but a Wardian case, one side of which is composed of entire sash. The dimensions are, height, 5 feet 8 inches; width three feet seven inches (this being the size of the window frame,) and depth two feet eight inches.

The accommodation of the plants is effected by a circular stage of 31 inches in diameter, revolving on a central stud. This form of stage permits a variety of arrangement, and allows access to all parts for the purpose of watering, etc. While this form of stage retains the moisture constantly rising from the soil

equally as well as the ordinary Wardian case, it is better supplied with light, and affords an opportunity for a much more tasteful display of plants. It is liable to great diminution of external air, by which means, in cold weather, the plants suffer for heat.

To secure a uniform and sufficient temperature, an opening is made on the top of the case for the entrance of warm air, and another in the bottom, for the exit of the cool, which falls in consequence of its greater specific gravity. By this means, the plants are perfectly protected from contact with cold air. The current of warm air entering the top would, however, naturally dissipate the necessary moisture. To avoid this, a net work of loose cotton thread is placed over the opening, one end being immersed in water. Capillary attraction causes the whole to be moistened, and the air, in passing over it, becomes saturated with water.

The effect of this method is shown in the better appearance of the plants, a greater evenness of temperature, and the constant marked presence of humidity. All this is accomplished without complication, and requires but little attention. The process is almost self-regulating, much like that in the Aquarium, which renders the latter of such interest.

To secure the condition of heat, the plants should be exposed not too directly to the rays of the sun. If possible, the case should be so placed as to have the light of an adjoining window thrown in its rear.

A communication from Mr. Walter Elder was read, in which the writer traced the history of window gardening, and presented some thoughts on the moral and pleasing nature of the practice. It was the simplest branch of gardening, and the first to interest the mind with a love of flowering plants; it is the parent of exotic floriculture. Working people in large cities, who had not a foot of ground, made gardens upon the house-tops, and now Paris and other European cities are noted for them.

The French excel in balcony gardens.—Some window gardening is perhaps more universal among the working classes in Scotland than in any other country. It is in every house. The pious, peaceful, and moral nature of the people attaches them to home, and creates in them a desire to beautify it. The writer thought that the people of Philadelphia showed, several years ago, more taste for this branch of floriculture than now.

The communication closed with an allusion to the soothing influence of the culture of flowers on the mind. There was never a more propitious time for the culture of window plants than now, when the number of flowers subject to such treatment is greatly increased.

### Late Grafting.

It is generally supposed that grafting must be done early in the spring, or it will not succeed; the rule is to graft before vegetation has begun. We have at various times practiced grafting up to the beginning of the second week in June, and with pretty uniform success. The chief difficulty to contend with is to keep the grafts from drying up on the one hand, or to prevent them from growing. When an ice house is at hand, the difficulty is somewhat under control. Early in the season we received valuable grafts from Mr. Wilder, Dr. Brinkle, and others. Our purpose was to set them at once; but absence and other causes made it quite impossible, and they remained in the cellar, covered with sand, till the 28th of May, when they were put in, some of them quite dry and somewhat shriveled. They were cut into lengths of three or four inches, and most of them inserted by the common mode of split grafting. With some, however, the usual T cut for budding was made in the bark, the graft cut sloping at the end, inserted under the bark, and secured by tying. All were thinly coated with grafting wax. Upwards of fifty grafts (apples and pears) were put in, and, with one single exception, are growing as finely as could be wished. The exception is a graft of two-year old wood, and is breaking rather feebly, which was to be expected. We call attention to this late grafting, not as a remarkable novelty, but that our readers may know that late grafting may be successfully performed. Valuable grafts are sometimes thrown away, because it is supposed to be too late to put them in. In regard to the ripening of the wood, we have never had a late graft winter killed. There is no doubt a limit beyond which we cannot go; but that limit we have not yet ascertained. The grafts put in by the T cut are growing quite as well as those put in the split. The T cut is more rapidly performed, but neither process requires much time.—*Horticulturist*.

**HOLLYHOCKS.**—To those lovers of flowers who object to the hollyhock on account of the height to which the flower stem rises, we would suggest a remedy. Instead of one, two or three spikes, encourage four, five, or even six, to rise, and when they have reached an approved height, cut their tops off, and the habit of the plant will be entirely altered. If one spike is fixed in the centre, and left taller than those which surround it, the effect is highly pleasing. Beyond this, there are many varieties naturally of a dwarf or bushy habit. Most of the leading modern kinds commence the formation of flower buds at about two feet from the ground.—*W. Paul*.

**GROWING THE TOMATO.**—One would suppose that at this late day we know pretty much all about cultivating the tomato; but it seems that we do not, inasmuch as we daily see recommendations as to the best method of getting the most fruit. Some people train the vines over the most elaborate tressel-work or frames, at no little expense; others trellis them; others stick them with brush above the size or a little larger than that used for peas; others simply throw down brush for them to run over; and others allow the vine to creep over the ground without any support, only previously mulching the ground with grass or straw.

We have tried every mode herein mentioned, and we have found that whether the plants are stuck, brushed, or allowed to run unsupported over the ground the yield is about the same. Frames and trellises are not so productive. We prefer the sticking process. It produces full as great a crop as any other mode; and if the brush is firmly inserted in the ground, it admits of passing between the rows to pick the fruit. When the vines are allowed to run over the ground unsupported, however much the ground may be mulched, the flavor of the tomato is more or less extracted by the natural attraction of the soil, by which the fruit is rendered almost worthless; besides the vines are all in a mass and to get at the fruit is inconvenient to the picker and injurious to the crop.—*German Town Telegraph*.

### The Dairy.

#### Rearing Calves on Milk and Linseed Meal.

No doubt but the best and most proper food for the calf is its own dam's milk; for it is a true food, in which the components of nutrition are so nicely balanced by the all-wise and beneficent Creator as to set at naught all human computations; but it is of so much value for human consumption, that it becomes necessary to economise it, and make imitations of it, though at a very humble distance; and thus it is that science comes to our aid. Professor Johnston says, in his "Lectures on Agricultural Chemistry," that "while the calf is young, during the first two or three weeks, its bones and muscles chiefly grow. It requires the materials of the therefore, more than fat, and hence half the milk it gets at first may be skimmed, and little bean meal may be mixed with it to a more of the casein or curd, out of which the muscles are formed. The costive effects of the bean meal are to be guarded against by occasional medicine if required. In the next stage more fat is necessary; and in the third we

latest, full milk should be given, and more milk than the mother supplies if the calf requires it; or, instead of the cream, a less costly kind of fat may be used. Oilcake finely crushed, or linseed-meal, or even linseed oil, may supply at a cheap rate the fat which in form of cream, costs for much money; and instead of additional milk, bean-meal in large quantities may be tried and if cautiously and skillfully used, the best effects on the size of the calf and firmness of the coat may be anticipated."

The scientific note from Professor Johnston has engaged the attention of many stockmasters in Ireland, and among the rest, Mr. C. Beamish, of Cork, who adopted it and brought it to a regular system on an extensive scale. His formula for compounding the mucilage is as follows: thirty quarts of boiling water are poured on three quarts of linseed-meal and four quarts of bean-meal. It is then covered up close; and in twenty-four hours added to thirty-one quarts of boiling water, then put on the fire, stirring it in slowly, and stirring it constantly to prevent lumps, with a perforated wooden paddle, so as to produce perfect incorporation. After boiling thirty minutes, the prepared mucilage or gruel is put for use, and should be given hot or lukewarm to the calves, mixing it in all quantities at first with milk, say one-fourth mucilage with three-fourths milk, progressively increasing it, so that by the end of a fortnight will be in equal parts: by the end of the third week, one and a-half mucilage to one part milk; at the end of the fourth week the mucilage may be given in double the quantity of milk, and in milk substituted for new milk; and by the end of the sixth week, the mucilage will be gradually increased in the proportion of two and a-half to one of milk; and from that on till the seventh week the milk may be gradually reduced, so that by that time they may be fed wholly on mucilage till they are fifteen or sixteen weeks old, when they may be weaned.

During all this time, if too early in the season put out the calves, they should be comfortably housed, well ventilated, and kept perfectly dry and clean; a little sweet hay tied in bunches and suspended, so that they may play with and learn to nibble and eat it; and a little red chalk, mixed with salt, given in lumps to lick at pleasure, which prevents acidity in the stomach, and the due formation of food. Small lumps of linseed cake should be put in other troughs, which they will soon learn to suck, if a little pain is taken to put a little in their mouths after they have taken in their meals after they have taken their meals of milk and mucilage. When housed it will be advisable to have a separate pen for each calf of a convenient size to walk about, so that they do not get into the habit of sucking each other and allowing the air, which, united with the curd of the regurgitating process going on in the stomach, forms round balls which are indigesti-

ble, and is the fertile cause of the death of many promising animals. The following scale of quantity of milk or milk and mucilage combined for each calf may be useful, but should be altered according to circumstances: For the first week the calf may get from three or four quarts daily; for the second week, four to five quarts; fifth and sixth weeks, eight to ten quarts; six to eight weeks, ten to twelve quarts per day, and so on, increasing the quantity about one quart per week per calf till weaning time.

Some parties do not give so much liquid food per day, but make it up by giving them finely-cut roots, dry oatmeal, &c.; but the animals are much too young for such food, though they may get the minced roots so as to train them into their use. Hay tea is an admirable thing also to mix with the mucilage and milk, as it contains a large amount of nutriment in a soluble form.

In the summer time the calves may be left out on the grass, both day and night, in a fortnight after they are calved (and fed as already described they should be in the house); but a warm sheltered paddock should be provided for them, and in wet weather they should have access to a covered shed.—*Irish Farmer's Gazette.*

## The Poultry Yard.

### A Profitable Hennyery.

Mr. Wingate's poultry house and yard are well planned—in winter the hens have a warm and commodious apartment, and in summer they are given free use of the yard, but never allowed out of it. Fresh water is kept by them all the time. The apartment in which the hens roost is about ten feet square, and it is also provided with several box nests. There are two perches for the hens to roost upon, about eighteen inches apart, and under them is a broad shelf for the purpose of catching the droppings. This is supplied daily with loam, ashes, stable-dressing, &c., and is scraped off each morning. Mr. Wingate finds this a most efficient fertilizer, applying it to his grapevines and also to other garden crops, with the best results. Adjoining this room is a larger one, which is used for the winter quarters of the poultry, connected with the other by a sliding door for the use of the poultry. Each fall Mr. W. collects from the streets about two cart loads of fallen leaves, and places them upon the floor of this room; consequently the hens have a warm, dry, and comfortable chance all winter. But this is not all; the leaves thus used become partially rotted, and with the droppings of the poultry, make a considerable pile of excellent dressing. Farmers and others who keep hens, and allow them

to freeze to death upon the cold, damp manure heap of the shed, should make a note of this.

In feeding his hens, Mr. W. makes use of the waste from the kitchen, as he keeps no pig. The potatoes, &c. are mashed up and mixed with oat-meal; and besides this, corn is given them in sufficient amount to keep them in good condition. He also uses what bones accumulate from the meat used in the family. For the purpose of crushing these up fine he has a substantial block with the top dug out in the form of a bowl, into which the bones are placed, and with an axe reduced to a form readily eaten by the hens. At present Mr. W. has twenty-four hens and a crower. He keeps the hens until they are three years old, then sells them in the fall, after the best season of laying is over. To replenish this number, he buys pullets of some good laying breed.

Mr. W. keeps a correct account of the number of eggs laid by his hens. The number of eggs laid each day are set down, and each month added up. The account of eggs laid last year, (1861) by 23 hens, as follows:

January . . . . .	48 Eggs	July . . . . .	345 Eggs.
February . . . . .	169 "	August . . . . .	309 "
March . . . . .	357 "	September . . . . .	211 "
April . . . . .	393 "	October . . . . .	95 "
May . . . . .	473 "	November . . . . .	18 "
June . . . . .	403 "	December . . . . .	18 "

In other words, 239 dozens of eggs, which at 15 cents per dozen—the average price during the year—would amount to \$35 85. The cost of keeping the hens for a year, Mr. W. considers to be \$8, as the waste from the house he does not reckon at full value. This is a profitable hennery, and is a good paying branch of Mr. Wingate's establishment.—*Maine Farmer.*

**LICE IN FOWLS.**—Poultry-houses floored with beaten or well-rammed clay are said to be less infected with lice than houses which have sandy floors. In this, however, as in other departments of stock-keeping, cleanliness is, after all, the best preventive. Cleanliness of the house and cleanliness of the nest. To secure the latter, let a plentiful supply of pure fresh water be given to them; and a dust bath should form an essential part of the furniture of a hen-house. A correspondent of a colonial paper suggests that to exterminate lice in fowls, they should be fed for several days on coarse meal wet with water, and sulphur mixed with it; the nests being at the same time thoroughly cleaned, the house fumigated with tobacco, and all the roosts and wood-work white-washed with fresh lime mixed with sulphur or tobacco.—*Mark Lane Express.*

**HENS EATING EGGS.**—A writer in the *London Field*, says: "That hens eating their eggs is often owing to the form of the nest, and suggests that the proper form is that of a

plate; shallow, that she may not have to jump down on the eggs, and sit on the bottom, so that when she treads on them they will roll aside, and let her feet slip easily between them. She can then pass her bill among them, as she tucks them up under her, and shuffles them together with her wing without hurting them. If on the contrary, the nest is made in the form of a basin, the eggs press against each other, and are liable to be crushed by her efforts to put her feet between them, or to alter their position with her beak and wings. When an egg is broken most hens will eat it, and as hatching approaches, the eggs become more brittle; and in a deep or badly formed nest the chicks are very apt to be crushed and killed between the other eggs, by the movements of the hen."

### Production of Poultry and its Produce.

There was a time—and compared with the age of a nation and civilization, not so very long since—when to enjoy the luxury of a salad or a cauliflower it was necessary for the wealthy and the titled, and even for the sovereign herself, to send an express to the continent in order to obtain it. Doubtless, the farmers of that day thought it beneath the dignity of their cloth to devote any portion of their time, attention, or land to so insignificant and ignoble a species of produce. It might do very well for the poor people of France and the Low Countries to fiddle themselves about such trifling productions, but an English farmer had something more worthy of his attention to look after than pot-herbs and lettuces, with their accompaniments. But the day is gone by, and these things are cultivated in old England with as much success and to as great an extent as on the continent; and any farmer has now only to step out at his back door into the kitchen garden attached to every house in the country to supply himself with whatever of culinary or other vegetables he delights in.

There are, however, still articles of daily consumption, the production of which in England is far from being commensurate with the consumption or with the capabilities of the soil, and for a large supply of which we are indebted to our neighbours, the French and Belgians, to an extent that will appear apocryphal to those who are not initiated into the history and mystery of the Board of Trade returns. We refer to poultry and its produce, in the raising of which the British farmers are far behind their neighbours.

A stimulus, it is true, has been given to this branch of rural economy the last ten years, but at present the "poultry mania," as it is justly termed, is chiefly confined to amateur breeders. In order to extend and diffuse the "poultry mania" amongst the agricultural classes, or rather

to induce them to pay greater attention to the business of rearing and fattening fowls for the market, we will place before them the returns of the Board of Trade of the quantity of eggs and poultry imported, the former for the last ten years, whilst the latter since the reduction of the duty not being inserted in the returns, we can only give them for a limited period.

With regard to eggs, then, the following are the average numbers per annum imported since 1828, taking every five years:

Average Annual Import of Eggs from	
1828 to 1832 inclusive	61,431,062
1833 to 1838	63,493,516
1838 to 1842	91,393,632
1843 to 1847	72,690,051
1848 to 1852	103,120,221
1853 to 1857	147,342,219
1858 to 1861	163,581,140

There has, therefore, been a gradual increase in the supply ever since 1828, with the exception of the fourth average; but to show the enormous extent which it has now reached, we may state that whereas in 1844 the quantity imported was 70,415,931, in 1861 it reached 203,313,360. And, if we reckon the cost price of these at 4d per doz, their value is £282,379 10s, upwards of a quarter million sterling for a species of produce that could with the greatest ease be raised at home. With regard to the poultry imported there is reason to believe that it has increased in an equal proportion. The returns have not noticed the same since 1856, but for that and the two previous years the imports were in value as follows:

1854	--	--	£38,876
1855	--	--	42,075
1856	--	--	48,230

So that the increase was about 25 per cent. on those three years, and has probably been quite in an equal proportion since, making up an aggregate amount for 1861 of fully £360,000 for poultry and eggs.

The number of eggs sent from France is not so surprising, when we take into account that every farmer has his *basse cule*, or fowl yard, the produce of which constitutes no inconsiderable item in the accounts of the year. M. de Lavergne, in comparing the produce of the United Kingdom with that of France, states that while the poultry of the former amounts to only twenty million francs (£800,000,) that of the latter country amounts to two hundred million francs (or £8,000,000 sterling); there is, therefore, a large margin left from the home consumption to be exported.

That the farmers would find it to their interest to cultivate more sedulously this branch of rural economy there cannot be a doubt. In London there is always a demand. Like all other provisions, there are different periods for different prices, and here it is that poultry shows

do much good in offering premiums for early maturity. If those who have facilities for rearing chickens would do so in January, or even in December, and bring them to market in a fit state in April, May, and June, they cannot fail to receive a remunerating price. Three pounds per dozen is a common value for fowls four months old. At this season, less than two guineas would be ridiculously low.

There is a collateral advantage to the farmer in keeping a large stock of fowls. The inferior grain could then be profitably consumed on the farm at a remunerating price, instead of being subject to the fluctuations of the market. Nor is the dung that would be made an object of no account. It is certain that fowls' dung is exceedingly valuable, and where large numbers are kept a considerable quantity would be made in a year. For the present we leave the subject for the consideration of those whom it concerns, but may probably recur to it on some future occasion.—*Mark-lane Express.*

## Veterinary Department.

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

### Umbilical Hernia.

The protrusion of any portion of bowel through the umbilicus or navel, forming a tumor at that part is what is understood by umbilical hernia. The navel of the young animal prior to birth is open for the purpose of giving passage to the umbilical cord or naval string; this opening after birth becomes closed, and the vessel of the cord obliterated.

It sometimes happens that closure of the aperture does not take place, and a portion of the intestines or intestine becomes protruded, constituting the hernia in question. However, in other cases it arises from blows or from the animal running and leaping, &c. The following is such a case.

About the end of July last, I was requested by a gentleman of this city to examine a thoroughbred filly, about one year old, that was affected with umbilical hernia. The tumor was about half as large as a man's fist, and increasing in size. The owner was anxious to have something done, if not to cure, at least to prevent the enlargement of the rupture; my opinion of the case was to operate immediately, as from the age and constitution of the filly the danger was

not great, and the chances were the operation would prove successful.

On Friday, the 1st of August, the filly was brought to my infirmary, and having lessened the contents of the bowels by giving laxative medicine and clysters, on the first Tuesday following her admission, I operated in the following manner :

I had the animal cast and turned upon her back and secured in the same manner as for castration. I proceeded to return the protruding portion of gut, which was easily done when in that position. The reduction effected, I pinched up the skin and passed an iron skewer about four inches in length through the skin and abdominal muscles, bringing the ruptured edges of the muscles together; taking care not to injure the intestine by guiding the point of the skewer with the fore-finger of my left hand. I secured the skewer in its place with a piece of twine, in the same manner as the pin is fastened in a horse's neck after the operation of blood letting. I then passed a second and third skewer through the skin only, anterior and posterior to the first, secured in the same manner, and the operation was concluded.

Next day the filly was a little feverish, and a slight swelling appearing in front of the rupture which continued to increase until Saturday, the 8th, when one of the skewers sloughed out, and on the day following the other did likewise; the ligatures and skewers having done their duty. During the time the swelling existed the abdomen was fermented with hot water several times a day, and a few doses of febrifuge medicine was administered, also clysters, and the animal kept continually in a standing posture. The symptoms now continued favorable, the swelling gradually decreasing, and on the 18th my patient was dismissed convalescent. A.S.

### Rabies in a Horse.

Communicated to the "Veterinarian" by R. H. Dyer, Veterinary Surgeon, Waterford.

A few weeks since, I promised to send you an account of a case of rabies in a horse, but circumstances over which I have had no control have prevented my doing so till now. In the meantime, I have been endeavouring to ascertain with certainty when the animal was bitten.

No person can or will say, however, whether he was bitten or not, and the only evidence to be procured, is, that several mad dogs have been in the neighbourhood, and that many animals have been bitten, and further, that in every case the animals so bitten were at once destroyed.

According to the evidence it appears that, the horse in question was taken ill on Saturday, February 22nd, on which day the owner applied to me for a colic draught, such as was sent to a neighbour of his a short time before.

I made some enquiries as to the symptoms present, when he replied that the animal was in pain and had no evacuation either from the bladder or bowels. He took with him an ordinary colic draught, which, however, did not afford any relief, for, on the following morning, Sunday, I was requested to see the horse; he being sent to my place of business. When my attention was first directed to him he was standing side by side with a mare, and I enquired how long he had been blind. The owner answered he did not know he was blind, but that he had noticed something "odd about him" for he blundered about, and did not seem to know what he was doing. On approaching him he snapped at me, which led me to inquire if he was in the habit of biting. The man answered in the negative. I said, "He has an appearance akin to that of a mad dog. The saliva was flowing from his mouth at this time. The moment I made use of the term mad dog neither the owner nor his servant would approach the animal. I suspected the horse had been bitten, but I could not elicit from them any information to lead me to a correct decision. They merely said that a mad dog had passed through their premises about three weeks before, and it was known he had bitten several animals in his progress.

The symptoms present were as follows. The horse was very restless and snapping at everything within his reach, excepting the mare which was with him. He never attempted that I am aware of to injure her. On feeling his pulse I did not detect any marked peculiarity in it, excepting a prolongation occasionally of its beat. The respiration, however, was very much accelerated, which seemed somewhat strange, considering that the pulse remained unaltered. I made a special remark about this at the time, I examined every part of the animal, but did not detect any evidence of a bite. The prominent symptoms were total blindness, anastation of the urinary secretion, discharge of large quantities of saliva, increasing restlessness, and occasional attempts to bite those near him. He also had a most ferocious look.

I administered a sedative draught with great difficulty. The act of giving the medicine brought on a severe paroxysm. He became almost frantic. Being much worse in a couple of hours I attempted to administer another drench, but found it to be impracticable. Every at-

tempt at introducing the horn into his mouth made him furious. He would throw himself upon the ground—not fall down,—as if determined to break his neck—he would rise again, and stagger about the yard, all the time snapping at the rope by which he was held. At length finding that he was becoming dangerous, I secured his legs when down, and kept him in that position, which made him if possible more frantic. At this time the owner, seeing the horse secured, felt more at ease, and approached within a couple of yards of him. He soon consented to my destroying him, which I did by opening the right jugular vein and blowing into it. This took place about three p. m., and five hours after I first saw him. For the last three hours, in particular, the animal had been most dangerous to approach or to handle.

The next morning I examined the interior of the body. Nothing seemed amiss except the heart, which was greatly dilated, pale, and soft in texture. The brain was afterwards examined in the presence of a medical friend. We found the membranes very much inflamed, especially at the base of the brain. Although it was evident that the base of the organ had suffered most, we were of opinion that the substance of the brain in general gave indications of disease. I have since been told that many other animals have been bitten by dogs supposed to be mad. From what I can learn, it seems that about three weeks elapse before the bitten animals are seen to suffer. The black mare, whose companion the horse was, has been attacked since, and, I believe, was destroyed. It is almost impossible here to trace things to their source, for the country people will afford no assistance. The desire to stifle all information abounds with them. I have not added much to that which is already known of this disease, but such as that case is, it is at your service.

## Miscellaneous.

### Scottish Anecdotes.

*Editors of the Canadian Agriculturist, —*

In your May number, dated 16th, there is an original anecdote of Burns, the first time I ever saw it imputed to Burns. It is said there are always two ways of telling a story. I recollect some forty years ago or more, my mother telling me the story, but she imputed it to Ayrshire Will; a crazy sort of an individual who had a great propensity for rhyming after anything that you would say to him. Lord Kilmarnock and Mr. Boyd (not lord Boyd) were out taking a walk, when they saw Will coming to meet them. It was arranged to say something to Will that he could not rhyme, so both

said "Boo," to him, when he addressed them thus:—

Ther's Lord Kilmarnock and Mr. Boyd,  
O' sense and manners they are void,  
They'r like the Bill among the Kye  
Plays " Boo ! to talk as they gang by."

My mother was an Ayrshire lass, and she had many of these stories to tell me. I recollect another of the same individual, and if you can devote a little more room in your valuable paper, it may please some of your readers. For myself I take pleasure in such. The Earl of Eglington, coming upon Will resting on the road side, as if asleep; the Earl awoke him and asked him what he was doing there, " I just sat down to rest, and fell asleep, and I was dreaming the Earl asked me what I was dreaming about. I dreamed that your lady gave me half-a-pound of tea, and your honour gave me two pounds of sugar." " Aye, but," says the Earl, " Will, you know dreams are contrary," meaning that he was not to get anything " Well, if they are," says Will, " you can give me the tea," and let her ladyship give me the sugar." Another of the same " Daft Will Spier," who was a privileged hunter of Eglington Castle and grounds. He was discovered one day taking a near land cut, and crossing a fence in the demesne. The Earl called out, " Come back, sir, that's not the road." " Do ye ken," said Will " whaur I'm gain?" " No," replied his lordship, " Weel hoo the deil do ye ken whether this be the road or no?"

READER.

North Leeds, 1862.

THE AGE OF OUR EARTH.—Among the astounding discoveries of modern science is that of the immense periods which have passed in the gradual formation of the earth. So vast were the cycles of the time preceding even the appearance of man on the surface of our globe, that our own period seems as yesterday when compared with the epochs that have gone before it. Had we only the evidence of the deposits of rocks heaped above each other in regular strata by the slow accumulation of materials, they alone would convince us of the long and slow maturing of God's work on earth; but when we add to these the successive populations of whose life this world has been the theater, and whose remains are hidden in the rocks into which the mud or sand or soil of whatever kind on which they lived has hardened in the course of time—or the enormous chains of mountains whose upheaval divided these periods of quiet accumulation by great convulsions—or the changes of a different nature in the configuration of our globe, as the sinking of lands beneath the ocean, or the gradual rising of continents and islands above;—or the wearing of great river beds, or the filling of extensive water basins, till marshes first and then dry land succeeded to inland seas

—or the slow growth of coral reefs, those wonderful sea-walks, raised by the little ocean-architects whose own bodies furnish both the building stones and the cement that binds them together, and who have worked so busily during the long centuries, that there are extensive countries, mountain chains, islands, and long lines of coast consisting solely of their remains—or the countless forests that have grown up flourished, died and decayed to fill the store-houses of coal that feed the fires of the human race to-day,—if we consider all these records of the past, the intellect fails to grasp a chronology for which our experience furnishes no data, and time that lies behind us seems as much an eternity to our conception as the future that stretches indefinitely before us.—*Agassiz.*

**LEEKs, GARLICK, AND ONIONS**—Shakespeare, as we all remember, in his play of Henry V., refers to the leek; and Gower asks Fluellen: "But why wear your leek to-day, St. Davy's day is past?" Fluellen desires Pistol to eat it, although he complains and says: "I am qualmish at the smell of leek." The Emperor Nero, we can assure Signor Mario, ate them in large quantities to improve his voice. The Egyptians use them as a sauce with roast meat, or for breakfast with bread. We read in the book of Numbers of the Israelites murmuring for the onions, leeks, and garlic of the Egyptians during their sojourn in the desert. Garlic was most esteemed by the ancients. The Romans and Greeks gave it to their soldiers to excite their courage, and to their labourers to strengthen them under their toil. Though they are so sharp, and "move tears" by their smell, the onion tribe has never been beneath the notice of the truly great. Napoleon Bonaparte devoured them greedily. One of the most favorite dishes was a leg of mutton, stuffed with sage and onions—On one occasion he ate so voraciously of it, that he was seized with a violent fit of indigestion, and unable to attend to his military duties. The conqueror of Marengo stayed by sage and onions! Here's food for moralizing.

**OBSTINACY OF THE SEA HORSE**—The walrus is an obstinate animal, and dies not fly on the approach of man; on the contrary, forming themselves into a body, they go and meet him, and resist any attempt on his part to proceed. When a company of travellers meet these animals on the shore, they are forced to fight their way through them: and if the walruses are pelted with stones, they gnaw them with their teeth, but afterwards attack the men with redoubled fury, rending the air with the most tremendous growling. These animals seem to be fully aware of the effect of united resistance and attack, and also of the utility of keeping in masses and ranks; for, should any one of them attempt to retreat, those in his rear fall upon,

and compel him to keep in the ranks, or kill him. Sometimes it happens that, when one walrus attempts to stop another, who is retreating, they all begin to suspect each other of being inclined to fly, and, in that case, the contest often becomes universal. When two are fighting with one, the others come to the aid of the weaker side. While they are thus fighting on the land, others that are in the water raise their heads, and look on for a time, till they also become enraged, swim to shore, and join in the combat.—*Cassell's Illustrated Natural History.*

## GRASS

BY DR. JOSEPH REYNOLDS.

It groweth everywhere. Its tender blade  
Shooteth in the sunshine and in the shade.  
It groweth on the hill-side, and the plain,  
By the sheltering hedge, in the shady lane.  
It springs by the roadside, under our feet,  
In the garden—where beds and borders meet;  
Under the shrubs, where blooms the scented rose,  
And the wild jasmine or sweet almond grows.  
It creeps up the bank, it runs down the slope,  
It springs with the crocus under the cope  
In the early spring, and stays in the fall  
With the pansy that peeps under the wall;  
In the fresh meadow, where the waters gleam,  
In the clear sunlight, and the sparkling stream  
Winds its course—now hidden, and now seen—  
It spreads its modest, cheerful coat of green.  
It groweth everywhere: on the mountain,  
In the valley, by the springing fountain;  
In the forest, in the field, on the beach,  
Just where the daily flowing tide doth reach.  
It creepeth close by the shore of the lake,  
Where its soft rootlets seek their thirst to slake;  
The waves that ceaseless lap its foam-crowded lip  
Kiss the green caresses that stoop down to sip.  
The wild deer from the wood crop the smooth turf  
As early he comes to sport in the surf.  
The herds of the prairies, with the wild ass,  
All find their homes in wide oceans of grass;  
The groves of mustangs on the Mexican plains,  
The Tartar's wild horse in the Afghan domains,  
The goats of the Alps, that climb on the rocks,  
The horned zebu, and the fleet springboks,  
All ranging free as the birds in the skies,  
Crop the sweet herbage that nature supplies.  
The soft, modest grass is everywhere seen,  
Spreading its carpet of beautiful green,  
To cover the scars man makes in the earth,  
And smooth o'er the soul that giveth it birth.  
When hoofs of war-horses trample the soil,  
In the rage and strife of battle's turmoil,  
When war's iron storm tears up the fair plain,  
And ridgeth it o'er with graves of the slain,  
The soft grass, in pity, spreads o'er the scene,  
Covering it up with its mantle of green.

—*New England Farmer.*

**MATERNAL HABITS OF THE KANGAROO**—As most of my readers are aware, the kangaroo like nearly every other animal indigenous to Australia, is "marsupial" i. e., the female is provided with a pouch outside the bottom of the stomach, in which are the teats, to one of which the young foetus is attached during the period of gestation, I believe about sixty days; and when fully formed—soon, in fact, as the young one begins to live—it becomes detached from the teat, which now supplies it with milk. When the young one leaves the teat, it is in an equal state of development to the new born offspring of any other animal; in fact, this pouch appears to be the womb of all these marsupial animals, and not, as many suppose, merely a place of refuge in which the old mother carries her young. Here the young one at first principally lives, till able to run at the foot of the mother; but, even then, when danger is near, it tumbles head over heels into the pouch for protection; and it is wonderful how quickly the old doe can pick up the joey when running at full speed, and shove it into the pouch, its pretty little face always outside. There she carries it till hard pressed, when the love of life overcomes the love of the mother, and she then casts it away to save herself. This, in bush phraseology, is termed "digging the joey." I once saw an eagle-hawk chasing a doe kangaroo with a heavy joey in the pouch through the forest. The cunning bird kept stroke for stroke with the kangaroo, which it hardly dare attack; but it well knew as soon as the old mother became exhausted, she would cast away the young one. Two ounces of kangaroo-shot from my gun, however, stopped the eagle's gallop. I might have killed the old kangaroo as well, but had not the heart, after seeing the struggle she was making to save the life of her offspring.—*Bush Wanderings of a Naturalist; by an old Bushman.*

**THE NEWSPAPER**—What charm then—what weird power lies in these straight lines of letters, that they should find the way to every house, and stir up a peculiar interest in every heart? They simply record the life and doings of our race. They give rude etchings and photographs of man in all the varying phases of his character—character developed in every possible condition—under every conceivable form of trial; and thus they appeal to our sympathies and desires in every way. The struggles and aims, the fears, ambitions, hopes, cares, passion, crimes and virtues of man are here set down faithfully in shorthand. The newspaper makes Shakespeares of us all. It furnishes us with an outline—it may be some fireside tragedy—we can at will fill up the sketch with details of the most romantic interest; the materials are given, we can weave—into a web hued and patterned as gorgeously as we please. It supplies us with a few bold facts relative to some mysterious occurrences; straightway we are absorbed in the exci-

ting process of completing the imperfect story, our minds pursuing a thousand probabilities, yet still left unsettled in a boundless universe of conjecture. The details of some strange scheme or deed are laid before us—at once all the faculties of the mind are engaged in the work of tracking out the hidden motives; unravelling the complications; developing the secret source or agency; in short, solving the mystery in whatever form it may present itself. Most people laugh at the countryman who wished a newspaper "wif plenty o' guid murders in't." But the "guid murders" doubtless meant those which the utmost ingenuity of concealment had shrouded in thorough mystery; and the desire probably indicated—not a weakness—not an unnatural gloating over the most brutal form of guilt, but the strong, though morbid working of a high quality of mind.

The feeling of power evoked by the newspaper is another element of attraction in it; it sets before us all the kingdoms of the world, and all the glory of them; by it we sit in the councils of kings, and take part in those deliberations by which the destinies of the world are controlled; by it we stand in the assemblies of the wise, while genius displays all her dazzling treasures; and by it we can, with the disciples of science, explore, investigate, and acquire new riches of knowledge in every direction where the Creator's own hand has written the inexhaustible wonders of his wisdom.—*Good Words.*

**CONCRETE HOUSES.**—In reply to an inquirer I copy from the *Civil Engineer and Architect's Journal* for 1852, the following brief description of the erection of two houses in concrete:—"On the estate of East Cowes Park, Isle of Wight, adjoining Osborne, Her Majesty's marine residence, two villas have been recently erected, under the direction of Mr. Langley, constructed entirely of concrete, composed of one part of Francis's Medina Cement, with seven of coarse gravel and grit, the gravel having been first carefully sifted clean and rendered perfectly free from sand. The gravel was dug on the estate, and the walls carried up, as well as the chimneys, by fixing two or three boards vertically, and filling in the concrete between about 12 to 14 inches thick, by which method, in consequence of the quick setting of the cement, boards were shifted every three or four hours as the work progressed. Even the arches were all turned in it, no bricks whatever being used. The method is not only extremely economical, but has the great desideratum of being perfectly free from damp, although the walls are not so thick as in the ordinary method of building by brick or stone. The absence of sand in the mixture is absolutely necessary, as every particle of sand engages a proportion of cement, or, in other words, deprives the gravel of so much strength, and materially deteriorates the work. We believe that a building-

society is about to be formed for the purpose of erecting many houses on the estate, with similar materials."—*London Field*

**MIGRATION OF EELS.**—A close observer assures us that the following interesting evolutions occur when eels come in from the sea: The aggregate shoal, about to ascend the inland streams, move up the shore of the river in the form of a long, dark, rope like body, in shape not unlike an enormous specimen of the animals which compose it. On reaching the first tributary, a portion, consisting of the number of eels adequate for peopling this stream, detaches itself from the main body and passes up; and, in the subsequent onward passage of the shoal, this marvelous system of detaching, on reaching the mouths of brooks, a proportionate quantity of the great advancing swarm, is repeated, until the entire number has been suitably provided with rivulets to revel in. Such being the wonderful instinct by which nature ordains that each stream be provided with a competent number of this migratory creature.—"*A Slice of Salmon*;" in *Macmillan's Magazine*.

**AN EAGLE'S STRATAGEM.**—As the mountains around the Konigs Sea abound in chamois, the eagle very naturally resorts there; and opportunity is frequently afforded of witnessing his tactics, modified by circumstances. The following account gives an instance of most cunning stratagem; but it also shows how impotent for attack the eagle is when his victim is not entirely exposed. A good-sized chamois buck had got upon a ledge of rock, and was gazing downward and about him as these animals like to do. An eagle perceived him; but as the bird could not approach close to the rock on account of his breadth of wing, he resolved to obtain the prize he had marked as his own in another manner. So he sailed by the chamois on his narrow path as near as he dared come; then again and again; and as the animal retreated in order to quit his perilous position, the eagle, wheeling round in a smaller circle, met him instantly, to hem in and cut off his retreat. By thus rushing past within a few feet of him, and filling him with terror, he hoped to bewilder the chamois, and cause him to fall over the precipice, in which case he would have but to descend, and carry off his booty. And, in fact, the chamois, from trepidation probably, in turning a corner, slipped with one hind foot over the ledge. He lost his balance, and fell headlong over the rocks, as the eagle intended that he should. But after lodging for a short time on an intervening slope the carcass rolled off, and came toppling down into the lake. The whole proceedings had been watched by two persons in a boat. They now crossed to get the chamois; while the eagle, disappointed of his victim, wheeled above them, watching all they did.—*Forest Creatures*; by *Charles Boner*]

**DANGEROUS COSMETICS.**—At a recent sitting of the French Academy of Medicine, Dr. Reveil read a paper on the necessity of preventing perfumers from selling poisonous or dangerous articles, which should be exclusively left to the responsibility of regular chemists, and not sold without a physician's prescription. "To show the danger there is in allowing the unchecked sale of certain compounds," he said "I need but state that arsenic, the acid nitrate of mercury, tartar emetic, cantharides, colchicum, and potassa caustica form part of their ingredients. The kind of soap called lettuce soap, which is sold with the announcement that it has been acknowledged by the Academy does not contain the slightest trace of lettuce. This and other soaps are all coloured green by the sesqui-oxide of chromium, or of a rose colour by the bi-sulphuret of mercury known as vermilion. Some that are cheaper contain 30 per cent. of insoluble matter, such as lime or plaster, while others contain animal nitrogenous matter which, having escaped the process of saponification, emits a bad smell when its solution is left exposed to the air. The various toilet vinegars are so far noxious that, being applied to the skin still impregnated with soap and water, they give rise to a decomposition, in consequence of which the fatty acids of soaps being insoluble in water, are not removed by washing, become rancid, and cause a chronic inflammation of the skin. The preparations employed for hair-dye under the pompous names of 'African Water,' 'Florida Water,' &c., all contain nitrate of silver, sulphur, oxide, and acetate of lead, sulphate of copper, and other noxious substances. All cosmetics for removing hairs or freckles are dangerous; the *lait antephe lique*, for instance, contains corrosive sublimate, and oxide of lead. Were a chemist to deliver such a remedy to a customer without a regular prescription, he would be liable to a fine of 6000fr." Dr. Reveil concluded by expressing his regret that certain physicians should so far forget their own dignity as to lend the support of their names to such noxious inventions.—*Galvani's Messenger*.

**SINGULAR DOMICILES.**—Like other familiar birds, the sparrow sometimes builds its nest in very unsuspected localities, and there are several examples of their nests being placed in different parts of a ship's rigging. For example, while the Great Britain was lying in the Sandown graving dock, some sparrows built two nests in the "bunts" of the main and mizen topsails, i. e., the place where the sail is gathered up into a bundle near the mast. As the sail could not be set without disturbing the birds, the sailors augured a speedy and pleasant voyage. Mr. Thompson gives an instance of the sparrow building upon the furled sail of the *Aurora*, of Belfast; but as the sail was loosened during the second voyage to Glasgow, the nest was destroy-

ed and the eggs broken. Again, a pair of sparrows built their nests under the slings of the foreyard of the ship *Ann*, of Shields, just before leaving port, and, when the vessel creaked the Tyne, the birds went ashore and brought back materials wherewith to complete their home.—*Routledge's Natural History.*

**DOMESTIC SERVICE.**—We are reminded here of a good-hearted housemaid in a clergyman's family, whose eyesight was in danger before she let anybody know her troubles. She valued her "religious privileges," and bore with much for their sake; and as often as she believed she had made up her mind to leave her place, her master's discourse to her on the trials of life, and descriptions of the beauty of patience upset her resolution, and induced her to try again. She was expected to call the pupils (it was a school), at six, summer and winter, and to serve the warm water, light the fires, and serve the breakfast, have the school-room swept and in order, besides washing and dressing the little children, her mistress thinking it quite hard work enough to be ready when the bell rang for prayers. All day the young woman was at work, fill drive, as she and the cook must have been in a household of that size and construction. When the last of the family went to bed at eleven o'clock, she was set down to make her master's fine shirt, by a single candle in the kitchen, and she rarely went to bed before one or two, except on Sunday nights. When invited out to tea at holiday times, she was told that if she was not home before nine she would be locked out; and it was no empty threat. The only way to procure her a sociable evening was by clearing her a bed. Moreover she was not allowed to go out without her workbag, in which was a pair of wristbands, or a shirt front, which she was to bring home finished. When asked why she put up with such treatment she alleged her unwillingness to give up her "religious privileges," and to inconvenience an inexperienced mistress. The state of her eyes settled the matter at last, and her sight was barely saved by a costly abstinence from work and wages. The mistress has probably learned from experience something of what it was she required. The family emigrated to a place where, if servants were to be had at all, they would certainly refuse to work both night and day, or at all save than suited their convenience.—*Edinburgh Review.*

**MIGRATORY INSTINCT.**—The Tower of Babel and the already recognized law of migration morally promulgated, beheld it branded the living tablets of human nature. And that law has never yet become effete: no portion of it has been annulled. Its operation—mainly never for long even suspended—has not ceased to afford evident tokens of its continuance. Look at the "Great Migration," as

it is called, which Europe saw before the Medæval times, and the colonizations of still much earlier periods, the irruptions of huge hordes of fierce herdsmen-warriors in many an age and many a country, in both Africa and Asia, upon lands and labours they knew not of, except as it were by a dim, dreamy-hearsay, myth-like both in its vague dimness and its fundamental element and substratum of truth. These illustrations of the instinct which impels the human species to migrate from scenes of failing capabilities and resources to newer ones of abundant supplies and exceeding susceptibility of development, are as numerous as the ages which have looked on man's existence, as striking as the succession of scenes that have ever newly presented to his wondering gaze, as he has been again, and yet again driven to seek some newer and fitter abiding place.—*Atkinson's Sketches in Natural History.*

**ANIMALS BECOMING PARENTS TOO EARLY.**—Victor Gilbert never allowed ewes to have lambs until they passed their third year; and the bucks were not used until they had arrived at full maturity. He, as well as many other sagacious stock-raisers that we might name, are probably conversant with the fact that during the period of growth and development up to maturity, the reproductive organs are dormant, while at the same time the nutritive function is wholly engaged in elaborating chyle and blood for the development of bone, muscle, and nerve, and thus calling into requisition the reproductive or generative organs, before the animal has attained full growth must necessarily divert the elements of matter intended for nutrition from their legitimate channel, and direct them to the reproductive organs. A too early use of the purely animal function induces weakness and stunted growth.—*American Veterinary Surgeon.*

**FREAK OF AN AGRICULTURAL LOCOMOTIVE.**—On Wednesday evening last the inhabitants of the Bull Ring, Birmingham, were much alarmed by a loud crash at the premises of Mr. John Gregory, boot manufacturer, a few doors from Moor-street. On going into the street to ascertain the cause, it was found that a large agricultural locomotive, moved by steam power, had dashed into the door-way of Mr. Gregory, smashing it to pieces, as well as several shutters. It appears that the steam plough, with some half dozen waggons containing implements, left Mr. Smith's premises at Coven near Wolverhampton, Stratford-on-Avon, and was driven by steam power along the highway and through the principal streets of the borough. To avoid the hill of the Bull-Ring, the train (for such it was) took the way of Carr's Lane, and Moor-street. On turning into the Bull Ring, from some misunderstanding as to the best direction to take so as to avoid accident, a sudden turn was given to the guiding wheel, and the ponderous mach-

ine, weighing 15 tons, and capable of drawing 50, jumped upon the pavement, and ran with great force against Mr. Gregory's shop. There were two men in charge of the agricultural train at the time, and both were at their post on the engine, and when it ran into the shop they had barely time to save themselves from being crushed to death by jumping off the machine. Fortunately the water in the boiler was rather low, and the steam not powerful at the time or the immense mass would either have fallen through the thin boarding of the shop flooring into the cellar, or, by going three or four inches further, knocked down an iron pillar which supported the front of the house. The occurrence attracted an immense crowd of persons, doubtless increased by the novelty of its character. The ponderous machine once fixed in the doorway of the shop, the difficulty was to get it back again into the street, and nearly three hours elapsed before this was accomplished. It was found necessary to obtain the assistance of six of the corporation horses to effect its removal, and at eleven o'clock the train was again on its way to Stratford.

**THE CRAB THAT FEEDS ON COCONUTS.**—What a wonderful world it is in which you live, and how very numerous are the proofs of the wisdom and goodness of God in taking care of all his creatures! You may be quite sure that he will take care of you, seeing that there are none so mean and so little but what he makes provision for their wants. There is a curious example of the instinct which the Almighty gives to some of the creatures he has formed that I have a mind to relate. You have all seen crabs; but there is an odd kind of crab that you have not seen, which lives in the East Indies, and instead of finding its food in the sea some say that it climbs up, like a monkey, into a cocoa-tree, that it may dine and sup; at any rate it feeds on the fruit which falls from the branches. But how does it get at the kernel? for your own little teeth tell you that the shell of the coconut is anything but soft. The Creator has given its forelegs a pair of strong pinchers; with these it tears away the husk, piece by piece, from that end where the eyeholes are situated. It then hammers away till it has broken the shell open; then it turns it round, and by working into it by its hind claws, which are as hind legs, it gets out the sweet and juicy inside of the coconut. It goes every night to the sea to refresh itself, as one drinks a glass of water at supper time, before going to bed. This is a very strange example of what we call instinct, which means something in beasts, and birds, and fishes, and reptiles which is to them instead of the reason and conscience which God has given you. What an interesting illustration this little fact is of what the Bible says: "The eyes of all wait upon thee, and thou givest them their meat in due season. Thou openest thine hand, and satisfiest the desire of every living thing."

## THE INDEPENDENT FARMER.

Let sailors sing of the windy deep,  
Let soldiers praise their armour,  
But in my heart this toast I'll keep,  
The Independent Farmer.  
When first the rose in robe of green  
Unfolds its crimson lining,  
And round his cottage porch is seen  
The honeysuckle twining;  
When banks of bloom their sweetness yield,  
To bees that gather honey,  
He drives his team across the field,  
Where skies are soft and balmy.

The blackbird clucks behind the plough,  
The quail pipes loud and clearly,  
Yon orchard hides behind its bough  
The home he loves so dearly;  
The grey old barn, whose doors unfold  
His ample store in measure,  
More rich than heaps of hoarded gold,  
A precious, blessed treasure;  
But yonder in the porch there stands  
His wife, the lovely charmer,  
The sweetest rose on all his lands—  
The Independent Farmer.

To him the Spring comes dancingly,  
To him the Summer blushes,  
The Autumn smiles with mellow ray;  
He sleeps, old Winter bushes.  
He cares not how the world may move,  
No doubts nor fears confound him;  
His little flocks are linked in love,  
And household angels round him;  
He trusts in God and loves his wife,  
Nor griefs nor ills may harm her;  
He's nature's nobleman in life—  
The Independent Farmer.

**ABSORPTIVE POWER OF THE SOIL.**—No contribution of science to the practice of agriculture is more calculated to arrest the attention of the farmer than the various observations which have been made within the last few years regarding the remarkable power the soil possesses of absorbing and retaining some of the indissoluble elements of the plant. They are the more worthy of attention, inasmuch as the facts which have been determined are to a certain extent, opposed to some of the more common prevalent opinions. They lend but little countenance to the idea that the manure, when committed to the soil, lies there in a precarious condition, liable at any moment to be deprived of its soluble constituents by the rain, and of its volatile matters by the heat of the sun's rays; but, on the contrary, they tend to show that there is a conservative influence at work in the soil which imprisons these substances within and stores and preserves them for the future uses of the plant; and, what is more, it exercises this influence more powerfully on these substances which are most sparingly distributed through the soil, holding with the firm grasp of a m.

the potash and ammonia, but leaving the soda and lime, which are less important to the plant, at the mercy of the rain. The discovery of these facts has thrown an entire new light on the chemistry of the soil, for they have shown that it must be studied not merely by itself, but in relation to the various substances with which it comes in contact in the course of cultivation as to trace the influences which they mutually exert, and thus a subject already sufficiently complex has become more difficult and laborious than it was before.—*Scottish Farmer.*

**THE SPIRIT IN GINGER BEER.**—As many temperance men are in the habit of drinking ginger beer under the impression that they are still "keeping the pledge," by abstaining from alcoholic liquor mixtures, it may perhaps be as well to tell them the real truth, that all good ginger beer contains a notable portion of spirit. The more the beer is "up," the more certain is it that alcohol is present. It is well known that ginger beer is made with sugar, ginger, &c.; and that it is "set" to ferment before it is bottled; now, it is during the fermentation of the sugar that spirit is produced, and, to show its presence, it can be easily separated by distillation. In making this statement we do not wish to bias the opinion of any man, but merely to correct a popular error—the belief that ginger beer is "from spirit!"—*Septimus Piessé.*

**WHITENING SHINGLES.**—Fresh or caustic lime, applied during the heat of summer, and when the wood has become thoroughly dried, opens the pores, and tends strongly to prevent decay. We have recently examined a board fence, which had been whitewashed in successive years about 18 years ago. The boards were still sound, and had not become covered with moss, as was the case with another fence built at the same time. There is no doubt that a great advantage would result from whitewashing shingles before laying them. We have on a former occasion, given some instances of the durability thus imparted to them. A late number of the Boston Cultivator gives some additional examples. J. Mears of South Abington performed the experiment in substance as follows:—He procured a vat (a lime vat at a very good price,) and applied salt with a small quantity of potash to the lime, and immersed the shingles for four hours. The wash was afterwards washed over the shingles when laid. This made a fire-proof roof on a blacksmith shop, now eleven years old. Silas Brown, another correspondent, 25 years ago, he dipped shingles into a kettle of lime wash to which salt had been added, and the whole kept boiling. A few shingles were dipped in all over at a time, long enough to soak them well, and then thrown out to dry. In a short time all the shingles were thus prepared. Although what are termed "lime shingles," they have now lasted 25 years,

"and may do so for years to come." Several experiments of a similar character have been made since, with very successful results. *Cultivator.*

**WHY YOU CURSE THE SEED STORES.**—Do you want to know why? "Certainly?" Well then, let me tell you what has been often told you before:—*You plant too deep!* You don't believe it? I do, and I know it. There are hundreds of western farmers who as conscientiously believe that they must plant their corn from four to six, and in some instances, eight inches below the surface, as they believe there is a God in Israel, or a McCLELLAN to swear by. And you can't make them believe differently. They know; they've tried it; and their experience proves them and their practice right, all "book-learned" farmers to the contrary notwithstanding. And they despise "book-farmers" as bad as they hate gophers; and they kill all the gophers they can find.

Why do they plant so deep? Because they think the soil is peculiar. And in that they are right; it is peculiar. But they have made it so by their manipulations. They plow it when it is wet, harrow it when it is dry, and it is cloddy and lumpy, and rough as a Down-East field of stone. Then when planting comes they must get down to moist earth, or it will not germinate. They have to get down deep to do it. The roller is not known to the majority of farmers in corn culture. It ought to be. On such land as I have described, it ought to be used before the corn is planted, and again afterward. But I speak of the practice in corn planting show to the more clearly where the fault is in the case of smaller seeds, such as are purchased at the seed stores, planted in the gardens, and never good at all! Why, only yesterday, I heard a lady say that she put her lettuce seed in three inches deep—down where the ground was moist—and it had not come up yet; and she was indignant! The seed stores were the matter, of course. "You know they do cheat so in seeds," said she to her companion. How sweet, and innocent, and indignant, and disappointed she looked, poor woman! For she was really a splendid woman; but she had not learned to garden. And she confessed that she planted her peas nearer a foot than six inches deep; and her flower seeds which she had got all the way from the Hub of Creation, were equally well planted—and O, the seeds men!

It should be remembered that the season is backward, the ground wet and cold in most localities; and then the fate of the good woman's seeds will be apparent. So of other sensible people who undertake farming and gardening. They know little of the laws of production, and less of the mode of manipulating soil. The more completely pulverized the soil the deeper they plant. It would seem hardly necessary to say

that in a fine, well pulverized soil, compact and clean, seed should *never* be planted deeper than three times its diameter; yet it is necessary to say so, and keep saying so, as long as children continue to be born, and seed is purchased and planted.—*Rural New Yorker*.

**THE SICK IN BED**—With a proper supply of windows, and a proper supply of fuel in open fireplaces, fresh air is comparatively easy to secure when your patient or patients are in bed. Never be afraid of open windows, then. People don't catch cold in bed. With proper bed-clothes, and hot bottles, if necessary, you can always keep a patient warm in bed. Never to allow a patient to be waked intentionally or accidentally, is a *sine qua non* of all good nursing. If he is roused out of his first sleep, he is almost certain to have no more sleep. It is a curious but quite intelligible fact, that if a patient is waked after a few hours' instead of a few minutes' sleep, he is much more likely to sleep again; because pain, like irritability of brain, perpetuates and intensifies itself. If you have gained more than the mere respite. Both the probability of recurrence and of the same intensity will be diminished, whereas both will be terribly increased by want of sleep. This is the reason why a patient waked in the early part of his sleep, loses not only his sleep, but his power to sleep. The more the sick sleep the better will they be able to sleep. A good nurse will always make sure that no door or windows in her patient's room shall rattle or creak; that no blind or curtain shall, by any change of wind through the open window, made to flap; especially will she be careful of this before she leaves her patient for the night. If you wait till your patient tells you or reminds you of these things, where is the use of us having a nurse?—*Florence Nightingale*.

**ANTIQUITY OF THE PIG**—The pig is the existing representative of a very ancient race of animals which lived and died upon this earth long before there were Christians to devour, or Jews to abhor their flesh. The same species of wild boar that was hunted by our forefathers was contemporary with the mammoth, cave-bear, and the long haired rhinoceros. Some persons imagine that geology deals only with fossil shells or fishes; but there is a vast deal of interest attached to the geological history of the predecessors and representatives of our domestic animals. We know that the wild ancestor of our domestic pig was in existence before the separation of England from the Continent of Europe; and that the hunter, had hunters then lived, might have chased the boar through forests the sight of which is now occupied by the waves of the English Channel. Mammoth tigers, and rhinoceroses perished but the wild boar lived, and lives still on the Continent of Europe, though extinct here.—*Old Bones; of the Rev. W. S. Simonds*.

**COLLODION FOR GRAFTING**.—They are practicing a process in France, by which trees be grafted at any season of the year, when tender buds can be obtained, whether the sap is in a flowing state or not. They remove a piece of bark and wood, leaving a perfect smooth surface, to which a similar piece, containing the bud intended to form the future is fitted. This is immediately sealed over with collodion, which forms a strong, impervious scale, insuring a perfect union of parts and free circulation of sap, on approach of wet weather.—*Working Farmer*.

## Editorial Notices, &c.

**THE WESTMINSTER REVIEW**—July: New York Leonard Scott & Co., 79 Fulton Street.

We have received from the Publisher through Mr. Rowsell, of this city, the current number of the *Westminster*, the contents of which evince, as usual, great ability and scholarship. The articles on the Life and Politics of Pitt; Election Expenses; English Rupee in India; will be perused with interest by practitioners of all shades of opinion; while those on the Philosophy of Sir William Hamilton; and the Disfranchisement of Literary Friendships; and the Dawn of Animal Life, will be read with equal pleasure and improvement by all classes of people who possess the smallest share of literary and scientific taste. The department of this Review consisting of a running comment on the most salient points of the chief publications of the quarter on the most important branches of human knowledge, including politics and polemical theology, is of the greatest service to all—the number of whom is daily increasing in the walks of life,—who desire to keep pace with the literary and scientific progress of the age. Although the theological bias of the *Westminster* is very far from being in accordance with the general belief of the age, an enquiring mind can scarcely afford to do without it, and its habit is to treat speculative subjects in a free and liberal spirit. The article on Dr. Davidson's introduction to the Old Testament is in point. Such articles of the *Westminster* require to be read with one's eyes fully open, and to accept their conclusions only after the most thorough and careful examination.

**BLACKWOOD'S MAGAZINE**, for July, from the same publishers, is also to hand, and as usual contains articles of general interest and of great worth.

The same publishers have issued an American Edition of the *Farmers' Guide* to scientific and practical agriculture, by Henry Stephens, F. R. S. of Edinburgh, with notes and appendices by the late lamented Professor Norton, of Yale College: 2 vols. Royal octavo, 1600 pages, and numerous steel plates and engravings. This is regarded by the highest authorities both in Europe and America, to be the most complete work on Agriculture, both in theory and practice ever published, and the American edition printed from the stereotype plates of the Edinburgh edition, and may be procured in this country for about one-third of the price. *Five Years only* for these two large beautifully got up volumes! We should like to see this inestimable work on the book-shelf of every farmer in Canada.

**The Infirmary and Veterinary Establishment, Corner of Bay and Temperance Streets, Toronto, C. W.**

DR. SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return thanks to the Public generally for the assistance in opening the above mentioned establishment, and respectfully solicits a continuance of the same.

And also begs to announce that Veterinary Medicines of every description are constantly on hand:—Such as, Physic, Diuretic, and Cordial, Tonic Condition, and Worm Pills and Powders. The constituents composing the Cough-balls, have been found (by Professor Dick, of Edinburgh) most serviceable in relieving many of the symptoms of Broken Wind or Heaves in Horses. Colic Draughts, &c., are the Medicine which owners of Horses should always have beside them.

Medicines for Sore-throat, Sprain, Curb, and Ringbone.  
Blistering Ointments. Liquid and sweating Blisters.

Horses bought and sold on commission.

Toronto, Aug. 30th, 1862.

### FOR SALE!

**Shire Cattle, Leicester Sheep, and Berkshire Pigs.**

The Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Animals from his *Prize Herd* will be on Exhibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

30th, 1862.

6-mos.

### THOROUGH-BRED STOCK FOR SALE

THE Subscriber has for sale DURHAM and GALLOWAY CATTLE, LEICESTER, COTSWOLD, and LINCOLNSHIRE SHEEP, Male and Female 10 Durham and Galloway Bull Calves—price from \$100 to \$500; 20 Shearling Rams, weighing from 230 to 285 lbs. each—Price from \$50 to \$100 each.

JOHN SNELL,

Edmonton P. O., C. W.

Four miles from Brampton Station G.T.R.

### EAST RIDING YORK

**Agricultural Society Fall Show,**

AT WELLINGTON HOTEL GROUNDS, MARKHAM VILLAGE, 9th October, 1862.

All Entries to be made by the evening of the 8th, or to be preemptorily excluded.

A. BARKER,

Secretary.

### THOROUGH BRED STOCK FOR SALE.

THE SUBSCRIBER has for Sale Durham and Galloway Cattle, male and female.

Leicester, Cotswold, Lincolnshire, Down and Cheviot Sheep; Cumberland and Yorkshire improved Pigs. All imported stock.

GEORGE MILLER.

Markham, June 3rd, 1862.

6t.

### THE PROVINCIAL EXHIBITION

OF THE

AGRICULTURAL ASSOCIATION OF UPPER CANADA,

WILL be held at the City of Toronto on the 23rd, 24th, 25th, and 26th September next.

Persons intending to exhibit will please take notice that the entries of articles in the respective classes must be made on or before the undermentioned dates:—

Horses, Cattle, Sheep, Swine, Poultry, on or before Saturday, August 16th.

Grain, Field Roots, and other Farm Products, Agricultural Implements, Machinery, Manufactures generally, Saturday, August 30th.

Horticultural Products, Ladies' Work, the Fine Arts, &c., Saturday, September 13th.

Prize Lists and Blank Forms for making the entries upon may be had of the Secretaries of all Agricultural Societies and Mechanics' Institutes throughout the Province.

HUGH C. THOMSON,

Secretary Board of Agriculture.

Toronto, August 1, 1862.

## TO BE SOLD BY AUCTION,

On Thursday, Oct. 16, 1862,

**T**HE well-known Herd of NORTH DEVON CATTLE, consisting of more than forty head of cows, Bulls, and Heifers; one hundred and seventy West and Southdown Ewes and Rams; pure blooded Essex Pigs, in pairs fit for breeding.

Catalogues of description, with pedigrees, may be had fourteen days before the sale, on application at the office of the *Galt Reporter*, if by letter, prepaid. Credit of 12 months may be had on approved endorsed paper.

## THE SPLENDID FARM,

Consisting of upwards of THREE HUNDRED ACRES, to be sold by private bargain, on a commutating terms.

DANIEL TYE.

County Waterloo, Wilmot, August 1862. td

## THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES, FOR UPPER CANADA,

Is Published on the first of every Month,

**A**T \$1 per annum for single copies, or to clubs of ten or more at 75 cents per copy; to members of Mechanics' Institutes, and of Literary, Scientific, and Agricultural Societies, through their Secretary or other officer, 50 cents per annum per copy.

Subscriptions payable in advance.

Printed for the Board of Arts and Manufactures for Upper Canada, by W. C. CHEWETT & Co., King Street East, Toronto.

## The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA,

**I**S published in Toronto on the 1st and 16th of each month.

**S**ubscription—Half a dollar per annum for single copies; Eleven copies for Five Dollars Twenty-two copies for Ten Dollars, &c.

**E**ditors—Professor Buckland, of University College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

## Contents of this Number.

Irrigation .....  
The Grain Aphid.....  
Wool and its Prospects.....  
Breeding and Rearing Pigs.....  
Cultivating mixed varieties of Wheat...  
The Atmosphere and the Soil.....

### AGRICULTURAL INTELLIGENCE :

Agricultural Shows this Autumn.....  
Royal Agricultural Society, Ireland....  
Yorkshire Agricultural Society, England  
Professor Cameron's Lecture.....

### HORTICULTURAL :

Cultivation of Window Plants.....  
Late Grafting.....  
Hollyhocks,—Growing the Tomato.....

### THE DAIRY :

Rearing Calves on Milk and Linseed Meal

### THE POULTRY YARD :

A Profitable Hennyery.....  
 Lice in fowls.....  
Hens Eating Eggs.....  
Production of Poultry and its Produce...

### VETERINARY DEPARTMENT :

Umbilical Hernia.....  
Rabies in a Horse.....

### MISCELLANEOUS :

Scottish Anecdotes, The Age of our Earls  
Leeks, Garlic, and Onions; Obstinacy  
the Sea Horse, Grass.....  
Maternal Habits of the Kangaroo, The  
Newspaper, Concrete Houses.....  
Domestic Service, Animals becoming  
puppies too early, Freak of an Agriculturist  
Locomotive, Absorption power of the  
Soil, Why you Curse the Seed Store  
&c., &c., &c.....  
Editorial Notices, &c.....

## BOARD OF AGRICULTURE.

Office in the New Agricultural Hall, c  
Yonge and Queen streets, Toronto.

HUGH C. THOMSON

Toronto August, 1862. Sc

## FOR SALE.

**A** LOT of thorough bred Essex Pig from recently imported 1st prize, and who have this season taken premium both Township, County, and Provincial exhibition.

JAMES O.

Clochmhor, Galt P. O., Oct. 19, 1861.

Printed at the "Guardian" Steam Press  
Street East, Toronto.