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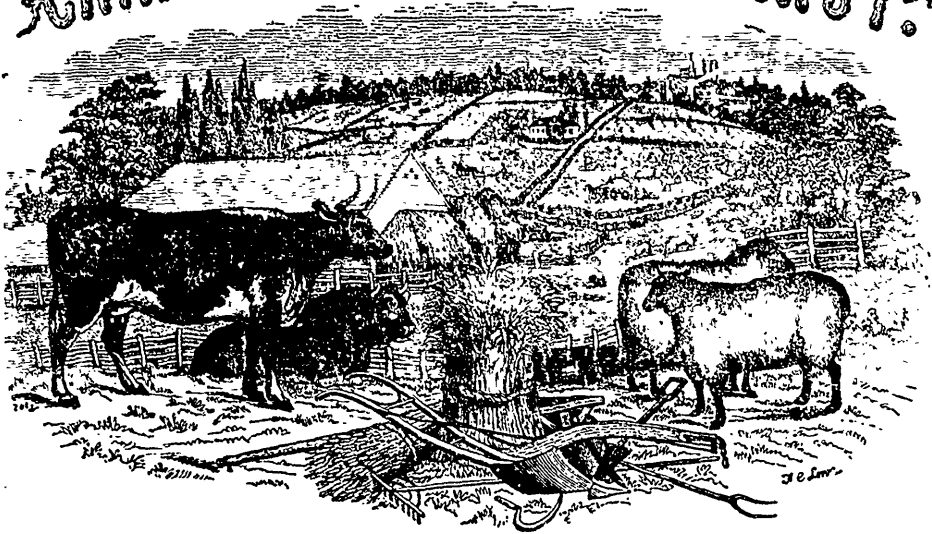
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CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, AUGUST 1, 1849.

No. 8.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE. DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDUGALL and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, in advance. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

MESSRS. DENISON & DEWSON, Attorneys, &c., New Market Buildings, Toronto.
January 26, 1849.

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

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CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea; and 25 bushels Flax Seed.

JAMES FLEMING,

Yonge Street,
Toronto, Jan. 1, 1849.

Seedsman and Florist.

1

WM. McDUGALL,
ATTORNEY, SOLICITOR, &c.,

South West Corner of
KING AND YONGE STREETS,
TORONTO.

Deeds, Mortgages, and other Legal Instruments promptly prepared.

We insert, for the full information of our readers, the following Programme of the Provincial Agricultural Show, to be held in Kingston in September next, as published by the Committee of Management:

GRAND PROVINCIAL AGRICULTURAL FAIR AND CATTLE SHOW,

TO BE HOLDEN AT KINGSTON, C. W.,

On September 18th, 19th, 20th, and 21st, 1849.

THERE will be expended in Premiums, in the various branches of Agricultural and Horticultural Productions, Implements of Husbandry, Manufactures, Mechanical Inventions, Fine Arts, &c. &c. the sum of from TWELVE TO FIFTEEN HUNDRED POUNDS, the particulars of which and Premium Lists (which will be liberal) will be prepared and made known as early as possible.

The ground selected for the Show is delightfully situated, and commanding a splendid view of the River St. Lawrence and Lake Scenery. Persons desirous of competing at the Show must become Members of the Association, which they can do by paying 5s. per annum, or \$10, which constitutes Membership for Life.

Members will have the right of entering for Competition *Three Articles free of charge* (all Entries over that number 7¹/₂d. each), and will be furnished with a Badge, which will entitle them to a Free Entry to the Show Grounds.

FIRST DAY.

All Entries to be made with the Secretary, at not later than 8 p. m. of the 18th, at which hour the Lists will be closed. Separate Lists of Premiums provided for Articles and Animals not the production of Upper Canada.

SECOND DAY.

The Judges, Competitors, and Officers of the Society only will be permitted to enter the Show Grounds until 2 p. m., after which hour the public will be admitted. At 7 o'clock, p. m., an AGRICULTURAL LECTURE AND DISCUSSION will be held in the Court House, to which the Public are invited.

THIRD DAY.

The Show Grounds will again be opened to the public, and at 3 p. m. the President will deliver the ANNUAL ADDRESS, after which the Premiums will be declared. The city authorities have kindly given the use of the City Hall for a PUBLIC DINNER in the Evening.

FOURTH DAY.

The Trial of Ploughs. A Ploughing Match will take place in the morning, and at noon the Prize Stock and Articles will be Exhibited on the Show Grounds, after which the PREMIUMS will be paid.

No Premiums will be paid on Stock or Implements, &c., leaving the grounds previous to this, without permission from the President.

THE WHOLE WILL BE WOUND UP WITH A

GRAND PROVINCIAL REGATTA,

At the close of the Show, open to all Competitors.

Ample accommodation will be provided for Visitors, and pledges have been received that the ordinary rates only will be charged at the principal Hotels, Taverns, and Boarding Houses, of which there are over one hundred and fifty in the city and immediate vicinity. Spacious Buildings will be erected for the reception of

all articles intended for the Show, and their protection and security suitably provided for; and particular attention will be given to the LADIES' DEPARTMENT.

The Executive Committee will meet on the Show Ground, on Wednesday, the Second Day, at 10 o'clock, when the Judges are requested to attend, as on that occasion all vacancies will be filled. Members of the Society are requested to call, on their arrival, at the Secretary's Office, and receive their Badges. Entries may be made at any time previous to the Show, with the Secretary, GEORGE A. CUMMING, Esquire, care being taken by the parties to make the entries in the owner's name, which will prevent confusion in calling over the premium lists for payment.

Arrangements are about being made with the respective Steamboat Owners, for the Transit of Stock, &c., intended for the Show, at moderate charges, and application made to the proper authorities to have Animals and Articles of American production, intended for competition at the Show, admitted Free of Duty.

Kingston, June 30, 1849.

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WANTED TO RENT.

A FARM of about 100 Acres, well cleared, the soil to be of excellent quality, well fenced and in good cultivation. The house, barns, and other necessary out-buildings, to be in a good state of repair. The farm not to exceed 4 or 5 miles from a town. The preference will be given to one with a good running stream through it.

All communications, stating fullest particulars, rent, &c., to be addressed (post paid) to D. J., Post Office Box 212, Hamilton.

Toronto, June 30, 1849.

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PROSPECTUS

OF A

WORK ON EDUCATION;

OR

An Address to the Mothers of Canada on the Education of their Daughters,

BY MRS. HURLBURT,

PRECEPTRESS OF ADELAIDE ACADEMY.

THIS work treats of the moral, religious, intellectual and physical training of Girls; dwells particularly upon the nature and great importance of an early religious education; the practical duties of Christians in the family circle, in social and public life; the prevailing systems of education, their excellences and defects; the choice of teachers, their religious and moral character; the subjects of study of most importance for Girls; their early associates, prevailing amusements; reading, choice of books, pernicious effects of novel reading; duties of mothers, duties of daughters; domestic or fireside education, private schools, public seminaries; examples of pious and distinguished women.

Nearly one-third of the work is devoted to the religious education of Girls, showing its influence upon the happiness and prosperity of families and communities. The author believing that this part of education is too much neglected, where it can most efficiently be attended to—at the fireside—has been induced to extend her remarks upon this part of the subject.

This work will contain about 200 pages, 12mo, and will be delivered to subscribers at the low price of 2s. 6d. per volume.

Toronto, 3th March, 1849.

T H E CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, AUGUST 1, 1849.

No. 8.

IMPROVED BREEDS OF CATTLE.— IMPORTANCE OF THE DAIRY.

In our last number, we mentioned an experiment made by the Messrs. McDonald, of Gananoque, in feeding cattle of the Canadian and improved breeds, the result being in all respects favorable to the latter. The subject has again been brought under our attention, by the opportunity which we had a few days since of going over the farms and seeing the splendid herds of those two eminent breeders, so well known both here and in the States, and we might also add the old country, the Hon. Adam Ferguson, of Woodhill, and John Wetenhall, Esq., M. P., of Nelson. Their stock consists of some very fine specimens of the Durham; and what is of such high importance in these matters, the strictest attention has been paid to preserving the *purity* of the breed. While looking at the stock and heavy crops of these gentlemen, on a spot which but a few years ago was an unbroken forest, we were strongly reminded of certain localities in the old country endeared to our remembrance, and could not help thinking, to what an incalculable extent the agricultural wealth of Canada might be increased by efficient cultivation, a judicious system of rotation, and improved breeds of stock.

In calling the attention of our readers to the subject of cattle, we are fully aware that it is not practicable that our farmers can generally and at once obtain the best and purest breeds. Even if that object were obtained, the difficulties of *retaining* purity of blood and first rate animals are so great, requiring the constant exercise of correct observation and judgment, as well as much expense, that the herds of no inconsiderable number would soon deteriorate. This, however, is no valid reason against a general effort being made to improve our breeds of cattle; for every step taken in that direction would increase the farmer's profits, and render less difficult the way to a yet higher progress.

There can be no doubt that if the farming public were sufficiently awake to the vital importance of this subject, and prepared to spend a few dollars, which in a short time would be converted into as many pounds, a number of intelligent and enterprising breeders would spring up in different parts of the country, that would soon be adequate to the wants of the public. But while men are so penurious and short sighted as to deprive themselves of the advantages of a good bull, of well known pedigree, for the sake of a dollar, we confess our inability to see how the live stock of the country is to be materially improved.

We are not willing to take upon ourselves the responsibility of urging the special claims of any particular breed. Situation, soil, climate, &c., must form essential elements in all such considerations, and the final decision must be determined by practical experience. The short horns possess a great number of valuable qualities, and, taking them upon the whole, may be said, perhaps, to excel any other breed for general purposes. They are good feeders, come early to maturity, and are for size unrivalled, an object of great moment where butcher's meat fetches a remunerating price. Much may be said in favor of the Ayreshire, Hereford and Devon breeds; the first we think particularly adapted to this country, especially for dairy purposes, for which they have the credit of being better suited than the pure Short-horn. At all events, let the farmer get a cross from his best native cows and a good bull of any of the improved breeds, and we venture to affirm that he will find the result profitable; he will possess a race of cattle either for the butcher or the dairy, very superior to any thing he had before, with the important advantage of arriving at maturity in half the time. In making the latter observation, we of course assume that the young stock are kept and treated in a proper manner, particularly during winter, when much injury frequently arises from want of sufficient protection and nourishing food.

The subject of the dairy is one that must continue to possess an increasing interest to the Canadian farmer. Much of our soil is well suited for dairy purposes, and this business might no doubt be made profitable in many localities, if conducted with care and judgment, upon proper principles. It is of importance to bear in mind that the *quality* of the article which we produce, especially for a distant market, should be a first consideration. The Americans have made of late years great improvements in the cheese they export to England, which of course obtains a higher price; and it would appear that they are fast increasing this, an already important branch of business, from the fact that they have recently been purchasing large numbers of cows in various sections of this country. What, we ask, should prevent the Canadians from doing a profitable business in butter and cheese in the markets of the mother country? The first thing to be done is to direct the attention of our farmers earnestly and practically to the subject.

In pursuing the routine of the dairy business, next to a selection of good cows (a cross of the best natives with the improved breeds will generally be found to answer well), follow considerations of management, feeding, &c., all which require to be done on a strict uniform system. Without suitable pastures, covered with a healthy growth of the cultivated grasses, it is in vain to hope for a copious supply of good milk. When the pastures become parched, in the latter end of summer and autumn, cows might be advantageously fed on the fresh stalks of Indian corn, sown thickly for that purpose. A cool, capacious, well-ventilated cellar, properly supplied with pure water (if a running stream can be obtained all the better), with the most scrupulous attention to cleanliness in every department of the management, are among the most essential requisites of a good dairy.

Since writing the above, we have met with the following excellent observations on the subject of cattle, in our cotemporary *The Church*, forming a portion of its monthly agricultural article for July. Although somewhat long, we readily transfer them to our own pages, for the information of our readers.

NEAT CATTLE.—The term cattle, in its most extensive sense, is used to denote all the larger domestic animals which are kept on the farm. In the more usual acceptation, it is applied to animals only of the ox kind, which are also called black and horned cattle; but as all are not black, and many are without horns, the technical term,

"Neat Cattle," is used as more definite and appropriate.

During the early part of summer, in the months of June and July, is the proper period to pay attention to the improvement of this description of farm stock. There is no very exact time at which it is the custom to have calves dropped. It depends a good deal on the purpose for which the cows or calves are required, and is also often determined by accidental circumstances. When the cows are required to give as much milk as possible during winter, or for the making of butter during that season, it is often the custom to have them calve in December or January. If the calves are intended to be sold as veal, early in the spring, they are dropped in February or early in March; but if to be kept as stock, and the cows for the making of spring and summer butter or cheese, the most usual and the best time is in the month of April or early in May, when the pastures are beginning to afford a supply of food.

The period of gestation of the cow varies very considerably, having been ascertained to have been in some instances less than 240 days, and in others more than 300 days. But any period less than 260 days, or more than 300, must be considered as irregular—though in the latter case the health of the calf is not affected. In the majority of cases, the period may be stated as extending from the 270th to the 300th day, or on the average about 284 or 285 days. [*Farmer's Dictionary.*] This being about nine calendar months and a week, it is easy in ordinary cases to regulate the time of calving of the cows, by that at which we allow them to be sent to the bull. In obtaining the services of a bull, it may be considered unnecessary to say that it is important to have an animal of as good a description as possible; but it might in reality be supposed, from the very inferior specimens that are frequently seen made use of in many parts of this country, that the fact was not known—or if known, that many farmers were determined not to pay any attention to the matter. We have seen this spring, and could point out in any year during the months of May and June, a hundred calves of a year's growth on the roadside in different parts of the country, any one of which would not weigh on the scales more than many a well-bred thrifty calf of five weeks' age, that is, say just a year younger—mere dwarfish little bundles, in fact, of bones, paunch and skin. Now, this unthrifty state of things is to be attributed, in the first place, to the want of a little attention in the selection of animals to breed from; and, in the next place, to the great neglect in the rearing of the young animals during the first summer and winter. The fact is, that there is a great want of spirit and proper exertion among many farmers in this respect—a grudging of a little present expense and trouble, even when they will acknowledge that it would repay them tenfold. Numbers of spirited breeders in different parts of the province have indeed imported very superior animals at great expense and trouble, and many others have benefited largely by their enterprise—large numbers of well-bred and superior grade animals, of the improved breeds, being

now found in many places; but on the part of the farming community at large, it must be confessed that there has not been that spirit in improving their own stock, by encouraging the enterprise of the importers of well-bred cattle, which might have been expected.

In endeavouring to improve our stock of neat cattle, we must be governed in our choice of individuals to breed from by the quality of those within reach, the best of which, especially of the male animals, should always be obtained. If the farmer does not go to the expense of purchasing highly-bred heifers or cows, he should at least take the pains to select and preserve the best of the native or common ones, as a foundation for an improved stock, and obtain for them the best bull within reach. By pursuing this course, and slaughtering or rejecting as breeders all the inferior young animals produced, a great improvement will soon be effected.

It is frequently a subject of inquiry, which of the different varieties of cattle are the most profitable? This must depend a good deal on the particular purpose for which they are required, whether for the shambles, the dairy, or the yoke, as well as on the climate and the quality of the land where they are to be kept. Different varieties have also their advocates, as much perhaps from mere partiality as from any peculiar intrinsic merit. In order to afford the farmer who is desirous of effecting improvement, but may perhaps not have a sufficient acquaintance with the subject, an idea of the requisite qualities of a good animal, whatever the breed, we may allude to what graziers and breeders call the fine *points* of an ox; and in this we prefer making use of a good authority—the Rev. W. L. Rham (article “Cattle”)—“There are certain forms and appearances, which are either anatomically connected with a perfect conformation of the body, and especially of the organs of respiration and of digestion, or which are constantly associated with the peculiar qualities of certain breeds, so as to be proofs of their purity. Of the first kind are—a wide chest, well-formed barrel, strong and straight spine, hip bones well separated, and length of quarter; all of which can be proved to be essential to the perfect functions of the body. Small and short bones in the legs give firmness without unnecessary weight. A thick skin, well covered with hair, ensures proper warmth; and its soft, loose feel indicates a good coat of cellular substance underneath, which will readily be filled with deposited fat. All these are indispensable points in an ox which is to be profitably fattened, and, whatever be the breed, they will always indicate superiority. Other points, such as colour, form of the horns, shape of the jaw, and setting on of the tail, with other particulars, are only essential in so far as experience has observed them in the best breeds, and as they are indications of pure blood. The eye is of great importance; it should be lively and mild, indicating a healthy circulation, with a gentle and almost indolent temper. An animal that is not easily disturbed will fatten rapidly; while one that is restless and impatient will never acquire flesh. Among the ancients, a deep dew-

lap was considered as a great beauty in an ox. In some of our best breeds there is scarcely any. The rump of the Freyburg cow rises high towards the tail; while a straight back, from the neck to the tail, is indispensable in a well-bred British ox.”

Among the improved breeds introduced into Canada, the Short Horns, or Durhams, are perhaps the greatest favourites, and are most extensively known. They are also probably the most profitable for general purposes. In colour, they are generally light, sometimes quite white. The horns of the pure-bred animal are quite short; sometimes, in the finest bulls, a mere tip on each side of the forehead. In the carcass, they combine every point which has been mentioned as essential to perfection. They are perfectly hardy, bearing all the variations of this climate quite as well as the native breeds, and returning, with fair keep, as great a weight for the butcher at three years old, as the common cattle do at six. A prejudice has sometimes existed against the Durhams, on the supposition that they were indifferent milkers; but the contrary is in reality the fact, the purest Durham cows having proved to yield a large quantity of milk, or, speaking technically, to be very *deep* milkers.

Next to the Short Horns may be classed the Ayreshires: they are indeed by some breeders preferred to the former, although their right to be considered as a distinct breed has been frequently disputed. They resemble the Durhams very much, except in point of size, and are hence sometimes supposed to have originated from a cross of that breed with some smaller variety. Although not so handsome an animal as the Durham, they have very good qualities, being very hardy, and excellent for the dairy or the shambles.

The only other improved breed well known in Canada is the Devon. In colour they are invariably a deep red, with a bright eye, fine head, small bone, glossy hide, and fine long horns. They are a very handsome breed, and, though smaller, are by some preferred to the short horns. The oxen are excellent for purpose of draught, being very active, and walking almost as fast as horses. The cows are of good quality for the dairy, the milk being of superior richness. The Devons fatten easily, and their flesh is of superior quality.

These are the most important British breeds well known in Canada; the other principal varieties, as the Hereford, Sussex, Leicestershire, Teeswater, and others, not being much known. It is to be hoped that ere long the importance of paying attention to the breeding of improved cattle will be more fully appreciated. There is now, perhaps, scarcely any section of the country in which a more or less well-bred bull, of one or other of the improved breeds, may not be found at no great distance; so that there is at least the opportunity of making improvement, if it is but made use of. Many of the common cattle of the country are of very good quality as milkers. By selecting the best of these, and obtaining the services of a well-bred bull for them, and paying greater attention in regard to proper care and feeding, the

weight and quality may be very much improved, without detriment to the milking properties. We do not wish to be understood in these remarks as implying that there has been no advance made in this respect. The advance has been very great—thanks to the enterprise of spirited individuals—but much yet remains to be done.

ON PRACTICAL FARMING, ROTATION OF CROPS, MANAGEMENT OF STOCK, &c.

(Communicated to the Johnstown Agricultural Society, by John Bland, Esq., Brockville.)

As a preliminary to successful cultivation, all experience has proved the necessity of clearing and draining lands well and carefully, as circumstances admit and demand. This being done, the following rotation of crops may be judiciously adopted in each and every soil; always taking it for granted that the farmer, in addition to his own knowledge and experience, avails himself of the example and advice of his elder and more experienced neighbours.

My experience favours the following rotations of crops, on the soils to which allusion shall be made, modified by all and sundry circumstances which may arise from seasons, localities, &c.

SANDY SOILS.

1st year.—*Potatoes*:* well manured and scattered abroad, immediately ploughed in and as carefully harrowed. *Red* and *white* potatoes are two kinds well known. The former prefers a clay soil, the latter a sandy or loamy soil. Should be planted whole and a reasonable distance apart each way. Should be kept clean, but not too much covered up by ploughing, as air is wanted. A change of seed is found a good practice; but above all things *plant early*.

2nd year.—*Rye*: after which a crop of Buck-wheat may be raised, part of which may be consumed on the field, according to circumstances.

3rd year.—Oats and Clover, or Barley and Clover.

4th year.—Clover.

5th year.—Wheat, after which Buck-wheat, which use the same as recommended in second year.

6th year.—Peas, and associated with oats, &c. Here are eight crops in six years, five of which are ameliorating to the soil.

LOAMY SOILS.

1st year.—*Potatoes*:* culture, seed, &c., the same as before mentioned.

2nd year.—Wheat and afterwards Buck-wheat as before recommended.

3rd year.—Indian Corn and Pumpkins.

4th year.—Barley and Clover.

5th year.—Clover.

6th year.—Wheat and Buck-wheat as before.

CLAY SOILS.

1st year.—Oats and Clover.

2nd year.—Clover.

3rd year.—Wheat followed by Buck-wheat.

4th year.—Beans, previously well manured.

5th year.—Wheat.

6th year.—Peas and Oats.

Having given a brief summary of rotations, which must be modified according to soils and circumstances, I shall now proceed to refer more particularly to each kind of produce, and the most approved mode of culture and general management.

The potato has now become an universal favourite in every country, as approved food for man and also for beast. Some little more care than is at present bestowed on its culture is well deserving our zealous industry. Two ways are open to our practice, namely, 1st, by sowing the seed, and 2nd by planting the root. The former method gains us many varieties, but three years are necessary ere such come to maturity. Hence the 2nd method, planting the root, returns the exact variety or kind; and it is almost the universal practice, its success merely depending on the selection of the soil, and the skill of the cultivator. The produce of this crop varies from 300 to 600 bushels an acre, hence the premium offered by our bounteous mother Earth is far above all other offers. The potato is generally understood to be a native of this Continent, and is now considered the next staff of life to bread, being, as analyzed by a French chemist, said to contain in relation to bread the following nutrition.

Bread, every 100 lbs., 80 lbs.

Potatoes, every 100 lbs., 25 lbs. to 35 lbs.

Spring set Potatoes (for observe fall planting is now practised with much success in Europe) should be planted if possible, from 12th to 20th May, and may remain in the ground till the end of October. Various modes of planting have been practised, and approved of. I should generally recommend whole potatoes for planting, and from experience would prefer a full medium size. Plant two feet apart, and one asunder. Put potato seed in ground covered slightly with soil, and if you have not ploughed and harrowed in your manure, put the same on the top of the seed, and afterwards a little more soil. Every shower of rain will send some food to the seed below, and if you plant in the fall be liberal with your cover-dressing, and be assured when you are sleeping and sleighing, the seed is safer and better for an early start in spring, and it has been found from experience that even seed with a slight taint of the rot has disencumbered itself of the disease. If any prefer the practice of cutting their seed, invariably bury in a bed of Plaster of Paris for some little time, and not expose to frost. This is found of very great importance in protecting the seed, and improving the produce. When Potatoes begin to appear above ground, weeds appear also, harrow well then—it saves labour afterwards. A second harrowing with a suitable implement, also much approved, which cleans all and loosens the soil, to admit both air and moisture. Well, all that remains to be done is careful and prudent harvesting and storing. Small surface hills are now practised with success, containing about 20 bushels each; cover with plenty of straw and earth, and a trench cut round to carry away all water.

* If the writer means to recommend Potatoes as a rotation crop for field culture (say ten acres), we fear it must be struck out of the list. Potatoes are seldom cultivated on ordinary farms to the extent of more than one acre. Nor do we think a more extensive cultivation would be desirable.—Ed. Ag.

Rye.—This is a grain less valued than it deserves, and the qualities are less known and appreciated than they ought to be. It does not compare with wheat, still there are circumstances, which as an object of culture, may give it the preference.

1st: it will grow and produce well where wheat cannot be raised.

2ndly: it endures much colder climate than wheat.

3rdly: It comes much sooner to maturity, and therefore exhausts the soil less. Indeed it is not uncommon to have two or three successive crops without manure, and the last crop as good as the first. Can be sown in the fall, and it gives good pasture without material injury to the final crop.

4thly: its produce is generally greater from an equal surface than that of wheat.

These known facts render it particularly suitable to poor soils, to high and elevated lands, and is well adapted to our high northern latitudes.

Its use and value are well known and appreciated in various parts of the Continents of Europe and America. In Germany it is regularly given to the horses in shape of bread; also in Belgium and Holland. The grain chopped and its straw cut and mixed forms the common and every day food of the horse of Pennsylvania. Its culture may be in keeping with our remarks on the potatoe crops preceding in a sandy soil. The ploughing, harrowing and manuring, given to that crop, will prepare for this. After harvesting the potatoe crop, plough the ground, and sow and harrow in the rye. Take especial care that the seed be carefully selected, and thoroughly washed in hot lime-water, then dry the seed with gypsum, and sow. Whenever the straw of rye becomes yellow and shining, cut promptly; observe to cut always early rather than an hour too late. This being done, time is given for ploughing and for next crop in succession.

Turnips.—Said to be natives of the north of Europe. There are of them eight species, and of these many varieties, but those which obtain most notice and approbation are the white in Europe, and the yellow, or *Ruta Baga*, with us.

Two methods of cultivation are adopted, suited to the end in view; say, if for enriching the soil by the turnips are then turned down by the plough; or for securing them for stall food. This latter practice seems generally the favourite mode, as it is justly considered the most economical and satisfactory. In the first case the harrow is used instead of the plough in light porous soils. The seed is sown after the harrowing, and left to itself. In the other case, the plough is used, and after it the harrow; a method generally performed, as the return will give a good equivalent for all the extra labour. Well, this done, sow your seed, say two pounds to the acre, this will allow some for accidents, &c.; when the plants are all above ground give them a light covering of ashes. Ashes which assist the growth of the young plants and save time, leeching on their leaves, protect them from the fly, &c. Soon afterwards it is a good practice to thin your plants by hand, and weed carefully. Some recommend running the plough at

stated lengths to form their land into beds, as approved culture. A second, and even third weeding and thinning is considered advantageous, as all weeds and surplus turnips are good converting manure. Then draw and top your turnips, afterwards stack, interspersing between each layer coarse hay or straw; should the season be open, it is a good practice to put on your turnip field sheep to pick up anything left there, and even after them your pigs. So much for the white Turnip; next the yellow or "*Ruta Baga*." This is usually cultivated and well known here, and a great and growing favourite in Europe, particularly in Old England, where many years ago it was successfully introduced by Wm. Cobbett, Esq. (His works generally on agriculture, from his personal experience, are well worthy of reference both in England and America). A Swedish Agriculturist says of its properties, as follows: "Its root is milder and more saccharine than that of the other species, particularly when boiled; its flesh is harder and more consistent, which better enables it to withstand frosts and to keep from one year to another. Its leaves extend horizontally, and may be stripped off from time to time as wanted for forage, without injuring the product of the root, which on a good soil gives on an acre of Sweden 350 quintals, and even in poor soils gives a crop. We sow half a pound of seed about the beginning or middle of May, which will give plants enough to fill an acre. Transplanting is performed about the last of June. To set out and water five or six hundred feet in a day is the task of one man or two women. One or two hoeings augment the product much. The harvest is made about the 1st November, and the Turnips are covered in ditches or dry cellars for winter's use."

Barley.—Of this we hear first of bread, or loaves, and among the Greeks the gladiators were called "*Barley Eaters*;" hence probably the modern descriptive name given to some questionable persons, namely, *Loafers*. At an early period it was used by the Romans as food for man, and afterwards for cattle, and this obtained favour from the general belief among that energetic people, of its nutrition and invigorating qualities. The same opinions have diffused, this grain above every other being better adapted to different climes and soils, more easily preserved and less subject to attacks from insects. I need hardly add its capacity for the production of those refreshing, wholesome and invigorating beverages, called beer, ale, and porter. Finally, it is good for cattle, and on which the Arabians bring up the horse to its greatest perfection. There are two species most in request, say "*Two-Row Barley*," and "*Naked Barley*." The former is preferred in England. It is understood to possess all the good qualities of the other varieties, and is much more productive than the latter species. The Northerners give the preference to it, and as they use this grain much as food and drink, ought to be considered good judges. Barley is not so particular as to soil as either wheat or rye, still it prefers a loose, warm, and moist soil (though not wet), and will thrive well even in sand, in succession to turnips. All

things equal, the spring crops, which are early sown, give the best and largest products. The instant that your soil is properly dry, plough at a depth not less than six or seven inches, as barley enters deeper than many other kinds of grain. If the soil is well pulverized, as it ought to be after turnips, proceed to sow your barley broad cast, and cover all with your short toothed harrow; the last operation will be to sow and roll your clover seed, being your next crop in rotation.

Clover.—This is found in many countries growing spontaneously, as shown by its names: hence Italian, Dutch, Spanish, Clover of Normandy, &c. It has been long cultivated, say for two hundred years, and is now, and has been long an article of export from England to her West India Colonies, and even to the Spanish Main; it is considered good for its effect on the soil as an ameliorating production, from its peculiar roots and leaves. It is almost invariably sown with barley or other spring grain, and rarely by itself. The advantages of this practice are three: 1st, the preparation given the soil for the grain crop, is just what should be done for the clover. 2ndly, the protection given by the barley to the young clover, against heat and dryness; and 3rdly, the improved condition in which it leaves the soil for subsequent culture. Hence in sowing the barley, care must be taken not to sow too thick, else much and serious injury may be done to the young clover for want of proper ventilation. I add two more conditions to make all certain, and to ensure a good crop: 1st, that your seed be good; and 2nd, that it be equally and regularly sown. The tests for good seed are, its comparative size and weight, the largest and heaviest being always the best. Its plumpness, its yellow or purple skin, its clearness or separation from other seeds and from dirt. The quantity of seed to be sown per acre depends in a great degree upon the soil. If good and rich, ten or twelve pounds are plenty; if poor, twenty-five pounds may not be sufficient; hence select judiciously. Never sow your clover with timothy or rye grass, as all these do not ripen alike, nor with winter grain of any kind, as much of it will perish. Better wait for the soil to acquire a temperature congenial to vegetation. By the time your barley is harvested, your clover will be able to live alone, and if not pastured, to resist the ensuing winter, and during the next summer to reward your industry by two abundant crops of grass and hay. The proper time to cut your clover, depends on various circumstances: 1st, clover cut before it flowers abounds in water, has little nutritive matter, and is apt to produce indigestion in cattle fed upon it. This is called "horning," and is prevented by giving the cattle a little water before feeding. 2ndly, the stems of clover cut after seeding are hard and woody, and no longer hold the leaf. 3rdly, all plants permitted to seed, exhaust the soil; to this clover is no exception. From all these facts, and to conclude, the best time to cut your clover appears to be the short period between the flowering and seeding, whether regarded as forage or as an ameliorating crop; but if seed is the principal object, the Dutch practice is probably the best; when the first crop is cut, before it flowers, and the second is reserved for seed. Our next way to go to work will be to plough in the clover stubble, as preparing for, say,

Wheat.—This great staple of this and every other country, so useful to mankind, and forming so large a portion of human subsistence, is very fortunately found to adapt itself to a great variety of soils and climates. It grows luxuriantly in clay, in loam, in calcareous earth, and even in sand when aided by suitable manure, or a prudent succession of succulent crops. Say potatoes, peas, vetches or clover, &c. It is found in the frozen regions of the north, and in the south under the scorching sun of Africa. And it yields, according to Pliny, more than one hundred-fold. On its introduction to ancient Rome, its use soon usurped and superseded that of barley and rye, and in Europe at the present day it is christened *Corn*, par excellence. Of this invaluable grain there are four species, say, Polish, Many-headed, Spelt's, and Common Wheat. These are the kinds known generally in Europe, and here partially, but of late several others have been introduced, as the Siberian, Black Sea, Fay, Soals, &c. These varieties are now being tested in our district, but it would be imprudent to give any opinion on their merits, till sufficient time elapsed for the trial. Besides these noted, there are many other varieties, indeed so numerous that it would be useless to mention them, but the most general classification is according to colour, hence Red and White, Spring and Fall. The White Wheats are considered more delicate than the Red; but the latter, though seldom sown on rich or warm soils, are generally found most profitable, being more hardy and early on poor and inferior land, and even in a more unfavourable climate.

The most important matter to which I would call the particular care and attention of the farmer is the selection of the seed, and its preparation for sowing; without which all else is vanity and vexation of spirit. Seed selected from a good crop of the preceding year, and fully ripe, as seed should always be, and also well preserved, put through the fanning mill two or three times, and then washed in hot water with fresh lime thrown in; clean and new ashes will do well also as a substitute. This washing must not be forgotten, for this good reason also, that all the shrunk and shrivelled grains, and even any foreign grains, will float on the surface, and hence be skimmed off. This will remove the dust of smut and rust, &c., &c., and prevents their propagation. Next process, roll well the seed in flour of gypsum till dry.

The time, mode, and quantity ought next to arrest our attention. Early sowing, either for spring or fall, seems the best practice, but this depends on circumstances. The hand is the best machine yet discovered; but some approved machines have been used with much satisfaction and saving, hence again no opinion is of much use. Rich lands require less seed than poor, but experience has found that if attention be paid to early sowing, less seed will do better than a much larger quantity sown later. Two to four bushels per acre are used, and with various results, as the soil,

exposure, or other causes may explain. Well, now a word or two on after-culture, which is labour not thrown away. We suppose seed broadcast, hence light harrowing and rolling is good practice, as grass may be sown in spring on winter wheats; the harrow and roller are used to loosen the soil and cover the seeds; even this to the wheat alone on many lands is of great benefit.

Again, rolling on dry and open soils in spring, ought never to be omitted, the frosts leaving the roots of the wheat loose and exposed to every kind of injury, besides the roller is better than the harrow in pulverizing the clods, and in bedding the ground for the snath in harvest next.

Reaping.—Wheat should always be reaped ere ripe, as a greater loss is generally sustained by being too ripe, than is commonly suspected.

Peas.—The pea is a native of Southern Europe, but is also found growing spontaneously west in our own Continent. There are many kinds, but the field pea is what we have legitimately to do with. Of these there are two varieties, the *Green* and *Grey*. Both are prolific, wholesome, nutritive, and agreeable food for man, and highly recommended for cattle; also green or dry, sheep, cows and horses are very fond of them, and hogs are more economically and promptly fattened on them, and also when mixed with barley meal in a state of acetous fermentation, than almost any other kind of food. Following turnips, the labour for peas is not much, two ploughings will do, and sow at once without loss of time, but not too deep. Two methods are practised in sowing, row and broad casting. By the former, the seed is economised and the product increased, affording better tillage for the soil. The latter saves much time and labour. Experience adds, to assist the feeble pea, sow beans, oats and rye, and it is said much advantage occurs from this. Such a crop can be turned to many useful purposes on a good farm.

Indian Corn.—It is a native of our southern Continent, its prolific and other good qualities are well known, and have brought it into general use, for it is now cultivated wherever this is permitted by the climate; even in England, Cobbett introduced it, and sold the cobs for seed at $7\frac{1}{2}d.$ cy. each. Many attempts were made to grow, but not generally with much success, the climate being too cold for it. With proper care and attention, it does well in a great variety of soils, but prefers old and rich grounds, artificial meadows, warm loams, and moist vegetable mould. There are numerous varieties, but the White and Yellow are generally preferred, and of eight and twelve rows. It should not be cultivated oftener than once in six years on the same land. The seed selected from the best ears of the last year's crop, and from the stems on which the largest number were found. Care also should be taken to steep it in a strong solution of nitre, at least twenty-four hours before planting. Hills at least eighteen inches apart is general in planting this, but if the soil is strong, twenty-four to thirty inches is better. But ere you plant, let the weather be genial, else you may lose your labour and seed; and observe, if late, you may be too late for a crop. No crop requires more nursing, but none repays better the care. Weed, hoe,

harrow, be liberal with Plaster of Paris; should you have moist and warm weather, your crops will be excellent.

[To be continued.]

DRAINING LAND.

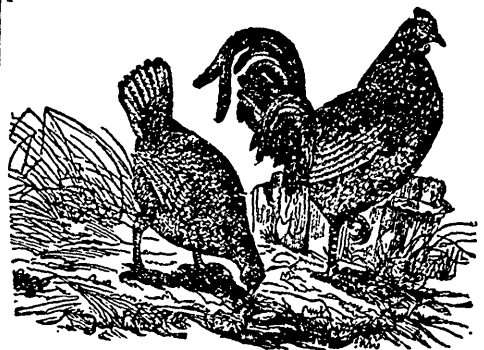
Of so much importance is this means of agricultural improvement considered in England, that, in addition to the immense sums annually expended by private individuals, the government, in 1846, authorised a loan of three millions sterling, that is two millions for England and Scotland, and one million for Ireland. In less than a year, applications for English estates were made to the amount of £508,659; and for lands in Scotland to the amount of £2,188,331. Among the applicants are the names of some of the largest landowners. Ireland, we presume, has not been in a condition to avail herself of the proffered aid, to any large extent.

POULTRY.

THE OSTRICH FOWL.

We copy the following remarks from that excellent work, recently published by C. N. Bement, Esq., "The American Poulterer's Companion;" a book that should be in the hands of every farmer. We are indebted to the politeness of the proprietor of the *Genesee Farmer* for the cuts, which are also copied from that work. We shall occasionally present our readers with further extracts from this book, feeling satisfied that information on this subject will add to the variety, interest and usefulness of our publication.

Among the many varieties of the domestic fowl, described by Mr. Bement, the "Ostrich Fowl" would seem to be as valuable as any for all purposes.



This valuable variety, we have understood, first originated in Bucks County, Penn., hence they are called by some the "Bucks County breed." Some of this breed were first introduced into this vicinity

some six or seven years since, from Philadelphia, by the late F. Bloodgood, Esq.

The specimens from which our portraits were taken, were presented to the author by a gentleman of Boston, who informed us he procured them from Maryland, where they were called the "Ostrich Fowl." In a letter accompanying the fowls he says, "This breed are the largest of fowls, and from them you will obtain the largest sized eggs. I have had eggs from this breed weighing $4\frac{1}{2}$ ounces avoirdupois weight. I could have sold fifty pair if I had them to spare."

The colour of the cock is a dark blue-black, with the ends of his feathers tipped with white; wings tinged with a bright yellow, or gold color; hackles dark glossy blue; rose or double comb, and wattles large; bold lively carriage and a stately walk.

The hen does not differ much from the cock in colour, and is very similar in form, being deep, short, plump, and thick-set in body; legs short, of a dark color and of medium size; she has a high, single, serrated comb, generally falling over on one side; wattles large.

This breed has one peculiar quality which we have discovered. When first feathered they are very dark colored; the white tips of the feathers are very small, and on moulting the white increases, and continues to increase with every successive moult until the white predominates. They are esteemed good layers, and for a large breed, good sitters and good mothers; the eggs large and nutritious; the flesh, unlike the Malay, white, firm, tender, and fine flavoured. We consider them in all respects fully equal to the famous Dorking breed.

We are under particular obligations to Dr. R. Kittridge of Portsmouth, N. H., for the following information regarding the Booby Fowl, which, from his description, appears to be the Ostrich Fowl, under a different name. "Booby is a large fowl," says the Doctor, "weighing from 6 to 9 pounds. Of those that I received, the smallest weighed 6 pounds, the largest $7\frac{1}{2}$ pounds; the cock almost 9 pounds. Their invariable color is a black ground with white spots all over them; the legs are black; they are shaped like a turkey.

They are great layers, and are not so much inclined to sit as the common hen; laying forty or fifty eggs before they are broody. I procured mine from Montgomery County, Pa."

In a letter from the gentleman in Philadelphia, who procured these fowls for the doctor, he says, "I shall send two lots of fowls, a cock and three hens each. The Boobies are speckled, and were furnished by a German, and are no doubt a year old. There will be one hen with the three, that the good honest man said was much superior, and for which he was offered two dollars, on his way to the city. He had no name for this fowl, but said 'these are the greatest fowls ever in our part of the country.'"

The Portsmouth Journal gives an account of two varieties of hens, of more than three times the common size, and of proportionate value, which can be as easily raised as the common hen. "They have been raised by Dr. Kittridge of that town." The editor says, "The kind called 'Boobies,' are spec-

kled. The cock now weighs ten pounds, and some of the hens eight pounds. They are prolific layers; some of their eggs weigh over $3\frac{1}{2}$ ounces each, and measure three inches in circumference."—*Am. Farmer.*

The editor of the Yankee Farmer says: "We have received from our friend Dr. Kittridge of Portsmouth, N. H., six Booby hen's eggs. These hens are considered as the greatest of layers by those who have kept them: and it appears that those which Dr. Kittridge has have laid well after getting over the effects of travelling. Owing to their being moved, they did not lay much for fifteen days; then they (our in number) laid thirty six eggs in ten days, and none showed a disposition to sit excepting one, which he thought was not of the Booby breed."

ON THE BREEDING OF CATTLE.—Up to the time of Collins and Bakewell, cattle and sheep were produced according to the generosity of the land on which their lot happened to be cast. Perhaps we owe it to difficulties of internal communication that very distinct races maintained in some districts of small extent, as compared to the surface of Great Britain, a separate existence. Over the rest of the country some little attention was paid to the qualification of the ox as a beast of draught, but beyond this the cow was merely a milk and calf producing animal. The bull was selected for his proximity, and his best recommendation was that he had given sufficient evidence of the talent which Mr. Shandy desiderated in Obadiah's grave pet. "Their bull gendereth and faileth not." When he had served the parish in this capacity for three or four years, he was discarded from a prevalent and probably well-founded idea that uncanonical connexions were, on more than one account, inexpedient. He was then marched off to Stilton or Porchester Castle to feed French prisoners, or, if his size and substance were favourable, he was degraded into an ox, and took his place in the team. Of his progeny, the males, with the exception of a successor or two in his own vocation and a few oxen for the plough, were made into very immature veal. The females were reared. Such as were seasonably prolific, and as showed milking qualities, succeeded their mothers in the dairy, and the remainder, after having been indulged with the best pasture which the district afforded, served to relieve, with the tenderness of youth, the uniformity of old cow beef which formed the staple supply of the provinces.

Of the pure races we must speak more definitely. England preserved the Devons and the Herefords. We add, with some hesitation, the appropriately named Long-horns, which still struggle for a separate existence in a small district round the point where the counties of Warwick, Derby, Stafford and Leicester approach each other. To fix on a known point, we should say they hail from Atherstone. Some splendid horns from this race are preserved by Lord Bagot at Blithfield. As late as the year in which the General Agricultural Meeting was held at Derby, a bull of this sort obtained a prize. The earliest, and that very recent, representative of the Short-horn, of which we have knowledge, was a large, uncouth, patch-coloured animal from the district of Holderness—a milk-seller's cow. Wales furnished a mean, black, mountain bullock, dignified with the name of a runt, which still appears in considerable numbers in the markets of the western and southern grazing districts. Perhaps the improvement which has of late years been made in this race by the infusion of West Highland blood, can hardly be called a cross. We apprehend that both races speak Gaelic. Scotland gave

us the unquestionable West Highlander, whose headquarters are now fixed in Argyleshire and West Perth, and the somewhat more equivocal Galloway; perhaps even the rough east country stot, from Aberdeenshire and its associate counties, may claim some *locus standi* in this enumeration. In Ireland we trace no distinctive breed. The distinction of the Irish ox and heifer was, that they were the worst shaped and worst fleshed animals which ventured to appear in an English market. "Good things scarce; plenty of Irish," became an almost proverbial description of a cattle fair. The same system of haphazard breeding, which overran a large portion of England and Scotland, prevailed universally in Ireland. As with the human, so with the bovine race. Each endowed with a marvellous fecundity: maidens and heifers equally precocious. The same circumstances of penury, hardship and neglect which made the Irish (not "the finest," but) the most degraded peasantry who came into permanent contact with civilization, made the Irish ox the most degraded of oxen.

So stood the case a short century ago. But a great change was at hand. The early systematic improvers of our stock took the readiest, and perhaps, under the circumstances, the most scientific course. Having come to a definite end, in the main, an accurate perception of the objects which it was desirable to attain, they selected and commingled, without any regard to affinity of race, the animals which appeared likely to realise their vision. Immediate success attended their efforts. The merits of the first cross are proverbial, and even while we write, the newspapers offer us a confirmation of the proverb in the statement, that the prize ox, which this year furnished the baron of beef for the Christmas festivities at Windsor Castle, was bred by Prince Albert, was an animal of rare symmetry, quality and fatness, and was the produce of a buffalo cow by an Ayreshire bull. In sheep, Bakewell put together white-legged and black-legged, horned and polled, long-wooled and short-wooled. Nor was the case much different in cattle. The late Earl Spencer traced much of his standard short-horned blood to a Galloway cow, which is still, we believe, a luminary of the Herd-book, and which produced one or more animals of agricultural celebrity. Still the desire for something distinctive prevailed; and as every three or four years brought a fresh generation of these animals, their fleeting series enabled a successful experimentalist to establish something of uniformity within the limits of one human life. So, from most heterogeneous materials, breeds both of cattle and sheep, having respectively distinctive qualities, were called into existence. Of either sort one—of cattle, the improved short-horn, and of sheep, the new Leicester—obtained a decided pre-eminence. They gained a footing in almost every agricultural district of England and Scotland. The uncivilised herds and flocks of our predecessors shrank before them as rapidly as the red man before the white in the New World; and though fashion certainly pushed them into some districts for which they were unsuited, and in which they degenerated rapidly, yet in the main they have retained their conquests. No doubt they trench on the dominion of the old and pure races. They drove in their outposts, and even made inroads into their territory. Meanwhile the possessors of the old races were not insensible to the spirit of improvement which was abroad, nor to the fierce competition which was forced upon them. To them, as to men in higher station, three courses were open. They might discard their own stock as unequal to the occasion, and adopt that which the enterprise of other men placed within their reach; or, following the example before their eyes, they might aspire to success by crosses of which their own herds should be the foundation; or, thirdly, they might seek improvement by judicious selection and rejection within their own do-

main. Happily, they adopted the last course, and the purity of our old races of cattle was maintained. Who would not regret the disappearance of the beautiful Devon and the picturesque West Highlander? Either position or design had kept these races pure, and they retained all the distinctive marks of purity. Thus they were improved without being adulterated, and remain to this day as marked in their respective characteristics as they were before an improved Short-horn or a new Leicester had been called into existence. Their improvement has perhaps not been so rapid as that of the new breeds, but they did not start from so low a point of degradation. Nor should it be forgotten that they occupy districts below the average of the kingdom in fertility. On the whole, they have maintained the contest for superiority with various success—a success regulated perhaps at times by fashion and caprice, but resulting on the whole in good judgment and truth.*

We should now, perhaps, be in a condition to estimate the results of a struggle which has continued for more than half a century. But before we can pronounce even a qualified opinion, we must have a very clear perception of the principles on which a decision ought to be founded. The real and only question for the farmer is, what breed of cattle will year by year yield me the largest money return per acre, or per given quantity of various sorts of food consumed by them? And this question is not settled by saying, Taken—ten tons of Short-horns and ten tons of Devons; 50 tons of food of equal quality were consumed by each lot; the short-horns give beef as 21 to 19, or *vice versa*. 1st, we must know the respective histories of each ten tons; we must have a debtor and creditor account of each up to the time of weighing in. The one may have credit for services in the dairy, the other for services in the team; or the creditor side may be blank in the case of either or both. We must *here* consider the breeder and the feeder as one man. Before we can answer the question so interesting to him, we must know the antenatal cost of each 10 tons, and their respective debits and credits up to the day when they leave the hands of the beef manufacturer for the shambles. 2ndly, We must know which fetched the most money—the beef represented by 21 or that by 19. It is easy to say, "I have bred a beast of rare symmetry, great size, early maturity, first-rate quality." Equally ready are the inquiries, "After how many failures?—At what cost?—How stands the balance?" These questions are answered by many brave and contradictory assertions, by many wild and contradictory guesses, but by no statistics on which we can found a safe conclusion. And yet on the answer depends, on average agricultural farms suited to any description of cattle, the whole question of successful breeding and feeding. The statistics are not forthcoming, first because few farmers keep any accounts but a cash-book; and secondly, because considerable intricacy arises from the circumstance that the breeder and feeder (in the case of cattle) are ordinarily not the same person. To those who give to the public accurate statistics of one farm, or of one animal, we are under great obligations; but the questions at issue can only be solved by a multitude of instances. Being therefore

* A split has arisen in the Herefords, of which we cannot explain the origin, but which we regret, though we cannot say that it has produced any deterioration. The difference, though small, is decided, and the respective parties are of course very positive. The general Hereford is an animal with a white face, upward horns, and a tawny side. The animal of the offset has a speckled face, generally a broad white stripe down his back, and shorter legs and more horizontal horns than his relative. Of the speckled-faced Herefords, the late Mr. Price, Earl Talbot, and Sir F. Lawley have been the most distinguished breeders. The contest between speckled-face and white-face is not worth carrying on.

"Facies non omnibus una
Nec diversa tamen, qualis decet esse sororum."

without the sure monitor of arithmetic, and left to our own observation, aided by the opinions of men of sagacity, and finding no very definite or decided preponderance in those opinions, we are not in a condition to offer to our readers any guidance on which we could safely advise them to found their practice. But we may mention some of those characteristics of the various animals which we have under review, which must be important points of consideration, whenever increased knowledge shall enable us to bring the main question to a definite issue. Before we do so, we may be allowed to premise, in a single sentence, that in the breeding of cattle, as in every other important human pursuit, national objects are promoted by the successful skill and industry of individuals. The first vocation of a cattle breeder is to furnish his countrymen with the dairy, with all its multitudinous comforts and luxuries. We scarcely know a more important national object of its class than to place a free supply of milk within the reach of the great body of our population. The next vocation of the breeder is to supply animal food—milk and animal food in the case of cattle, wool and animal food in that of sheep. Animal food is suited both to our climate and to the hard-working energy of our people. The breeder has to cater for appetites which bodily exertion has made rather active than critical, as well as for others, of which sedentary and intellectual pursuits have blunted the desire for quantity, but at the same time stimulated the appreciation of quality. Bearing these objects in view, we proceed to remark on those qualities of the various descriptions of agricultural animals which subserve to their attainment.

From their general and hitherto progressive prevalence, the new breeds of cattle and sheep claim our first notice. We have already adverted to the manner in which (if at the expense of a little accuracy we may use the most expressive phrase) they were *created*. To the short-horns we must award the merit of uniting milking qualities with a propensity to get fat, in a degree which rarely, if ever, had been previously found in the same animal. We doubt, however, whether the mothers of the prize bullocks are the animals which fill the milk-pail. To that very simple agricultural implement is, as we fancy, to be traced the slack and bare loin which is the characteristic failing of this breed. In the shambles at Birmingham, where a large proportion of the well-fed cows from our dairying districts are slaughtered, you may generally perceive the blue and bare spot on the loin, though the rest of the carcass is loaded with fat. The advocates of the new breeds claim for them, that with a given amount of food, and in a given time, they will yield a larger weight of beef and mutton than animals of the old races. With some qualification, we are prepared to admit the claim. In the case of selected individuals, previously brought to a certain age or point of maturity, we think that the claim is well founded. Our qualification has reference to the previous history of the animals. As we hinted above, we must begin at the beginning. We have no doubt, we might almost say experience has proved, that if 1000 short-horned females were subjected to the breeding process in competition with 1000 West Highlanders, Devons or Herefords, not only in the first named would there be more failures of produce, but among the products there would be more animals of low quality, coarse and utterly exceptional, than would be the case in any of the three old races. As little doubt have we that 1000 Leicester ewes would produce fewer lambs, and among those fewer more rickety, wry-necked and turn-in-the-head, than 1000 ewes of any other breed. This is because, though art may improve upon nature, it never can become so unvarying and sure in its operation. The varieties and incongruities which have been introduced on account of their connexion with some coveted

quality, will from time to time re-appear. The concocter of a new breed is always liable to disappointment. He introduces into his herd some unknown animal on account of certain apparent excellences, but he cannot tell what qualities, though latent in the individual, run in the blood. The flat side, vulgar head, or hard flesh of some paternal or maternal ancestor may re-appear in the offspring. We have heard Mr. Buckley, of Normanston, the owner of one of the oldest and purest flocks of Leicestershire sheep, say that from time to time grey faces and black feet appeared among his lambs. We have before us a letter from the late Earl Spencer to a friend who had consulted him on a point in breeding, in which he says, "Your cross will not justify a very high-priced bull, but in order to secure you against *anything monstrous* in his stock, you must ascertain that you have several generations of real good blood." With such incidents a breeder of horses is familiar. He selects a bay mare with black legs, and unites her with a male having the same characteristics. If the produce should be chestnut, with a bald face and what the dealers call white stockings, we can assure him of sympathy from many fellow sufferers. To disappointments of this class, the proprietors of original or very old races are less liable. Every connoisseur in cattle is aware, that in a drove of short-horned bullocks or heifers, there be more diversity of shape, of quality, of colour and of aspect, than in a corresponding drove of West Highlanders, Devons or Herefords. Another difficulty besets the breeders of short-horns, and all others who have attained to animals of great merit by many mixings and crossings. You have selected the breeding stock for size, symmetry, propensity to fatten, or for what a Frenchman would call a "*je ne sais quoi*," and a breeder a sparkly appearance. When you have secured the recurrence of these qualities in their offspring, as far as bovine frailty permits, you have invariably attained this object at some sacrifice of fertility. We have known some breeders of short-horns who have been, and perhaps still may be, desirous of having bulls with the heads of heifers and the thighs of bullocks. The offspring of such males is always deficient in quality, and is of weak constitution; the progeny inherits the paternal effeminacy. When such a blunder has established itself in a herd, it can only be redeemed by recurrence to a male.

"cui turpe caput, cui plurima cervix.
Et crurum tenuis a mento palcaria pendet."

These are the true and natural indications of taurinity.

Our lamented friend, Mr. Edge, of Strelley, having shaped in his imagination a breed of cattle formed on his own model, great size, symmetry, and a propensity to fatten, spared no expense to realise his vision. Aided by a most correct eye, and with no prejudices personal or local, he selected at any cost, and from any quarter in which he found them, the animals, both male and female, which he thought likely to answer his expectations. Nor was he disappointed in the qualities of their offspring. But after some years, when he seemed to have attained, or to be on the point of perfection, he came to a dead lock; his females, though much solicited, refused to give him produce. On this ground, and on this only we believe, he broke up his herd and discontinued the pursuit. Lord Spencer, an enthusiastic advocate of short-horns, admitted in more than one public speech, that in his herd fecundity had diminished to an inconvenient degree, and was only maintained by a degree of care and attention which could hardly be extended to the general breeding stock of a kingdom. We know the ready answer—The females are too fat. But this is not the whole question. We lately inspected a herd of Herefords, the property of a distinguished and (we speak on the authority of his farming accounts) very successful agriculturist. The breeding cows and

heifers, living solely on crushed gorse, were considerably above the point of marketable beef in fatness. We have no doubt they would be very bad milkers. The bulls were loaded with fat; but there was no deficiency of calves; the drafts on account of barrenness were very few. The expression of the owner was, "I have no trouble on that score." Twins were by no means unknown in the herd. Since short-horns have been very generally introduced into the midland counties, barrenness has been a great "trouble" to the cheese-making farmer.

We will endeavour to sum up impartially. Even the improved short-horn is by nature a coarse animal, requiring a good climate and a generous soil, and unprofitable for merely feeding purposes. Sterility is a serious tax on any herd which, by great care and attention, has attained to a respectable quality of flesh and to symmetry of form. The dairy sustains the short-horns. The cast cows soon acquire a rough coating of fat, and form a valuable supply of low-priced beef for the manufacturing and colliery districts—for those appetites which we have described as being active without being critical. But we should be unjust if we did not assign to the short-horns one quality of great value in an agricultural animal. Composure of mind. The males have lost the combativeness of their species. We can hardly conceive a more ludicrous sight than a bull from Althorp or Babworth thrust into the arena at Scville or Ronda. The females yield precedence without contest. If you introduce a little petulant Highland cow into a dairy of short-horns, of which every individual is double her own weight, she at once becomes mistress and leader of the herd. We have been in the habit of attending annually a sale of fat cattle where the stalls are filled with beasts of various descriptions. The short-horn is released from the stake to which he has been tied for four months, and proceeds to the hammer with all the solemnity which befits an animal who is walking to his own funeral. The West Highlander, as soon as he ascertains that he is free, rather in frolic than in fury breaks through the ring of his intending purchasers, blunders over a fence, and celebrates his recovered liberty by most extraordinary antics. The butchers get but a passing view of him. "Now, gentlemen," says the facetious auctioneer, "you must shoot him flying." His sale proceeds without the solemn pinching and punching, and the wise looks which, in the case of a more patient animal, are preliminary to a bid. Some excitement has been produced by the scene, and, if the gin-bottle has done its duty, he generally sells well. But we beg pardon.—We must not altogether pass by the important point of early maturity. Here the short-horns claim a decided pre-eminence. We will not altogether negative the claim, though we do not find it borne out by the declared ages of the animals which are exhibited for prizes at the Strathfield show. We only desire to ask and to receive candid answers to two questions, and, in order that we may dismiss the subject, our questions shall have reference to new Leicester sheep as well as to short-horned cattle. Have or have not these two breeds possession of the most fertile districts which are devoted to breeding? Have they or have they not during their two first years more indulgence than falls to the lot of the young of other breeds?

So many general points have entered incidentally into this review of short-horned merits, that we can be more concise respecting the old races. We will take Devons and Herefords together as having many points in common. They are confessedly prolific; neither are suited to a farmer whose rent is to be made by the produce of his dairy; we reckon little of the services rendered by their bullocks in the team; human labour must be at a low ebb where it can be profitably associated with so slow a

beast as an ox; bullock-teams and railways will not, we think, long co-exist. We must admit that something will be sacrificed, for we are not insensible to the superior quality of meat of mature age. The claims of these two races are founded on good constitution, on the very rare occurrence of animals without merit, on a considerable capacity to bear hardship without suffering, on symmetry sustained with less care than in any artificial breed, and on the high quality of their beef. When their symmetry does fail, it is generally in the fore quarters; where the high-priced beef lies, they seldom fail. They are unrivalled in the deep cut of lean meat well covered with fat along their whole top and sides, which butchers find so acceptable to their best customers. If compelled to give a decision between the two races we should say, with much hesitation, "If you wish to please your eye, take the Devons; if your pocket, the Herefords."—*Stephens' Book of the Farm.*

THE CANADIAN AGRICULTURIST—CORRESPONDENTS' LETTERS—FARMERS NOT INCLINED TO READ ON AGRICULTURE—CONCLUSION.

To the Editors of the Agriculturist.

GENTLEMEN,—I have looked over carefully the half dozen numbers of your journal, with which I have been obligingly favoured by Mr. Buckland, and take sincere pleasure in recording my humble opinion that it is calculated to contribute materially to the progress of agriculture in this province. One feature has been wanting in all our Canadian publications, that of short and well-written articles, over the signatures of the writers, from different sections of the country. Knowing that you were desirous of enlisting correspondents for your journal, I examined each successive number, with a view of ascertaining how far you had been successful, and find that your correspondents' letters are not by any means so numerous as is desirable. I regret this, because I look upon these letters as the very best instruments in arresting the attention of farmers and others. One great difficulty appears to be to get agricultural articles read. Canada has long been embroiled in political contests, and the yeomanry have had much more of their attention turned to political than to scientific subjects, and as a consequence they have corresponding tastes. The true friends of agriculture therefore find it difficult to secure sufficient attention to agricultural and scientific investigations, on the part of those who are more immediately interested in them. Political journals are read with avidity, while agricultural papers are frequently with reluctance taken out of the post office.

Within my own experience, active and intelligent members of agricultural societies have exerted themselves fruitlessly, with a view of extending information on farming operations, by the circulation of periodicals. Strange to say, in some instances, farmers of considerable intelligence, and who by honest industry have managed to acquire a reasonable competency, affect to despise this means of improvement! It is now some years since the first regular agricultural paper made its appearance in Canada. We have now at least three of respectable character and appearance; some token, I am happy to say, of a

change for the better in the tastes and opinions of the farming population.

Still very much remains to be accomplished in the way of creating an interest in the great cause of our country. Agricultural societies, our provincial association, our agricultural journals, are yet, comparatively speaking, struggling for existence! However, while the intelligent and the enterprising, the lovers of their race, and the well wishers of Canada, are redoubling their exertions, progress is made, slow at present, but sure and lasting in its results. You are, gentlemen, engaged in a noble cause; and I trust most sincerely that your success may in every respect be more than commensurate with the highest expectations of one who has resolved to devote his "talents in promoting peace and good will, in the diffusion of useful knowledge, the improvement of agriculture, the advancement of the social and moral condition of the people, and of those principles of our common christianity which all good men both believe and practice."

I intended to make a few other observations, but feel that it would be trespassing on your space.

W. O. BUELL.

Perth, Bathurst District,
July 9, 1849.

SHALL WE MAKE COMPOSTS?—In the *Cultivator* for January, 1849, I read a notice of a work entitled "*Scientific Agriculture*," &c., by Dr. M. M. Rodgers. I have since procured the book, and in glancing over its pages, I came to the following, under the head of "Compost."

"It was formerly supposed, that great advantage was derived from the combination of several different substances together, and forming what are called *composts*. The recipes for these compounds are numerous, and go to prove that the discovery of a good compost requires but little scientific or practical skill. When a compost heap is made up of several materials, which are all separately good manures, it follows of necessity that the resulting compound must be a good fertilizer. But it is impossible to supply any more in this way, than if these several ingredients were applied to the soil separately. And a little knowledge of chemistry will shew that by this means no new elements can be generated. Neither can any new property be developed which could not be done by their separate action. We see that whenever a substance which has little or no fertilizing power, is in this way manufactured into good manure, it is done at the expense of some powerful fertilizer which is distributed by the mixture, and consequently, loses just as much of its efficacy as the other gains. Thus, although this process serves to dilute and extend manures which are too powerful or too expensive, it absolutely supplies none."

The author goes on still further to explain, that the principal advantages of composts, are the dilution of manures which are too strong when used by themselves. Thus, among other substances, he mentions "caustic lime," the object in using which, he thinks can be much better attained by mixing, and diffusing it through some other substance, "such as saw-dust, sand, *barn manure*," &c.

Now the inference from the above remarks is, that ordinary composts are unprofitable—that no effect is produced that would not take place if the substances were applied separately, and that, consequently, the labour of forming the compound is lost.

It strikes me that Dr. R.'s reasoning is not entirely

sound, and that his conclusions are not wholly reconcilable with facts. It is not strictly true that the same effect is always produced by the use of substances applied separately, that would follow from their combination. For instance, peat, in its natural state, frequently contains an acid which is prejudicial to vegetation, and its fertilizing properties are locked up, as it were, until they are liberated by the action of some substance which causes a decomposition. Hence, it has been found highly useful to mix with peat alkalies of some kind, by which the acid is destroyed, and the peat brought into a soluble condition. Potash and ashes are used for this purpose; the ammonia of animal manure, urine, and all animal matters, produce a similar effect. Thus, Doctor Dana, in his *Muck Manual*, states that—"the power of alkaline action is alone wanting, to make peat good cow dung," and that—"by the addition of alkali to peat, it is put into the same state which ammonia gives to dung."

Here, then, is one example of the advantage of combining or mixing substances to be used as manure. But it may be asked—"Why will not the same effect be produced, if the peat and the alkalies are both spread, separately, on the same land?" For the obvious reason that they are not brought sufficiently, and for a proper length of time, into contact. The alkalies being spread over a larger surface, and exposed to the air and rains, are soon dissolved and carried into the soil below the peat.

But there are other advantages, in mixing different substances in a manure heap. The farmer should endeavour to save all the excrements of his animals, both solid and fluid, as well as all other substances which are capable of enriching his land. The readiest way of saving urine, is to retain it by means of some absorbent—such as charcoal dust, peat, loam, straw or other vegetable rubbish.

Again, if it were true that substances ultimately produced the same effect when applied to the soil by themselves, as when combined, there is still, in many cases, a *convenience* in composting. It is inconvenient to use corn-stalks and other litter in their crude state. If applied to the surface, they do not readily rot, and they interfere with cultivation by obstructing the operation of the implements used. If buried beneath the surface,—which is not always readily effected,—they sometimes cause the soil to be dry and *luffy*. There is no way that these matters can be used to so good advantage as by mixing them with animal manure, and saturating them with urine. By this means, the ammonia soon brings on a decomposition, by which the fibrous structure is cut down and they are brought into a comminuted state, fit to be used as circumstances require. But we may cite other authority in favor of composts. J. Prideaux, an agricultural chemist of considerable distinction, advises to mix in the manure heap—"peat, sods, turf-parings, ditch and pond scourings, way-soil, humus soil in whatever form, and ashes of all kinds. All *liquids* in which vegetable or animal matters have been soaked or boiled; and all that contain fertilizing materials, as soap-suds, dish-washings, pot-liquor," &c. "We must remember," he adds, "that vegetable matters work sour, and that animal substances generate ammonia, which neutralizes the acid, and is fixed by it, so that in due proportion they correct each other. Urine gives most ammonia."

One word, before closing, in regard to mixing "caustic lime" with "barn manure," recommended by Dr. Rodgers, as one of the means of "diluting" the lime. This is a kind of compost that I am not in favor of. I had supposed, if any thing has been established by chemical investigation, that caustic lime should not be mixed with animal manures. Thus Prof. Johnston says, guano should not be mixed with quick lime—

"because the quick lime sets free the ammonia contained in the guano, and causes it to escape into the air." He observes, also, that "quick lime will, in the same way, drive off the ammonia contained in liquid manure, and in horse or farm-yard dung." Farmers who have bought poudrette that has been compounded with fresh lime, have often complained of its inefficiency.

T. Sedgwick, a writer in the *English Agricultural Gazette*, says—"The employment of lime with dung is a most beneficial practice, as it renders the ammonia caustic and volatile, to the greatest degree, and causes the loss of the most energetic portion of the dung. When lands require lime, it should be applied separately, and avoid as much as possible its contact with the dung."

The effect of mixing lime with animal manure, may be explained as follows:—Lime-stone contains nearly half its weight of carbonic acid. In the process of burning, the carbonic acid is driven off; but the lime has a constant tendency to return to its original condition by the re-absorption of the property it had lost. Animal manure contains ammonia, combined with carbonic acid. When fresh lime is added, it attracts the carbonic acid, which, uniting with the lime, sets the ammonia free, and it escapes.—*Albany Cultivator*.

A MIXTURE OF GRASSES.—Our farmers are now laying down much of their ground to grasses. Clover and herds-grass are, nine times in ten, the kinds and the only kinds sown, whether for mowing or pasturage. We have ever contended against this mode of being confined to only these two species of grass, and have always advocated mixing together more varieties. It ought to be done in either case, whether you wish to confine your land to mowing for the hay only, or where you wish to turn it out to pasture. Each separate species of grass or plant, used for forage, has some peculiar property or ingredient which is valuable in producing certain qualities in the beef, milk, butter, or cheese, which is manufactured from it. The white clover, for instance, is said to produce more *caseine*, or cheese matter, in the milk of those cows that feed upon it than most other grasses. Some grasses give peculiar flavour to the butter, and others give out a pleasant fragrance to the hay, which is communicated more or less to the milk. The red-top and the orchard grass should be mingled in with herds-grass and red and white clover. There is another grass which is not very abundant with us, which should be more cultivated as an ingredient of our pastures and mowing fields. It is called the *sweet scented renul grass*. It is what botanists call the *Anthoxanthum Odoratum*. It is a native of Europe and was introduced into this country, and has become more or less scattered about our grasses. It is very fragrant, and when a little of it is cut, gives a delightful flavour to the new mown hay. It is an early grass. A writer some years since in the Farmer's Cabinet, speaking of the prevalence of this grass about Philadelphia, says, its scent somewhat resembles vanilla. It grows from a foot to eighteen inches high. Its stem is very small and round, with a few long and slender leaves. Its odor, said he, is sufficient to distinguish it from other grasses found in our pastures. When in blossom the air is often highly charged with its scent. As we have before said, it is an early grass, and of course ripens before other grasses, so that it will require but a small portion to be sown for the earlier supply of pasturage, while others will come on in succession. It accommodates itself very well to different soils.

It is found that butter made from cows which graze upon pastures in which this grass grows, has in the earlier part of the season a peculiarly pleasant flavour, and when this grass declines, the flavour declines. The grass, however, comes on again in the fall, and it makes

valuable fall feed, or "aftermath," as it is sometimes called.

A chemical examination of this species shows that it is not so highly nutritious as some of the other species. Its fragrant properties consist in its containing *benzoic acid*, a substance which is well known to possess a peculiarly aromatic odor. It is stated that an essential oil can be distilled from the grass, which will afford a pleasant perfume.

It is not strange, therefore, that the butter should contain a portion of it, and partake of its fragrant qualities. We know that milk will contain the odoriferous particles derived from turnips, onions, garlic, &c., &c. Hence it is an object with the farmer to take advantage of the knowledge of such facts, and mix his grasses in such a way that he shall not only obtain a supply of the nutritious matter which the several species may contain, but also any other materials which will render the products of beef, butter, and cheese, more grateful in quality, and consequently more saleable and profitable. This can be easily done by mixing the seeds of different grasses, when sowing. We presume all the varieties of seed required for the above purposes may be obtained at the several seed stores in Boston, New York, and other large places.—*Farmer*.

VERY IMPORTANT TO FARMERS.—Turnips may be liberally fed to milch cows without imparting any unpleasant flavor to the milk or butter, by the following process:—Place the whole turnips into a steam box, with chopped hay, straw, or corn fodder, and steam them until they are soft. There should be some apertures in the top of the box, in order that the steam may escape whilst they are cooking. As soon as they are soft, the "escapes" should be closed, and the steaming process continued until the material with which they are steamed is perfectly saturated with water and the flavour of the turnips.

By this process, all the strong, unpleasant flavour of turnip is removed, and a palatable one imparted. In connexion with this experiment, I made the following invaluable one in testing the comparative value of cold and warm food, and drink for milch cows. The experiment was conducted thus: a herd of nine cows in a stable were fed with food, prepared as above, and allowed to cool before it was fed. The cows were turned out into the yard to drink cold water, where they remained some two or three hours, morning and evening, in the cold air (the weather being very cold.) The food was given in the stables, and the cows remained in all night. The milk was carefully measured for one week, and the amount of feed given, noted. The succeeding week the same amount of feed, prepared in the same manner, was given warm, the stable temperature was kept above freezing, and the chill taken off the water, the cows being constantly kept in the stables and the water carried to them. The result was, that there was an average gain, or increase, in the amount of milk secreted, of about one pint per diem for each cow, or nine pints, at five cents per quart, or two and a half cents per day. This will leave a net profit, in favour of the warm stable, food and drink, of about thirteen cents per day of the nine cows, or about \$4 per month, which is the usual wages paid a common labourer in winter, in this region.

Besides the above advantage, the cows were much more comfortable, and the labour of turning them out into the yard and putting them up again, was more than that of carrying the water to them, as they required but little, being fed with moist steamed food, about one third of which was turnips.

I have also fed my swine with warm swill during the past winter, in which I have found a decided advantage.—*American Agriculturist*.

USE OF BUCKWHEAT AS GREEN FOOD FOR ANIMALS.—Buckwheat, when intended for green fodder, ought, as already hinted, to be sown in the first week in June, in order that it may be available at the most parched and needy time in summer. It may also, for a succession, be sown in three crops each a fortnight later than the preceding; and, in this case, it will of course be available throughout a corresponding series of mowings. When cut for fodder, it is most suitable when about half in blossom; and the quantity of it wanted for each day ought to be mown on the preceding day, at a time when it is perfectly dry; for as cows eat it with the same avidity as clover, and are liable to become blown if they have access to it in a thoroughly green state, it is best adapted for them when it is quite dry and has become a little withered. All domestic animals, particularly cows, weaning calves, pigs, and mares with foal, are exceedingly fond of this fodder, and appear to thrive well upon its use. "The most economical management of it," says Dr. Hunter, "is to put it into moveable racks, because if laid in heaps upon the ground, the cattle will be apt to fight about it, and spoil a great deal by trampling. What falls from the racks, the pigs will take care of. In this manner, the cows will fill themselves in the forenoon with the greatest ease, and ought then to be brought home to the fold-yard, where they will lie down and enjoy rest during the heat of the day; instead of which, if they were in the pastures in search of food (which at that time of the year is often very scanty,) they would be teased with flies and other insects, be running about and heating themselves, and instead of increasing their milk, would shrink from it more and more. Whoever will make the experiment, will certainly be most agreeably surprised by the great quantity of excellent rich milk his cows will produce, at a time when all his neighbours, who have not been so provident, will complain of the considerable reduction of theirs."

ENGLISH FARMERS.—The progressive movement impressed on society has penetrated the agricultural as well as the manufacturing districts; and if the improvements in rural industry are less remarkable than those effected by the application of the power loom, the inferiority may fairly be attributed to the nature of the work, which does not, to an equal extent, admit of the use of mechanical forces. However, within the last half century vast tracts of land have been reclaimed; fens and marshes have been drained, and sandy soils brought into a high state of culture; the farmer has studied chemistry, and perfected himself in the knowledge of manures. An extraordinary change has also taken place in the social habits of rural life; the houses of the farmers are now elegantly furnished, and their general style of living has become generous and refined. Their children are well educated, and their wives and daughters have caught the spirit of metropolitan taste. They have, indeed, been reproached with having abandoned the simplicity of their ancestors, and aspired above their station; but it is difficult to understand why agriculturists should not make equal advances with manufacturers, merchants, and tradesmen. Undoubtedly they err if their expenditure exceeds their means, but this of course applies to all classes, and it seems as admissible that the farmer should keep a house in London, as that the Manchester manufacturer should possess his cottage ornee on the banks of the Windermere. It is said of the late Earl of Yarborough that he was pleased at seeing his Lincolnshire tenants mounted on better hunters than himself, as an evidence not only of laudable pride, but of independent resources. It is also obvious that, in proportion to their riches, the farmers become good customers to the shop-keepers, who, in turn, are enabled to stimu-

late the industry of towns, and by such means the home trade flourishes. If we wish to estimate the evils of an impoverished tenantry, we have only to look to Ireland.

REARING AND FEEDING STOCK.—The following is a summary of remarks made by Mr. Lyon, in a lecture before the *Derby Farmers' Club*. The principles laid down are worthy of attention:

Young animals grow more quickly for a given amount of food than older. By high feeding, a lamb of Southdown breed (not a large sort) may be fifteen or sixteen pounds a quarter at a year old; at the same age, a young ox may be from five to six score a quarter. This produce, from the smaller quantity of food which animals consume while young, is equal to what they will yield in any subsequent year, from a larger quantity.

If young animals be reared well, or kept fat from the beginning, they acquire a constitution which ensures their growing more in subsequent years from a less proportion of food. The progeny of well-reared stock improves from generation to generation.

When an animal is in good condition, it yields a greater produce for its food, than when it is poor and lean.

If, therefore, an animal be first fed on good pasture till it is fresh and fat, and then removed to poor keep, so as to lose its condition, not only is the food wholly lost on which it declined in flesh, but all the good food which it may consume for some time afterwards has very much less effect.

The feeding of animals should therefore be quite continuous, as well as liberal, in order to be fully profitable.

All animals pay best for that amount and kind of food which causes them to produce most largely. That which makes rearing stock grow and thrive fastest, that which makes feeding beast or sheep fatten most quickly, and that which makes milking beasts milk most profusely, and for the longest time, is the most profitable kind of food.

The principle of continuous feeding is especially applicable to milking cattle. For if the milk be suffered to fall off, it cannot be brought fully to return, like the fattening propensity; and if, during the interval between the cessation of the milk and calving, the state of constitution which promotes the flow of milk decline, it requires a long period to bring out the full effect of the liberal food given afterwards, and the cow never yields so largely as she otherwise would have done.

It is always profitable to grow on land a succession of nutritious food for all stock kept on it. But in those cases where the natural produce of the land is deficient in richness, or where much straw, in proportion to other forage is grown, or where the casualties of season cause crops of cattle-food to be deficient, it is always advantageous to add a portion of artificial strong food, such as cake, or corn, or linseed, to the food of animals, whether rearing, feeding, or milking stock.

A MAMMOTH CHEESE.—Mr. Jas. Elgar, cheesemonger, Peterborough, England, has exhibited an immense cheese, weighing 1474 lbs., its circumference 13 feet, and thickness 18 inches. This exceeds in size and weight the one sent as a present to the Queen, from Somersetshire, in 1841, which measured nine feet round, and was 22 inches deep. Mr. Elgar's cheese was made from upwards of 20 hogsheds of milk, of one meal from 737 cows.

Horticulture.

HORTICULTURAL SOCIETY.

The Midsummer Exhibition of this society was held in the Normal School Grounds, on Wednesday, the 18th of July. The day was warm and fine; the inspiring band of the Rifle Brigade was present; a very considerable quantity of fruits, flowers and vegetables, were tastefully arranged in the two tents erected for the purpose; and yet, strange to say, the attendance was most meagre. We can scarcely account for this paucity of visitors, except by supposing that the inhabitants of Toronto are so afraid of the much dreaded cholera, that they think twice about *looking* at vegetables, having been so fully warned not to *eat* them. We cannot imagine that it was owing to a want of taste for horticultural pursuits, for the attendance on the first exhibition was very considerable, although the weather was far from favorable. Whatever may have been the cause which kept visitors away, it is much to be regretted, as the fees for admission must always form a large proportion of the income of the society, which has to be applied to the payment of the various prizes. We know that on the present occasion prizes were not allotted to several articles which in reality deserved them, owing to the absolute necessity existing for the Judges keeping within bounds; and the society can only hope to succeed and to become useful in promoting emulation among all connected with gardening, by offering a large number of prizes for competition. We hope that our fellow citizens will assist in so laudable an undertaking, either by becoming members or by not failing to visit the ensuing exhibition.

The number of articles exhibited was not altogether so great as might have been expected, several of our most successful gardeners having (we know not from what causes) neglected to send any specimens. We did not observe any thing from Messrs. Turner, Gordon, or Mansfield, whose names we have heretofore generally found on the prize list. The peculiar nature of the season may perhaps also account for some articles not being sent in as great perfection as could be wished, such for instance as cauliflower and brocoli, although a very respectable specimen of the latter was exhibited by Mr. Cull.

Among the flowers, we noticed a very fine grown specimen of the splendid cactus *speciosissimus*, from Mr. Justice Draper's conservatory, and a well grown *stoa carnosa* from Mr. Hancock's.

A fine specimen of *crassula coccima* was exhibited by Mr. Fleming, among his twelve greenhouse plants; while his collection of fuchsias was exceedingly fine, both on account of the size of the blossom and the growth of the plants; although it only received a second prize, on account (we believe) of Mr. Hancock's collection containing a greater variety of kinds.

A fine collection of hardy roses was shown by Mr. Leslie, although the season was too advanced to have these flowers in perfection; while the cockscombs were not arrived at their full growth, and were consequently not good.

Three floral ornaments were exhibited by Mr. Hancock, Mr. Fleming, and Mr. Leslie, the first distinguished by the beauty and variety of the flowers, the second by the elegance of the design, and the third by the richness in garden flowers. The judges very properly, we think, did not classify them, but allotted a prize to each, being all excellent.

The display of fruits was very good; the gooseberries, from Mr. E. Turner, were magnificent; the grapes, from Mrs. Bull, very early and well ripened; red raspberries, from Mr. Humphreys and Mr. Fleming, sufficiently luscious to make one's mouth water; while the display of white, black and red currants, was so great that the judges must have had very considerable difficulty in determining which was the best. Well ripened melons were exhibited by Mr. Margetson.

Among the vegetables, we may especially allude to Mr. Lewis' potatoes, Mr. Sherwood's and Mr. Collier's cabbages, Mr. Margetson's rhubarb, as well as the seedlings from Mr. Leslie, and carrots, parsnips, beets, onions, &c., &c., from a number of gardeners.

The vegetable department was on the whole the most creditable; so many excellent specimens were exhibited that our space will not allow us to particularize them all, and we refer our readers to the accompanying list of the successful competitors.

It is to be hoped that the next exhibition will surpass the two former, and that every gardener or amateur who has any thing that he thinks worthy of exhibition will not be backward in sending it to the autumn show. We understand that the next meeting will be held shortly after the Provincial Show, and consequently very early in October or late in September.

The following is the list of prizes :

Exotic in flower, 1st prize, Mr. Hennah for	
Mr. Hancock	£0 7 6
Do. 2nd prize, Mr. Sherwood	0 5 0

12 Greenhouse plants, prize, Mr. Fleming	0 7 6
Balsams, prize, Mr. Fleming	0 5 0
Do. second best, Mr. Burns
Fuchsias, 1st prize, Mr. Hennah	0 5 0
Do. 2nd prize, Mr. Fleming	0 5 0
Hardy Roses, prize, Mr. Leslie	0 5 0
Cut Flowers, prize, Mr. Leslie	0 5 0
Do. second best, Mr. Hennah
Bouquet, prize, Mr. Fleming	0 5 0
Floral Ornaments, prizes, Mr. Fleming, Mr. Hennah, Mr. Leslie, each	0 7 6
Potatoes, kidneys, 1st prize, Mr. Lewis	0 5 0
Do. Early Junes, 2nd do. Mr. Paling	0 5 0
Kidney Beans, prize, Mr. Hayden	0 5 0
Do. second best, Mr. Tattle
Peas, prize, Mr. Tattle	0 5 0
Do. second best, Mr. Paling
Red Raspberries, 1st prize, Mr. Humphreys	0 5 0
Do. 2nd prize, Mr. Fleming	0 5 0
White Raspberries, best exhibited, Mr. Tattle	0 5 0
White Currants, prize, Mr. Lewis	0 5 0
Do. second best, Mr. Paling
Black Currants, prize, Mr. Tattle	0 5 0
Gooseberries, prize, Mr. E. Turner	0 5 0
Do. second best, Mr. E. Baldwin
Cherries, prizes, Mr. Tattle, Mr. Leslie, each	0 5 0
Cabbage, prize, Mr. Sherwood
Do. second best, Mr. Collier
Brocoli, best exhibited, Mr. Cull
Cucumbers, prize, Mr. Lewis	0 5 0
Melons, prize, Mr. Margetson	0 5 0
Rhubarb, prize, Mr. Margetson	0 5 0
Do. second best, Mr. Burns	0 5 0
Celery, prize, Mr. Lewis	0 5 0
Cauliflower, prize, Mr. Daniells	0 5 0
Carrots, prize, Mr. Margetson	0 5 0

Extra Prizes of 5s.

Snap Dragons	Mr. Fleming.
Hollyhocks	Mr. E. Turner.
Dahlia	Mr. Fleming.
Box of Vegetables	{ Mr. Hayden and Mr. Margetson.
Beets	Mr. Daniell.
Radishes	Mr. Grainger.
Seed Onions	Mr. Hayden.
Potato Onions	Mr. Hayden.
Grapes	Mrs. Bull.
Parsnips	Mr. Margetson.

Recommended by Judges.

Picotees and seedling Picotees	Mr. Fleming.
Double Pinks	Mr. Leslie.
Seedling Rhubarb	Mr. Leslie.
Exotic—Cactus Speciosissimus	Mr. Draper.
Well kept Apples	Mr. Tattle.

PRACTICAL HINTS FOR AMATEURS AND SMALL GARDENS.

TREATMENT OF CACTUSES IN WINDOWS, AND IN THE OPEN AIR.—The plants commonly called by the name of Cactus belong to the natural order Cactaceæ, but are known among botanists and scientific gardeners by various appellations more or less distinctive of their generic peculiarities; as, for instance, the Epiphyllum, from a Greek word signifying upon a leaf, in allusion to the flowers growing upon the flat stems, commonly called leaves; and the Cereus, so called from the waxy and pliant nature of the shoots of some of the species; the Latin word cereus meaning waxy. Cactuses are very common in this country, on account of the rough treatment they will bear; for although they are natives of hot climates, as Brazil, Mexico, and Peru, and consequently are soon killed by frosts, yet in other respects

they are sufficiently hardy to allow of their general cultivation. They are magnificent objects at the stoves and conservatories of the wealthy, where they startle by the contrast between their gorgeous flowers and wrinkled unsightly stems; they also help to set out many a cottage window, and they are usually found to some extent among the floral collections of the middle classes. Yet with this general disposition to cultivate them few plants are less understood in those habits on which their successful flowering depends.

"I wish you would look at my cactus," said a lady to the writer the other day; "it is a very fine plant, but it never flowers." On being introduced to this unproductive occupier of a pot and window room, a fine piece of vegetation indeed presented itself; above a yard high, as green as grass, and every flat stem as plump as a traditional alderman. "Madam," said the writer, "you feed your plant too much, and in order to make it flower, you must at certain times adopt the starving system." He informed her that he had one of the same kind, and commonly called Cactus Jenkinsonii, not near so tall, and very inferior in *embonpoint* and general handsomeness, which yet bore above 100 flowers last season. The inquirer expressed her wonder at this, and received the following account of the method adapted to produce such a result; it is now submitted to those readers of the *Chronicle* who may wish to make fat and green Cactuses bring some tribute to their floral temple.

In the natural home of the Cactus, there is a moist and a dry season; during the former, vegetation receives a surprising impetus; during the latter it flags, and appears almost burnt up and destroyed. Cactuses may be seen shrivelled up through the heat of the sun and the dryness of the soil, but it is to this circumstance they owe their abundance of flower buds. The wet or moist season returns, and pushes those buds into a glorious life. How different is this natural treatment from that adopted in windows and often in greenhouses! The plants are kept wet all the year round; they have no cessation in their growth, but they form no flowers. Let Nature be followed, and the desired result is sure. My Cactuses were put away in the autumn into a lumber room, and have had no water since until the middle of last March. They were then brought out covered with dust, cleaned, and gradually supplied with water. They are now as plump as can be wished, and are covered with flower-buds. They will be kept supplied with moisture until the flowering is over; then they will take their chance in a sunny part of the garden, against a south wall, until cold weather comes and consigns them again to the lumber room.

A light soil, composed of brick rubbish mixed with loam and leaf-mould is best for them, and need not be changed every year, if the top is removed and a fresh layer put on every spring. Large Cactuses cannot be grown well in windows, and my plan with them is to put them out of doors every day, where they will have all the sun, and to bring them into the sitting-room just as they are about to flower. The whole tribe is easily propagated. The cuttings should have the wound healed before being potted, and no water should be given for a month or six weeks afterwards. Such is my simple plan.—*Gardeners' Chronicle*.

ORIGIN OF VARIOUS PLANTS.—Every farmer ought to be so far acquainted with the history of ordinary plants and trees as to know their nature, country and condition. Such knowledge, besides being on every account proper and desirable, will sometimes explain phenomena in their habits that would otherwise appear anomalous and inexplicable.

Wheat was brought from the central table land of Thibet, where it is original, and yet exists as a grass, with small mealy seeds.

Rye exists wild in Siberia.
 Barley exists wild in the mountains of Himalaya.
 Oats wild in Northern Africa.
 Maize (Indian Corn) found in America.
 Rice from South Africa, whence it was taken to India, and thence to Europe and America.
 The garden bean from the East Indies.
 The horse bean from the Caspian Sea.
 Buckwheat originally came from Siberia and Tartary.
 Rape seed and cabbage grow wild in Sicily and Naples.
 The poppy from the East.
 The sun-flower from Peru.
 Flax, or linseed, is in Southern Europe a weed in the ordinary grain crops.
 The radish from China.
 Garden cress out of Egypt and the East.
 Hemp is a native of Persia and the East Indies.
 The nettle, which sometimes furnishes fibres for spinning, is a native of Europe.
 Of dye plants, madder comes from the East; dyer's weed grows in Southern Germany; safflower comes from Egypt; dyers' knot-grass from China.
 Hops come to perfection as a wild plant in Germany.
 Mustard and caraway seed the same.
 Anise from Egypt, and the Grecian Archipelago.
 Koriander grows wild near the Mediterranean.
 Saffron from the Levant.
 The onion out of Egypt.
 Horseradish from South Europe.
 Tobacco is a native of Virginia, Tobago, and California. Another species has also been found wild in Asia.
 Fullers' teazle grows wild in Southern Europe.
 The grasses are mostly native plants, and so are clovers, except lucerne, which is a native of Sicily.
 The gourd is probably an Eastern plant.
 The potatoe is a well-known native of Peru and Mexico.
 Turnip and mangel-wurtzel come from the shores of the Mediterranean.
 Monalrubi and white turnips are natives of Germany.
 The carrot is supposed by some to have been brought from Asia, but others maintain it to be a native of the same place as the white turnip.
 Amongst other kitchen garden plants, the spinach is attributed to Arabia.
 The cucumber from the East Indies.
 The melon from Kalmuck.
 Parsley grows in Sardinia.
 Celery in Germany.
 Of fruit trees and shrubs, the currant and gooseberry come from Southern Europe.
 The medlar pear and apple are likewise European plants; but the sickle, the best of pears, is traced to near Philadelphia, its original locality so far as known.
 The cherry, palm and almond came from Asia Minor.
 The walnut and peach from the same country.
 The citron from Media.
 The quince from the island of Crete.
 The chestnut from Italy.
 Of forest trees, the majority are natives of England, except the pine and horse-chestnut, the former of which was brought from America, and the latter from Thibet.
 But the greatest variety of oaks, and other fine timber trees, are natives of North and South America.
 The whortleberry is a native of Asia, Europe and America.
 The cranberry, of Europe and America.

EFFECTS OF THE PAST WINTER ON TREES.—From many portions of the Western States we have information that the severity of last winter has been exceedingly destructive to trees. A friend in Illinois says:—
 "All of our orchard peaches, and most of our choice

cherries, (and we had 'a good few' of them, as our Yorkshire neighbour says,) are dead—defunct, winter-killed; not blighted a la—, but killed by cold. And many, too many, of our pears are in the same fix, and *et cetera*. Our two or three years old nursery peaches mostly dead, and one year old two-thirds dead, and last year's buds half dead. Most of the native seedlings still alive, and on the lower limbs (which were buried in snow,) there were abundance of flowers, and will be some fruit. Mr. —, of Wisconsin, writes me that nearly all of his pears and plums in the nursery are dead, and also many apples."

The nursery business here has quite enough of toil and trouble for us, but in a climate like that of portions of the west, how must it be? What a thorough cure such experience as the above would be for some persons who seem to be labouring under a delusive idea that the nursery business is one of the most lucrative and delightful in the world. Before they get into it they dream of fruits and flowers, pleasure and riches; after they get fairly embarked in the matter, they sometimes dream of *excessive cold, heat, frost, snow, hail-storms, blight, insects, rain, drought*, and a thousand other things that annoy the poor cultivator.

In Western New York we had a remarkably severe winter, but vegetation seemed to suffer very little. We have not seen a single tree, old or young, winter killed.

Pawlonias, Ailantus, Catalpas and other tender trees are quite uninjured. Young Deodar Cedars, Araucarias, and other evergreens planted out last summer, and not protected at all during the hardest part of the winter, are perfectly safe. Roses generally, had more of their tops winter killed than usual, but this has done them very little harm.

Fruit trees are very promising, as we stated in the June number. Apricots, Nectarines, Peaches, Plums, Apples, and indeed all the fruits, are bearing at this moment an abundant crop. The young trees in the nursery never looked better. The buds of peaches, pears, plums, and indeed all the fruits look unusually well. This is a great contrast with the state of things in Illinois, Wisconsin, &c., which our friends communicate.—*Genesee Farmer.*

TO DESTROY THE APHIS ON ROSE TREES OUT OF DOORS.—In the *Ladies' Companion to the Flower Garden*, under the article of Aphid, Mrs. Loudon advises to make a decoction of quassia, in the proportion of an ounce of chip to a pint of water, and dip the infected branches of roses into it. This cannot be done on a large scale, but I have found the use of the decoction so valuable that it ought to be more generally known. My mode of using it is as follows:

Having made in the outset a small quantity in the above proportions, and tested it as a guide for my future use, I now make from two to three gallons at a time in a large iron boiler. When cold, on a fine day, throw it on your rose bushes by means of a garden syringe, taking care to wet the under as well as the upper surface of the leaves. In two day's time you will see thousands of the insects adhering to the leaves, but quite dead. Then syringe the bushes with plain water, using considerable force, to wash off the dead aphides. You will no doubt observe many still living, as it is almost impossible to wet them at one operation. Repeat the syringing with the decoction, and afterwards with the water.—*The Rose Garden, by Wm. Paul.*

SPOKEN AGAINST.—What if people do speak against you? Let them feel that you are able to bear it. What is there gained by stooping to correct every word that is whispered to your discredit? Lies will die, if left alone. Slander never kills a sterling character.

Mechanics and General Science.

COLONISATION THE PIONEER OF CIVILIZATION.

The new impulse reserved for our century is colonisation. Always existing, even from the earliest ages of mankind, it had hitherto scarcely deserved the name. The French colonisation of Canada had not advanced, in a century, beyond the nook where they first nestled themselves, and where the most absurd of all policies—that of allowing them to place their language on a footing with the manlier tongue of their conquerors—has perpetuated them as a separate race, with all their absurdities, all their prejudices, and even with all their hostility to the British name. The Spanish colonisation of South America amounted to scarcely more than settling the descendants of the Spanish garrisons, of the Spanish refugees, and of the attendants on the viceroys.

The only true colonists were the English of North America; who, for a hundred years, poured a feeble stream towards the prairies of the Mississippi, recruited and stained by the vagabondage of Europe. But no great impulse of national necessity gave depth and force to the current. But within these two years a more powerful impression has been made by necessity. The Irish famine of 1846, and the following year, drove multitudes to seek for bread on the shores of America. Some hundred thousands probably have left Europe behind for ever, and are now delving and woodcutting in the forests of the western world. A German emigration, though of a more tardy order, has followed, from a pressure, if not of direct famine, yet of difficulty. And within the last year a powerful impulse has also been made in the direction of Australia, of all countries the one which offers the fairest prospect for the Englishman. The success of these emigrations will naturally tend to continue the outpourings of Europe. The emigrants, once settled and successful, will encourage the movement of those whom they have left behind, as much embarrassed as they themselves originally were; and the comforts which come into the possession of industry, in a land of cheap purchase—unburdened with taxes, and unburdened with the still heavier taxes which the vanities of old countries lay on the myriads of middle life—must form a strong temptation, or rather a rational inducement, to seek independence at the antipodes.

But the sudden discovery of the Californian gold-country has given a still more determined urgency to emigration. That a vast territory, which, if we are to rely on the reports of its labourers, is a sheet of gold, should have lain for three hundred years in the hands of the Spaniards, wholly unknown to a people always hungry for gold, is among the wonders which sometimes strike across us in the history of nations. But its immediate effect is, unquestionably, to aid the general tendency. It is already drawing thousands from every part of the world towards California. Columns of men, followed by their trains of oxen and wains of merchandise, are already pouring over every track of the West. In a few years, the desert will probably be filled with population; and when the mines are exhausted, or taken into the possession of the government, the more valuable mine will remain, in the existence of a new nation, in the commerce of the Pacific, and in the richness of a soil unploughed since the Deluge.

The effect of this emigration, for the moment, is obviously to assist the reception of the multitudes from Europe. It is thinning the population of the United States, carrying off the labourers, and turning every unoccupied eye in the direction of the west. The drudgery of Ireland, the skilled labour of England, and the patient and not unintelligent toil of Germany, will daily find the mart more open; and thus even the mania of gold-digging will have its effect on the sober welfare of mankind.

But a still more important effect, though more remote, may follow from the Californian mines. The celebrated Burke, sixty years ago, predicted that the new population on the plains of the Mississippi would extinguish the power, if not the existence, of the cities on the coast, and that when those "English Tartars," as he imaginatively described them, once poured down on the New Yorks, Bostons, and Philadelphias, they would turn them into warehouses, and their sites into watering-places. They would have fulfilled his prophecy long since, but for the boundless expanse of territory which lay behind this "Tartar" region. Their discontents evaporated into the wilderness; the provincial who looked with a jealous eye on the man of cities, found it easier to travel than to make war; and he forthwith set up a state for himself in the boundless prairie. A Californian republic may erect a formidable balance to the domination of the old States. Washington will no longer be the capital of America, and the north of the New World may yet have a stronger resemblance to Europe—with its great kingdoms, its little princes, and its commercial cities—than the anomalous government of the Stripes and Stars.

But the noblest of all the projects which have ever excited the curiosity of the world is still to be consummated—the communication between the Atlantic and the Pacific—a canal across the Isthmus of Darien. That Isthmus is but twenty miles broad, but a passage across it would shorten the voyage to China, perhaps to six weeks, instead of four months; annihilate the perils of the navigation round South America, and bring Europe into rapid contact with Australia, India, and the unexplored glories and exhaustless opulence of the finest archipelago in the ocean.

The project is so natural that it had been a hundred times conceived; but the perpetual wars of Europe, the angry jealousy of Spain, and, in later years, the disturbances of the native governments, have wholly obstructed the mightiest benefit ever offered to the progress of civilisation. The enterprise of the Americans had not overlooked this key to both hemispheres, and, some years since, a compact was entered into with a company headed by the American Biddle. But it was suffered to die away; other contracts succeeded, equally abortive, the government on the spot demanding terms of such exorbitance that it was impossible to carry the work into execution. With the usual short-sightedness of the foreigner, they had placed all their profit on the rent and tolls of the canal, foolishly forgetting that their *real* profit was to be found in the wealth which the intercourse of all nations must bring into their country.

Two projects are now said to be under consideration—a railroad, which would be exclusively for the benefit of the Americans; and a canal capable of carrying large vessels across the Isthmus, and which would be open to all nations. There can be no question as to the superior benefits of the latter to mankind.

Of the five routes, four are exposed to obstacles arising from elevation of ground, (the track to Panama rises a thousand feet), from insalubrity, and from other circumstances of the soil and the locality. The fifth, by the river of Nicaragua, evidently deserves the preference. It lies through a fine river, reaching from the Atlantic to a central lake, and thence descends through a second river to the Pacific. The whole distance would be but two hundred and seventy-eight miles, which would require locks and other works (the rivers being at intervals interrupted by rapids) but this portion would amount to but eighty-two miles. The lake-sailing would be a hundred and twenty-five miles. The whole expense, estimating it at the prices of Europe, would be less than four millions sterling. Sanguine calculators value the profits at twelve per cent. But whatever might be the smallness of the dividends in the first instance, there can be no imaginable doubt that, with fair

dealing on the part of the local government, the Isthmus would soon be worth all the mines of Peru, with all the gold-washings of California besides.

The next great enterprise would be the junction of the Mediterranean and the Red Sea, by a passage across the Isthmus of Suez. There is already a road, but the passage is slow and difficult, from the heat, the soil, and the imperfect conveyance. Two proposals have been long since made, the one for a canal and the other for a railroad. To the canal there seems to be insuperable objections, the shallowness of the sea at Suez, the shifting nature of the sands on the way, which would soon fill up the canal, and the difficulty of water for its supply. It has been also ascertained by the survey of the French engineers that the Red Sea is about thirty feet higher than the Mediterranean.

The railroad is obviously not merely the true expedient, but the only one. But it is almost impossible to deal with the foreigner on any subject of prospective profit. The habit of living but for the day deteriorates all the movements of national progress. Unless he can grasp his profit at once, it exists no longer to his eye. With the man of the East the grasp is eager and avaricious. Mehemet Ali might have brought millions of wealth into Egypt by a railroad, while he was wasting thousands in paltry contrivances to make a royal revenue for himself, out of the contending bargains of English and French engineers. The result is, that except a miserable canal between Alexandria and the Nile, dry half the year, and scarcely navigable during the other half, nothing has been done; and the journey across the isthmus occupies nearly two days, gives infinite trouble, and makes money only for donkey-boys and tavern-keepers, which, by a railroad, might be effected luxuriously in three hours.—*Johnston's Physical Geography.*

[Some opinions are expressed by Mr. Johnston in the foregoing article, political in their aspect, with which we must not be identified.—*Ed. Ag.*]

LECTURE ON THE STRUCTURE, FUNCTIONS AND CHEMISTRY OF PLANTS, DELIVERED BEFORE THE WEALD OF KENT FARMERS' CLUB, BY DR. FLOMLEY.

In undertaking to introduce to your consideration the connection between agriculture and vegetable physiology, a few preliminary explanations and apologies may be naturally expected. Viewing agriculture as the most interesting science, and the most useful art, it occurred to me that it was entitled to the services of every one, to the best of his ability and acquirements, however limited the one may be, and however few the other. Agriculture has derived valuable assistance from the natural sciences, but, up to the present time, very little attention has been paid to the application of the doctrines of the physiologist to its illustrations; and this is the more to be regretted, as almost every operation performed on the farm is more intimately, or more remotely connected with this subject of inquiry.

I may further mention that my object in this lecture is not the advancement of views that are new to science, but rather to bring before you in as ample and intelligible language as I can, all that is known on the subject, and point out the connection between these facts and observations, and every day field operations; and I submit all with the greatest deference to your practical experience.

A lecturer in chemistry has many circumstances in his favour in addressing an audience; he receives attention and illustrates his remarks by the exhibition of interesting and brilliant experiments, and any one calling your attention to agricultural mechanics might exhibit models of machines and implements, and interest you with certified accounts of their extraordinary capabili-

ties in performing work at a small expenditure of labour and time. On the present occasion I can avail myself of none of these accessories, but merely lay claim to instruct, rather than amuse; and, I solicit your attention whilst I make a feeble attempt to explain to you some few of the most prominent principles of vegetable growth, a knowledge of which will enable you to understand the wonderful machinery of plants, through the agency of which the air and the earth are converted, under your guidance and assistance, into the food of man and animals. Plants and animals, and, indeed, all organized beings, however complex their structure and valuable their properties, are composed of very few elementary substances, when they are considered chemically, and many that are most opposite in appearance and properties, are nearly identical in chemical constitution.

All vegetables, from the mushroom to the oak, are composed of merely four elementary substances. They are carbon, hydrogen, oxygen, and nitrogen. Hydrogen, oxygen, and nitrogen are airs or gases. Carbon is a solid substance which, in the rough state, is charcoal, in the pure and crystalized, diamond.

The hydrogen is obtained from water, the carbon or charcoal from carbonic acid gas, the oxygen from the air, and nitrogen from ammonia.

These four elements, carbon, hydrogen, nitrogen, and oxygen, form in living plants a variety of compounds, but there are only two classes of these compounds that have a deep importance to man and animals, and they are indeed most important to the grower of plants, and the feeder of animals. These two classes of compounds are called nitrogenous, or flesh producing, and carbonaceous, or heat producing, both essential to animal existence.

The first, the nitrogenous, or flesh producing compounds, are composed of all four of these elements, carbon, hydrogen, nitrogen, and oxygen, in the shape of gluten and albumen, which in animals form flesh, and without which no part of an animal body can be formed; and when life becomes extinct this flesh becomes resolved again into water, carbonic acid and ammonia fit again for the food of plants. The second class of compounds called the carbonaceous, or heat producing, are formed of three only of these elements, carbon, hydrogen, and oxygen, without the nitrogen; these are starch, gum, sugar, and the liquors prepared from them, as beer, spirits, and wine, &c., and also all kind of oil and fats; these pass through the body, and are burnt off in the lungs, producing heat only, and in so doing are again converted into carbonic acid and water, fit for the food of plants.

We are made aware by the discoveries in chemistry and physiology, that the animal body is incapable of forming any of these substances which are absolutely necessary to its development and support; that every animal must receive substances ready prepared, in order to supply them to its nutrition, its growth, and to the formation of its bones, its muscles, its nerves, &c., and therefore the flesh producing compounds are the exclusive materials for nutrition. Every man requires five ounces daily, merely to supply the usual waste of the body. These cannot be replaced by any other substance, and when withheld, the body must die of starvation. The carbonaceous, or heat producing compounds, must be present also in the body for fuel. Every man consumes, when at rest, eight ounces of carbon daily, and when in exercise, fourteen ounces; a horse consumes seventy-nine ounces in a day. These substances, usually called food, are materials for respiration only. They are consumed in producing the warmth of the body. When we compare these substances necessary for the maintenance of the animal body, with the contents of plants, which serve for the food of man and animals,

we find that in all plants, in all their organs, a certain quantity more or less of both of these classes of compounds dissolved in the sap, or deposited in the seeds and bulbs.

Now this leads to the important fact, as before stated, that animals have not the power of creating any of these organic substances, and that the whole animal world lives upon the vegetable kingdom exclusively; it is in the vegetable kingdom, therefore, that the great laboratory of organic life is found; it is there that both vegetable and animal substances are compounded.

Now comes the question, what do plants live upon? The reply to this and its correct solution is the most important that can engage the agricultural chemist, and, indeed, of every human being; and, in order to understand the changes which inorganic matter undergoes in its conversion into the materials fit for the food of man and animals, it will be necessary to know something of the structure and functions of plants, which are the only machines by which these wonderful results are produced.

A perfect plant is made up of a number of different parts or organs. The root, the stem, and leaves, which form the organs of nutrition and growth.

The flowers and seeds which form the organs of reproduction. The roots are for fixing the plant in the soil, and also for absorbing fluids containing various soluble substances.

The stems are for conveying liquids to the leaves, for giving stability and firmness, so as to elevate the leaves to the air, and expose them to light.

The leaves are the organs by which the crude sap, absorbed by the roots, and transmitted by the stem, is converted by the air and light into nutritious sap, from which all vegetable substances are formed.

The flowers, the fruit, and the seed, are the organs of reproduction, and contain the germs of future plants.

All these parts constitute what we call an entire plant, and all formed or made up of a mass of cells, or little closed sacks joined together in all directions, putting on various shapes and forms, which variation of shape depends, frequently, but not altogether, upon the pressure they may be subject to, and also the direction and force of the circulating juices. Before we proceed further, it will be necessary to understand the structure and functions of these cells, especially when we consider that all plants as well animals, formed on the earth's surface, are not only made up of a mass of them, but that they make their first appearance under the form of a cell, and that in the lowest forms of vegetables and animals, this cell forms the whole plant or animal. A review of the life of the cell then must necessarily precede the endeavour to comprehend the whole plant. When the cell forms the whole plant, as it does in moulds, mildews, and blights of corn, as red rust, smut, and bunt, or when the cell forms the whole animal, as it does in some infusoria, it is an independent being, it lives for itself alone, it imbibes fluid nourishment from without, out of which it forms new substances, part of which goes to its growth, another part is laid up in store for future requirements, and another portion is expelled as useless, to make room for the entrance of new matter; in a short time the cell comes to maturity; it then divides, or a number of small grains are formed in the inside of the cell. These are the germs of new plants, and when liberated by the rupture of the parent cell, go through precisely the same series of changes.

But it will naturally be asked how the cell, which is a closed sack, obtains fluid from without; this is effected by a physical law, called endosmosis. If two fluids of different densities, as water and brine, be separated only by animal or vegetable membranes, the light fluid, the water, will pass through into the brine, or denser fluid, and in a small degree also the denser fluid will pass into

the thinner, in this case it is called exosmosis, so that in whatever part of a plant the fluids are the most dense, there will be the greatest circulation and the greatest activity.

This is the only cause of circulation in all parts of plants consisting of cells, but in those plants possessing ducts or tubes, which, as we shall presently see, are only cells elongated; another physical agency comes into play, which is the force of capillary attraction; it is known that in delicate tubes which have their extremities, immersed in a fluid; the level of the fluid within the tubes becomes raised above that of the fluid without, and this, in proportion to the smallness of the tubes; so that, in this capillary attraction of the tubes of plants, and the absorption by the cells called endosmosis, we have sufficient cause to produce the rise of the sap, and the existence of these two causes is capable of direct experimental proof.

The effect of this law of endosmosis possessed by membranes is beautifully seen in our own bodies. Spring water, containing no salts, and therefore of much less density than the blood, if swallowed into the stomach is taken up into the blood vessels with great rapidity. Now if this water should contain the same quantity of salts as the blood, it would remain untouched by the blood vessels and produce a feeling of weight. But if we drink a solution containing more salt than the blood, and therefore of greater density, the fluids of the blood will pass through into the solution, and purgation will be the consequence, as in the case of taking Epsom salts, or common salt.

This power of absorption by endosmosis is destroyed by certain substances as opium and tannin.

PHYSICAL GEOGRAPHY.

Of all modern sciences, the science of the globe has made the most rapid, the most remarkable, and the most important progress. Bacon makes the fine remark, that while the works of man advance by successive additions, the works of Nature all go on at once; thus the machinist adds wheel to wheel, and spring to spring, but the earth produces the tree, branch and bark, trunk and leaf, together. There is something analogous to this combined operation in physical geography: a whole crowd of remarkable discoveries seem to have burst on us at once, expressly designed to invigorate and impel our progress in geographical science. Thus, our century has witnessed new phenomena of magnetism, new laws of heat and refrigeration, new laws even of the tempest, new rules of the tides, new expedients for the preservation of health at sea, new arrangements for the supply of fresh food, and even for the supply of fresh water by distillation, and all tending to the same object—the knowledge of the globe.

The use of steam, to which modern mechanism has given almost a new existence, and certainly a new power—the conquest of wind and wave by the steam-ship, and the almost miraculous saving of time and space by the steam-carriage; the new necessity of remote enterprise, originating in the urgency of commercial and manufacturing difficulties; the opening of the thousand islands of the Indian Archipelago, till now known to us as scarcely more than the seat of savage life, or the scene of Oriental fable; the breaking down of that old and colossal barrier of restrictions and prejudices, which, more than the wall of China, excluded England from intercourse with a population amounting to a third of mankind; and most of all, those vast visitations of apparent evil, which the great Disposer of things is evidently transmuting, year by year, into real good, by propelling the impoverished multitudes of Europe into the wildernesses of the world—all exhibiting a stupendous combination of simple means, and a not less astonishing convergency to the one high purpose, the mastery of the globe—place Physical

Geography at the head of the sciences essential to the happiness and power of human-kind.

PECULIARITIES IN THE VEGETABLE KINGDOM.—

The difference between animals and vegetables is so great, that, on a superficial view, we do not perceive any resemblance between them. Some animals only live in water; others on the earth or in the air; and some are amphibious, or capable of living either on land or in water. And this is literally the case with vegetables; some of them only grow upon land, others in the water; some can scarce bear any moisture; others either live in earth or water; and some even are found that exist in the air. There is a tree in the island of Japan, which, contrary to the nature of all other trees, to which moisture is necessary, cannot bear wet. As soon as it is watered it perishes; the only way to preserve it in such a case, is to cut it off by the root, which is to be dried in the sun, and afterwards planted in a dry and sandy soil. A peculiar species of mushroom, some mosses, and other small plants, float in the air; but what is still more extraordinary, a bunch of rosemary, which, as is the custom of some countries, was put in the hand of a corpse, sprouted out to the right and left so vigorously, that after a lapse of some years, the grave being opened, the face of the defunct was overshadowed with rosemary leaves.

The vegetation of the truffile is still more singular; this extraordinary tubercle has neither roots, stem, leaves, flowers, nor seeds; it derives its nourishment through the pores of its bark. But it may be asked how is it produced? Why is there commonly no kind of herb in the places where this species of mushroom grows? and why is the land there dry and full of crevices? These things have never been explained.

It exists in all seasons, even in winter; but is never so abundant as after rain in summer. The most remarkable circumstance about it is its speedy growth, being formed almost instantaneously: for sometimes, if we walk in the garden in summer, not a trace of it is seen; when a sudden shower of rain falling, if the same place is visited in an hour, the walks are entirely covered with it. The nostoch was long supposed to have descended from the sky; but it is now known to be a leaf, which attracts and imbibes water with great avidity. This leaf, to which no root appears to belong, is in its natural state when impregnated with water; but a strong wind or great heat soon dissipating the water, the leaf contracts, and loses its colour and transparency; hence it appears to grow so suddenly, and to be so miraculously produced by a shower of rain; for when the rain falls upon it in its dried and imperceptible state, it becomes reanimated, and appears a fresh production.

We might readily enlarge the list of plants which bear a resemblance to animals; but there are other peculiarities in vegetables which solicit our attention. The whole atmosphere is predated with plants and invisible seeds, and even the largest grains are dispersed by the wind over the earth; and as soon as they are transported to the places proper for them to germinate in, they become plants, and often so little soil is necessary for this purpose, that we can scarcely conceive whence they derive the necessary degree of nourishment. There are plants, and often trees, which take root and grow in the clefts of rocks without any soil whatever.

Vegetation is sometimes very rapid; of which we have instances in mushrooms, and the common cresses, the seed of which, if put into a wet cloth, will be fit for a salad in 24 hours. There are plants that exist with scarcely any perceptible vitality. We often see willows, which are not only hollow and decayed within, but their external bark is so much injured that very little of it remains; yet from these seemingly sapless

trunks buds sprout in the spring, and they are crowned with leaves and branches. It is truly wonderful that plants should not only imbibe nutriment by their roots, but that their leaves also should assist in this important function, by inspiring air; and an inverted tree will flourish, as well as when in its proper situation, for the branches will grow in the earth and become roots.

The advanced age that some trees attain to, is also very remarkable. Some apple trees are above a thousand years old; and if we calculate the amount of the annual produce of such a tree for the above space of time, we shall find that a single pippin might supply the whole world with trees and fruit. So extensive is this subject, that to follow it through all its ramifications would lead us on much too far for our present limits. All nature teems with wonders, every thing leads us on to an infinitely perfect Being, whose power, united to boundless wisdom and goodness, is continually acting for our benefit, and daily giving us fresh cause for gratitude and admiration.

How great and magnificent are Thy works. O Lord! What wonders crowd upon my mind! I view them with rapture, and am lost in the contemplation; they surpass my comprehension; I cannot fathom them. At Thy command the grass shoots forth its green blade, and the woods are clothed with verdure; the flowers adorn the fields and beautify the gardens with their glowing colours; the tree lifts up its tall head to the clouds, and the mountain cedar declares Thy glory! Wherever I turn my view, new wonders delight me: the meadows, the mountains, and the valleys, the rivers, the seas, and all, from the least atom to the distant spheres in the heavens, declare Thy goodness and display Thy glory!

INSTANTANEOUS ICE.—In addition to the extraordinary display of the American plants in full bloom at the gardens of the Royal Botanic Society on Saturday last, another very curious exhibition was presented; ice-making, under the direction of Mr. Masters, the well known confectioner in Regent-street. A large assemblage of the fashionable visitors manifested great curiosity as to the means by which Mr. Masters kept continually producing ice creams, and even solid blocks of ice, as instantaneously as a cook will produce egg-flip. We heard many exclaim that it was incredible that the delicious ices, with which they were refreshing themselves, could have been produced by machinery without the aid of natural ice. Ocular demonstration of the fact, however, was given to all who could get within the magic ring of Mr. Masters's refrigerators, or freezing apparatus. The invention is constructed in a great variety of forms, some of which show remarkable mechanical ingenuity, and are, at the same time, highly ornamental. They vary in size. With one of the larger apparatus a quantity of ice may be produced in about twenty minutes sufficient to supply a party of 300, by simply causing a chemical mixture to be dissolved in water, and mechanically agitated in the apparatus till ice is produced in a chamber containing the fluid to be frozen. The chemical mixture it also the invention of Mr. Masters, and, as an article of commerce, is not more expensive than rough ice. Rough ice, however, can be used in this apparatus, whenever it can be obtained at less expense, as a substitute for the mixture. The portability of the mixture gives it a decided advantage over natural ice, where an ice-well is not at hand, as in tropical climates, for the mixture is not affected by heat, or atmospheric changes. One form of the invention seems well calculated for family use. In shape it resembles an elegant flower vase, and is in size about twice the dimensions of the ordinary wine bottle, while its cost is remarkably moderate. With this small apparatus, which a child can manage, we saw

repeatedly produced, in five minutes, solid ice weighing about a pound, and ice as pure as that from spring water in the frostiest winter; indeed, pure spring water is used, and Mr. Masters' ice thus produced is quite equal in flavour to that of the Wenham Lake ice. In fine, the lover of frigid luxuries may, by the aid of the ice apparatus, command, at any time and in any climate, at a few minutes' notice, a supply of any cooling dainty, from a sherry cobbler to a castellated tower of ice sufficiently capacious to stow away a week's provisions, of varied kind. Mr. Masters announced that he had arranged to exhibit these curious processes daily at his city depot in Mansion House Street. He is known also for other ingenious inventions.

SWEET OIL OF TURPENTINE.—There are many useful things, which, like many highly respectable individuals, have their full portion of the disagreeable. Among such things is turpentine, exceedingly useful and thoroughly disliked for its peculiar fulness of odour, by ladies and amateurs especially. The "Sweet Oil of Turpentin Co.," in Pream's-buildings, Chancery-lane, have obviated this objection to using turpentine in painting, in cleaning pictures, apparel, or indeed any of many applications of the liquid. The excellence of the discovery is certified by Dr. Serny, and it goes rather "beyond what we have specified—the disagreeable odour is expelled and a perfume substituted. You may now "turpentine" your handkerchief!

PAPER SPLITTING.—This is a recent invention, which, although of considerable importance and extensive application, has been hitherto little known or practised—indeed, scarcely at all beyond the moderate sphere of the few discoverers themselves. It may, indeed, be perhaps asked of what use can the splitting of a sheet of paper be? Now we understand that the art can be, and has been, applied to the separation of holographs and indorsations from written documents; and from the circumstance of the directors of the Bank of England having, a few months back, attached great importance to the splitting of a bank-note, much curiosity has been excited on the subject. The means, however, by which that note was split was kept a secret by the person who performed the task, so that in so far as the public are concerned, they have remained as much as ever ignorant of the art. Since then various modes have been prepared by different individuals for effecting the same object, and there are some who are said to have more or less succeeded by a means discovered by and known only to themselves, but up till the present time, if such discoveries have been made, they have been uniformly kept secret by the discoverers for their own special use and benefit. Now, however, a discoverer offers to teach this very ingenious art.

INSECT SLAVERY.—The most remarkable fact connected with the history of ants is the propensity possessed by certain species to kidnap the workers of other species and compel them to labour for the benefit of the community, thus using them completely as slaves; and as far as we yet know, the kidnapers are red or pale-colored ants, and the slaves, like the captured natives of Africa, of a jet black. The time for taking slaves extends over a period of about ten weeks, and never commences until the male or female are about emerging from the pupa state; and thus the ruthless marauders never interfere with the continuation of the species. This instinct seems especially provided; for were the slave ants created for no other end than to fill the station of slavery to which they appear doomed, still even that office must fail, were the attacks to be made on their nest before the winged myriads have departed or are departing, charged with the duty of continuing their kind.

When the red ants are about to sally forth on a marauding expedition, they send scouts to ascertain the exact position in which a colony of negroes may be found. The scouts having discovered the object of their search, return to the nest and report their success. Shortly afterwards, the army of red ants marches forth, headed by a vanguard, which is perpetually changing; the individuals who constitute it, when they have advanced a little before the main body, halt, falling into the rear, and being replaced by others. This vanguard consists of eight or ten ants only.

When they have arrived near the negro colony, they disperse, wandering through the herbage and hunting about, as aware of the propinquity of the object of their search, yet ignorant of its exact position. At last they discover the settlement; and the foremost of the invaders, rushing impetuously to the attack, are met, grappled with, and frequently killed by the negroes on guard. The alarm is quickly communicated to the interior of the nest; the negroes sally forth by thousands, and the red ants rushing to the rescue, a desperate conflict ensues, which, however, always terminates in the defeat of the negroes, who retire to the innermost recesses of their habitation. Now follows the scene of pillage. The red ants, with their powerful mandibles, tear open the sides of the negro ant-hills, and rush into the heart of the citadel. In a few minutes each invader emerges, carrying in its mouth the pupa of a worker negro, which it has obtained in spite of the vigilance and valor of its natural guardians. The red ants return in perfect order to their nest, bearing with them their living burdens. On reaching their nest, the pupa appear to be treated precisely as their own; and the workers when they emerge, perform the various duties of the community with the greatest energy and apparent good will. They repair the nest, excavate passages, collect food, feed the larvæ, take the pupa into the sunshine, and perform every office which the welfare of the colony seems to require. They conduct themselves entirely as if fulfilling their original destination.

CURIOUS PROGNOSTICATORS OF THE WEATHER.—

The following Notes were made by Mr. E. J. Lowe, and may be useful as practical prognosticators of the weather. There are one or two very curious items in this table—for instance, that in 14 cases where landralls were clamorous, 13 were followed by fine weather in 24 hours, and only one by rain; again (a reverse case) in 25 cases where cabbages and turnips were lowering, only five were followed by fine weather, and 20 by rain. The whole of the observations, indeed, are curious, and the table deserves a record among the other documents of meteorological observers:

	No. of observations.	Followed in hours.	Fine.	Main.
Solar halos.....	204	133	71	
Lunar halos.....	102	51	51	
Mock suns.....	35	19	16	
Mock moons.....	9	7	2	
White stratus in the valley.....	229	201	28	
Distance clear.....	191	61	41	
Distant sounds heard as if near at hand..	45	25	20	
Aurora borealis.....	76	49	27	
Lunar Burr.....	64	47	17	
Coloured clouds at sunset.....	35	26	9	
Black stratus.....	6	3	3	
Burr round Venus.....	6	4	2	
Whirlwind.....	4	4	0	
Dew profuse.....	241	198	43	
Dew from 1st April to 30th September....	185	161	24	
Dew from 1st October to 30th March....	56	37	19	
White frost.....	73	59	14	
Falling stars abundant.....	85	65	20	
Stars bright.....	83	61	10	
Stars dim.....	54	32	22	
Sun pale and sparkling.....	51	27	24	
Smoke rising perpendicularly.....	6	5	1	
Moon shining dimly.....	18	12	6	
Sun red and shorn of rays.....	34	31	3	

Stars scintillated	14	12	2
Moon rose of a red colour.....	8	7	1
Sun shone through thin cirrostrati.....	13	6	7
Bats flying about in the evening.....	61	45	16
Many toads in the evening.....	17	12	5
Many snails about.....	29	15	15
Fish rise much in the lake.....	15	9	6
Bees busy.....	29	19	10
Many locusts.....	8	4	4
Cattle restless.....	24	12	12
Landrails clamorous.....	14	13	1
Flies troublesome.....	22	12	10
Gnats troublesome.....	28	15	13
Many insects.....	24	13	11
Cows co-aggregate and are clamorous.....	34	18	16
Spider webs thickly woven on the grass.....	13	7	4
Spiders hanging their webs in the evening.....	8	5	3
Ducks and geese clamorous.....	10	7	3
Cabbages and turnips lowering.....	25	5	20

In the above table it will be seen that fine weather predominates even in the prognostications for rain. That there are a greater number of fine days than there would be if we were to register the day rainy if followed by a slight shower, is owing in a small degree to the day being called fine unless sufficient rain has fallen to allow of its being measured in the rain-gauge.

THE COLOUR OF HOUSES.—The interior of a house should always be painted of a warm, neutral tint. Pure white is too cold and cheerless for a dwelling-room, and is, moreover, so liable to stains, that its appearance of purity and cleanliness, which is a great recommendation with neat housekeepers, very soon wears off.

The purity of our atmosphere, and the absence of coal smoke, admit of houses being painted a pure white; and where lead and oil are alone used in the open air, the color will grow whiter from exposure; but in the interior of a house it will become a dingy yellow, from being deprived of light and air. White lead improves by age, and should not be used for wood work unless at least a year old; linseed oil also becomes purer and better from age, and should be at least two years manufactured before used. Much harm results from the employment of incompetent workmen in the painting of houses, as from their inexperience in mixing paints, and their inability to distinguish between good and bad materials, the employer often throws away his money, and defaces the appearance of his house in the attempt to beautify it by a coat of paint.

In painting a house any light color, particular care should be taken to *kill* the knots in pine wood, as it is technically termed, or the effects of the first painting will be greatly marred. The best method of destroying the turpentine contained in pine knots is by spreading upon them freshly slacked lime, which will effectually burn it out. After this has been done, the knots must be covered with a sizing, composed of red and white lead and glue.

In painting the outside of a house, there should be no turpentine mixed with the paint, excepting in the case of white paint, and then only in the last coat; not more than one part turpentine to four parts oil should be used, as oil has a tendency to discolor white.

White lead forms the basis of all pigments for house paintings except black, which is generally composed of lampblack; but a new mineral substance has recently been discovered in New Jersey, which forms a beautiful jet black, and resists the action of the atmosphere and water better than any paint yet made. It has already been extensively used on ships, and will probably entirely displace every other kind of black paint before long. Not much black paint is ever used on houses, although it is extensively employed for fences and iron work; and as it is important to use a material that will resist the action of the atmosphere in ornamental iron work, which is so soon destroyed by rust, the discovery of this new mineral pigment is a matter of importance to builders. We have seen some specimens of this new

paint, which were remarkable for brilliancy of color and hardness of surface. A steam mill has been erected for manufacturing this article, and we shall be able to give more definite information respecting it before we conclude our remarks upon this subject.

The colors and tints proper for house painting, such as browns, drabs, yellows, pea-green, grays, and imitations of stone color, are made by mixing, with white lead and linseed oil, the following colors, which should first be finely ground in oil:

Drabs—Chrome yellow, lampblack, and red; or Venetian red and burnt umber, with white.

Brown Stone color—Spanish brown, chrome yellow, and lampblack, with white.

Grey Stone—Lampblack and Venetian red, with white.
French Grey—Indian red, Chinese blue, and ivory black, with white.

Sage color—Raw umber, Prussian blue, and Venetian red, with white.

Slate color—Black and Venetian red, with white.

Dark Blue—Prussian blue, with white.

Sky Blue—Ultramarine or Prussian blue, with white.

Violet—Vermilion, blue, and black, with white.

Lilac—Drop black, ultramarine, and crimson lake, or Indian red, with white.

Peach blossom—Carmine and ultramarine, with white.

Rose color—Crimson lake and vermilion, with white.

Salmon color—Chrome yellow and Indian red or burnt sienna, with white.

Straw color—Yellow ochre and orange chrome, with white.

Buff color—Venetian red and yellow ochre, with white.

Pearl White—Ultramarine, crimson lake, and ivory black, with white.

French White—Indian red, ivory black, Chinese blue, or ultramarine, with white.

Fawn color—Yellow ochre and Spanish brown; or Venetian red, blue and umber, with white.

Pea Green—Yellow and blue; or chrome green, with white.

Green—Prussian blue and chrome yellow.

Olive Green—Chrome yellow and black; or raw umber and black.

Bronze Green—Black and green; or chrome yellow and black.

Orange—Chrome yellow and vermilion.

Chocolate—Spanish brown and black; or Venetian red and black.

There are various other modes of producing the above shades, but simplicity and economy are the objects we have in view. The gradation of shades produced by a varied portion of these colors is almost indefinite.

Small quantities of the coloring matter should first be added to the lead, and continued till the right shade is procured. Enough should be mixed at one time to cover all the woodwork required with one coat.—*Runlett's Architect.*

VINEGAR.—Many families purchase their vinegar at a very considerable expense; some "make do" with a very indifferent article; and others, for want of a little knowledge and less industry, go without. It is an easy matter, however, to be at all times supplied with good vinegar, and that without much expense. The juice of one bushel of sugar beets, worth twenty-five cents, and which any farmer can raise without cost, will make from five to six gallons of vinegar, equal to the best made of cider or wine. Grate the beets, having first washed them, and express the juice in a cheese press, or in many other ways which a little ingenuity can suggest, and put the liquor into an empty barrel; cover the bung with gauze, and set it in the sun, and in twelve or fifteen days it will be fit for use.—*Farmer's Advocate.*

Domestic and Miscellaneous.

THE FARMER'S BOY.

I should like to guide a plough;
Cut a furrow clean and straight;
Run a-field and fetch the Cow;
Eat my luncheon on a gate.

Drive the team a-down the lane,
Happy as I trudge along;
Shout the rooks from off the grain;
Whistle back the blackbird's song.

Would I mind the frost or snow?
Not a bit if warmly clad;
Would I loiter as I go,
Like an idle, louty lad?

No; I'd rise with early morn.
Busy on throughout the day;
Idle hands but pluck a thorn.—
Honest work's as good as play.

When I lay me down at night,
Oh, how soundly shall I sleep!
Whether it is dark or light,
Safely me my God will keep;—

Keep me if I seek his love.
Rest upon his promised aid:
While I trust in One above.
If I rest or if I rove,
What shall make my heart afraid!

[A correspondent requests us to publish some receipts for making domestic wine. We copy the following from Mrs. Rundell's popular treatise on *Domestic Cookery*, and have no doubt but they will be found useful to many of our fair readers.]

ELDER WINE.—To every quart of berries put two quarts of water *boil* half an hour, run the liquor and break the fruit through a hair sieve; then to every quart of juice put three-quarters of a pound of Lisbon sugar, coarse, but not the very coarsest. Boil the whole a quarter of an hour, with some Jamaica peppers, ginger, and a few cloves. Pour it into a tub, and when of a proper warmth, into the barrel, with toast and yeast to work, which there is more difficulty to make it do than most other liquors. When it ceases to hiss, put a quart of brandy to eight gallons, and stop up. Bottle in the spring or at Christmas. The liquor must be in a warm place to make it work.

BLACK CURRANT WINE.—To every three quarts of juice, put the same of water unboiled; and to every three quarts of the liquor, add three pounds of very pure moist sugar. Put it into a cask, reserving a little for filling up. Put the cask in a warm dry room, and the liquor will ferment of itself. Skim off the refuse, when the fermentation shall be over, and fill up with the reserved liquor. When it has ceased working, pour three quarts of brandy to forty quarts of wine. Bung it close for nine months, then bottle it, and drain the thick part through a jelly-bag until it be clear, and bottle that. Keep it ten or twelve months.

RASPBERRY or CURRANT WINE.—To every three pints of fruit, carefully cleared from mouldy or bad, put one quart of water; bruise the former. In twenty-four hours strain the liquor, and put to every quart a pound of sugar, of good middling quality of Lisbon. If for white currants, use lump-sugar. It is best to put the fruit &c. in a large pan; and when in three or four days

the scum rises, take that off before the liquor be put into the barrel.

Those who make from their own gardens may not have sufficiency to fill the barrel at once; the wine will not be hurt if made in the pan, in the above proportions, and added as the fruit ripens, and can be gathered in dry weather. Keep an account of what is put in each time.

THOUGHTS FOR THE YOUNG.—The Garden of Eden was undoubtedly a place of surpassing loveliness. Its beautiful groves, its fragrant flowers, the melting richness of its fruits, its cool streams and limpid rivers, the choral strains of its feathered songsters, and the soft and balmy atmosphere, must all have conspired to render it a most delightful abode. We wonder that Adam and Eve could not have been contented, and let the forbidden fruit alone, so that we their posterity could have had access to the garden also.

But instead of mourning over the loss, we may as well look around us, and see whether there is not something yet left worth possessing. There is, after all, much that is lovely and beautiful in the earth, notwithstanding the dazzling glories of Eden have departed. The glowing beauties of the maiden have faded, but traces of that beauty still beam in the face of the matron. That man must have a morbid disposition, who can look out upon the face of the earth, on a bright morning in spring, when vegetation is bursting its fetters and unfolding its beauties, when the feathered tribe is filling the air with rich melody, and when the balmy fragrance of the atmosphere is courting into life the buds and blossoms of a thousand different plants, and discover no beauty, no loveliness. The mind endued with a right spirit will perceive much to admire, and will look through all these clustering beauties of nature up to nature's God, and discover his handy-work in the development of life, and all the various arrangements for the growth and maturity of the vegetable and animal world.

It is interesting to notice the perfect system and order that nature exhibits in all her works. She seems like a chemist in a vast laboratory, nicely weighing and measuring out various simple elements, and compounding them in such exact proportions, as to produce the most beautiful experiments in countless numbers. Man can only faintly imitate her, and wholly fails in the ability to give the life-inspiring principle, which fills the earth with joy and gladness.

But nature, or more properly nature's God, folds up this principle in the seed, where it may lay for a hundred or a thousand years, and then place it in circumstances to call it forth, and it will readily answer to the summons. In the hand of an Egyptian mummy, embalmed 3000 years ago, was found a small bulb. On being placed in the earth and exposed to moisture, it germinated, sent forth its leaves and produced a beautiful flower. The seed of other plants and grains have sometimes been found preserved under somewhat similar circumstances, which would readily germinate when placed in the ground. A chemical examination of seeds will show that they are composed principally of starch, which if kept dry, will undergo no change in any length of time; but if placed in the ground under circumstances favourable for germination, the starch disappears and is replaced by sugar and gum.

As illustrating the process of germination, take a bean, remove the outer covering, and the two lobes will be perfectly insipid and amylaceous, while between them will be found a minute germ, the embryo of the future plant. Place it in the ground, and soon the moisture will penetrate the outer covering, the lobes will swell and burst their envelope, the germ will send down a little radicle, and upward the imperfect form of leaves. If tasted now the lobe is no longer insipid, but

sweet and mucilaginous, because the starch is changed into sugar and gum. At the same time, numerous vessels run through the lobes for the purpose, as is supposed, of conveying these principles, as generous nutriment to the newly-born plant, until it has acquired sufficient maturity to procure other support for its welfare from the air and the earth; and when this happens, the sugar and gum entirely disappear from the lobes; they decay, and the plant is entirely dependant on the leaves and the root for its future support.

The silent and almost miraculous process of germination will only take place under certain conditions. In the first place, darkness is essential, and plants will not sprout if exposed to constant light; and yet no sooner have the leaves appeared than light becomes absolutely essential to a healthy and vigorous growth. In the second place, a due temperature is essential, which must always exceed 32 degrees, and never exceed 100 degrees Fahrenheit. It also requires a liberal supply of moisture, and perfect access of air; and all these agents, light, heat, moisture, and air, must operate conjointly or at the same time. Bury the seed deep in the earth, and so situated it will not germinate nor decay, but remove it near the surface, so as to be subjected to the influence of air, moisture and heat, and it will quickly start into life, and its emerging plumula or leaf become verdant under the influence of the solar light. Seeds of the raspberry which have been buried 1600 years, thirty feet deep, have been known to germinate and grow.

How mysterious is the agency of light, at first serving to keep the vital principle dormant, but when it has once burst into activity, becoming so essential to the growth and beauty of the plant. The power and goodness of God are magnificently displayed in this element. As we look out on the landscape, lighted up by the glorious orb of day, and relieved by the various shades of verdure; as the eye wanders over hill and valley, mountain and plain, streamlet and lake, or as we gaze with admiration on the blue vault above—the summer clouds, or the stupendous arch of varied light which so frequently spans the heavens as the rainbow—how can we refrain from bowing down with grateful adoration before the Being, who has, by the creation of this one simple element, contributed so wonderfully to the happiness of his creatures, and saved them from the horror of groping in perpetual darkness. And how excellently does the divine goodness and wisdom shine out, in constituting this light, of seven different colours, as it is exhibited in the rainbow, or separated by a prism. Different objects absorbing different rays, and reflecting others, produce an endless diversity of shades, and we are charmed with the varied and gorgeous hues of creation.

“Look upon the rainbow and praise him that made it; very beautiful it is in the brightness thereof; it compasseth the heavens about with a glorious circle, and the hands of the Most High bended it.”—*Vermont Agriculturist*.

THE FLOWER GARDEN.—The first point to be remembered in making a garden is, that ugliness is unknown among plants. Every thing created is beautiful when in its most perfect state, but it may be rendered ugly by mismanagement or by unavoidable accidents. There is not a weed in our fields which is not at some time of its life beautiful in one way or other, if in the most perfect health. Those which have the gayest flowers may have the poorest foliage, while, on the other hand, the most exquisitely beautiful leaves may be, and generally are, associated with unattractive flowers. But a garden must be beautiful in every possible way, and the grand mistake which half the English commit consists in ransacking the world for mere gaudy flowers. How great an error is this the *Pelargoniums*

abundantly prove, for scarlets, with the worst of all foliage, are exclusively employed in flower gardens, while the charming foliage of *Radula*, *quercifolium*, *graveolens*, *balsameum*, and their allies, is entirely overlooked, except by those who stand above the crowd.

Beauty in plants is dependant upon skilful cultivation, and it is because good gardening is not thought of, that most of our old favourite and herbaceous plants have fallen into neglect. Because they would remain alive without care, therefore they received none, their owners forgetting that what a plant would live upon is not precisely what it would thrive upon. Bad gardeners drew a ring in the ground with their forefingers, poured into the ring the contents of a packet of brown paper marked *Dalphinium Ajacis*, scratched the earth into the ring by the aid of a second finger, and called it sowing seeds. The plants sprang up, crowded each other to death, and what remained, a circle of poor, famished, jaundiced wretches, represented the noble family of *Ajax*. Had the plants been permitted to breathe and feed, and spread their branches, and nourish their brilliant flowers, they would have proved themselves worthy of the mighty name they bore. This was the way with all annuals, and hence the cultivation of annuals has almost ceased in fashionable gardens. What should have been done was to treat each separate plant with the same care that would be bestowed upon a pet *Geranium*; not that it would have needed as much, but to have given it all the care it wanted; then, indeed, its beauties would have become manifest, and it would have maintained its rank securely in the history of horticulture. He who doubts this should take a plant of *Hemlock*, put it in a garden, in rich soil, shelter it from winds, and give it ample room to expand; and he will find, probably to his great surprise, that it can scarcely be matched for admirable beauty. Beauty, then, is an affair of cultivation; and depends less upon a plant than on its master.

The season is not yet advanced enough to form an old-fashioned flower-garden; which is best done in the summer, so as to be ready for filling in the autumn and succeeding spring; but this is the very time to set about determining what to put into it when ready. Instead, therefore, of crowding our columns with long and useless lists of plants to be commended—which, after all, may not suit our inquirers' pockets, means, taste, or climate—we recommend the following course to be pursued. Go to the seedsmen and buy as many of their cheap packets of annuals as you can afford; go to the nurserymen for as many of their commonest herbaceous plants as it may suit your convenience to grow. Cultivate these skilfully through the summer; note all that you want to know about them—size, colour, season, duration, &c.; and then when the season comes for stocking your garden, you will have ten times better information in your possession than all the advice in the world can supply you with. Above all things, you will have learned what best suits your means, wants, and taste.—*Gardeners' Chronicle*.

DOMESTIC EDUCATION.—The time is coming, when domestic duties are expected to be performed upon scientific principles; and we are bound to employ every means in our power to make ourselves acquainted with the sciences pertaining to our domestic affairs. A knowledge of chemistry and dietetics, in a cook, is invaluable to a family. Information regarding the laws of health, and life, and mental philosophy, is absolutely necessary to the proper rearing of children. The suffering I have seen and experienced for want of knowledge, and the almost incredible advantage gained by the application of a few practical ideas, makes me very desirous for others, as well as myself, that we should have “more light.”

I think, however, it is not proper that we should always be in performance of the sober duties of life. Nature does not bestow all her care on the sturdy oak and mountain pine, but adorns the landscape with an endless variety of fanciful colors and forms, enlivens the whole music, and the frolicsome play of animated beings. Nor did she fail to implant in the human mind faculties harmonizing with the beauty, melody, and gaiety of external nature, which find a legitimate sphere of action in ornamental horticulture, vocal and instrumental music, &c.

AMANDA.

FEMALE CULTURE.—The great entertainments of all ages are reading, conversation and thought. If our existence after middle life is not enriched by these, it becomes meagre and dull, indeed—and these will prove sources of pleasure just in proportion to the previous intellectual culture. How is that mind to have subject matter of pleasurable thought during its solitary hours, which has no knowledge of the treasures of literature and science, which has made no extensive acquaintance with the distant and the past? And what is conversation between those who know nothing? But on the other hand, what delight is that mind able to receive and impart, which is able to discuss any topic that comes up, with accuracy, copiousness, eloquence and beauty? The woman who possesses this power can never fail to render herself agreeable and useful in any circle into which she may be thrown, and when she is so, she cannot fail to be happy. A full mind, a large heart, an eloquent tongue, are among the most precious of human things. The young forsake their sports and gather round, the old draw nigh to hear, and all involuntarily bow down to the supremacy of mind. These endowments add brilliancy to youth and beauty, and when all other charms are departed, they make old age sacred, venerable, beloved.

WASHING CLOTHES.—We publish to-day, for the benefit of the ladies, the greatest recipe for washing clothes ever yet published. By this process one hand can do as much as three hands in the old method, and do it much better. Be sure to keep this recipe. If you file our paper, mark round the recipe with pen and ink; if not, cut out the recipe and file it away.

RECIPE.—Take good home-made soft soap, 4 lbs.; borax refined, 4 oz.; common salt, 3 oz.; water seven pints. Boil slowly to cake soap; separate the top from the sediment for the cake soap. The bottom or sediment will do for washing dishes and such like.

PROCESS.—1. Wet the clothes thoroughly. 2. Rub the dirty and greasy spots with some of the soap. 3. Boil the clothes in strong soap suds of the above soap. 4. Rinse the clothes three times well in clean water. —*Exchange paper.*

MUSIC OF INSECTS.—A sound like the humming of bees is often heard in lonely rural retreats, among mossy dells and leafy solitudes; the poet heard this music of the groves as he penned the following couplet:

"Not undelightful is the ceaseless hum,
To him who, musing, walks at noon."

Sounds like the humming of bees are frequently heard, though not a single insect is to be seen. The existence of these diminutive creatures,—who only appear in the evening,—is said to terminate before the dawn of day; though short, it is a life of incessant pleasure. By naturalists they are now classed as coral flies, who congregate in millions, as Gardner supposes, for the pleasures of music and the dance.

It is related of Beethoven that those imitative sounds in his celebrated Pastoral Symphony were caught from na-

ture; that he employed the violin, in that extraordinary composition, to represent the soft, fluttering stir of the insects,—the hum in a noontide warmth of a summer's day. He used to sit upon a stile in the environs of Vienna, a lovely, sequestered spot, and listen to the ceaseless sound of unnumbered winged insects dancing in the air.

Plutarch tells us that when Terpander was playing upon the lyre, at the Olympic games, and had enraptured his audience to the highest pitch of enthusiasm, a string of his lyre broke, and a grasshopper immediately perched on the bridge, and by its voice supplied the loss of the string, and saved the fame of the musician.

The Athenians kept those delicate creatures in cages for the sake of their song, and called them the nightingales of the nymphs. As in the case of birds, the males only sing.

SUGGESTIONS ON HEALTH.—Children should be taught to use the left hand as well and as much as the right.

Infants should be sponged with cold water every day. Infants should be carried into the air every day of the season. Infants should be nursed at regular intervals, once in about three hours. From the time they are weaned, until they have passed the first dentition, children should be fed on bread and milk.

Coarse bread is better for children than fine.

Children should sleep in separate beds, and, where it is practicable, in separate rooms, and should not wear night-caps.

Children under seven years of age should not be confined over six or seven hours in the house—and that time should be broken by frequent recesses.

From the time of the first, to that of the second dentition, children should be denied animal food.

Children and young people must be made to hold their heads up and shoulders back, while standing, sitting or walking. The best beds for children are of hair, or in winter, of hair and cotton.

At proper times, and in proper places, children should be indulged in the free use of their limbs and lungs. A play-room is a useful appendage to a house.

After the second dentition is passed, young people may eat all kinds of wholesome food. Young children should drink only water. One pint of liquid to a person a day, is sufficient for health; and that should neither be hot nor very cold, and should be taken at some interval after eating.

From one to one pound and a half of solid food is sufficient for a person in the ordinary vocations of business. Persons in sedentary employments should drop one-third of their food and they will escape dyspepsia.

Young persons should walk at least two hours a day in the open air.

Young ladies should be prevented from bandaging the chest. The author has known three cases of insanity, terminating in death, which began in this practice.

Every person, great and small, should wash all over in cold water every morning.

Reading aloud is conducive to health.

The more clothing we wear, other things being equal, the less food we need.

Sleeping-rooms should be furnished with a fire-place, or some other mode of ventilation besides the windows.

The proper temperature of sleeping-rooms is from 55 to 60 degrees Fahrenheit.

The temperature of a room warmed by an open fire-place is sufficiently high for health and comfort at 70 degrees Far., but in a room warmed by an air-tight stove, it needs to be at 75 degrees. Air-tight stoves are not good for health unless the room is plentifully supplied with cracks and crevices.

Young people and others cannot read and study much by lamp-light with impunity.

The best remedy for eyes weakened by night use, is a fine stream of cold water frequently applied to them.

When eyes fail by age, the aid of spectacles should be called in, instead of being deferred as long as possible.—*Dr. Warren's Tract on Health.*

MAXIMS OF ORDER AND NEATNESS.

1. Perform every operation in proper season.
2. Perform every operation in the best manner.
3. Complete every part of an operation as you proceed.
4. Finish one job before you begin another.
5. Leave your work and tools in an orderly manner.
6. Clean every tool when you leave off work.
7. Return every tool and implement to its place at night.

THE WAY DOMESTIC ANIMALS COLLECT THEIR FOOD.—The horse, when feeding on natural herbage, grasps the blades with his lips, by which it is conducted between the incisors, or front teeth. These he employs for the double purpose of holding and detaching the grass, the latter action being assisted by a twitch of the head. The ox uses the tongue to collect his food. That organ being so directed as to encircle a small bundle of grass, which is placed by it between the incisor teeth and an elastic pad opposite to them in the upper jaw—between these the herbage is pressed and partly cut, its complete severance being effected by tearing. The sheep gathers his food in a similar manner as the horse, but is enabled to bring his cutting teeth much nearer to the roots of the plants, in consequence of the upper lip being partially cleft. For his upper lip is thin, and is susceptible of considerable mobility; while that of the ox is thick, hairless, with a very limited action.

REPORT ON QUARANTINE.—The General Board of Health have just presented to her Majesty a report on quarantine, the main object of which is to show the greater security to the public health which would result from the substitution of sanitary for quarantine regulations. The report proves by statistical and other details that the great epidemics are governed by laws over which quarantine has no controul. In tracing the rise and progress of cholera, for instance, in British America, during the years 1832 and 1834, it is observed that this disease on both occasions advanced with post-like regularity in the same course, attacking the same places on nearly the same corresponding days. The rapidity of the course of great epidemics further shows how vain the attempt must be to stop their progress by such machinery as that of quarantine. In 1817, influenza spread in one day over every part of the metropolis. "It met you everywhere," says the registrar-general; nearly the whole population were affected more or less, and without taking slight instances, not less than 500,000 persons in 2,100,000 suffered in London from the epidemic. In like manner, when cholera broke out in Cairo, in 1831, it spread within the space of five days over the whole of Lower Egypt, infecting at the same time all the towns and villages of the Delta. In 1832 it leaped at one bound from London to Paris, and out of the 48 quarters of that city it spread in five days over 35. What conceivable influence, it is asked, can quarantine or sanitary cordons exert in checking the progress of disease possessed of such powers of diffusion? After entering into a minute investigation of questions of plague, the sanitary condition of the merchant ships of Great Britain, and the actual mortality among merchant seamen, as presented by the marine register; and presenting an exposition of the principle of legislation

recommended, namely, that of concentrating responsibility on those who have a direct interest in prevention, and who possess the best means of securing it, the report concludes as follows:

"Having carefully examined what appeared to be the best available evidence as to the facts on which the system of quarantine rests, having considered the report made to the Royal Academy of Medicine in France, and the written testimony of the most eminent professional and scientific observers and writers, as well in Austria and America as in England, we have now to report as our conclusions:—1. That the chief pestilence in respect to which quarantine establishments have been kept up in this country, the Oriental plague, is, in its antecedent circumstances or causes, in the localities, classes, and conditions of the population attacked, and, in its rise and progress, a disease of the same essential character as typhus, being according to the most recent authorities who have had practical experience of the malady, a form of that disease modified and rendered more intense by peculiarities of climate and of social condition. 2. That the notion of the propagation of the plague by means of goods appears from one uniform mass of evidence to be as entirely unfounded as the opinion which formerly prevailed in this country that typhus could be propagated in the same mode. 3. That the true danger of the propagation of plague is not by contact of the affected with the healthy, but by exposure on the part of susceptible subjects to an infected atmosphere, under the like conditions which are known to produce and propagate typhus fever in this country. 4. That the quarantine establishments in this country, and every other of which we have information, are wholly insufficient, even on the assumption on which they have hitherto been maintained, to prevent the introduction and spread of epidemic disease. 5. That these establishments are of a character to inflict on passengers extreme and unnecessary inconvenience, and to subject such of them as may be sick to increased suffering and danger, while they maintain false securities in relation to the means of preventing the spread of disease. 6. That typhus and other dangerous epidemic diseases are frequent on board merchant seamen vessels at sea and in port, for which no effectual or suitable provision is at present made. 7. That, as far as relates to the cases of epidemic diseases generated at sea, the principle of the concentrating of responsibility on the shippers, in making it their pecuniary interest to complete the voyage with healthy passengers, operates most effectually in the cases where it has been applied, such as to emigrant, transport, and convict ships, and should be extended to all cases; and that in respect to ships in port, the regulations applied to the prevention of the spread of epidemic diseases from houses in towns are applicable, and would practically be highly beneficial. 8. That the substitution of general sanitary regulations to ships in port, for the existing quarantine regulations, would far more effectually extinguish epidemic disease and afford better protection to the uninfected on shipboard, whilst it would relieve passengers and crews from grievous inconvenience, abate the motives to concealment of sickness and to false representations as to its nature, greatly lessen commercial expenses, and remove obstructions to the free transit of goods and uninfected persons which the existing system of quarantine occasions. 9. It follows that we propose the entire discontinuance of the existing quarantine establishments in this country, and the substitution of sanitary regulations. 10. By such substitution the most effectual security which the present state of knowledge affords would be taken against the importation of foreign contagion, the maintenance of infection, and the origin and spread of epidemic disease." The report is signed by Lord Carlisle, Lord Ashley, Mr. Edwin Chadwick, and Dr. Southwood Smith.

Editors' Notices, &c.

W. W., Hope.—The answer to your note should have been given in our last number, but was over-looked. As you did not pay us for the paper, and as we only get paid for one copy to your address, you must look to the person to whom you paid your money.

To AGRICULTURAL SOCIETIES.—We shall be much obliged to those Agricultural Societies in arrears for the *Agriculturist*, if they will remit us the amount of our claims. We understand that the government allowance has been received, which will enable them to comply with our request without inconvenience.

ADELAIDE ACADEMY.—We refer our readers to the advertisement of Mr. Hurlburt, in our present number. Parents desirous of giving their daughters the benefit of competent teachers in every branch of education, should avail themselves of the superior advantages afforded at this institution.

HARVEST, CROPS, &c.

The wheat harvest in this part of the province is nearly over, and the yield may be said to be above an average. The grain is remarkably plump, and has been secured in good order. We have heard complaints of rust, but it appeared so late that except in the case of late crops little harm has been done by it. The spring crops will be light. Hay has been a good crop on low grounds, but on up-lands it has been light also. We give below a few extracts from the newspapers in different parts of the province. In the eastern section the accounts are not the most promising.

The wheat is being generally cut in this neighborhood. The fall wheat is remarkably heady, and is expected to give a great yield. In some places there is rust, but nothing of consequence. The rust must have been induced by too long drought, producing dew, as the rains came too late, besides the weather was cool after them. Oats, peas, and barley will suffer from the want of rain; but still there will, it is supposed, be an average crop. There has been a greater quantity of Indian corn planted this year, and it promises a good return. In fact, the hot weather has just been the thing for it. Potatoes are expected to be an abundant crop. The hay is nearly all cut, and the produce surpasses the calculations of the most sanguine.—*Hamilton Journal and Express*.

The fall wheat in this country looks well, and harvesting has already commenced. The spring crops have suffered from want of rain. In some cases the farmers have ploughed it up. Hay is good and abundant and is housed.—*Port Hope Advocate*.

The wheat harvest is proceeding in this township and in Waterloo, with alacrity, but will not be general till the beginning of next week; the crops are very abundant. An intelligent friend, himself a farmer and miller, has traversed the country from Goderich to Galt, and gives us his opinion as follows: the fall wheat is an average crop generally, and there is three or four times more sown this year than was ever before put in the ground, in the Huron District: the

spring crops are light and healthy. Rust has appeared in very many places, but seems chiefly confined to the straw. The potatoe crop appears healthy, and, as yet, free from any appearance of disease.—*Galt Reporter*.

FIRE IN WOODS.—CROPS.—The weather continues dry, and fires are raging in the woods all around us, and considerable damage has been done. On the American side of the river the fire has made sad havoc, burning in some instances, houses, barns, fences, &c. The cutting of hay has commenced in this vicinity, and the crop, although somewhat better than that of last year, is much below an average one. Unless rain fall soon, the spring grains will totally fail.—*Prescott Telegraph*.

FIRE IN THE WOODS.—During the late hot weather, the woods all around have been on fire, and in some instances great damage has been done to fields of grain. In some instances we have heard of the destruction of houses, barns, stock, and even loss of human life. We have been informed that M'Cracken's Saw Mills, in Finch, have been burnt down, together with a quantity of lumber. Also the houses of Mr. Cockburn and Mr. Thompson have been consumed. We are told that the fires in the woods have also made sad havoc on the other side of the river. It was reported in town last Saturday, on good authority, that the house and buildings of a farmer near Fort Covington, had been burnt to the ground, and sad to say, four of his children had perished in the flames. The rain of Friday night, however, which happily extended over a large tract of country, checked the progress of the flames, and in some places extinguished the fires altogether. But should rain not fall soon, the smouldering fire will again ourst forth into flame.—*Cornwall Freeholder*.

TORONTO MARKET.

July 31, 1849.

	s.	d.	s.	d.
Flour, per bbl. 196lbs. - - - -	17	6	to	21 3
Wheat, per bushel, 60lbs. - - - -	3	6	to	4 0
Barley, per bushel, 48lbs. - - - -	1	6	to	1 9
Rye, per bushel, 56lbs. - - - -	2	6	to	3 2
Oats, per bushel, 34lbs. - - - -	1	0	to	1 3
Oatmeal, per bbl. 196lbs. - - - -	15	0	to	18 0
Pease, per bushel, 60lbs. - - - -	1	4	to	1 8
Potatoes, per bushel - - - -	2	6	to	4 0
Onions - - - - -	3	6	to	5 0
Beef, per lb. - - - - -	0	2	to	0 4
Beef, per 100lbs. - - - - -	15	0	to	20 0
Veal, per lb. by the quarter - - - -	0	2½	to	0 3
Pork, per lb. - - - - -	0	2½	to	0 3½
Timothy, per bushel, 60 lbs. - - - -	6	0	to	8 0
Turkies, each - - - - -	1	3	to	3 9
Geese, each - - - - -	1	3	to	2 6
Ducks, per couple - - - - -	1	0	to	1 6
Chickens, per couple - - - - -	1	6	to	1 9
Ham, per 100 lb. - - - - -	27	6	to	40 0
Bacon per 100 lbs. - - - - -	36	0	to	37 6
Mutton, per lb. - - - - -	0	2½	to	0 3½
Mutton, per lb., by the quarter - - - -	0	2½	to	0 4
Lamb per quarter - - - - -	2	0	to	3 0
Fresh Butter, per lb. - - - - -	0	6½	to	0 8½
Firkin Butter, per lb. - - - - -	0	5	to	0 6
Cheese, per lb. - - - - -	0	3	to	0 5
Lard, per lb. - - - - -	0	4	to	0 4½
Apples, per barrel, - - - - -	10	6	to	15 6
Eggs, per dozen, - - - - -	0	6	to	0 7
Fowls, per pair - - - - -	1	5	to	1 10
Straw, per ton, - - - - -	30	0	to	37 6
Hay, per ton, - - - - -	30	0	to	37 6
Fire Wood - - - - -	10	0	to	12 6

Advertisements.

PROSPECTUS.

THE PROVINCIAL MUTUAL AND GENERAL INSURANCE COMPANY.

INCORPORATED BY ACT OF PARLIAMENT.

BOARD OF DIRECTORS.

ROBERT E. BURNS, Esq., *President.*
 J. S. HOWARD, Esq., *Vice-President.*
 W. L. PERRIN, RICHARD C. GAPPER,
 WM. GOODERHAM, JAMES BROWN,
 JOHN G. BOWES, FRANCIS NEAL,
 A. A. CLARK, J. C. MORRISON, M. P. P.,
 and CHARLES BERCZY, Esquires.

THE Stock of this Company is divided into the Mutual and Proprietary—the Mutual by the members giving premium notes upon obtaining Policies, and the Proprietary by having a subscribed Capital and issuing thereupon in the ordinary way.

THE MUTUAL BRANCH.

It has been felt throughout the Province, that Mutual Insurances have not been sufficiently restricted to render the system a favorite with the public; but this may be said to arise from the operations of the different companies being confined to each particular District. It is evident that these restrictions operate badly; for it it be desired to have nothing but equal risks, then the transactions must necessarily be limited to an amount which makes it unprofitable to become Policy-holders; and if it is desired to increase the business by taking unequal risks with others, then members are exposed to pay more than they would be required to do in other Companies.

If Mutual Insurances are taken upon property classed as extra hazardous with those termed not hazardous, although higher rates are put upon the former with a view to equalize them, it is obvious it has not such effect. This may be fully established by simply putting a class together, as for instance all the Mills of the Province, and ask whether such class would be desirous of mutually insuring each other, or whether they would not rather be joined with a goodly sprinkling of farmers as members. Again, ask the farmers and others of similar risks, whether they would not be willing mutually to insure each other without being obliged to pay for losses on extra hazardous property, and there can be no doubt that the answer would be.

The object of this Company is to equalize the risks so as to make it certain to policy-holders, that by insuring with this Company, they will not be called upon to pay such high rates as in other Companies. The Act of Parliament provides that no one risk shall exceed £500, and no insurance shall be effected on buildings and other property situated in blocks or exposed parts of Towns or Villages, nor on any kind of Mills, carpenters' or other shops, which by reason of the trade or business followed are rendered extra hazardous, machinery, breweries, distilleries, tanneries or other property involved in similar or equal hazard. It is expected to obtain nothing but the best description of risks, which in fact this Company is confined to by the charter; and as their operations will extend over the whole Province, and will thereby unite a most powerful and wealthy class, it affords to the public a security hitherto not attainable in this Province.

The principle now adopted by this Company has been acted upon in the United States for some years, and in consequence people have insured with the United States Companies to a very great extent. It is not, however, too late yet to prevent a great deal more money from leaving us, and if we are desirous to keep our means among ourselves, an opportunity is now afforded to every farmer and other person wishing to insure upon equal risks only, to do so upon the terms of knowing that he never can be called on to pay except for losses sustained upon property of equal risk with his own.

Agents of this Company will be named in all convenient localities; and the advantage of having an institution with all its officers under the supervision of the members themselves, and under the controul of their own laws, require no comment.

The rates have been placed upon the most favourable terms, and as low as can possibly be obtained in any Company whatever. For instance, the second class embracing the ordinary farm buildings and produce of the country, are fixed at one per cent. of the insured value, that is, if £500 be insured, the premium note will be £5 and the payment thereon £1 13s. 4d., with 7s. 6d. for the Policy and Survey—in all £2 0s. 10d.—which is the whole probable amount for five years' insurance, the future liability being in no case beyond the £5 for the whole five years.

Every facility will be afforded to persons wishing to insure, and if loss should happen, it will be found that the by-laws amply provide for the Insured.

The Directors are confident that they are now placing before the public, the means of effecting Insurances on property on more favourable terms, considering all things, than can be obtained elsewhere.

Applications may be made to the agents, or at the office of the Company, where every information will be afforded.

THE PROPRIETARY BRANCH.

The Capital is £100,000, divided into shares of £20 each, upon which five per cent. is required to be paid at the time of subscribing.

The Company is authorised to take Fire and Marine risks, and also to effect assurance on lives, and to grant annuities.

The Agents of the Company will be authorised to obtain subscriptions for stock; and as soon as a sufficient amount is obtained the Company will be prepared to take Fire and Marine risks.

It is well known to Merchants and others, that a large amount is paid annually to Foreign Companies, simply because the Insurance Companies established in the Province are not sufficient for the business. It cannot be supposed that the foreign companies would continue business in this Province if they did not find it profitable, and that circumstance abundantly affords proof, that there is room for another company, upon remunerative terms to the shareholders.

The Company is not confined in their Marine risks to the lakes and rivers of this Province, but has authority to insure upon the ocean as well.—This authority may afford to the merchant an easy mode of effecting insurance upon property at their own doors.

So soon as it can conveniently be done, it is the intention of the Directors to bring into operation the branch authorising the effecting of Life Insurances, and granting annuities. It has been stated that upwards of £10,000 a year is remitted to Britain for life insurance—this might be saved by proper attention to the subject. The large Capitals accumulated by the

Life Insurance Companies in Britain, prove them to be proper, and the best and most sure means of saving and making provision for families.

The Directors appeal to the public to consider the advantages thus offered by this Company, in uniting under one management, and at one expense, all the different branches of Insurance—and they confidently expect that they will not be mistaken in such appeal.

LIST OF AGENTS ALREADY APPOINTED.

- Montreal.—C. BOCKUS, Esq.
- Gananoque.—W. T. MACDONALD.
- Kingston.—M. DRUMMOND, Esq.
- Prescott.—W. PATRICK.
- Peterboro'.—J. HALL.
- Belleville.—F. McANANANY, Esq.
- Oshawa.—S. B. FAIRBANKS, Esq.
- Scarboro'.—Mr. C. C. BOWEN.
- Sharon.—Mr. I. C. HOGABOOM.
- Bradford.—Mr. T. McCONCHY.
- Weston.—J. A. MACDONALD.
- Hamilton.—Mr JOSIAS BRAY.
- St. Catherine's.—A. K. BOOMER, Esq.
- London.—W. BUCHANAN, Esq.
- Drummondville.—R. R. HUBBARD.
- Stratford.—J. W. DALY, Esq.
- G. lerich.—J. CLARK, Esq.
- Travelling Agent—MR. T. RYALL.

Toronto, July 25, 1849.

ADELAIDE ACADEMY,
FOR THE EDUCATION OF YOUNG LADIES.

No. 28, Bay Street,
TORONTO.

THE next Session of Adelaide Academy will commence on the 1st September, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four departments, with experienced Teachers over each.

Board	£0	10	0	per Week.
Tuition in English Studies.....	1	0	0	“ Qr.
Board & Tuition in English Studies	26	0	0	“ Ann.

Pupils attend the Church which their Parents or Guardians direct.

REFERENCE

Is politely permitted to—
 The Honourable The Chief Justice,
 The Honourable Robert Baldwin,
 The Honourable J. H. Price,
 Henry Ruttan, Esq., Sheriff N. D.
 W. B. Jarvis, Esq., Sheriff H. D.
 W. S. Conger, Esq., Sheriff C. D.
 Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions; Rev. H. Essoh, A.M., Professor in Knox's College; and to numerous Patrons throughout the country.

Cards, giving particulars, can be obtained at this office, or at the Academy.

J. HUREBURT, A. M., Principal.

Toronto, 26th July, 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849. 1-tf

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive *Conflagration of 7th April*, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c. &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of cheap and fashionable Goods, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

PHENIX FOUNDRY,

No. 58, YONGE STREET, TORONTO.

GEORGE B. SPENCER,

(LATE G. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849. 1-tf

STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,

CITY FOUNDRY,

No. 116, Yonge Street, Toronto,

HAS constantly on hand Cooking, Box, Parlour and Coal Stoves, of various patterns and sizes, very cheap for cash.

Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.