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THE
CANADIAN AGRICULTURIST,

AND

Journal and Transactions

OF

THE BOARD OF AGRICULTURE

OF

UPPER CANADA.

PUBLISHED MONTHLY.

AND DEVOTED TO

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THE
Canadian Agriculturist
AND
JOURNAL OF THE BOARD OF AGRICULTURE
OF UPPER CANADA.

VOL. XV.

TORONTO, JANUARY, 1863.

No. 1.

THE AGRICULTURIST FOR 1863.

In commencing a new Volume of the *Agriculturist*, its Conductors may be allowed a few words in reference to the state and prospects of the publication.

During the past year a reference to the pages of this periodical will show that the great agricultural movements and discoveries of the period have been faithfully chronicled. In doing this, we have not confined ourselves to what has been going on in Canada, or the great American continent, but have availed ourselves of the vast fund of information that is to be found in European publications, particularly those of the United Kingdom of Great Britain and Ireland, to which, as members of the great British Empire, we look in this as in many other respects, for light, guidance, and encouragement. We could have desired a larger amount of original contributions from a Canadian source, a want that has long been felt and deplored. From some cause or other our farmers evince a lamentable apathy in communicating to each other through the press the suggestions and results of their experience and observation; herein unfavourably comparing with their brethren on the other side of the lakes, as the American agricultural papers plainly show. The conductors of several of their journals not infrequently experience much difficulty in finding space for their contributed articles, while the labour has too often devolved on the conductors of the *Agriculturist* of supplying the al-

most entire material of each successive number. With a fortnightly publication, and numerous pressing duties of another kind, we are obliged to confess that for want of time and opportunity, more than will or desire, our periodical has not reached the high standing which we wish and trust it is destined to attain.

As the *Agriculturist* is the only paper of its kind published in Upper Canada, and the accredited organ of the Board of Agriculture for this section of the Province, one would naturally imagine that its pages would be largely enriched by original contributions, both from individuals and societies throughout the country; a country, too, be it remembered, that is pre-eminently agricultural, and each county and almost each township having a regularly organized society liberally aided by the government. Now we ask the officers of these societies, and enterprising farmers generally, to send us occasionally an account of whatever is important, novel, or interesting that comes within the range of their own local observation or experience. In this way only can our paper properly represent the state and progress of agriculture throughout the country. It is not long, laboured articles that we require, but a simple statement of facts, and anything that is doing that will prove interesting and suggestive. *Farmers of Canada we again ask, will you not contribute material for your own paper?* We are far more in want of contributions than subscribers, though of the latter we can do with any amount of increase.

In order to afford more time in procuring

and arranging material for the work, and thereby to improve it, the *Agriculturist* for the future will be published monthly, commencing with the present issue. The number of pages will be increased, and will never fall short of forty, and as occasion may require more will be added. Notwithstanding the large increase in the price of paper, it has been determined to keep the amount of subscription for this journal at half a dollar a year to single subscribers, with a progressive scale of discount according to the number taken; thus encouraging societies and individuals to form clubs. The *Canadian Agriculturist* will be the cheapest paper of its kind on this continent, and probably in the world! Full particulars as to terms, &c., will be found on the last page.

It is our desire to make the *Agriculturist* more efficient as a means of communication among the lovers of, and such as are professionally engaged in the Horticultural art, than which nothing can tend more to improve and refine and make beautiful our rural homes.— Gardening not only refines and elevates the taste, but it is the means of bringing to our tables not a few of the necessaries and luxuries of life. Our country in many places has already passed through what may be termed the rough era, the chopping and clearing of the forest; and the time has fully arrived for the introduction of the beautiful and not less useful art of Horticulture in all its departments. We are thankful to such friends as have contributed to this department of our work during the few past years, and while we make these acknowledgments, and request a continuance of such aid, they will be glad to learn that our future prospects are in this respect more encouraging.

As labour-saving machines must continue to occupy a prominent position in Canadian Agriculture, we shall always feel desirous of giving illustrations and publicity to all such as possess mechanical merits, and a practical utility. Implement-makers are therefore invited to communicate such information respecting their particular productions as will promote at the same time their own and the public interests. It is hoped that the promotion of an Agricultural Museum, noticed elsewhere; and the Depot for tools and implements, both in agriculture and horticulture, about being opened by James Fleming & Co., of this city, will tend to facilitate this important object, which we regard as second to none in the advan-

ment of agriculture. We hope therefore to be able for the future to give to all enquirers definite information respecting the price and construction of every implement and machine made in the Province, and where it can be seen and obtained.

Another word and we conclude. The main object of the *Agriculturist* not being profit either to the Board or individuals, but the dissemination of useful information on the various topics which it embraces, the price is put at the lowest possible rate, so as barely to meet the actual cost for paper and printing. Its principal function consists in forming a medium of communication among the Agricultural and Horticultural Societies of the Province and all such individuals who feel an interest in rural pursuits. The Veterinary department will be both enlarged and improved, and will be found, it is believed, generally useful. While we are desirous of giving a Canadian character to our own publication, we shall always be happy to learn that the better class of American agricultural journals have an extended and increasing circulation in the Province. Our farmers, gardeners, and mechanics cannot observe and read too much; and such ably-conducted papers as the *Country Gentleman and Cultivator*, the *Genesee Farmer*, *American Agriculturist*, *Rural New Yorker*, *Horticulturist*, *Gardener Monthly*, &c., we welcome among us as valuable auxiliaries in the great work of rural improvement.

THE NEW AGRICULTURAL HALL

It may not be known to some of our readers that the Board of Agriculture of Upper Canada has recently erected a capacious and suitable building on the corner of Yonge and Queen Streets, in this city, where the offices and library are now permanently located. The basement, with the first and portion of the second floor, are leased to JAMES FLEMING & Co., as a Seed and Implement Warehouse; and the third, or uppermost floor, occupying the whole area of the building, (38 feet by 76 feet) is to be devoted to the purposes of an Agricultural Museum, Lecture Hall, and Public Meeting that relate to these pursuits. A few words explanation of these objects will no doubt be acceptable to the reader.

In the preamble to the Agricultural Statute, among the objects stated for the Board to promote is the formation of an Agricultural and Horticultural Library and Museum. The nucleus of such a library has already been formed, and a number of the most approved and standard works in relation to farming, gardening, &c., has been got together. A museum, however, could not even be attempted, with the very restricted accommodation only which the Board has hitherto possessed. The want of adequate and permanent offices, with sufficient room for collecting and exhibiting agricultural and horticultural products, implements, tools, &c., has long been felt as an important desideratum; and much inconvenience, involving serious delays and impediments, was consequently experienced. These obstacles have now been happily removed, and sufficient accommodation of a permanent character has been provided by the erection of a building that is an ornament to the city, and highly creditable to the intelligence and enterprise of the agricultural community of Upper Canada.

The formation of an Agricultural Museum must necessarily be a progressive work, and will involve no inconsiderable amount both of labour and time. It is one of those things that will continue to increase and improve year by year. A beginning is now being made, and the active co-operation of the farmers, gardeners, and implement makers of the Province is earnestly desired to aid and carry out this useful and patriotic design. These classes are requested to render help both individually and in their collective capacity as societies. Without such assistance, promptly and generously afforded, it will take a long time for the Board unaided, to get a collection together that will adequately represent the agricultural state and progress of this rapidly advancing Province.

It is desired that the Museum should contain specimens of the best cereal productions of Canada, with the names and residences of their producers, and the principal facts in relation to the soil, cultivation, &c. Wheat, barley, oats, rye, maize, &c., should be exhibited in the straw, just as it grew in the field, as well as in the grain. By this means a much better idea can be had of the form

and growth of our various cultivated crops. The grasses too, whether wild or cultivated, should be fully represented and described in a collection of this nature; and we have very much yet to learn in Canada that will be of the greatest practical value and importance respecting this interesting department of husbandry. Characteristic specimens of the varied productions of the farm and the garden, with adequate descriptions, will always be thankfully received as contributions to the Museum.

With respect to implements and machines it has long been felt a desideratum that no depot of sufficient range existed in any one place, and people have often been perplexed and subjected to delay and inconvenience from not knowing where to apply for what they particularly needed. The proposed Museum, it is confidently hoped will, in a great measure, if not fully, meet this want. Of the more bulky machines, such as threshing mills, &c., only models would be adapted to the Museum proper, but arrangements will be made by Messrs. Fleming & Co. for keeping on hand the various implements and machines belonging to Agriculture and Horticulture that are produced in Canada, besides such as are suited to our wants of British and American manufacture. The Board is particularly desirous of having specimens of whatever our own manufacturers are in the habit of making, with full instructions as to price, and the advantages claimed for the respective articles, as ordinary merchandise. Practical utility, and not the gratification of a mechanical curiosity, is what is most desirable to attain in such an arrangement. Implement-makers, upon reflection, will perceive that this plan, although but imperfectly sketched, will, if properly carried out, be alike beneficial to themselves and the public. The improvement in our implements and machines has of late been of an exceedingly encouraging character; we now produce such articles equally good and cheap as do the Americans. The proof of this is to be seen at any of our recent Provincial Exhibitions; and we trust that the arrangements now about being made will tend to aid this most desirable and important object.

As the character of the proposed Museum

should be general and not local, contributions are invited *from all parts of Canada*. We hope to see ultimately not only every county, but township also, represented in this Provincial collection, so that any intelligent stranger,—and we trust there will be many such,—who may pay it a visit, will be able to form a satisfactory idea, with the aid of written or oral descriptions, of the productions and capability of the various sections of the Province. The numerous strangers that visit Toronto may thus acquire correct information of a practical character, at the least expenditure of time and trouble. Specimens of remarkable soils with the underlying rocks, and of the various kinds of manures now more or less used in agriculture, and in gardening, would be acceptable contributions. These, with other productions, would afford ample material for private study and popular instruction in the most useful and interesting of human pursuits.

SCIENTIFIC FARMING.

Written for the Agriculturist.

The great mass of agriculturists in this country, as also in the world, may be divided into two classes. The first great class, containing all but about one in a thousand, are content to go on in the ways of their grandfathers. They *understand* farming fully; they are *practical* farmers. These men add nothing to the knowledge, and but little to the wealth, of themselves or the world at large. They can be disposed of in very few words. The other class are enthusiasts; and under the heading which we have laid down for this article would branch gloriously into a dissertation on salts and sub-salts, soils and sub-soils, acids, gases and improved machinery. The road is equally simple to them, but is a very different one from that of the class referred to. Class No. 2. holds that all farmers cultivate too much ground; that none plough deep enough; that none manure strong enough, that none bestow sufficient attention on fences; that none plant trees and vines enough, that none have sufficient regard to sustain the power of the soil; and in short, that none are sufficiently mathematical, chemical, and generally speaking, abstrusely scientific in their operations. They would induce farmers to subscribe for every agricultural periodical—which every farmer should do, if he desires success,—read every

book, attend every Fair or Agricultural Lecture, and become perfect walking dictionaries in their familiarity with the names and opinions of all chemists and alchemists, from the discoverer of Glauber salts down to the manufacturer of Paine's gas.

In practice it happens almost invariably that these scientific farmers lose, rather than gain, by their own farming operations, and this fact cannot be considered too significant. There is an extreme in this business as in every other, and whether the matter be viewed in an abstruse scientific light, and mathematical formulas and equation be developed to show the state of affairs, or whether we take, in ordinary language, the simple term "judgment" as expressive of the element desired, the fact is indisputable that the truth lies between the extremes, and is a very difficult matter fully and properly to be arrived at.

Rotation in crops is desirable; but how often the crops should be changed with every variety of soils, and with every conceivable ratio of the cost of labour, as compared with the value of the products, is a matter extremely difficult to determine. Rotation involves extra labour. To change pasture to tillage, and this again to meadow, is far more expensive than a continuation of either condition; and the truly wise farmer ascertains or judges as accurately as possible, the point where the conflicting considerations actually meet. Planting trees is most assuredly a good investment in general; but a farm all orchards would necessitate a great expense for fertilizer and a long and patient waiting for a return. Guanos and artificial manures are, in many cases, highly profitable; but unfortunately the knowledge of soils and the capacity to describe them, so that every farmer for himself may determine precisely what is wanted, and how much, on a given piece of land, and the actual pecuniary result, is yet far from being effected. Improved machinery is highly advantageous, but it is easy to be led into the expenditure of too much, and to be egregiously imposed on in such devices.

While we are thus free to admit the possibility, in fact, the strong temptation, in those progressive minds to invest largely in science, the expense of practical results, the great proportion in the two classes referred to, must be borne in mind, and each reader may ask himself which of the two classes he most probably represents. A perfectly reliable and infallible jud-

ment would call for a far larger amount of cultivation per acre, and a greater expenditure for fertilizers and machinery than generally obtains. The mass need no choking in this respect, but the few who do are most likely to be found among the readers of the *Agriculturist*.

Having sufficiently pointed out the danger of over-doing in science, we may the more heartily urge the old grannies to their duty. It is true that nearly every farmer cultivates too many acres of land. It is true that few farmers avail themselves so fully as is profitable of the improvements of the age, either in fertilizers, cultivation, rotation, drainage, irrigation, harvesting or curing. Thousands, yes, millions of dollars are annually lost to the country and to the world through the ignorance and obstinacy of farmers, which a very few dollars of time pleasantly applied to the reading of a still fewer dollars worth of information, would have entirely avoided; while at the same time, the obtuse mind of the hard-fisted labourer would have been expanded and developed, and his capacity and means for enjoyment greatly increased. Store, then, the mind with facts, and diligently cultivate the judgment to discriminate. If reapers and harvesters, ditching machines, sub-soil ploughs, experiments in drainage, &c., cost too much to be expedient for one, club together the neighboring farmers, and make a purchase or experiment. Form associations for mutual comparison of data—this might and should be done in every village of Canada—quicken your perceptions by rubbing together ideas, and multiply your experience by giving others the benefit. Neighboring experiments, where soils, climates, and distances from market are necessarily very similar, are far more valuable in practice than distant ones, which may be paraded with more ostentation. Do not look for *immense* results in any experiment. It is unfair to ignore progress unless the results are three or four-fold the old method. Do not expect a gain of more than 10 per cent, all things considered; but if this can be accomplished every year, or even once, without again retrograding, the result is sufficient to make all the difference between profitable farming and absolute bankruptcy.

If you have cattle to consume it, the Chinese sugar cane may be planted, and very possibly with good effect, as green fodder; but do not, we beg you, expect to make sugar or respectable molasses, without elaborate and expensive ma-

chinery, and a reasonable amount of care and enlightened experience. The Chinese potato is very different in this respect, and may ultimately be of great value as food for man, or as a root to store for winter use in feeding; but a score of experiments in a town are very nearly as good as a thousand, and far better, unless the thousand are properly conducted. There are some whose tastes incline them to such efforts. Aid such "martyrs to science" in experimenting, and compare notes carefully on the results, but do not each spend half the summer in tending these strange plants, covering the joints of the vines, &c., to find at the year's end that you have been *almost* successful.

We have in mind nothing which we care to designate particularly, as imposition on the farming public; but although interested parties are always crying *immense* results, the farmer who expects such from any one step may generally be set down as a deluded man. There are those who are "wide awake" to speculate in novelties; but the great mass must be content to accumulate by carefully and skilfully grouping together almost trifling economies, with a view to produce the greatest possible quantum of finished goods, at the least possible price.

ANNUAL MEETING OF COUNTY AGRICULTURAL SOCIETIES.

The following circular has been addressed to the Secretaries of all County Agricultural Societies in Upper Canada.

BOARD OF AGRICULTURE OF UPPER CANADA.

Toronto, January 5th, 1863.

SIR,—I am instructed by the Board of Agriculture, on the eve of the Annual General Meeting of your Society, for the Election of Officers, and adoption of a Report, &c., which, under the existing Statute, must take place during the Third week in January, to request the attention of your Society to the following subjects:—

The Annual Report and Election of Officers.

The Statute states what information shall be given in the Report, viz. 1. The names of members during the past year, and the amount of subscription paid by each. 2. A list of the premiums awarded, stating the amount of each, and to whom, and for what awarded. 3. A detailed statement of the receipts and expenditure. 4. Such remarks and suggestions upon the Agriculture and Horticulture of the Country, and Arts and Manufactures therein, as the Directors shall be enabled to offer.

It is requisite that the statement of receipts

and disbursements should be very carefully and correctly prepared, showing the exact state of the account; and it is very desirable that the Report should embody under the 4th general division, above mentioned, such information of a practical nature in regard to the Agricultural and Horticultural resources and progress of the County, as would be useful and interesting for publication in the Transactions of the Board.

The Report, after adoption at the Annual Meeting, should be entered in the Society's Journal, and a true copy thereof, certified by the President or Secretary, forwarded to this office, punctually on or before the 1st day of April next.

The Reports of the Township or Branch Societies in your County should be received by your Society at or before your Annual Meeting, and must be forwarded to this office along with your own. You are requested to see that such reports are compiled in accordance with the requirements of the Act, and that the names of the officers elected for the current year are given, before so forwarding them.

The Officers to be elected by your County Society are a President, two Vice-Presidents, a Secretary and Treasurer, and not more than seven Directors. You are particularly requested to forward the names of these, along with the Annual Report, to this office.

The Board of Agriculture.

It is a part of each County Society, at the Annual Meeting, under Section 12, Con. Statute, to nominate four persons to serve as members of the Board of Agriculture.

The Board, as constituted last year, consisted of the following gentlemen, viz: E. W. Thomson, Toronto; R. L. Denison, Toronto; Hon. H. Rutan, Cobourg; Asa A. Burnham, Cobourg; Hon. George Alexander, Woodstock; Hon. Adam Fergusson, Waterdown; Hon. David Christie, Brantford; and Wm. Ferguson, Kingston.

Of the four members who would now retire in regular rotation, the late Hon. Adam Fergusson, who continued a member of the Board from its first organization to the day of his death, was one. He, as you are well aware, departed this life in September last, and the Board would respectfully take this opportunity of expressing to the County Societies their high estimation of the deceased gentleman's many virtues as a man and a Christian, and his eminent services to the country of his adoption as an Agriculturist.

The remaining three members who now retire are Messrs Burnham, Christie, and Wm. Ferguson. Their retirement, however, does not render them ineligible for re-election.

The Statute requires each County Society to transmit the names of the four persons nominated as members of the Board to the *Bureau of Agriculture (at Quebec)* forthwith; and the four persons so nominated by the greatest number of Societies shall be members of the Board in the place of the members vacating their seats.

Agricultural and Veterinary Instruction.

A Class will be formed in Toronto, during this winter, for instruction in the Principles of Agriculture, and the Veterinary Art, specially adapted to the wants of young men engaged in, or intended for agricultural pursuits. Professor Buckland will be assisted in the department of Scientific Agriculture by the Professors of Chemistry, Geology, and Natural History in University College. Mr. Smith, Licentiate of the Edinburgh Veterinary College, and Consulting Surgeon to the Board of Agriculture for Upper Canada, will have charge of the Veterinary department.

This course will commence on *Wednesday, January 21st, 1863*, and continue for about six weeks. Three Lectures a day, and no fees. The subjects treated of will comprise:—

The History, Breeding, Diseases, and Treatment of Farm Animals, including their Anatomy and Physiology, with a course of instruction in Practical Dissecting.

Agriculture in its relations to Chemistry. Geology, Mechanics, Physical Geology and Meteorology, Botany, and Zoology, including Farm Architecture and Engineering, the valuation and management of Landed Property, with special reference to Canada.

Pupils may enter and leave the class without being subjected to an examination. But, with a view of promoting emulation the Board of Agriculture offer the following Prizes, the value to be given in suitable books:—First, \$20 to the student who shall pass the best Examination in all the subjects at the end of the term; Second \$15; Third, \$10; and Fourth, \$5.

Further particulars on this subject may be known by applying, either personally or by letter, to Professor Buckland, University College.

Agricultural Museum.

The Board is about establishing in their new Hall in this city, for the benefit and instruction of the public, an Agricultural Museum, and will be thankful for your assistance in procuring suitable specimens for it. Any members of your Society, or others, who may grow upon their farms, grains, grasses, roots, or other agricultural products, possessing a distinguishing character for excellence of quality, productiveness of yield, beauty of sample, or other marked and useful property, are respectfully requested to send specimens of the same to this office (the samples of grain either in the straw, with the roots attached, or the clean seed,) giving the producer's name and address, and all the useful particulars in reference to the cultivation, amount of produce, &c. Specimens of the seeds of forest trees, named, with location and time of collection mentioned, and of other useful and interesting natural products, will be also thankfully received. Implement Manufacturers are also invited to avail themselves of the advantages of the Museum, for the purpose of displaying to the public the articles they manufacture, either by sending models or the implements themselves.

The Canadian Agriculturist and Journal of the Board of Agriculture of Upper Canada.

The Fortnightly publication of this Journal during the past three years not having been found in all respects so convenient or satisfactory as was anticipated, besides involving a greater amount of labor and expenditure than are compatible with the price at which it is issued, especially in view of the great rise in the price of printing paper, it has been decided, for the future, to publish it *Monthly*, commencing Jan. 1863.

The Journal will, however, suffer no diminution in value or interest, but rather the contrary. Each number will contain not less than 49 pages, illustrated with wood cuts. The Horticultural and Veterinary Departments, in particular, will be enlarged and improved; and the price will be *reduced*, when over 5 copies are taken, so as to encourage the formation of Clubs throughout the country.

The terms of subscription will be as follows: Single Copies 59 cents per annum each. Five to Twenty Copies, 10 per cent. discount. Twenty to Thirty-five Copies, 15 per cent. discount. Thirty-five to Fifty Copies, 20 per cent. discount. Fifty Copies and upwards, 25 per cent. discount allowed.

The Editorial Staff will consist of Professor Buckland, University College, Toronto; Hugh C. Thomson, Secretary of the Board of Agriculture of Upper Canada; and Andrew Smith, Licentiate of the Edinburgh Veterinary College, and Consulting Surgeon to the Board of Agriculture.

All orders to be addressed to the Secretary of the Board of Agriculture.

I beg leave also to take advantage of this occasion to earnestly solicit from the farmers of the country, a greater amount of co-operation than has been heretofore given by them, in filling the pages of the Journal. Communications on any subject connected with Agricultural or Horticultural pursuits however brief or unstudied in composition, will always be thankfully accepted. A large number of contributions of this character, from many correspondents in different parts of the country, would be mutually advantageous to the writers and the readers of the Journal, and would add greatly to the general value and interest of the latter.

I am, Sir,

Your most obedient servant,

HUGH C. THOMSON,
Secretary Board of Agriculture.

NOXIOUS WEEDS.

MR. EDITOR,—Clean cultivation is impossible, however earnestly desired and pursued, while neighboring fields are left to multiply the most noxious weeds. In our own Township (York) a Bye-Law in existence some time ago seems to have become obsolete, as weeds abound to an alarming extent through the township, not only

on waste land partially cleared, but on farms and lots under ordinary cultivation. To every one engaged in Agriculture this is a nuisance which should be abated if possible by most stringent laws in every municipality throughout the Province or by Provincial statute. Besides the unsightly appearance which the existence of weeds (such as the CANADA THISTLE and PIGEON WEED) gives to the field, these fruits of indolence or neglect impose incalculable labor and loss upon the community. I know of one person who recently lost \$200 on the rent of a farm by such means. To accomplish deliverance from such a curse the remedy, to be at all effective, must be simultaneous and general. My attention has been particularly called to this subject by noticing in a late American paper the following measure passed at the late session of the Pennsylvania Legislature, viz.

“Hereafter any individual or corporation in the State allowing the Canada Thistle to ripen on his or their premises, shall be liable to a fine of ten Dollars, upon each complaint that is properly established; and any one who may fear the spread of the Canada Thistle upon his premises from the hands of his careless or thriftless neighbor, may, after five days notice, enter upon any lands where the thistle is found growing, cut it and claim pay for the labor and trouble.”

The limitation with us should not be confined to the Canada Thistle, but should embrace Pigeon Weed or any other which might entail labor and loss upon the farmer. An evil of such magnitude might be more easily remedied by a Provincial Act (if no such act already exists) than by isolated and uncertain By-Laws of our Municipalities.

I am,
Yours, &c.

J. J.

York Township, 14th Dec., 1862.

[Our correspondent is quite right; the greatest hindrance to clean cultivation and improved farming is, without doubt, the multitudes of weeds which are too commonly to be seen on fields, and what are called gardens, as well as on the highways. We think that there exists a Provincial Statute on the subject. If not, such an Enactment as our correspondent refers to, passed by the Legislature of Pennsylvania, would, if properly applied, meet the difficulty. One would imagine that *self-interest alone* would supply a sufficient motive to persons to keep down weeds: experience unhappily shows the contrary. Hence the necessity of legislation in some form or other. We commend to the earnest attention of Agricultural Societies in particular, the subject of the above communication.—Eds.]

THE POTATO DISEASE.

TO THE EDITOR OF THE "EVENING TIMES."—
SIR,—Permit me through your valuable columns to say a few words about that excellent root, the potato. Much has been said and written on the cause and the cure of the potato disease, and premiums have been offered for many years by the Agricultural Societies of Great Britain for the best essay on the subject; and many an antidote has been suggested, both in Great Britain, Canada and the United States; but all, in my opinion, have failed to effect a cure.

I recollect, some 17 years ago, of reading in a Scotch newspaper, an essay on that subject, written by a clergyman, who had made the potato disease his study for many years, and he explained the cause and cure more to my satisfaction than any other who has written on the subject.

He says we have been working against nature all along in propagating from the root, instead of raising new potatoes from the seed; that the potato, like other vegetable plants, and even the human species, lived to a certain age and then died. Like an apple tree, or a laying hen, they would live after they had ceased to bear; that is, the apple tree would live after it had ceased to bear apples, and the hen after it had ceased to lay eggs. That the age of the potato was 30 years: that it took five years to mature it, and the next five years it was in its full vigour, and would continue to carry its seed until the twentieth year, but ceased to do so after that period, and all the plants raised from the root after that period were weak and subject to disease.

So far as my experience has demonstrated, I must say I have found his theory correct. About four years ago I commenced to work on his plan, and I got two potatoes, just five years from the seed, and planted them in my garden. The produce was about a peck; next year I had a goodly quantity; the next year I had about fifty bushels, and this year I had them growing in a very unfavorable piece of ground, being very low and wet, and they have been almost under water for a period of twenty days; but, notwithstanding, there was not one of them diseased, and during the four years that I have raised them I have never discovered the least blemish or symptom of disease, nor have any of my neighbors, a number of whom got them from me. They go by the name of *Chilis*; are of a dark purple color, very floury, and bear an excellent crop, being large sized and fine flavoured, with no small ones amongst them.

Now, Sir, as I am convinced that the clergyman's theory is correct, so far as I have experienced, I thought proper to communicate with you on the subject, as I consider that anything

having a tendency to promote the public welfare cannot be too widely known.

I am, with respect,
Your most ob't servant,
A FARMER.

Township of Blanshard, Nov. 22, 1852.

THE LANCASHIRE RELIEF FUND.— FLAX VS. COTTON.

TO THE EDITOR.—It might have been opportunely suggested at the meeting held to relieve the destitution in Lancashire, that the growth of flax by the farmers of this district, would, though not immediately, yet hereafter, permanently contribute to the end.

We know that flax affords the best material for mixture with cotton, at a cheap rate, and creates employment for a large population engaged in agriculture and manufacture, enriching both by reciprocal supply and demand.

The townships of Yarmouth and Southwold comprise 144,000 acres, divided into farms varying from 50 to 300 acres. Now allowing 5 acres in flax culture in every 100, these two townships would alone yield a very large quantity of raw material, and of the value to the grower, in straw and seed, of \$300,000.

The farmers account on this crop, exclusive of interest on land, tillage, &c., would average per acre:—

3 tons of straw, at \$8	\$24
20 bushels of seed for feeding, at \$1 per bushel.	20

Total. \$44

His expenses would be:—

Two bushel of clean seed, at \$1.50	3
Pulling, stocking and tying	4
Threshing the seed	1
Balance	36
	\$44

The farmers, I am aware, have not the opportunities or conveniences for preparing flax for market, but they can grow good flax by using clean seed and fine tillage.

In my efforts hitherto to promote the culture of flax, I have shown that the business of preparing it for the market, must in this country as in France and Belgium, fall into the hands of the "linier" or flaxman, who purchases the straw from the farmer and makes it a business to ret and scutch it.

For the purpose of showing that flax could be readily prepared for the manufacturer and a market thereby opened to the grower, I imported during the summer from Belfast two of Rowan's patent scutching machines, one of which may be seen in daily operation at Wilson's plaining factory in this town.

I anticipate the time will shortly arrive when reterries will be established in convenient

localities throughout the country, and Rowan's scutchers as common as threshing machines.

The Elgin Flax Association, though it has not accomplished much, has no doubt by the information and instruction it has diffused through the county, brought the value of flax culture prominently into notice, it remains with the farmers to apply practical results.

In the reign of Henry VIII, in the year 1532, an Act of Parliament was passed requiring that every person occupying land fit for tillage, should, for each quantity of 60 acres, sow at least one rood of it in flax each year. The quantity was increased to one acre in the reign of Elizabeth, 1562, under pain of a penalty.

The compulsion to raise flax may not in these days be enforced by Acts of Parliament and penalties, but let us hope by the stimulus to aid the distress and alleviate the sufferings of the manufacturers of Lancashire, who are deprived of their daily bread by the withdrawal of the supplies of cotton.

Your obedient Servant,

B. WALKER.

St. Thomas, Nov. 24.—[*Home Journal*.]

PROVIDING HOMES FOR THE FAMILIES OF IMMIGRANTS OF THE LABOURING CLASSES.

We publish the subjoined correspondence by request, and commend the subject to the consideration of our readers. Although the exact scheme suggested by the Chief Agent of the Emigration office—might not be found feasible in many localities, still the general subject of providing comfortable houses for farm labourers and their families, together with a plot of land for cultivation in garden, or small field crops where expedient, pasturage, &c., is one well deserving the attention of proprietors of land, as intimately connected with their own interests, and the conduct and future progress of the labouring immigrant.

GOVERNMENT EMIGRANT OFFICE,

Quebec, December, 1862.

TO THE EDITOR OF THE AGRICULTURIST,—SIR,
—The accompanying correspondence is submitted for your consideration and should you take the least interest in the matter of which it treats, I beg of you to give it publicity amongst the agriculturists in your neighbourhood.

I am naturally desirous before taking any steps to give the subject effect in the United Kingdom, to ascertain what encouragement the farmers and landed proprietors of Canada are prepared to offer in a cause of such vital importance to the country at large.

There is also another question which I should wish to bring under the notice of our farmers.

Applications are being constantly made to me, by young men of character and intelligence who are desirous of acquiring a practical knowledge of agriculture previous to purchasing a farm on their own account. They are in most instances willing to work for their board, or at mere nominal wages, on being received as one of the family, and some are prepared to pay for the instruction they may receive.

Farmers who are disposed to accept young men on either of these conditions are invited to transmit their proposals to this office.

I remain, &c.,

A. C. BUCHANAN,

Chief Agent.

GOVERNMENT EMIGRATION OFFICE,

Quebec, September, 1862.

To the Farmers and Landed Proprietors of Canada.

GENTLEMEN,

Now that the organization of a scheme for a better system of colonization is engrossing the attention of our public men, and a fresh "stimulus" thereby given to the subject of Emigration, I am induced to suggest to you the importance of devising some means to make provision for Emigrant families who arrive in this country without funds; which, while tending to promote the comfort of the poor Emigrant himself, will prove advantageous to your interests, and beneficial, I hope, to the country at large.

The great drawback against which the head of a poor Emigrant family has now to contend is the want of some "Home," or shelter, where he can place his family, while he goes out to work for their support. From the general lack of such accommodation throughout the country, and the consequent difficulty of procuring it, the majority of our Farmers give preference to the employment of single men, much to the detriment of a class of laborers who have within them the elements of a steadier success. To remove this objection, I venture to suggest that proprietors of 200 acres lots should set apart one cleared acre adjoining 10 uncleared acres of land; that they should build thereon a habitable log cabin, fit for the occupation of an Emigrant family, letting it to them for a term of years: the rent to be made payable in labor or in money, as might be agreed upon; or some such arrangement as the following might be made:—That the Emigrant should rent the lot ten years, he giving one day's labor in the week, by way of payment, with the proviso that if within five years he clears and puts under crop five acres, no further rent will be required for the rest of the term; but should he fail to do so, then the bargain would be annulled. An arrangement of this sort would have the effect, if widely adopted, of securing immediate provision for the newly arrived Emigrant, and the Farmer affording this accommodation, would thereby acquire labor with

out paying money for it: at the same time improve his land, and attach by kind treatment, to his interests, a family whose services or assistance might, in many instances, become of incalculable value to him.

In giving publicity to this letter I am influenced by a desire to attract the attention of practical men to the exigency I refer to, in the hope that the question may be fairly dealt with, and I earnestly advise all who may feel disposed to act upon my suggestions, to put themselves in communication with this Office, stating what accommodation they are prepared to offer, and such information will be brought before the Emigrant on his arrival here.

I am, Gentlemen,
Your Obedient Servant,

A. C. BUCHANAN,
Chief Agent.

The following are extracts from letters, addressed to Mr. Buchanan upon this subject.

HOPEFIELD, OPEONGO ROAD, COUNTY OF
RENFREW.

November, 21st, 1862.

After giving to your suggestions as contained in your late circular a good deal of consideration, I am so fully impressed with the benefit mutually to be derived by its adoption by the emigrant, the farmer and the Government, that I in conjunction with a few others have decided upon giving it a trial on as extended a scale as the means at our command and the field of our operations for the purpose will admit of. A few alterations have been made which it is thought will meet your approval, but in many instances could not be generally adopted. Of its success for the following reasons we are so confident that we only look to Government for its cooperation by forwarding the intended settler to this place

To this end we intend laying off six hundred acres of which we are in possession, being 300 acres on either side of the main Road fronting each other and having a frontage of nearly a mile, into sixty lots of 10 acres each. Each lot being well watered. On each of those we intend erecting a dwelling 20 x 24 feet and clearing around it one acre to be ready for crop on the opening of spring. The settler on his arrival can at once proceed to put in his crop and turn round and assist his older established neighbors in doing similarly, for which he will receive payment in most cases in produce that he must require delivered to him, which is better to him than cash, as with the latter he would be obliged to look for what he required and lose time in doing so, and of demand for labor in this vicinity there is no laxity.

Very many settlers of old standing have seriously crippled their first footsteps by being the possessors of too much land, running over its surface carelessly and slovenly, whereas one-half

attended to and receiving the same amount of labour would have yielded a larger return. Believing in a small farm well tilled we are of opinion that for the first few years of a settler's life, 10 acres will be found quite sufficient for his requirements. By our plan he is not bound in any manner to his holding as he can by a months notice of his intention to remove himself to any other location, do so; and this is required so as to be able to communicate to your office any vacancies as they may occur, that they may be filled up. Our intended settlement being thus nothing more or less than a depot or school, from whence the scholars can when opportunity offers of bettering themselves issue, and in which they will learn the various branches necessary for their future success, and of which on their advent they are of necessity ignorant, getting their maintenance during their stay and accumulating a little store as they proceed. I may here mention that should our trial be successful, of which we have little doubt, it could be enlarged and improved by the immediate action of Government in any wished for locality and to any extent. But the great difference in our plan and your suggestion is this, that whilst by yours the Emigrant never becomes the proprietor of his holding but pays a day's labor per week for the occupancy thereof, we will permit him to become a purchaser at the expiration of three years, of his holding and its improvements for the sum of fifty dollars. Thus not in any way curtailing him in the amount of either labor or capital he may expend thereon, and this we consider a great boon to the settler, as in the mean time he can improve, well knowing he can become the sole possessor of those improvements at the expiration of three years on the above mentioned payment, when he can either sell or remain as suits him, and should the settlement become prosperous he can sell building lots on the front to pay the cost of the entire, and this in the case of mechanics is a decided advantage.

Four buildings have been erected already and the necessary clearances for eleven more have been made and we only await some encouragement to proceed with the entire to the completion so as to have them ready for occupants on the arrival of the spring fleet. I have written a letter to the *British Whig* which explains fully the terms of settlement, and have in course of preparation a map of the adjoining Townships and an advertisement in reference to the subject which I will forward you on their issue for distribution to your correspondents. If the encouragement is extended to us we will be prepared to receive forty families in the spring.

HENRY READ,
Agent for the Proprietors.

To A. C. BUCHANAN, Esq.,
Chief Agent of Emigration,
Quebec.

*Copy of a Letter received from Mr. George Craig,
of Southampton, C. W.*

COUNTY OF BRUCE, C. W.,

Southampton, 18th September, 1862.

SIR,—In the "*Montreal Witness*," of the 15th June, I have seen a circular referring to how Emigration of the right sort is to be promoted, which I highly approved, both as regards its theory and practice, and which should be taken into consideration by every Agriculturist. both for the benefit of himself and also of the poor Emigrants who are daily arriving on our shores, but who do not know what course to pursue in order to procure a support for themselves until they become acquainted with the Country. And as I am a farmer in this County and own considerable land, I would like well to get some Emigrants on part of it, and would quite agree with you in your suggestion as to the way they should get it, viz: Suppose from 10 to 50 acres with some clearing and a comfortable "cabane" thereupon. was given to such, for a term of 2, 3 or 4 years with the understanding that they should clear and work for you what is reasonable for it. Thereby gaining for themselves a comfortable support, and also improving the land for their employers. Now, I will give 10 or 12 Emigrant families such a chance myself, and can also assure you that many other parties in this place would do the same. And take it upon the whole the County of Bruce cannot be surpassed for such persons to steer to when they land in Quebec. As it is a new country with good land, and a healthy climate, good steady hands who have been 2 or 3 years in the Country get from \$12 to \$18 per month, and I think it right to inform you as head of the Emigrant Office to let all such know where they find plenty of work at liberal wages. They can get here pretty easily from Quebec—by Rail to Toronto, thence to Goderich and by boat to Southampton.—Time from Quebec about 1 days, distance 697 miles.

I am, Sir,
Your very Obedient Servant,
GEORGE CRAIG.

*Extract from a letter received by the Chief Agent,
from Scotland.—October, 1862.*

I hope to have a large party to send out next spring; your circular is excellent, and the proposal made just meets the want, that has always frightened me for my poor people, I hope your Canadian proprietors will respond to it warmly.

CHRISTMAS-DAY ON A THURSDAY.

Peterboro, C. W., Christmas-day, 1862.

TO THE EDITOR OF THE "*CANADIAN AGRICULTURIST*."—Dear Sir,—The occurrence, this year, of Christmas-day on a Thursday reminds me of the following lines, with the name of whose author I am, however, unacquainted. They ap-

pear among the celebrated papers deposited in the British Museum, and known as the "*Bibliotheca Harleiana*." Not having that work at hand for reference, I can give no more than the fragment I have transcribed. It may not prove uninteresting to such as are in the habit of noting the signs of the Seasons, as well as "the signs of the Times," and of recording passing events as well as passing storms, to bear these verses in mind, and compare them, occasionally, with what transpires both above and upon the earth; and thus, to a certain extent, ascertain whether the old Author was warranted, and if so to what extent, in penning his quaintly-poetic prophecy. The Harleian MSS. were collected partly by the first and partly by the second Earl of Oxford, the latter of whom died in 1741.

"If Christmas day on Thursday be,
A windy winter you shall see;
Windy weather in each week,
And hard tempests, strong and thick;
The summer shall be good and dry,
Corn and beasts shall multiply;
That year is good for lands to till,
Kings and Princes shall die by skill;
If a child that day born should be,
It shall happen right well for thee,
Of deeds he shall be good and stable,
Wise of speech and reasonable.
Whoso that day goes thieving about,
He shall be punished without doubt;
And if sickness that day betide,
It shall quickly from thee glide."

I am, dear Sir,
Yours faithfully,
VINCENT CLEMENTI.

FLAX SCUTCHING.

In the first place, sufficient interest is not taken by any party in connection with flax scutching. The farmer is in a hurry to get scutched, the mill-owner to make money, and the scutcher to make wages. Thus all parties concerned being in a hurry, no wonder that the work is slovenly and badly done. The millowner never thinks of taking the responsibility of standing between the farmer and the scutcher; the entire management and control therefore devolve on the scutcher, and he very easily persuades the farmer that he should not get his flax all scutched away. This the farmer agrees to, and desires the scutcher not to scutch his flax too far. Now, though this be well meant on the part of the farmer, it is taken advantage of by the scutcher. He will, consequently, scutch it both roughly and hurriedly. The secret of all this is—the scutcher makes more wages, the millowner more money, but the poor farmer sustains more loss. Again, a millowner does not think of losing his time with the supervision of two, four, or six stocks or stands; and even in the larger mills the owner may not take the responsibility of the

management, but appoints as manager one of the scutchers themselves. By this means the most valuable portion of our produce is put into the hands of the most uneducated portion of the community, and the farmer is left entirely at their mercy. Now, after twenty years of close and unremitting attention to flax scutching, I can unhesitatingly state, that from £3 to £4 per acre is lost to the farmer by *hurried* and slovenly scutching. There is, in addition to this, another great mistake from the state in which the farmer brings his flax to the mill, often in so damp condition that it is ruinous to scutch it. On this point I have had some hundreds of experiments, and all were in favour of flax being scutched in a dry state. In some instances the loss is to an extent almost incredible, some lots giving double the amount of fibre when dry than when in a damp state, and the quality is greatly improved. I therefore hold that there are great waste and loss, and one of the chief causes of bad scutching, by putting into the scutchers' hands flax in a damp state. There should be a means of drying all flax scutched in the winter months, and steam is the only safe drying, all other means being either injurious to flax or dangerous as to fire.

I particularly wish to call the attention of flax-spinners to the plan of drying the flax by steam, as not only quality, but quantity is improved, and that to an extent they would scarcely credit. However, should they have any doubt, by sending a deputation of two or more flax-buyers, to my mills, I will let them see a series of experiments that will convince them that steam-drying of flax is a great improvement in every way. Now, every means should be resorted to that would either improve quantity or quality in these days of want of cotton. Spinners should be the first to set the example, and let them begin where the Royal Flax Society left off, namely, at the scutch mills. The farmers have been very well instructed how to do their part to flax; it is only when it comes to the mills that there is a want of skill and care. I would therefore say that the spinners, as a body, should form a society or committee, and erect one or more model scutch mills, and experiment on them, giving to the country the benefit of experiments, and also training young men and fitting them to take management elsewhere through the kingdom, as the want of such is a great drawback. Many new districts would commence growing flax were there a facility of obtaining such skill. Every young man should be able to superintend the erection of the scutching department of a mill, as also to train scutchers, &c., &c. With such facilities many new districts would commence flax culture. It is now quite evident that machine scutching will not supersede the established system. The present scutch mill, when well fitted up and in good working trim, is in

itself an admirable machine, and well adapted to take the shoves out of flax. Its action cannot be excelled; and when we add to that a well-trained scutcher, I would say that as long as he does his part well, no machine will be able to compete with it. I have had many experiments on this, having invented the first cylindrical scutching machine, which obtained a medal at the Dublin Exhibition some ten years ago. In course of inventing this machine I had many experiments with the present system, and invariably found that a well-ordered mill and a good scutcher could come out with long odds. We should, therefore, look after and try to improve what experience teaches us is the best machine. To do so we should have the flax brought into a suitable state by *steam* drying, (none other being so safe or so good). It will then be in a fit state for the scutcher. In fact none but those who have seen it can imagine the difference there is in scutching a dry, as compared with a damp, strick of flax; and all the fine flax is as much improved in quality as quantity. When prepared in this way with steam drying, and carefully put through our patent rollers, then it is fit to be put into the scutchers' hands, but not before. The scutcher should have a well ordered stock or stand, with eight wipers or knives on a rim of four feet diameter, the wipers being ten inches projecting from the rim and nine inches broad, and travelling at a speed of about 200 revolutions per minute, being the maximum speed, and ranging from that down, according to the quality and firmness of fibre. Now, I hold that such a machine has not hitherto been equalled for scutching our Irish flax—for refining the fibre and preparing it for the spinner. I have minutely examined all the processes that flax goes through preparatory to spinning, and unhesitatingly state that the scutch-mill is the place to take out the shoves and refine the fibre with the greatest saving for both quantity and quality (always supposing the scutcher to do his duty). Let, therefore, one or more model scutch mills be erected on these principles, which I will explain (if required) more minutely and accurately, and managed on the rules I have stated, and I will guarantee a vast saving of flax to the country, as well as greatly extended culture. The flax fabric will now be called in to make up the void of cotton; hence the present is the most fitting time to develop flax culture and management, that it may not again lose the place it is now likely to take. Should any nobleman or society take up the subject, I will feel pleasure in imparting such information and instruction as my long experience and close application to flax-scutching have given me, as well as the result of my many experiments. I am, sir, your very obedient servant, Wm. BAIRD, Mullanboy, Castlefin, Co. Donegal, September, 1862.—*Belfast Morning News.*

LIEBIG ON AGRICULTURE.

Baron Liebig, the world renowned chemist, is publishing in the *Bavarian Gazette*, a new introduction to his well known "Agricultural Chemistry" which is just coming out in a seventh edition. The following extracts will afford material for thought to agriculturists generally; and though they have a special application to England, the suggestions implied or expressed will be found to have no unimportant bearing on our Canadian agriculture. It is a fact too palpable to admit of doubt, that both in the neighboring States and in Canada, thousands and tens of thousands of acres of land formerly rich and highly productive, yielding profitable returns, have now become, in consequence of the exhaustive system of tillage comparatively barren, and in some cases abandoned.

"Exhaustive agriculture (Raub-Bau), which renders the country a desert, and makes it unfit for human habitation, may be described in a very few words. On a virgin soil, and during the first period of its subjection to the plough, the farmer sows his corn, year after year, in the same ground. When a deterioration of the crop becomes visible, he passes on to another field. As population increases, this extension becomes more and more limited, and the farmer is confined to one and the same plot, different portions of which are successively left to lie fallow for a time. The yield goes on decreasing year after year, and the original fertility is now sought to be restored by the artificial resource of manures. The meadows are gradually absorbed in the process, and the three-field system introduced. But as these resources do not hold out for ever, the production of manure by the cultivation of fodder becomes a necessity. The lower depths of the soil are used for the rearing of plants originally confined to the meadows, until at length these, too, are exhausted. Peas are first employed for this purpose; shamrock, turnips (Rube), and potatoes then follow in disastrous succession. At length cultivation becomes impossible; the soil being no longer able to produce crops. This is a process that may extend over many hundreds of years, and in some cases even up to a thousand. At length the exhaustive effects of his labour reach a point when they become too clearly visible; expedients are then resorted to one after the other, each of which recognises the deterioration of the soil.

"English agriculture will best exemplify the disturbance of nature's economy on the part of a highly civilized nation. In the last quarter of the eighteenth century was com-

menced the importation of bones into England, which continues uninterruptedly to this very day. The importation of guano began in 1841; in 1857, 286,000 tons were brought to England, while the average importation of bones had risen to from 60,000 to 70,000 tons a year. One pound of bones produces in three seasons 10 lbs. of corn, while 1 lb. of guano in a course of five years makes 5 lbs. of corn. It may be supposed, without danger of falling into a mistake, that in the 50 years between 1810 and 1860 4,000,000 tons of phosphates have been imported into England in the form of bones, linseed cakes, rape-seed, &c. These, in the same time, have produced 40,000,000 tons of corn, sufficient for the sustenance of 110,000,000 of people. Supposing that, from 1845 to 1860—that is, in 15 years—the English fields have received an addition of 15,000,000 tons of guano, the corn produced by this artificial manure must be estimated at 7,500,000 tons, sufficient to feed 20,000,000 of people. Again, it is self-evident that if the phosphates imported since 1810, and the guano forwarded to England since 1842, had not exhausted part of their productive power by employment upon the fields, these fields would have possessed in 1861 the essential conditions for the production of food for 130,000,000 of people. But with this calculation must be contrasted the astounding fact that Great Britain is not even able to produce the amount of food required for its 29,000,000 of inhabitants. The introduction of closets into most parts of England results in losing annually the material capable of producing food for 3,500,000 people, the greater part of the enormous quantity of manure annually imported by England being regularly conveyed to the sea by its rivers, and the crops grown not sufficient to feed the ordinary increase in the number of its inhabitants.

"Although not in the same proportions as in England, the same process of self-destruction is going on in every European country. In all the great towns of the Continent large sums are annually expended by the authorities in order to make the material requisite for the improvement of the fields unattainable by the farmer. In Bavaria, for instance, one of the richest and most fertile countries of Germany, the average crops of the Danubian districts, although proverbially abundant, have been found to decrease year after year, and are already inferior to those in the Palatinate. To form a correct notion of what is shortly in store for Bavarian agriculture, it may be sufficient to mention in this place, that a single factory at Henfeld, in the course of last year, only exported seven hundred and fifty tons of bone powder to Saxony, where its value is no doubt, better understood than here. For twenty-five years past the exportation of phosphates from Bavaria has steadily increased, and the figures just given

for the Henfield factory are only a small fraction of the entire amount. In Munich alone one thousand two hundred and fifty tons of bones are annually procured, which for greater part are exported as fast as they can be obtained; and I believe I am right in estimating the sum total of bones exported from Bavaria at something like six thousand thalers a year. Large as this quantity may appear, it is yet no more than what is imported every two years into the one district of Bautzen, in the kingdom of Saxony. With each hundred weight of bone powder, however, the essential conditions for the reproduction of two thousand six hundred pounds of wheat are withdrawn from the Bavarian fields, thus running up the annual loss of corn to one hundred and fifty thousand tons. Still, the loss in this particular is only a small fraction of the agricultural requisites wasted in the towns by the supineness of the authorities and the indifference of the inhabitants. For centuries past considerable wealth has accumulated in Bavaria from the exportation of corn—the country, in accordance with a law of nature, losing in the value of its soil what it gains in silver and gold. It is asserted that even now the annual crops of Bavaria exceed 34,500,000 cwt., which is the amount required for the sustenance of its population; but I believe that, if the statistical data collected were more exact than they are, the boast would appear to be founded upon an error. At all events, it is impossible for the surplus production to continue for any length of time, the diminution beginning directly upon the attainment of the extreme limits. The preservation of prosperity in a country essentially depends upon keeping open its sources, and Bavaria, as an agricultural country, is more than any other German provinces interested in maintaining its fields at the due standard of fertility, which as I have said, is very much the reverse of what is actually the case. The greatest danger in all these things is to ascribe any value to the opinions of the farmers themselves, many thousands of whom are neither able to judge the qualities of their soils, nor to account, correctly and scientifically, for the results of their cultivation.

“There is nobody knows the sum total of nutritive elements in the soil, and it is but thoughtless to suppose it to be inexhaustible. What the soil really includes, I repeat, nobody knows; though what it yields everyone may easily ascertain for himself. The great object in view is not to extort the greatest possible quantity out of the soil, but to learn to economise our resources. A boy may calculate the amount of productive power left in a field after a hundred years, even though only one-half per cent of its original value should be annually taken out of it; but the addition of this half per cent a year, if he would learn to provide for it, would make it yield the same crop for another hundred years, and, in fact, for an un-

limited time. Suppose only one-fourth of the essential conditions for the reproduction of corn to be annually lost in Bavaria, the sum of this deficit in one hundred years amounts to no less than \$60,000,000 cwt. No land is rich enough to make up for its waste after a certain time; and even though it were sufficiently wealthy to purchase all the manure required for the purpose, there would be no market at which it might be obtained. It is all the more difficult to employ the right medicine against the chronic malady eating away the heart of the European populations, inasmuch as the patient does not believe in the existence of the disease. The populations of Europe resemble a man suffering from consumption, whose looking-glass offers him the deceitful image of health, and he only complains of a feeling of fatigue in his limbs. The agriculturist of the day equally complains of some little fatigue in his fields; but for the rest, considers them sound in wind and limb. The consumptive patient thinks that a little wine would restore him to his former condition; but, if he takes it, the progress of his malady is only accelerated. The agriculturist of the day being equally of opinion that a little guano would do his fields good, in most cases only brings them nearer the day of utter exhaustion. Years pass by before an insolvent husbandman may be actually obliged to declare bankruptcy; and it is not before he has impoverished all his friends and relatives, and carried his last silver spoon to the pawnbroker, that he abandons the deceptive hope of a change for the better. The gradual reduction of the peoples of Europe to a condition of impoverishment and depopulation is also a slow process, growing on for centuries for its ultimate consummation; yet, the day is marked down when in all European countries the children will experience that they have to suffer for the sins of their fathers. No nation has contrived to continue its existence, unless it knew how to preserve the conditions physically essential to its sustenance; and all those countries of the globe where the fields had not had restored to them by the hand of man the elements necessary for the return of crops, we may follow in their downward course from a period of the densest population to the ultimate condition of barrenness and desolation. It is vain to hope that a field in Greece, in Ireland, Spain, or Italy, which is known to have once yielded abundant harvests, will ever return anything like them, even though subjected to the highest cultivation. Emigration from Ireland must continue for a century longer, and never will it be possible for the population of Spain or Greece to exceed a certain and very limited number. Great Britain deprives all countries of the conditions of their fertility. It has raked up the battle-fields of Leipsic, Waterloo, and the Crimea; it has consumed the bones of many generations accumulated in the catacombs of Sicily; and now annually destroys

the food for a future generation of three millions and a half of people. Like a vampire, it hangs upon the breast of Europe, and even the world, sucking its life-blood without any real necessity or permanent gain for itself. It is impossible to imagine that such a sinful disturbance of the Divine order of things should be allowed to go on for ever with impunity; and the time will probably arrive for England, earlier even than for the rest of Europe, when, with all its wealth in gold, iron, and coal, it will not be able to repurchase the thousandth part of those essential conditions of life so frivolously wasted for centuries past. I am fully conscious that nearly all practical agriculturists insist upon the implicit correctness of their methods, and that they are filled with a belief in the permanent fertility of their estates. This circumstance it is which makes people so indifferent to the future, so far as it depends upon the produce of agriculture; and thus it has probably been with all nations who have brought about their extinction by their omissions and commissions. No political wisdom will be able to protect the States of Europe against a similar fate, unless both peoples and governments should be at length prevailed upon to pay a due amount of attention to the growing symptoms of an impoverished soil—to the solemn warnings of history and science."

BRIEF NOTES ON THE HISTORY OF BRITISH AGRICULTURE.

Agriculture as an art goes back to the very beginning of the human race, as we are informed by sacred history, that our first parents were placed in a garden to dress and to keep it, and that of their first two born sons, one was a "keeper of sheep," and the other a "tiller of the ground";—thereby indicating that at the beginning, this ancient art was divided into the two great departments, viz: tillage and grazing, in which it has continued to the present day.

It is not a little remarkable that an art so ancient and indispensable as Agriculture, upon the success of which mankind in general depend for their daily bread, and the raw material which their ingenuity works up into articles of comfort and ornament, should, during the earlier and far greater period of its growth, be absolutely without a history. We are dependent for the very limited and imperfect knowledge we have of this important pursuit for several thousand years, to mere incidental allusions by ancient writers, and the symbolical representations that have been discovered in works of art. One would have naturally imagined that a pursuit so essentially connected with the physical existence and well being of mankind, constituting in fact the only solid basis of the wealth and independence of nations, would have found ready and truthful chroniclers of its state and progress, in every age, by all races at all removed above the condition of

barbarism. Historians, however, not only in ancient—but also in modern times, have been too prone to limit their investigations to the intrigues of courts, and deeds of war and rapine; so that in vain we look to their works for any full or satisfactory information relative to the inner life and industrial progress of the people. In this respect Agriculture has shared the common fate of the other industrial arts; an extremely scanty knowledge of the state of which, up to a comparatively recent period, we can only acquire by a patient collection of here and there an occasional reference by writers of the ancient and medieval periods of the world's history, and what has been preserved and discovered of the remains of the industry and arts of preceding ages.

That most singular and interesting country,—Egypt,—whose history goes back to the infancy of the race, we learn was not only the cradle of the sciences, but also the granary of the world. And although we can form but very imperfect notions of the condition of our art among the ancient Greeks, from the meagre information respecting it that has come down to us in their writings, yet there is reason for believing on good authority, that a considerable number of authors among that polite and learned people treated of the subject of Agriculture, but that their writings have been irrecoverably lost. The Greek mind, however, was far more speculative and less practical than that of their successors,—the Romans,—of whose agricultural knowledge and practices very interesting and trust-worthy information has come down in the works of their poets and historians. No one can impartially consult the Roman bucolic writers without receiving a conviction that that valorous people were far advanced in this practical art, and that in a number of important particulars their writings will favorably compare with similar productions of modern date. Indeed, if the practice of the ancient Romans reached the standard laid down by several of their rustic authors, we can hardly, in the present day, be said to have got much the advance of them in several important operations of practical husbandry. And to this adventurous people the modern nations of Europe are greatly indebted for their literature, civil polity and arts; including particularly that of agriculture. Wherever Rome carried her victorious arms, and planted her eagles, she planted also her arts, and taught ruder nations,—our own loved Britain among them,—the principles and practice of improved husbandry.

Pliny informs us that Cresinus, an ingenious but humble Roman husbandman, by superior knowledge and industry so far succeeded in raising greater crops, and therefore obtaining larger profits than most of his countrymen, that the envy of his neighbors became so much excited that they brought this accusation against him:—"That by sorcery, charms and witchcraft he had transported his neighbor's fruits,

fertility, and increase to his own fields." For this he was ordered peremptorily, by Albinus, a Roman general skilled in agriculture, to answer the charge before him. Cresinus fearing the issue, resolved upon his best defence, brought his plough and other rural implements, and displaying them openly, together with his daughter, a stout, strong and handsome lass; then turning to his fellow citizens said; "My masters, these are the soceries, charms, and all the enchantments that I use; I might also allege my own travel and labour, my early rising and late sitting up, and the painful sweat that I daily endure; but I am not able to present these to your view, nor to bring them with me into this assembly." This bold, ingenious, and we may add truthful defence subdued the jealousy and hatred of his assailants. Cresinus was pronounced not guilty; and it is said that his opposing neighbors had the good sense to benefit afterwards by his improvements and example. This incident is only one of a very numerous class, showing that it is the common lot of discoverers, and reformers to incur the jealousy, mistrust, and not unfrequently the persecution even, of their neighbors and fellow countrymen.

As the agriculture, commerce, and institutions of the British Islands are essentially connected with the interests of the Colonies and dependencies of the Empire,—including no small portion of this mighty continent of America,—in tracing a few of the salient lines of the state and progress of British Agriculture, we shall be the better prepared to understand and practice our own. For it should ever be borne in mind that the great scientific and practical principles of this noble and useful art are essentially the same all over the world; and that it is the province of reason and experience to modify their practical applications so as to meet the varying conditions of soil, climate, markets, &c.

The Norman conquest was no doubt in many respects a great benefit to the agriculture of England, then in the rudest state, by the introduction of improved practices from a more advanced country, but the subsequent disposition of the Norman Kings to turn smiling corn fields and green pastures into wild hunting grounds, was injurious to the progress of agriculture as it was to the prosperity of the nation, often resulting in a most exasperating tyranny. The profound and faithful historian of the Middle ages, Mr. Hallam, in reference to these matters observes: "The exclusive passion for the sports of the field produced those evils which are apt to result from it; a strenuous idleness, which disdained all useful occupations, and an oppressive spirit towards the peasantry. The devastation committed under the pretence of destroying wild animals, which had been already protected in their depredations, is noted in various authors, and has also been the topic of popular ballads. What effect these must have had on agriculture it is easy to conjecture. The levelling of forests, the draining of morasses, and the extirpation of mischievous animals which inhabit them, are

the first objects of man's labor in reclaiming the earth to his use; and these were forbidden by a feudal race, whose control over the progress of agricultural improvement was unlimited, and who were not willing to sacrifice their pleasures to their avarice."

From the fifth to the eleventh centuries, when the nation was frequently embroiled in feudal wars, agriculture, like the other arts, found a refuge in the religious houses, and was both encouraged and improved by the sacerdotal orders; "We owe,"—observes a modern writer, the agricultural restoration of great part of Europe to the Monk; they chose, for the sake of retirement, secluded regions, which they cultivated with the labor of their own hands. Several charters, are extant granted to Convents, of lands which they had recovered from a desert condition. To the Benedictine order, severe labour in the acts of tillage stood in the somewhat strange double capacity of an usual penance and a favorite occupation."

The Monks were in fact not only the most advanced agriculturists, but the best landlords in the highest acceptance of the word. Connected by the ties of ecclesiastical dependence and intercourse with Rome, the fact at once of their supreme authority, and of whatever still remained to the world of ancient art, science, and literature, and employed in the transcription of manuscripts whose language was a sealed repository of knowledge to all but their own order, they kept alive the embers of past learning and civilization, which were otherwise threatened with utter extinction; and though the georgical writings of Greece and Rome were deficient in that one great preliminary of northern Agriculture, the subject of Drainage, it may be readily conceived from the works of the Roman writers that the mental influence of their studies would be more or less perceptible over the lands of proprietors thus comparatively enlightened. Extensive draining operations were commenced, and successfully carried to completion by the religious houses, in various parts of the kingdom; such as the fens of Lincolnshire and Somersetshire of Romney Marsh in Kent, during, and subsequent to the reign of Edward the first. Some of these districts are still known by the names of the ecclesiastical dignitaries who commenced or carried out their reclamation as "Becket's Marsh," "Boniface's Marsh," and "Baldwin's Marsh," forming that rich and extensive alluvial tract along the Kentish coast, now denominated Romney Marsh, so celebrated for its large long-woolled sheep. There appears to have been considerable improvement effected about this period in the rude agricultural implements which had come down from still remoter times. The value of manures began to be appreciated, and their application to the crops better understood. Some of the more far seeing and close observers seem to have had an indistinct idea of the benefits of rotation, and the legislature made enactment relative to the proper preparation of the soil for cropping, and the keeping of the ground free

from weeds,—matters which, even in the present age, if they do not need the interference of government, imperatively require stricter attention on the part of too many cultivators.

British husbandry can scarcely be said to have possessed a literature before the sixteenth century, at the early part of which books treating of its practical principles and routine began to appear. The earliest treatise of much importance by an English author was "*The Boke of Husbandrie*," by Sir A. Fitzherbert, lawyer and judge; it appeared in 1534, and the author refers to himself as "*a farmer of forty years' standing*." In those days a Chief Justice of the Common Pleas did not consider the pursuit of agriculture below the proper dignity of his position. The learned author has left all posterity a valuable legacy in his "*Boke of Husbandrie*," which is a most remarkable production for those times, and which for expression, brevity, and clear descriptions, has, perhaps, never been surpassed, if it has been equalled, either in ancient or modern times: Condensing his remarks into the space of one hundred pages, with a terseness almost unrivalled, he points out with the greatest clearness the prevailing bad practices of the day, and the improvements he thought needed, some of which are equally applicable to our own times, and to this, as well as many other nations of the British Empire. The practice of having deep stubble to be mowed at leisure late in winter, when much of its manuring ingredients have undergone chemical changes and disappeared, he condemns, as though he was acquainted with the doctrines and results of the modern science of agricultural chemistry. And in reference to what is felt by many in the present day—the too great disparity between the size of many farms and the number of cattle kept thereon, he says:—"A husbände cannot thryve by his corne without cattell, nor by his cattell without corne;" adding, "sheep in myne opinion is the most profitablist cattell that any man can have." He makes but little mention of lime, a circumstance indicating that it was not largely used in his day; but of marl he frequently speaks and commends.

The following passage from one of the celebrated Hugh Latimer's discourses, preached before Edward the sixth, will afford some idea of the value of land and the state of the farm and family of a British yeoman of the sixteenth century:—"My father was a yeoman, and had landes of his owne; only he had a farme of three or four pound by yeare at the uttermost; and hereupon he tilled so much as kepte a half dozen men. He had walke for a hundred sheps, and my mother mylked thirty kyne. He was able, and did find the king a harness, with himselfe and hys horse, whyle he came to the place that he shoulde receive the kyng's wages. I can remember that I buckled his harness, when he went into Blackheath felde. He kept me to schole, or elles I had not been able to have preached before the Kinge's Majestie now. He

*

marrýed my sisters with five poundes, or twenty nobles a pece; so that he brought them up in godliness and fear of God. He kept hospitalitie for his poor neighbours, and some alms he gave to the pore, and all things did he of the same farme."

To be continued.

BUCKWHEAT FOR MILCH COWS.

Buckwheat is not regarded as either a safe or profitable crop as a rule. But latterly when buckwheat cakes and refined sorghum syrup form the staple for breakfasts in city and country during the fall and winter months, this grain is growing in favor among farmers. The danger from early frosts, and the adherence to the theory that good crops cannot be grown unless the seeding is delayed until July, prevents the investment of labor and capital in it that would otherwise occur. It is safe and best, if seed is the object, to sow before the 10th of June in this climate, (Illinois.)

The buckwheat plant is valuable forage for stock while in bloom. It is said to be more nutritious than clover. It is valuable as a forage for bees at the same time.

In conversation with a gentleman who owns and milks two hundred cows, and sells their product in Chicago, I ask him what kind of feed would produce the most milk of good quality? He replied that he fed many tons of middlings every winter, but there was no feed that he had used that would produce so much milk as buckwheat meal. Cattle are fond of it, and it aids the secretion of milk wonderfully. It is often fed underground, and is regarded as very nutritious—a single bushel equal to two bushels of oats as a horse feed. The milk farmer referred to said he regarded it as the most profitable grain crop he could grow for his husbandry. Whether or how it affects the quality of the milk I cannot say; or whether the feed is better mixed with a lighter food, and fed wet or not I had no opportunity to inquire. Its value for this purpose was new to me, but may not be to some of your readers; if not, their experience will be interesting.—*Rural New Yorker*.

SKETCHES OF THE DIFFERENT BREEDS OF CATTLE.

Durhams or Shorthorns.

The origin and early history of this celebrated breed of cattle are points involved in considerable obscurity. It has been called at different times, "Dutch," "Durham," and "Leicester," and did not originate as is often supposed in the county of Durham. There can be little doubt of its Dutch origin;—that is to say the stock imported from Holland became crossed with the better specimens of the large, medium-horned cattle, which for centuries existed throughout the east and north-east of England. In the fenny parts of Lincolnshire and adjoining counties the cattle

were distinguished for ages by their great bulk and coarse figure, with small short blunt horns. But we are informed that northward of the vale of Trent, and thence across the Ouse, through the central plains of Yorkshire, to the river Tees and beyond it, the cattle assumed a less gross and unwieldy form, but were still a very tall race, of varied colours, with horns of medium length, or short in comparison with the prevailing long-horns. In comparing these varieties of cattle with the races or the opposite continent, the large dingy breed of the fens may be compared with the native black cattle of the flats and marshes of Holland, and the more varied kinds north of the Humber, with those of Holstein and Jutland, whence the finest cattle of the north of Europe have been derived. It is not unreasonable to believe, that the latter during the early period of Saxon colonisation, may have been brought to the country of the Jutes and Angles who settled in this part of England.

It is to be regretted that a better record of the different early imports of these cattle does not exist; but sufficient proof is extant that several breeders more than a hundred years ago, made trips to Holland, and selected some of the best bred cattle of the country for improving their own stocks. The earliest importations seem to have been made to the East Riding of Yorkshire, the port of Hull affording then as now great facilities for intercourse with Hamburgh and the United Provinces. The Dutch breed was especially established in the district of Holderness, on the north side of the estuary of the Humber, whence it extended northward through the plains of Yorkshire; and the cattle of Holderness still retain the distinct traces of their Dutch origin, and were long regarded as the finest dairy cows of England. Farther to the north, in the fertile district of the Tees, importations likewise took place of the cattle of the opposite countries, sometimes from Holland, and sometimes by the way of Hamburgh, from Holstein, or other countries of the Elbe.

A few bulls, cows and heifers previous to the middle of the last century, were imported by Sir William St. Quinton of Scannster, and Debinsons, which effected a considerable change; and it is to those individuals especially the country became indebted for "Improved Short-horns." The cattle formed by repeated crossings and selection, became gradually improved, and known at first as the Dutch or Holstein breed, under which names it extended northward through Northumberland, and at length became naturalized in the south of Scotland. It was also known as the Teeswater, or simply the Short-horned, breed. The spirit of emulation once being aroused, improvement succeeded improvement; and it may now confidently be asserted that this breed is without a parallel. In the pages of

Coate's Herd-Book, the pedigrees of all pure bred animals have for many years been recorded with the greatest care, in a similar manner to those of the race-horses in the British *Stud-book*. The Herd-Book contains the pedigrees of all animals of note since the time of the celebrated bull "Hubback," to which we shall presently refer, in 1777; it is published annually, beautifully illustrated, and forms a thick octavo volume. The value of this record of pedigrees is fully known to all breeders of Short-horns, and is, from the accuracy with which it is kept, an acknowledged authority on all matters in which the purity of blood of any animal is called in question. It appears that the Teeswater breed became much improved in the hands of several individuals, the recent experiments of the celebrated Bakewell with the Long-horns, excited a spirit of extensive emulation. Immense size of frame was at length attained, but the animals in general were comparatively coarse, and large consumers of food.

At length this valuable breed was destined to have its points harmonized and capabilities more fully developed by two brothers, Charles and Robert Colling, of Darlington, who succeeded in imparting to the Short-horn its modern characteristics. The Collings, we are informed, had become considerable farmers soon after the year 1770. Mr. Charles Colling, the younger brother, is justly regarded as the founder of the new breed, although his eldest brother followed him in his course of enterprise and improvement, step by step. Charles Colling cannot, indeed, be compared with Bakewell for boldness and originality of design; but he was greatly more fortunate in the selection of a basis for his breed. Colling, like Bakewell, seems to have regarded size in his animals, as a quality secondary and subordinate to those which he wished to communicate, and to have directed almost exclusive attention to beauty and utility of form, and development of the properties of early maturity and facility of fattening. Having, by selection and the skilful conjunction of the best individuals for breeding, become possessed of animals with the properties sought for, he continued to breed from his own stock, disregarding affinities of blood; by which means he gave to it the necessary permanence of character, and that delicacy of form which this system of breeding tends to communicate. He adopted the practice of hiring out his bulls, by which means he realised a complete fortune, and extended the influence of his stock to the districts around him.

Much obscurity hangs around the methods which Colling adopted for improving his herd, since he manifested great reluctance to communicate any definite information on these points. It is generally believed the first radical improvement which he effected on his stock, was through the medium of a young

bull, which he acquired by a kind of chance. This animal is said to have been a calf belonging to a poor man who grazed his cow on the sides of the highway. The calf was purchased from his owner by Mr. Waisted and Mr. Robert Colling, and shortly afterwards transferred to Charles, whose sagacity led him to perceive the value of the young animal. He seems, likewise, to have acquired the cow, which, however, on being removed to superior pastures, became so fat that she did not again breed. The calf inherited the same property, and as he grew up became so fat as to be useful as a bull only for a short time. This bull was termed Hubback. He was below the ordinary size of the Teeswater cattle, but his points and touch were admirable, and he is generally regarded as the father of the improved Shorthorns. However this may be, Colling, from this period, continued to produce many fine bulls, as Petrarch, Bolingbroke, Favourite, Comet, &c. The properties of his stock thus became more and more appreciated throughout the district of the Short-horns, and about the year 1800 had begun to extend to distant parts of the country where hitherto the Short-horn breed had not been cultivated. A circumstance, apparently trivial, contributed in a considerable degree to this result. A fine animal, termed the Durham Ox, the son of Favourite by a common cow, was sold for public exhibition, and carried in a caravan to all parts of the country. He was exhibited in this manner for nearly six years, and excited much interest among the country people. He arrived at great weight, but was chiefly remarkable for the fineness of many of his points. When killed, after two month's illness, during which he had lost considerably in flesh, he weighed 165 stones 12 lbs., besides tallow and offal.

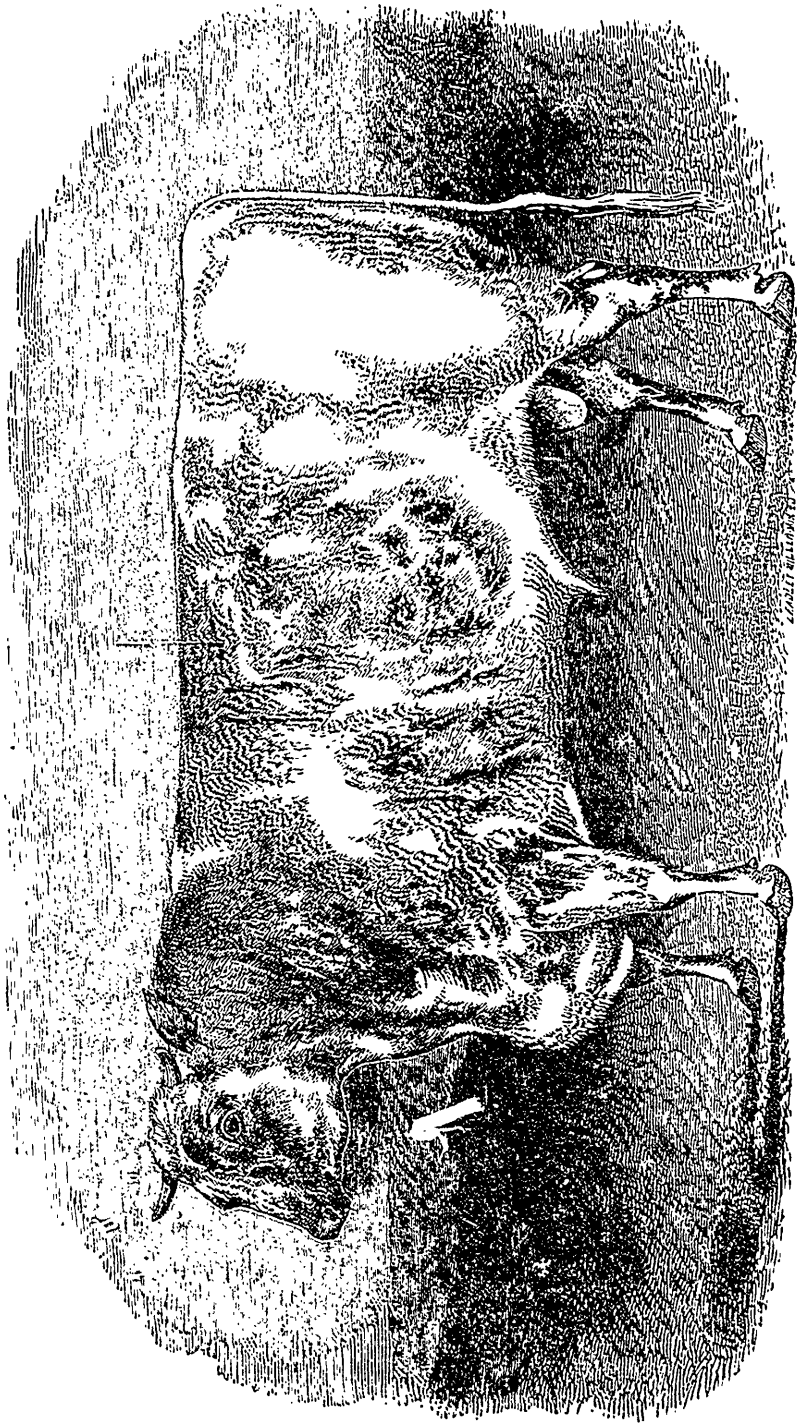
Colling, from continually breeding from his own stock, seems to have pushed refinement in breeding to its limits; and probably began to experience that impairment in constitution in his animals which never fails to accompany a continued and forced intermixture of blood, in a limited number of individuals. Whether from this cause, or from a mere desire to try experiments, it is understood that he attempted various crosses with the cows of other breeds, and chiefly, it is said, with the Scotch Highland and the Galloway. The experiment with the former did not succeed, but that with the latter led to a remarkable result. Colling procured a fine Galloway cow, of a red colour, and this cow was covered by one of his best bulls; a grandson of Bolinbroke. The produce was a bull-calf, which in due time was conjoined with a fine Short-horn cow, Johanna. The produce of this union was likewise a bull calf, which, in the fitting time, was put to another fine Short-horned cow, Lady, from whom has descended a family termed, in reproach, the Alloy. The family of the Alloy,

however, has proved not inferior to those of what are termed pure blood. At the sale of Mr. Colling's stock, which took place in 1810, this cow, "Lady," with her descendants, sold at enormous prices, shewing that, in the estimation of the public, the Galloway cross had not impaired the excellence of the pure stock. Thus it appears, that by a single cross with another race, and then by breeding back again to the superior one, no injury was sustained; nay a fresh infusion of vigour was probably made into the parent stock. Similar results are common in the breeding of horses, dogs and other animals. The proceeding, in the case of Colling, was nothing more than a rash experiment, the favourable result of which should not diminish the caution of breeders, in preserving the purity of a family of animals whose characters have been established.

The whole of the unrivalled stock of Colling was sold in 1810, and fetched very high prices. The adjoining analysis will be read with interest at the present day. Seventeen cows of different ages realised the sum of 2669 guineas. Eleven bulls, from 1 year and upwards brought 2249 guineas; the celebrated "Comet," age 6 years was among the number and sold for 1200 guineas! Seven bull calves 655 guineas; seven heifers, 898 guineas; five heifer calves under one year old 306 guineas; thus making a grand total of 6777 guineas!

The other brother Robert Colling, was distinguished as a breeder, although his stock as a whole did not altogether reach the high reputation of Charles Colling's. It was sold in 1818, and reached the following prices;—Thirty-four cows fetched 4141 guineas; seventeen heifers, 1287 guineas; six bulls, 1343 guineas; four bull calves, 713 guineas; making a total of 7484 guineas!

The accompanying cut represents one of the finest bulls of Col. Townley's world renowned Herd of Short-horns at Burnley, Lancashire, England. "Master Butterfly" was bred and owned by the Colonel, and was considered by the best judges to have been an animal as nearly approaching perfection in the various points characteristic of this celebrated breed as England ever produced. After winning many of the highest premiums at the leading Shows of Britain, his enterprising owner disposed of him to a Society of farmers in Victoria, Australia, for the magnificent sum of *one thousand guineas!* It is to be regretted that this celebrated Bull died of inflammation after having served only one season. We saw his brother, "*Royal Butterfly*," at the Royal English Society's Show, at Canterbury, in 1860; an animal it is said not at all inferior to the former, and such possibly as we shall never see again. The following is *Master Butterfly's* Pedigree; No. 13311 English Herd Book:—



MASTER BUTTERFLY, A SHORT HORN BULL.

MASTER BUTTERFLY, — Roan, calved July 14, 1855, bred by Col. Towneley, Towneley Park; got by Frederick (11489), dam (Butter-

fly) by Jeweller (10354) g. d. (Buttercup) by Expectation (1688), — by Belzoni (1709), — by Garrick (3863), gr. g. d. (Bampton Rose) by Comus (1861), — by Denton (198).

i.

BREEDING IN THE LINE.

In a lucidly written treatise on "the Principles of Breeding," from the pen of S. L. Goodale, Secretary of the State of Maine Agricultural Board, are the following excellent observations which we commend to the special attention of our readers:—

The preferable style of breeding for the great majority of farmers to adopt is neither to cross, nor to breed from close affinities (except in rare instances and for some specific and clearly understood purpose), but to *breed in the line*, that is, select the race or breed best adapted to fulfill the requirements demanded, whether it be for the dairy, for labor or for beef in cattle, or for such combination of these as can be had without too great sacrifice of the principal requisite; whether for fine wool as a primary object and for meat as a secondary one, or for mutton as a primary and wool for a secondary object, and then procure a *pure bred* male of the kind determined on, and breed him to the females of the herd or of the flock; and if these be not such as are calculated to develop his qualities, endeavor by purchase or exchange to procure such as will. Let the progeny of these be bred to another *pure bred* male of the same breed, but as distantly related to the first as may be. Let this plan be steadily pursued, and although we cannot, without the intervention of well bred females, obtain stock purely of kind desired, yet in several generations, if proper care be given in the selection of males, that each one be such as to retain and improve upon the points gained by his predecessor, the stock for most practical purposes will be as good as if thorough bred. Were this plan generally adopted, and a system of letting or exchange of males established, the cost might be brought within the means of most persons, and the advantages which would accrue would be almost beyond belief.

The writer on cattle in the Library of Useful Knowledge well remarks:—"At the outset of his career, the farmer should have a clear and determined conception of the object that he wishes to accomplish. He should consider the nature of his farm; the quality, abundance or deficiency of his pasturage, the character of the soil, the seasons of the year when he will have plenty or deficiency of food, the locality of his farm, the market to which he has access and the produce which can be disposed of with greatest profit, and these things will at once point to him the breed he ought to be solicitous to obtain. The man of wealth and patriotism may have more extensive views, and nobly look to the general improvement of cattle; but the farmer, with his limited means and with the claims that press upon him, regards his cattle as a valuable portion of his own little property, and on which everything should appear to be in natural keeping, and be turned to the best advantage. The best beast for him is that which suits his farm best,

and with a view to this, he studies, or ought to study, the points and qualities of his own cattle, and those of others. The dairyman will regard the quantity of milk—the quality—its value for the production of butter and cheese—the time that the cow continues in milk—the character of the breed for quietness, or as being good nurses, the predisposition to garget or other diseases, or dropping after calving—the natural tendency to turn everything to nutriment—the ease with which she is fattened when given up as a milker, and the proportion of food requisite to keep her in full milk or to fatten her when dry. The grazier will consider the kind of beast which his land will bear—the kind of meat most in demand in his neighborhood—the early maturity—the quickness of fattening at any age—the quality of the meat—the parts on which the flesh and fat are principally laid—and more than all the hardihood and the adaptation to the climate and soil.

In order to obtain these valuable properties the good farmer will make himself perfectly master of the characters and qualities of his own stock. He will trace the connection of certain good qualities and certain bad ones, with an almost invariable peculiarity of shape and structure; and at length he will arrive at a clear conception, not so much of beauty of form (although that is a pleasing object to contemplate), as of that outline and proportion of parts with which *utility* is oftenest combined. Then carefully viewing his stock he will consider where they approach to, and how far they wander from, this utility of form; and he will be anxious to preserve or increase the one and to supply the deficiency of the other. He will endeavor to select from his own stock those animals that excel in the most valuable points, and particularly those which possess the greatest number of these points, and he will unhesitatingly condemn every beast that manifests deficiency in any one important point. He will not, however, too long confine himself to his own stock, unless it be a very numerous one. The breeding from close affinities has many advantages to a certain extent. It was the source whence sprung the cattle and sheep of Bakewell and the superior cattle of Colling; and to it must also be traced the speedy degeneracy, the absolute disappearance of the New Leicester cattle, and, in the hands of many agriculturists, the impairment of constitution and decreased value of the Leicester sheep and the Short Horns. He will therefore seek some change in his stock every third year, and that change is most conveniently effected by introducing a new bull. This bull should be of the same breed, and pure, coming from a similar pasturage and climate, but possessing no relationship—or, at most, a very distant one—to the stock to which he is introduced. He should bring with him every good point which the breeder has laboured to produce in

in his stock, and if possible, some improvement, and especially in the points where the old stock may have been somewhat deficient, and most certainly he should have no manifest defect of form; and that most essential of all qualifications, a hardy constitution, should not be wanting.

There is one circumstance, however, which the breeder occasionally forgets, but which is of as much importance to the permanent value of his stock as any careful selection of animals can be—and that is, good keeping. It has been well said that 'all good stock must be both bred with attention and well fed. It is necessary that these two essentials in this species of improvement should always accompany each other; for without good resources of keeping, it would be vain to attempt supporting valuable stock.' This is true with regard to the original stock. It is yet more evident when animals are absurdly brought from a better to a poorer soil. The original stock will deteriorate if neglected and half-starved, and the improved breed will lose ground even more rapidly, and to a far greater extent."

A very brief resume of the preceding remarks may be expressed as follows:

The Law of Similarity teaches us to select animals for breeding which possess the desired forms and qualities in the greatest perfection and best combination.

Regard should be had not only to the more obvious characteristics, but also to such hereditary traits and tendencies as may be hidden from cursory observation and demand careful and thorough investigation.

From the hereditary nature of all characteristics, whether good or bad, we learn the importance of having all desirable qualities and properties *thoroughly inbred*; or, in other words so firmly fixed in each generation, that the next is warrantably certain to present nothing worse,—that no ill results follow from breeding back towards some inferior ancestor,—that all undesirable traits of points be so far as possible, *bred out*.

So important is this consideration, that in practice, it is decidedly preferable to employ a male of ordinary external appearance, provided his ancestry be all that is desired, rather than a grade or cross-bred animal, although the latter be greatly his superior in personal beauty.

A knowledge of the law of Divergence teaches us to avoid, for breeding purposes, such animals as exhibit variations unfavorable to the purpose in view; and to endeavor to perpetuate every real improvement gained; also to secure as far as practicable, the conditions necessary to induce or to perpetuate any improvement, such as general treatment, food, climate, habit, &c.

Where the parents do not possess the perfection desired, selections for coupling should be

made with critical references to correcting the faults or deficiencies of one by corresponding excellence in the other.

But to correct defects too much must not be attempted at once. Pairing those very unlike, oftener results in loss than in gain. Mating a horse for speed with a draft mare, will more likely beget progeny good for neither, than for both. Avoid all extremes, and endeavor by moderate degrees to obtain the object desired.

Crossing, between different breeds, for the purpose of obtaining animals for the shambles, may be advantageously practised to a considerable extent, but not for the production of breeding animals. As a general rule cross-bred females should be served by thorough-bred males.

In ordinary practice, breeding from near relationships is to be *scrupulously avoided*; for certain purposes, under certain conditions and circumstances, and in the hands of a skilful breeder, it may be practised with advantage, but not otherwise.

In a large majority of cases (other things being equal) we may expect in progeny the outward form and general structure of the sire, together with the internal qualities, constitution and nutritive system of the dam; each, however, modified by the other.

Particular should always be taken that the male by which the dam first becomes pregnant is the best which can be obtained; also, at the time of sexual congress both are in vigorous health.

Breeding animals should not be allowed to become fat, but always kept in thrifty condition; and such as are intended for the butcher should never be fat but once.

In deciding with what breeds to stock a farm, endeavor to select those best adapted to its surface, climate, and degree of fertility; also with reference to probable demand and proximity to markets.

No expense incurred in procuring choice animals for propagation, or any amount of skill in breeding, can supersede, or compensate for, a lack of liberal feeding and good treatment. The better the stock, the better care they deserve."

THE CHEMICO-AGRICULTURAL SOCIETY OF ULSTER AND ITS CLAIMS FOR SUPPORT.

Our readers will, we trust, excuse us if we address a few words to them regarding ourselves; and in doing so we must disclaim any charge of egotism, because when we advocate the claims of the Chémico-Agricultural Society, we are in reality urging the claims of an institution which is closely bound up with the personal interest of every landlord and of every tenant and farmer, not only in Ulster,

but throughout the kingdom. We might, indeed, go further, and say with perfect truth that there is not a consumer of agricultural produce in the country but is directly interested in the well-being of our association.—We believe, therefore, that we are entitled to the attention of the public; and such being the case we would be shirking an obvious duty were we to refrain from setting forth the strong claims which the society, of which this journal is the organ, has upon the public.

It is universally felt that the business of the farmer is one of vast importance. He is the food producer to the community. It is equally felt that ignorance is an extremely undesirable feature in a class which has such a responsibility as that of providing the first necessary of life, "our daily bread;" for ill-informed cultivators must always be insufficient providers, and thus the consequences of their lack of suitable information fall upon others as well as upon themselves. The great aim of all associations which have for their object the improvement of agricultural practice is to remedy this want of information; and they have effected it to a certain extent, although we must say that the circle in which they usually move might be enlarged with advantage both to themselves and to the public. But although we do not intend to discuss this view of what may be termed the shortcomings of such associations, there is one point in which they must necessarily be defective. They profess to teach and to encourage improved practices; but the requirements of modern agriculture demand that there shall be a union of "science with practice," in order that practice may become more effective, because more intelligent, and it is to effect this union that the Chemico-Agricultural Society has been formed, and that the three great national societies have enlisted the services of such men as Dr. Apjohn, Voelcker and Anderson.

The time has gone by when the idea of the co-operation of science with practice, in the business of farming, could be received with a sneer. Men have got wiser, and a strong tribute is paid, no doubt often unconsciously, to the advantages which scientific research confers on the practice of agriculture, whenever even an analysis of a manure is asked for, as a test of the value of the article. It may happen that the analysis is worthless; that it is even worse, and positively injurious, because it is a fabricated document; but this does not render the homage paid to science one whit the less, nor does the falsity of that document invalidate the claims which science has upon the merely practical man. If the union of "science with practice" rested on no higher grounds than those which were founded on the defective, and therefore protective functions of the former, there would be quite

enough to justify the connection. But its claims are even higher, and the field of its operations is, in reality, almost boundless.

It is now 16 years since the Chemico-Agricultural Society was established, and although its means have always been extremely limited, in a pecuniary point of view, we have no hesitation in saying that it has done a vast amount of good during its existence. If it had been more liberally supported, much more could have been done, and we therefore call upon the public to give it heartier support, so that it may be enabled to take a higher position in the promotion of the general welfare of the community than it has as yet been able to attain. The people of the northern provinces have long been favourably known for their intelligence and industry; but it is possible to heighten that intelligence and to stimulate that industry. A most efficient agent in effecting this exists in the Chemico-Agricultural Society. It has not, indeed, the attraction of annual exhibitions to draw public attention to its doings; but operations tell on the success of those very exhibitions. It does not, indeed, profess to improve the agricultural standing of the country by introducing better breeds of stock, but it assists in rendering such improved stock more profitable by the influence which it exercises on the cultivation of the soil, the feeding of stock, and the various ramifications of farm practice. We trust, therefore, that our appeal will not be unheard, but that many who have not as yet contributed to the funds of the society, and who have not as yet lent it the influence of their names, will see fit to do so. There are thousands in Ulster who have not contributed a shilling to the funds of the society but who have, directly or indirectly, been benefitted by it, and we certainly think it is their duty and their interest to support it.

[We take the foregoing from the last number of the *Journal of the Chemico-Agricultural Society of Ulster*, and shall be happy to learn that the appeal has been liberally responded to. That Society, with small means, has effected much good, not only for the agriculture of Ulster, but the whole of Ireland. We have frequently availed ourselves of the valuable investigations and results of its accomplished Chemist, Professor Hodges, of Queen's College, Belfast, whose labours and writings are well known and appreciated on this side of the Atlantic as well as in Europe. We trust, therefore, that the Society has yet before it a long career of increasing usefulness.—Eds C. A.]

Agricultural Intelligence.

THE STEAM PLOUGH TRIALS AT YORK.

The following Official Report to the Council of the Yorkshire Agricultural Society, on the recent trial of Steam Ploughs and Cultivators, will not be without interest to our readers generally. Mr. Morton, who conducted the trials, is a man peculiarly fitted for such a work, having devoted for many years special attention to farm machinery. :

The field set apart for the exhibition of steam ploughs and cultivators, though perfectly well fitted for showing the machines at work, being large enough for three or four hours' trial of all the different implements upon the ground, and providing a furrow upwards of 300 yards in length, is yet very ill adapted for the illustration of steam cultivation. It is for the most part of an extremely light soil, and thus presents none of that difficulty as to either the labor or the quality of horse cultivation which proves on stiffer land the advantage of applying steam power to the cultivator or the plough. And besides that, there extends across the field a narrow band of stiff clay, which requires a double or triple power to crossit, so that the engines employed had to be worked throughout the furrow at much higher pressure than was needed, except at particular moments. A spectator had thus no sufficient opportunity given to him of ascertaining aright either the advantage or the cheapness of the cultivation of the land by steam. He had, however, ample opportunity of seeing how the machines of Fowler and Howard were worked; and his own experience in cultivation elsewhere might enable him to judge of the advantage they possess on the stiff soils of the country.

It is indeed impossible to over-estimate the advantage of steam cultivation on stiff clay lands. They are dependent on proper cultivation even more than on the application of manures for their fertility, for they are already full of the food which plants require if we only could get it. To this end, they need to be broken up and exposed throughout their depth to the free access of air and weather. But there are comparatively few days during the year in our climate when this can be done by horse-power, for they are generally either baked by the sun, so that horses cannot pull the plough or cultivator through them, or they are so softened by the rain that the trampling and the sliding of the team and tool will do more to close the land than open it. We want a power which shall make the full use of the short intervals when such land is in proper condition for tillage operations, and which shall at the same time avoid the evil of poaching the land above and harden-

ing it below, which in the horse cultivation of clays is too often seen. A four-horse team and plough weigh more than 40 cwt., and all this goes trampling and sliding from end to end of the field that is being ploughed, over every 10 or 12 inches of its width; and thus of course a floor is formed beneath the soil, hindering drainage, which is the greatest improvement of which clay lands are capable. We want a tool not weighing more than 4 or 5 cwt. for every foot in width worked by it—carried on wheels so as not to close the surface over which it travels, and driven by a power which shall not press upon the land that is being worked.

All this we have in the steam-drawn ploughs and cultivators that were seen at work yesterday. The ploughs employed weigh not more than 5 to 7 cwt. per foot of width, and both are carried on large wheels at wide intervals, thus traversing the field but once to every 4 or 6 feet width. The engines driving them either travel on the headland, as in Fowler's apparatus, or they may stand altogether out of the field, as in Howard's case. In both cases the tools can be drawn with wonderful effect through sun-baked clay which horses could not touch; and (supposing the land to be fit for horse work) in both cases the mischief done by drawing a heavy tool across the land that wants loosening and cultivating is reduced to a minimum; while for speed of work in order to the full use of the short times when clays are fit for cultivation, the advantages of steam power are in both cases beyond a question.

We saw the speed of steam cultivation well illustrated yesterday, and the superior quality of steam cultivation was also sufficiently well shown, for the patches of clay land in the field were ploughed and cultivated, and the lighter soil was thrown about, so as no horse-power could have done it.

The cost of the work cannot be illustrated by a few hours' trial; but there is now experience, both of Fowler's and Howard's apparatus, over years enough and acreage enough to prove that their better cultivation is generally attained at much less cost than is incurred in horse labor. I have walked over many thousands of acres cultivated by both, and having been allowed to inquire particularly into the history of steam cultivation over many score of farms in all parts of the country, I am able to speak with some confidence on this point. It will be found that taking every particular of the expense into the account—wages, fuel, breakages, and tear and wear, and interest of capital—good ploughing may be done by steam for from 8s. to 10s. per acre, and one-way grubbing for from 5s. to 8s. per acre, which under horse labor would have cost 12s. to 18s., and 6s. to 10s. respectively for much inferior work.

There is, I believe, no one, unless he be interested in the success of one or other of the rival firms engaged in the manufacture of steam ploughs and cultivators, who will not greatly prefer thus confidently to report the unquestionable

success of steam cultivation generally, rather than venture to compare the rival methods of it after a few hours' trial and inspection. Having, however, undertaken the duty of drawing up such a comparison, I have now to relate the performances of the machinery that was exhibited at work.

On one side of the field an ordinary Clayton and Shuttleworth's single cylinder 8-horse-power moveable threshing engine drove by strap a moveable anchor furnished with clip drum, by which the draught rope extending from it around another moveable anchor on the farther headland was drawn to and fro, and with it Fowler's ordinary 4-furrow balance plough. The engine has a single 9-inch cylinder, with 12-inch stroke, and it was working at a pressure probably upwards of 70 lbs., the gauge standing occasionally as high as 80 lbs.; though I was assured it was indicating beyond the truth,—being out of order.* The engine was making about 130 revolutions per minute during the trial. The ploughing, as I measured it, was hardly 5 inches deep. The furrow was 330 yards long. The plough made close on 13 journeys along this furrow within the hour, losing $6\frac{1}{2}$ minutes on the headlands, and $1\frac{1}{2}$ minute during one stoppage. Exactly 1 acre (not half a perch more) was accomplished within the hour. The men employed were: engineman, two anchormen, one ploughman, and two porter lads. The rope was well carried on 12 rope porters, which stood rather less than 50 yards apart.

The central plot allotted to Messrs. Howard, was partly ploughed and partly cultivated. In their new three-furrow balance plough, the two frames carrying the ploughs balance one another, not, as in Fowler's machine, by being both part of one rigid frame-work, thus balancing over the axle of the wheels which carries it, but by each hinging on separately to a central framework, which runs on three wheels; and each as in its turn it drops into its work, lifts the other off the ground, the chain which connects the two passing over cams or eccentrics, thus giving to each, as its turn comes to work, an advantage in weight over the other.

The plough is drawn to and fro by a Clayton and Shuttleworth's ordinary 10 horse-power engine, with 7-inch double cylinders and 12-inch stroke. It was working up to 70 lbs. pressure, and making from 125 to 130 revolutions per minute. It drives a double windlass, each barrel being geared into work alternately, while the other, which is then paying out the slack-rope, drags upon a wooden stud, on which it drops when out of gear. The patent snatchblock arrangement, by which the drum is hindered from paying out rope any faster than its neighbor pulls it in, was also in operation, the advantage of it

* It is proper to remark that the diec indicator of steam pressure attached to this engine was out of order—the index pointing to 52 lbs. all day long! so that many spectators must have gone away with the impression that all the work done here was accomplished by about two-thirds of the force that was actually employed.

being that the slack rope behind the plough is kept at sufficient tightness to prevent its dragging on the ground. This rope runs all round the part of the plot which remains unworked, and was carried on eight high rope porters on wheels and nine lower ones, and on eight wheel-lower porters along the furrow on which the implement is at work. These latter porters are furnished with an ingenious leverage, enabling the porter lads very easily to shift them and replace them. The men employed here were: engineman and windlass man, two anchor men to shift the pulleys at either end of the furrow as it encroached on the unworked part of the land, one ploughman and two rope porters. The work accomplished with the plough was as nearly as possible (not half a perch less) three roods within the hour; and I estimated it at fully 5 inches deep. The ground was here, upon the whole, more difficult than where Fowler's plough was working; the clay patch being wider here than there. The work was accomplished in 14 journeys of the 3-furrow plough, along a furrow 314 yards long; seven minutes were lost on the headlands, and one minute was lost during a stoppage.

Howard's three-tined cultivator, furnished with teeth projecting both ways, so as to come into operation on both the forward and backward journey without turning at the land's end, was also tried here. At first it was set too deep for the power of the engine when on the clay; and as it is not provided with any means by which the man can at once release it in any degree from its work, when once it stops, there it must remain until the engine acquires power to pull it through. Thus, during the first half hour it made only four journeys, cultivating very deeply and thoroughly rather less than a quarter of an acre in that time. During the next half hour of its trial, when it was working at a less depth, it made seven journeys, accomplishing close on half an acre in the time, or at the rate of one acre per hour.

The outer plot was set apart for Fowler's 14-horse power engine with double cylinder of $7\frac{1}{2}$ inches, with 12-inch stroke, working at about 75 lbs. per inch, and making 150, often 180 revolutions per minute. The speed of its work was indeed such, that when on the lighter parts of the field the furrow slices were thrown from the mould-boards or digging breasts fully 30 inches on one side, making quite a wave of earth, which was tossed off them in a thoroughly smashed condition—tossed however into heaps which would require rather a laborious levelling during the next tillage operation. There are here 1 engineman, 1 ploughman, 1 anchorman, and 2 porter lads employed. The four-furrow balance plough, with the digging breasts, make about $9\frac{1}{2}$ journeys along a furrow 318 yards long—losing only $2\frac{1}{2}$ minutes on the headlands—during half an hour, ploughing nearly 6 inches deep at the rate of 1 acre 1 rood $5\frac{1}{2}$ perches per hour.

The 7-inch grubber was then tried, only six

tines however being in operation : thus accomplishing a width of more than 5½ feet at a mite. It made 8½ journeys in the half hour, doing very thorough work at the rate of about 1 acre, 3 roods 24 perches per hour. The advantage of great rate of speed was shown in the complete wreck and smash of the earth that was moved. It was, however, here also, though in a less degree, occasionally left too irregularly for easy treatment afterwards with the harrows; and a less speed would, on this account, have been better. Howard's cultivator, driven not nearly so fast, was found, on examination, to have moved as much earth per superficial yard; but it was merely moved, not tossed about, and it would need, therefore, a crossing with the cultivator before the ordinary harrows would take hold of it. Whereas Fowler's work would no doubt have been laid hold of by the harrow at once; though, as already said, sometimes too much laid in heaps.

In order still further to compare the work done by the several cultivators and ploughs upon the ground, it was resolved to attempt an estimate of the earth moved per acre in the several cases. To this end a frame, 4 feet by 4 feet 6 inches—enclosing, therefore, 2 square yards of surface—was provided; and all the earth within this frame, which was dropped here and there on the several plots, was carefully collected and weighed. The following tables represent the work accomplished by the several machines as thus ascertained :

1. Fowler's (so called) 8-horse power engine with moveable anchor, carrying clip drum and a four furrow balance plough.

Labourers Employed—Four men and two lads.

Estimated Depth of Work—Barely 5 inches.

Quantity Ploughed per Hour—One acre.

Weight of Earth moved per square yard ascertained in four instances—

No.	Stones.	lbs.
1	35	3
2	29	0
3	31	2
4	28	10

Average weight of earth moved per yard 31 0
 Weight of earth moved per acre.. 938 tons.
 Weight of earth moved per hour by the so-called 8-horse power engine—4 men and 2 lads..... 938 tons.

2. Howard's (so called) 10-horse power engine with windlass, and 3-furrow balance plough.

Labourers Employed—Five men and two lads.

Estimated Depth of Work—Fully 5 inches.

Quantity Ploughed per Hour—Three roods.

Weight of Earth moved per square yard, ascertained in four instances—

No.	Stones.	lbs.
1	26	10
2	30	10
3	35	3
4	30	7

Average weight of earth moved per yard 30 11
 Weight of earth moved per acre 932 tons.

Weight of earth moved per hour by the so-called 10-horse power engine—5 men and 2 boys 774 ton
 3. Fowler's (so-called) 14-horse power engine with 4-furrow balance plough, and digging breast—

Labourers Employed—3 men and 2 lads.

Estimated Depth of Work—Close on 6 inches.

Quantity Ploughed per Hour—One acre 1 rood 5½ perches.

Weight of Earth moved per square yard, ascertained in three instances—

No.	Stones.	lbs.
1	31	3
2	34	0
3	35	3

Average weight of earth moved per yard 34 2
 Weight of earth moved per acre 1002 tons.

Weight of earth moved per hour by the so-called 14-horse power engine—3 men and 2 lads 1280 tons.

4. Howard's 10-horse power engine, double windlass, and 3-tined cultivator.

Labourers Employed—5 men and 2 boys.

Weight of Earth moved per yard, ascertained first when going deeply and doing ½ an acre per hour, 33 stones, equal to 998 tons per acre, or about 500 tons per hour. In this case, however, as already stated, the stoppages were frequent, the power being insufficient.

In the second case the weight of earth moved when the cultivator was going shallowly and doing 1 acre per hour, was ascertained in three instances—

No.	Stones.	lbs.
1	24	4
2	19	7
3	22	0

Average weight of earth moved per yard 21 12
 Weight of earth moved per acre 660 tons.

Weight of earth moved per hour by the so-called 10-horse power engine and 5 men and 2 lads 660 tons.

5. Fowler's so-called 14-horse power engine, with 6-tined cultivator.

Labourers Employed—3 men and 2 lads.

Weight of earth moved per square yard ascertained in five instances :—

No.	Stones.	lbs.
1	22	7
2	22	7
3	20	0
4	24	0
5	20	0

Average weight of earth moved per square yard.. .. . 21 10
 Weight of earth moved per acre .. 650 tons.

Weight of earth moved per hour by the so-called 14-horse power engine, 3 men and 2 lads 1240 tons.

The weight was here taken in so many instances because it was supposed that some mistake had been committed, the quantity of earth moved per acre by Fowler's cultivator certainly appearing to be very much greater than that moved by Howard, whereas, repeated weighings proved it to be actually somewhat less. The fact was that it was thrown about so much more roughly in the former case that it lay looser and appeared deeper than it was. And one result of these weighings is to prove the fallacy of estimates of work of this kind by mere measurement, however honestly performed. The quantity of earth moved per hour (per day) is of course very much greater in Fowler's case than in Howard's. The power employed was much greater—how much greater is probably inadequately represented by the nominal horse-power of the several engines. The reader has, however, before him, in the speed of the engines and the size of the cylinders and the pressure of the steam, the means of comparing pretty accurately the power employed; and, contrasting this with the work accomplished in the several instances, he will draw his own conclusions of the merit of the several machines at work.

It is proper to add, that the results of a racing trial do not necessarily represent the ordinary experience of the farmer, and that the above is to be taken as absolutely true only of the case here described, where ploughs and cultivators were employed on a clover stubble in a light sandy field for an hour or two last Tuesday. It is also fair to add that the clayey part of the field extended more and more towards the latter side of the field here described, so that Fowler's 8-horse power engine worked on lighter land, upon the whole, than Howard's 10-horse power, and this latter on rather lighter land than Fowler's 14-horse power engine.

We add the prices of the apparatus employed:

	£	s.	d.
1. Fowler's 3-furrow plough, 800 yards rope, 5-tined rubber, and rope porters, two anchors	295	0	0
8-horse power engine	235	0	0
2. Fowler's 14-horse power engine, 4-furrow plough, rope porters, 800 yards rope, and anchors	875	0	0
7-tined cultivator	70	0	0
3. Howard's double windlass, 1,400 yards of rope and cultivator	220	0	0
3-furrow plough	50	0	0
10-horse engine	295	0	0

JOHN C. MORTON.

August, 1862.

ERADICATION OF OX-EYE DASIES.—Do you or any of your subscribers know how to eradicate Ox-eye Daisy? Part of my farm is becoming infested with them, and I want to get them out. *Ans.* They may be kept in check by sheep, they eating them so close that they will not seed. Sometimes they are kept from spreading by mowing them off with the scythe, while in flower, but they cannot be eradicated except by smothering with rotten wood or

straw, or by effective cultivation. J. J. Thomson as states in the *Country Gentleman*, that on a farm which he had lately visited in Pennsylvania, the Ox-eye daisy has been so thoroughly eradicated that not a plant could be seen through it is generally abundant in the neighborhood. The mode practiced for its extirpation is to plant two hoed crops in succession, usually Indian corn, both being well manured, to be followed by wheat and "seeded" to clover. The few weeds which show themselves are dug up.

Horticulture.

HORTICULTURAL NOTES,

Made during a Tour in the British Islands and France, during the Summer of 1862.

It may be of some interest to a portion of your readers who have a taste for Horticulture, and the cultivation of flowers, to give a short description of some of the more rare and beautiful trees, shrubs, and plants, which I saw growing during my late visit to the Botanical Gardens of Ireland, England, Scotland, and Paris, during the past summer.

Having, in a former letter, given a brief description of the Botanical Gardens of Belfast, I shall pass over them, and commence with the Royal Botanical Gardens of Dublin. The gardens are beautifully situated on a rising piece of ground close to the Glasnevin Cemetery, within the immediate vicinity of the city. They comprise about 30 acres, tastefully and systematically laid out, and kept in the very best order; and are planted with every variety of trees, shrubs, and plants that will stand the climate of Ireland. The range of hot and green houses is extensive, all being built of iron and glass, and filled with a vast collection of rare and valuable plants. It may be interesting to describe a walk through these houses, and notice some of the rarer plants as we proceed:—The first house is the octagon, containing a large collection of the lone bearing or Pine Tribe Plants. I noticed fine specimens of the Norfolk Island Pine, Moreton Bay Pine, Brazillian Pine, and Chinese Pine. The next house we enter is called the *Victoria Regia House*,—where that magnificent water lily is grown, forming a magnificent object. In the same tank you see the *Nelumbium Speciosum*, the sacred bean of India. There are also other varieties of water lillies, natives of the Tropics; and rice ripening its grain. Leaving this we enter the *New Holland House*, filled with plants, natives of Australia and the Cape of Good Hope; fine specimens of the genera *Banksia*, *aracaria*, *Bidwilli*, all the New Holland *acacias*, and many others that I took no note of. Proceeding on we enter the *Heath House*, containing

an immense number of varieties of this beautiful class of plants, principally natives of the Cape of Good Hope; some of the specimens were really fine, I should think, at least, six feet in circumference, and covered with bloom. Going on we enter the *Palm House*, the central house of the range, 40 feet high. When I was there they were erecting a new palm house which, from appearance, would be nearly 100 feet high. The palm house contains noble plants of the *Great Fan Palm* of South America; the *Date Palm*, supposed to be the palm tree of Scripture, and the plant which produces the dates of commerce. There is also growing in this house the well-known *Cocoa Nut* tree, and the *Plantain* tree, bearing large bunches of ripe fruit, weighing from 20 to 30 lbs. Leaving this department we enter the *Cactus House*, containing a very large collection of this tribe of plants, many of them very large. I also noticed fine specimens of *Euphorbias*, large American *Aloes*, *Staphelia* or Carrion Flower, and *Strelitzias*. Walking along we come to a large stove filled with miscellaneous selections of plants which require a pretty high temperature to grow them well. The *Sugar Cane* thrives well, also the *Coffee tree*, *Cinnamon tree*, and the *Banyan tree*, sending out roots from the branches inclining towards the earth, into which they fix themselves, becoming in a short time strong supports; I also noticed a very remarkable tree in this house, the *Lace Bark tree* of Jamaica, whose inner bark, without any artificial preparation, resembles beautifully wrought lace. Another curious plant grows here, the *Skeleton Plant*, the skin of the leaf appears to be removed and nothing left but a web of veins resembling coarse lace. Proceeding on we enter the Orchidaceous and Fern House—a fine sight to see such a collection of these rare and curious plants. I shall just notice a few that attracted my attention as I passed along,—the West Indian Butterfly Plant, (*oncidium Papileo*) looks like a large locust with wings expanding; the Dove Plant, (*Peristeria Elata*) resembling the form of a dove in miniature; another remarkable plant, the Moth Plant, (*Phalarnopsis amabilis* and *Grandiflora*.) We have also here the South Sea Island *Bread fruit tree*, bearing its fruit abundantly. I observed the *Sarracinia Purpuria*, our Canadian Pitcher Plant, which is cultivated with great care. The Moving Plant is also a great curiosity, the leaves are constantly in motion, raising up and falling down alternately. Passing on we enter the large Central Conservatory, which contains a miscellaneous selection of Cape of Good Hope Plants; some remarkable *Tree Ferns*, probably from 8 to 10 feet high, natives of Australia. Celery leaved and Fern leaved Pines, very strange looking plants. The next house we enter contains a mixed collection of hardy green house plants.

We now come to the last house of the range,

called the *Camellia* and *Azalia* house, which contains a fine and extensive selection of *Camellias* and *Azalias*. The white and scarlet tree *Rhododendrons* of Nepaul. Leaving this house, we walk out into the Flower Garden, which is very tastefully laid out and kept in the very best order.

The *Rookery* and aquarium form part of the ornamental grounds. The Botanical department of the Garden seems to be well managed, and the *Arboretum* contains a large and interesting selection of shrubs and trees. There is connected with the garden a Botanical Museum for the reception of all useful and interesting vegetable products in their raw state.

These Gardens are liberally supported by Government, and are a great ornament and attraction to Dublin, which is truly a magnificent city; the environs, comprising the extensive Phoenix Park, and the Vice Regal Residence, are particularly picturesque. The Glassnevin Garden, in point of arrangement and management, reflects great credit on the able and scientific curator, Mr. Moore, who has done much to advance the art of horticulture in Ireland. There is also a Botanical Garden attached to the extensive grounds of Trinity College, which is specially arranged for the practical teaching of Botany, and is much frequented by medical students.

Leaving Ireland, I would now take a glance at some of the rare plants in the Royal Botanical Gardens of Kew, the vicinity of London. The beauty and extent of these grounds and of the plants and trees which they contain attracts, as may be supposed, great crowds of visitors. I derived much pleasure and instruction from my visits to Kew.

I shall have to be very brief in any remarks I make, and I would just say that my memory is not sufficiently retentive to remember all the fine plants I saw in these noble Gardens, but having before me the published *Guide* to the Gardens, I am enabled to recall to mind many of the noble specimens that attracted my attention. The first house we enter is the Conservatory, filled with Australian trees and shrubs. Here you will see the *curious* Hand Plant, (*Cheirostmon Platanoides*) with leaves resembling those of the Plane tree, and stamens resembling a man's hand.

The next house we enter is called the *Orangery*. I did not observe any orange trees; the house is used for protecting in the winter large and half-hardy trees and shrubs, especially tender pines; the most of them were out on the lawn when I was there. Proceeding on we enter the Tropical aquarium; the large circular tank contains a fine specimen of the *Victoria Regia*, and other water plants. We now enter the Great Palm house, occupying an area of 362 feet long, the centre is 100 feet wide, and 66 feet in height; the whole is built of iron, stone, brick, and sheet glass. The extent of glass for covering this vast building is

about 45,000 square feet. The whole is heated with hot water pipes, 24,000 feet in length; and water tanks 100 feet. The Palms growing here are the noblest specimens I have seen; having mentioned a good many varieties that were growing in the Dublin Palm House, I shall omit them here. The Bamboo grows to a great height, pushing its way through the glass roof. A very large plant of *Cycas Revoluta*, which yields a kind of sago in the East Indies. I noticed also the Papaw tree, the Chocolate tree, Mango tree, Mahogany tree, and Joffee tree, with a host of other rare trees that space would not permit me to mention. We proceed on and enter the *Orchid* house, containing a vast amount of orchideous plants, many of them of great value, and when in flower they are certainly amongst the most beautiful objects of the vegetable creation. Entering the next house, there is a fine tank of water, containing several varieties of aquatic Floating Plants. The stage also contains very choice plants suited to the atmosphere of this house; several being very singular and striking in their appearance.

The next department is the succulent house, 200 feet long, 30 feet wide, filled with a rare collection of *Cactuses*, *Aloes*, *Euphorbias*, *Grassulas*, *Staphelias*, &c. The collection of these curious plants is perhaps the largest in Europe. Here you will see the true African Aloe, which yields the medicinal aloes of the shops. Of the same natural family is the New Zealand Flax, (*Phormium Tenax*;) its leaves are like those of our Iris or Flag, and abounds in a strong fibre, which recommends it for an immense variety of uses in Europe. Another extensive group of plants we see here is *Agava Americana*, (Great American Aloe) which is said to blossom only once in a hundred years. I was fortunate in seeing one of these plants in bloom in the Conservatory at Kensington Gardens; the flower stem was about 20 feet high, with white bell-looking flowers, very much resembling Adam's needle, (*Yucca Gloriosa*.)

We will now take a look at the Hardy Aquarium, a large tank filled with bog earth and water, containing hardy aquatic plants of England and other cool countries. This house is used for the purpose of testing the hardiness of all of kinds of aquatic grasses suited to the climates of England and Scotland. You have no doubt heard of the celebrated *Tussac Grass* of the Falkland Islands, which flourishes here luxuriantly; it is a valuable coarse agricultural grass, and has been introduced with considerable success in the Orkneys and Hebrides; probably it might be worth a trial to introduce it in some of the low half-swampy parts of Canada. We now enter the New Holland house, filled with all the rarer sorts of Australian *Aceacias* and other plants. We come now to the Tropical Fern house, 140 feet long and 28 feet wide. The Ferns constitute a valu-

able and beautiful collection, and nothing can exceed the variety, beauty and elegance of the leaves and fronds. We now pass through the Arum house, the Azalea house, Camellia and Rhododendron; all filled with valuable collections of plants in their respective classes.

We now walk out into the pleasure grounds and *Arboretum*, comprising an area of 270 acres, open to the public, without any charge, every day, from May to the end of October, from 1, P. M., to sunset, and on Sundays from 2 to 7, P. M. When I was there thousands of respectably attired people were walking in these noble grounds, and it is very rare that any injury is done to the flowers or trees; the good sense and right feeling of the public is duly appreciated, in their being permitted to enjoy themselves in these grounds. Before closing my brief remarks on Kew, I may observe that it would be well if the youth of Canada were taught to respect and protect shrubs and flowers in public and private gardens, streets, &c., and not cut and injure them as is generally done. In this respect the people of the old world are much better conducted than on this side of the Atlantic. It is a rare thing indeed for any injury to happen to trees, fruit, flowers, &c., by admitting the public to parks and gardens.

After leaving Kew let us take a short glance at Hampton Court Palace, a distance of about 12 miles from Hyde Park Corner, beautifully situated on the Northern banks of the Thames. The Gardens are very extensive; the walks in the pleasure grounds and round the Palace are about three miles in extent. The beds are all planted with the choicest varieties of bedding-out plants in the grouping and ribanding styles. Some very fine old orange trees, large and in full bearing, the remains of Queen Mary's collection. The greatest curiosity is the large vine, certainly the largest in Europe. This vine is supposed to have been planted in the time of Cardinal Wolsay, 1526; the house where the vine grows is seventy-two feet long, and the breadth on the rafters thirty feet; the vine is above 100 feet long, at three feet from the ground the stem is nearly thirty inches in circumference; it is a black Hamburg grape, and the quantity it bears in some seasons exceeds 2,000 bunches. When I was there the grapes were quite green, but promised a fair crop; the bunches were small. The house is not heated by any artificial means, and it is therefore strictly a cold vinery. For one penny you can have a full view of this noble vine. Another great attraction here is the Maze, or Labyrinth, which was formed in the early part of King William's reign. It is a source of much amusement in trying to discover the intricacies of the Labyrinth, and is much resorted to, particularly by the young people.

Leaving the Palace and taking our seat on the coach for London we enter Bush by Park, and

pass through the fine avenue of horse chesnut and lime trees, more than one mile long; these trees are of great size and age, and have a noble appearance.

The next trip I made was to Sydenham Palace. I cannot describe the pleasure I derived from this visit. The grounds and the park occupy 200 acres, which are laid out with the most perfect taste. The Rosery, or Mount of Roses, was in full bloom. This is a circular colonnade, formed by 120 columns supporting 12 arches, 32 feet in height, and 16 feet wide. Roses of every variety grow up here on the lattice work, and produce a very fine effect. The slopes of the bank round this mound are planted with all the approved varieties of standard and dwarf perpetual roses. The valley of *Rhododendrons*, principally of the American varieties, was very fine. Broad walks, fine lawns, great fountains, water temples, with their cascades and falls, extinct animals, and many other attractions, the magnificence of which must be seen to be appreciated.

Before closing my remarks on Sydenham I would take the liberty of throwing out a few suggestions for the arrangement of bedding-out plants on the grouping and ribanding system adopted at Sydenham, Kew, and other places, I was very much pleased with this form of planting, and would strongly recommend a trial of it in Canada. Plants adapted for this purpose are such as we grow in our houses for planting out. I will give a few specimens of what I think would have a fine effect. The beds may be made of any shape to suit individual tastes, as for example, stars, crosses, diamonds, squares, circles, &c.

Grouping in Beds.

A circle of White Petunia, edged with Verbena, Giant de Battles.

A centre of Purple Verbena, edged with Geranium, Golden Chain.

A centre of Geranium Nosegay, edged with Gazania Splendens.

A centre of Punch Geranium, edged with Cloth of Gold Geranium and a Ring of *Lobelia Speciosa Kermesina*.

A centre of Scarlet Geranium, edged with White Verbena.

A centre of Geranium *Ceres Unique*, edged with a rim of Crimson Geraniums, and a ring of *Cerastrium Lomentasum*, a fine dwarf variegated white plant, easy of cultivation, and will stand clipping.

A centre of Geranium Punch, two rings of Golden Chain Geranium, and one ring of *Lobelia Speciosa Kermesina*.

A centre of ivy-leaved Geranium, edged with *Cuphea Platycentra*.

A centre of *Ageratum Mexicanum*, a ring of Punch Geranium.

A centre of Dwarf Bedding Dahlias, two rings of variegated Geraniums.

A centre of *Purtulaca Splendens*, two rings of variegated *Alyssum*.

A centre of *Calceolaria Aurea*, two rings of crimson nosegay Geraniums.

A centre of *Pirilla Nankinensis*, two rings of Scarlet Geraniums, edged with *Mentha Variegata* (Variegated Mint.)

A centre of *Tropacolum*, Crystal Palace Gems, edged with two rings of Purple Verbena.

The same arrangement of plants may be adopted for ribanding, using those recommended for centres of beds as back grounds for the ribands. For mixed beds, variegated and scarlet Geraniums have a fine effect; also, *Heliotrope* and scarlet Geraniums look well.

I do not wish it to be inferred that the variety of plants mentioned are the only effective arrangement for beds. I simply recommend them as suitable, and easy to be obtained; of course as we advance in this new style of garden decorations we shall increase our variety of plants suitable for the work.

JAMES FLEMING.

Toronto, December, 1862.

To be Continued.

TORONTO GARDENERS' IMPROVEMENT SOCIETY.

[It is with much satisfaction that we record the formation of a Society among the Gardeners of this city and neighbourhood, for self-improvement, and the advancement of their useful and refining art. Hamilton, as our readers well know, has for several years had such an organization. We wish the new enterprise every success, and should like to hear of similar societies being established in different parts of the Province. In order to meet a practical want that may be felt by such as may contemplate the formation of a Gardeners' Society, we insert for their information the regulations that have been adopted by the one just established in Toronto.—EDS.]

At a Meeting of the principal practical Gardener's of Toronto, and the neighbourhood, it was agreed that they should form a Society for the promotion of useful information among themselves in matters connected with gardening. The object of the Society being to bring the Gardeners together from time to time, that they may mutually benefit each other by entering into discussion on various Horticultural subjects, each one thereby making known his views and experience. A preliminary meeting was accordingly held the second Monday in December, at which a Committee was appointed to draw up a set of Rules and Regulations, and to report the same to a general meeting held on the 22d of December. The report of the Committee being approved of—the

following Members were elected Officers of the Society for the ensuing year :

James Fleming, Chairman.
James Forsyth, Secretary & Treasurer.

DIRECTORS.—C. J. Young, E. Turner, S. Ashby, Jas. Maughan, Geo. Veat, E. Townsend.

Through the kindness of the Board of Agriculture, the Society is granted the use of one of the rooms in the new Agricultural Hall, corner of Yonge & Queen Streets. The first general meeting for discussion will be held on the third Monday in January 1863, at 7 o'clock p. m. Subject :—"The cultivation of the Azalia, and the best mode of forcing the Strawberry."

REGULATIONS.

1. Persons desirous of admission to the Society shall be recommended by two Members ; the votes of two thirds of the members present being necessary for the admission of a member.

2. Members of the Society shall pay an annual subscription of one dollar for defraying necessary expenses, any surplus or donations will be applied to the purchase of Horticultural publications.

3. The Office bearers to consist of a Chairman, six Directors, Secretary and Treasurer, to be elected annually at the annual general meeting of the Society on the third Monday in January. Five of the Office bearers to be a quorum for the transaction of business.

4. The duty of the Chairman shall be to preside at all Meetings, to regulate the order of procedure by enforcing the rules for the regulation of debates or discussions. In the absence of the Chairman, one of the Directors present shall preside for that occasion.

5. The duty of the Secretary shall be to record the proceedings, giving a short account of the proceedings and discussions.

6. The duty of the Treasurer to collect and pay moneys and keep the accounts ; submitting a correct statement at the annual meeting.

7. The meetings will be held on the third Monday of every month, at 7 p. m., in Winter, and at 8 p. m. in Summer.

8. The business of the meetings will be 1st., the exhibition of any plants or objects of interest, not to exceed half an hour ; 2nd., reading, correcting if necessary, and approving the minutes of previous meeting ; 3rd., voting in new members ; 4th., the reports of standing committee ; 5th., reading an essay, or discussion on a Horticultural subject approved at a previous meeting, and remarks on the same by members in rotation.

9. Any member may introduce a friend at a regular meeting.

10. No discussion or conversation allowed on any subject not connected with the objects of the Society.

11. Any member interrupting the proceedings by improper conduct, or disturbing the harmony of the meeting, may be expelled by a majority of the members present.

CANADIAN FRUITS IN ENGLAND.

Our horticultural readers in particular will be interested in the subjoined article from the *Gardeners' Chronicle*, a paper by no means lavish of its encomiums, on the contributions of Canada to the late Exhibition held in the Royal Horticultural Gardens at South Kensington, to which pomologists of all countries were invited to send specimens of their fruits. The Show was a splendid one ; and not only Canada but the other British North American Colonies occupied a respectable position therein ; as they did also in the great International Exhibition. These pleasing facts should incite us to continuous exertion, that the great capabilities of these extensive portions of Her Majesty's Empire may become better and more generally understood :

"The most remarkable feature of this meeting was the wonderfully fine collection of apples, &c., now on view in the Society's new Conservatory, from Canada. These come from the neighborhood of Lake Ontario, and are shown by the Hamilton Society of Practical Gardeners at the solicitation of Dr. Hurlburt, one of the Canadian Commissioners at the International Exhibition. Well may our transatlantic friends be proud of their apples, which equal, and in some instances surpass, even the very best English produce of that description. Magnificent as was the collection of apples shown the other day from Nova Scotia, it is fully equalled by that under notice. True, we want the external beauty of the carration striped Chebucto, and one or two others ; but on the other hand, no such Ribston Pippins have been shown in this or any other year, that we can remember, as those from Canada. They measure individually a foot in circumference, and are of a rich golden yellow hue, beautifully painted and streaked with red. Scarcely less astonishing, as regards size and general appearance, are the examples of *Gloria Mundi* and *Fall Pippin*, which the collection contains ; the latter is not unlike the former in shape, but it is more yellow in color, and has a tinge of red on the sunny side ; *Gloria Mundi*, on the contrary, is of a pale green color, and covered all over with white specks, an appearance which it seldom or ever presents in this country. Of Catshead there are some fine fruit, as well as of Pumpkin Sweet, a large orange yellow kind mottled with red ; Americaner, a conical yellow variety, red on one side ; and Pound Pippin, a sort not unlike Nonesuch. Auchmar, a round small-eyed variety, greenish yellow streaked and mottled with red, measured a foot in circumference ; what is called Hoary Morning appears to be Fearn's Pippin, but there is a beauty and delicacy of coloring about it which with us it never possesses ; Bourassa, which was stated to be a native of Canada, looks not unlike the Roy

Russet; it is, however, beautifully covered with red on the sunny side. 'Swaar' is a medium sized green fruit [When ripe it is a golden yellow color. It was 'green' from being picked too early.] Vandevere a nice looking medium sized kind with a small eye and firmer, but otherwise something like Fearn's Pippin; concerning Golden Russeting, a small round apple, it is stated that it will keep till July, and that it never rots; on the contrary, it 'wilts' up, a character which its appearance fully bears out. Craigie's Graft is a conical firm variety, and a reported good keeper. Esopas Spitzenburg is a high conical middle sized fruit, but in this instance scarcely up to the mark as regards brilliancy; Westfield Seek no Further is a pale green round sort below the middle size, and dark red on one side; Fall Genetin, an irregular shaped apple, is the variety hitherto known in this country as Fall Pippin; but in reality it is very different, and not nearly so handsome as the sort shown in the collection under that name. What is called snow apple appears to be the same as the sort named Lt Fameuse, a small glossy red kind with snow white flesh. Northern Spy is a conical green kind, slightly streaked with red. [This had been gathered too early.] Colvert, pale green and round, speckled and streaked with red; Tallman Sweet is a middle sized, nearly white kind; Red Detroit is a dark red glossy apple, of attractive appearance; as is also Jonathan, another glossy red conical variety; 20-ounce Pippin and 20-ounce Branch are different sorts; the one is pale green and streaked with red, while the other is smaller, more conical, and darker in color. Of the Baldwin there are large sized specimens, as well as of a sort called Carjuga, [Probably the Cayuga Red Speck or 20-ounce Apple is referred to.] which measured thirteen inches in circumference. The last is a red streaked, firm, good-looking apple. A kind called Menagerie somewhat resembles Gloria Mundi, both as regards shape and size. Maiden Blush is a flat yellow sort, red next the sun. Of Blue Pearmain, the collection contains fine specimens; they are, however, a trifle smaller than fruit of that variety shown from Nova Scotia. Canada Reinette is a medium sized kind streaked with red; and of Emperor Alexander and Blenheim Grange, more handsome fruit could not possibly be produced than those in the collection now under notice. Wagener is a middle sized pale green kind, red on one side; and of Lady Apple and English Golden Pippin there are some small fruit; the last, which appears to be the true old Golden Pippin, is not, however, so fine as it is now and then found in this country.

"The whole of the apples just noticed have arrived in excellent condition, without speck or blemish. We however found all that we tasted much sweeter than the same sorts in this country, the hot summers of North America being unfavorable to the formation of the acidity which renders our English apples so delicious.

"Pears do not seem to have fared so well; for some which are shown are greatly decayed. Among them are Louise Bonne de Jersey, Forcille or Trent pear, the last beautifully colored and speckled with red; Winter, Nelis, Vicar of Winkfield, Beurre Rose, White and Gray Doyenne, Swan's Orange, Easter Beurre, Beurre Diel and Soldat Laborer, the last the same as the B. d'Arenberg. These are all paler in the skin, and in some instances smaller than the same kinds grown in this country.

"Of grapes there are several dishes of fair size for outdoor fruit; but all of them have the wretched foxy taste peculiar to most sorts of American Grapes. The sorts called Dalhousie and Ontario somewhat resemble Black Hamburg, from which they appear to be crosses; the Isabella has a grizzly appearance; others consisted of Diana, Delaware, Hamilton and Black, Sweetwater, Concord, Lincoln, and Rebecca, the last a white sort with egg-shaped berries, and better flavor than some of the others.

"Other subjects consisted of fruit of the Black Walnut, American Chestnut (*Castanea americana*.) Nuts of large size, Siberian Crabs, White Hickory Nuts, Quinces and Capsicums.

"Various examples of cereals, potatoes, onions and carrots, are also included in this magnificent exhibition of Canadian produce. We hope to see more of our Canadian friends' fruit at our exhibitions."

HOW TO TREAT DWARF PEARS.

I have them fifteen years old in my garden, thifty, hardy, productive, and bidding as fair to live the next fifty years as any standard tree upon my grounds. The complaints against these pets of the garden, I am fully persuaded, are owing more to neglect, and mismanagement, than to any inherent difficulty. Some varieties will not flourish on the quince stock. The fruit books will point them out. Do not plant such. They will not be productive on grass land, or in hard inflexible soil. Do not plant them there. They want a deep, rich, mellow border, at least eighteen inches in depth. If you cannot afford to prepare a border, do not purchase dwarf pear trees. In addition to being properly planted, they must have care every season. Now they should be shortened in, about two-thirds of the last season's growth. This keeps them stocky, and prepares them to sustain a great burden of fruit. They also want a barrow full of stable manure put around them every fall. The quince roots cannot go far in search of food. They should have all they can take up within six or eight feet of the tree. With manure and good management dwarf pears will be a success.—*American Agriculturist*.

Domestic.

GENERAL DIRECTIONS FOR MAKING SOUPS.

[We shall occupy a page or two of each number with matters pertaining to Domestic Economy, and shall be obliged for any original communications that are founded on practical experience. Care will be exercised in making selections only from the best accredited authorities. The following information on the methods of preparing soups is taken from Mrs. Beeton's "Book of Household Management;" a recent English publication of acknowledged merit.—Eds.]

LEAN, JUICY BEEF, MUTTON AND VEAL, form the basis of all good soups; therefore it is advisable to procure those pieces which afford the richest succulence, and such as are fresh-killed. Stale meat renders soups bad, and fat is not well adapted for making them. The principal art in composing good rich soup is so to proportion the several ingredients that the flavour of one shall not predominate over another, and that all the articles of which it is composed shall form an agreeable whole. Care must be taken that the roots and herbs are perfectly well cleaned, and that the water is proportioned to the quantity of meat and other ingredients, allowing a quart of water to a pound of meat for soups, and half that quantity for gravies. In making soups or gravies, gentle stewing or simmering is absolutely necessary. It may be remarked, moreover, that a really good soup can never be made but in a well-closed vessel, although, perhaps, greater wholesomeness is obtained by an occasional exposure to the air. Soups will, in general, take from four to six hours doing, and are much better prepared the day before they are wanted. When the soup is cold the fat may be easily and completely removed; and in pouring it off, care must be taken not to disturb the settlings at the bottom of the vessel, which are so fine that they will escape through a sieve. A very fine hair sieve or cloth is the best strainer, and if the soup is strained while it is hot, let the tamis or cloth be previously soaked in cold water. Clear soups must be perfectly transparent, and thickened soups about the consistency of cream. To obtain a really clear and transparent soup, it is requisite to continue skimming the liquor until there is not a particle of scum remaining, this being commenced immediately after the water is added to the meat. To thicken and give body to soups and gravies, potato-mucilage, arrow-root, bread-raspings, isinglass, flour, and butter, barley, rice, or oatmeal, are used. A piece of boiled beef, pounded to a pulp, with a bit of

butter and flour, and rubbed through a sieve, and gradually incorporated with the soup, will be found an excellent addition. When soups and gravies are kept from day to day in hot weather, they should be warmed up every day, put into fresh-scalded pans or tureens, and placed in a cool larder. In temperate weather, every other day may be sufficient. Stock made from meat only, keeps good longer than that boiled with vegetables, the latter being liable to turn the mixture sour, particularly in very warm weather.

Stocks for all kinds of Soups.

Rich Strong Stock.

INGREDIENTS.—3 lbs. of skin of beef, 3 lbs. of knuckle of veal, $\frac{1}{4}$ lb. of good lean ham, any poultry trimmings, 2 oz. of butter, 3 onions, 3 carrots, 2 turnips (the latter should be omitted in summer) lest they ferment, 1 head of celery, a few chopped mushrooms when obtainable, 1 tomato, a bunch of savoury herbs, not forgetting parsley; $1\frac{1}{2}$ oz. of salt, 3 lumps of sugar, 12 white peppercorns, 6 cloves, 3 small blades of mace, 4 quarts of water.

Mode.—Melt the butter in a delicately clean stewpan, and put in the ham cut in thin broad slices, carefully trimming off all its rusty fat; cut up the veal in pieces about 3 inches square, and lay them on the ham; set it on the stove, and stir frequently. When the meat is equally browned, put in the beef and veal bones, the poultry trimmings, and pour in the cold water. Skim well, occasionally add a little cold water, to stop its boiling, until it becomes quite clear; then put in all the other ingredients, and simmer very slowly for 5 hours. Do not let it come to a brisk boil, so that the stock be not wasted, and its colour preserved. Strain through a very fine hair-sieve or cloth, and the stock will be fit for use the next day.

Time, 5 hours.

Medium Stock.

INGREDIENTS.—3 lbs. of skin of beef, or 3 lbs. of knuckle of veal, or 2 lbs. of each; any bones, trimmings of poultry, or fresh meat; $\frac{1}{4}$ lb. of lean bacon or ham, 2 oz. of butter, 2 large onions, each stuck with 3 cloves; 1 turnip, 3 carrots, $\frac{1}{2}$ a leek, 1 head of celery, 2 oz. of salt, 3 lumps of sugar, $\frac{1}{2}$ a teaspoonful of whole pepper, 1 large blade of mace, 1 small bunch of savoury herbs, 4 quarts and $\frac{1}{2}$ a pint of cold water.

Mode.—Cut up the meat and bacon or ham into pieces about 3 inches square; rub the butter on the bottom of the stewpan; put in $\frac{1}{2}$ a pint of water and the meat, cover the stewpan, and place it on a sharp fire, occasionally stirring its contents. When the bottom of the pan becomes covered with a pale firm gravy, add the 4 quarts of cold water, with all the other ingredients; and simmer very gently for 5 hours. As we have said before, do not let it boil quickly. Remove every particle of scum while it is doing, and before putting it away in the larder, strain it through a fine hair-sieve.

This stock is the basis of many of the soups afterwards mentioned, and it will be found quite strong enough for ordinary purposes.

Time, 5 hours.

Economical Stock.

INGREDIENTS.—*The liquor in which a joint of meat has been boiled, say 4 quarts; trimmings of fresh meat or poultry, shank-bones, &c., roast beef bones, any pieces the larder may furnish; vegetables, spices, and the same seasoning as in the foregoing recipe.*

Mode.—Let all the ingredients simmer gently for 5 hours, taking care to skim carefully at first. Strain the stock off, and put it by for use.

Time, 5 hours.

White Stock.

INGREDIENTS.—*4 lbs. of knuckle of veal, any poultry trimmings, 4 slices of lean ham, 1 carrot, 2 onions, 1 head of celery, 12 white peppercorns, 1 oz. of salt, 1 blade of mace, 1 oz. of butter, 4 quarts of water.*

Mode.—Cut up the veal, and put it with the bones and trimmings of poultry, and the ham, into the stewpan, which has been rubbed with the butter. Moisten with $\frac{1}{2}$ a pint of water, and simmer till the gravy begins to flow. Then add the 4 quarts of water with the remainder of the ingredients: and simmer for 5 hours. After skimming and straining it carefully through a very fine hair-sieve, it will be ready for use.

Time, 5 $\frac{1}{2}$ hours.

Note.—When stronger stock is desired, double the quantity of veal, or put in an old fowl. The liquor in which a young turkey has been boiled is an excellent addition to all white stock of soups.

To Clarify Stock.

INGREDIENTS.—*The whites of two eggs, $\frac{1}{2}$ pint of water, 2 quarts of stock.*

Mode.—Supposing that by some accident the soup is not quite clear, and that its quantity is 2 quarts, take the whites of 2 eggs, carefully separated from their yolks, whisk them well together with the water, and add gradually the 2 quarts of boiling stock, still whisking. Place the soup on the fire, and when boiling and well skimmed, whisk the eggs with it till nearly boiling again; then draw it from the fire, and let it settle, until the whites of the eggs become separated. Pass through a fine cloth, and the soup should be clear.

Note.—The rule is, that all clear soups should be of a light straw-colour, and should not savour too strongly of the meat; and that all white or brown thick soups should have no more consistency than will enable them to adhere slightly to the spoon when hot.

Carrot Soup.

INGREDIENTS.—*4 quarts of liquor in which a leg of mutton or beef has been boiled, a few beef bones, 6 large carrots, 2 large onions, 1 turnip, seasoning of salt and pepper to taste, 3 lumps of sugar, cayenne.*

Mode.—Put the liquor, bones, onions, turnip, pepper and salt, into a stewpan, and simmer for 3 hours. Scrape and cut the carrots thin, strain the soup on them, and stew them till soft enough to pulp through a hair-sieve or coarse cloth; then boil the pulp with the soup, which should be about the consistency of pea soup. Add cayenne. Pulp only the red part of the carrot, and make this soup the day before it is wanted.

Time, 4 $\frac{1}{2}$ hours: *Seasonable* from October to March. *Sufficient* for 8 persons.

Celery Soup.

INGREDIENTS.—*9 heads of celery, 1 teaspoonful of salt, nutmeg to taste, 1 lump of sugar, $\frac{1}{2}$ pint of strong stock, a pint of cream, and 3 quarts of boiling water.*

Mode.—Cut the celery into small pieces; throw it into the water, seasoned with nutmeg salt, and sugar. Boil it till sufficiently tender: pass it through a sieve, add the stock, and simmer it for half an hour. Now put in the cream, bring it to the boiling point, and serve immediately.

Time, 1 hour.

A good Family Soup.

INGREDIENTS.—*Remains of a cold tongue, 2 lbs. of shin of beef, any cold pieces of meat or beef-bones, 2 turnips, 2 carrots, 2 onions, 1 parsnip, 1 head of celery, 4 quarts of water, $\frac{1}{2}$ teaspoonful of rice; salt and pepper to taste.*

Mode.—Put all the ingredients in a stewpan and simmer gently for 4 hours, or until all the goodness is drawn from the meat. Strain off the soup, and let it stand to get cold. The kernels and soft parts of the tongue must be saved. When the soup is wanted for use, skim off all the fat, put in the kernels and soft part of the tongue, slice in a small quantity of fresh carrot, turnip, and onion; stew till the vegetables are tender, and serve with toasted bread.

Time, 5 hours. *Seasonable* at any time. *Sufficient* for 8 persons.

Gravy Soup.

INGREDIENTS.—*4 lbs. of skin of beef, a piece of the knuckle of veal weighing 3 lbs., a few pieces of trimmings of meat or poultry, 3 slices of nicely flavoured lean ham, $\frac{1}{2}$ lb. of butter, 2 onions, 4 carrots, 1 turnip, nearly a head of celery, 1 blade of mace, 6 cloves, a bunch of savoury herbs, seasoning of salt and pepper to taste, 3 lumps of sugar, 3 quarts of boiling soft water. It can be flavoured with ketchup, Leamington sauce, or Harvey's sauce, and a little soy.*

Mode.—Slightly brown the meat and ham in the butter, but do not let them burn. When this is done, pour to it the water, put in the salt and as the scum rises take it off; when no more appears, add all the other ingredients, and let the soup simmer slowly by the fire for 6 hours, without stirring it any more from the bottom: take it off, and pass it through a sieve. When perfectly cold and settled, all the fat should be removed, leaving the sediment untouched.

which serves very nicely for thick gravies, hashes, &c. The flavourings should be added when the soup is heated for table.

Time, 7 hours. Seasonable all the year. Sufficient for 12 persons.

Poultry.

ILLNESS IN FOWLS.

Most illnesses are caused by bad constitution, and this is the result of accidents, the causes of which are unknown; sometimes they come from feeble parents, from lack of care and insufficiency of food during growth, or continued ill treatment. But whatever may be the determining cause of illness in a fowl, it is not less true that if there is a desire to cure it, it will take as much science, as much care, and as much expense as a sick horse. As this is next to impossible, the shortest and simplest of all remedies is to cut the patient's throat; you will thereby get rid of an unproductive animal, capable of only propagating in the poultry-yard the disease with which it is infected. When robust birds become ill, it is always caused by dirty water or houses, or by infection bred in the small spaces wherein they are confined, or by the lack of substance they would find if they were at liberty.

It is, then, by the hygienic cares of every description that are pointed out in this work that we must prevent those attacks, which very often become contagious, causing serious damage on large farms, and irreparable loss to amateurs. Some useful indications may in certain cases help preserve a valuable animal.

The most frequent maladies are nasal catarrh (discharge from the nostrils), canker on the tongue and in the throat, and lastly ophthalmia. These affections are almost always indications of bad or vitiated constitution; they may also be caused by draughts, by infected houses or tainted pens, or by unwholesome food or water; and in delicate breeds, such as the Creve Cœur, Hamburgh, and Dorking, by a simple change of locality or habits. In the first case it is almost curable, and in the other it is absolutely necessary to isolate the patients or to lot them in pens, twos or threes of small-floored compartments kept very clean and sanded. The nostrils, the eyes, and the interior of the beak should be washed every morning with slightly acidulated water. If canker produces a thick or hard sticky discharge, it should be removed with a sharp wooden spatula; the place should be washed, and, if possible, cauterised with nitrate of silver. Refreshing food, such as millet, dough made of rye flour, grass, and very clean water, complete the treatment. As fast as the birds are cured they are let out to regain strength and vigor in those places where there is the greatest amount of vegetation.

A barbarous custom, as ridiculous as it is inhumane, consists in tearing off the horny tip

of the tongue in order to cure the malady called the pip, and which is only canker or *aphte*. This substance is as natural to the tongue as the nail is to the finger. I have seen people take a sick hen, examine the beak, then, seeing it was sufficient from canker or *aphte*, take a pin and tear off the end of the unhappy patient's tongue. As a precautionary measure all the birds in the yard were examined. As they all had the horny tip, it was settled all were about to suffer from the canker, and then all hands set to work to mutilate the entire poultry yard. The wound it causes is long in healing, and sometimes incurable. One of the most dangerous maladies, because, in time, and almost imperceptibly, it will invade a whole yard, young and old, is a disease I will call the *white*: or sort of itch, evidently caused by invisible "vegetations," which appear first on the feet, on the combs, on the wattles, on the cheeks, and on the deaf-ears, in the form of small flour covered patches. These patches extend and thicken till they stop the ear, form crusts on the face, make holes in the legs, raise up the scales, and cause them to fall, and at last invade the whole animal. As soon as the appearance of white is ascertained, a remedy is at hand which is a certain specific. It is merely sulphur ointment, the recipe for which is powdered or flowers of sulphur and lard or hog's fat in equal quantities. These two substances thoroughly kneaded together for a long time will form a very thick ointment, which should be abundantly applied. If the white is of old date and very floury, a cutting instrument should be used, and the parts scraped with it to the quick, even in the most difficult places; the ointment should be abundantly applied, and renewed every third day, till a cure is effected.

The ointment should be applied wherever it is necessary, care being taken to raise the feathers in layers, all over. Gout makes a direct appeal to the fatal knife, the same may be said for consumption, chilblains, convulsions and fractures. To conclude with a general rule, every fowl sick of any malady should if a cure is desired, be put by itself, and fed as has been described. I have almost always found this successful without any other treatment.—From *M. Jacque's Work on Poultry*.

FEEDING HENS IN WINTER.

The following is furnished the *American Agriculturist* by a correspondent:

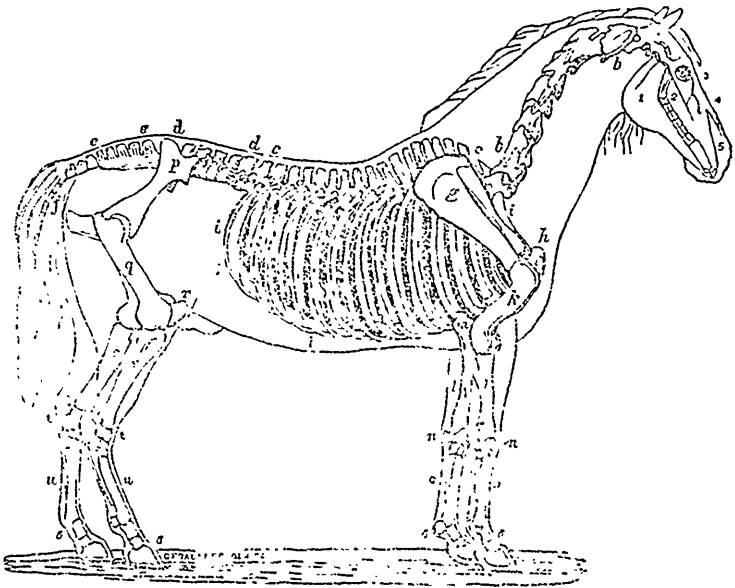
"I have twenty-eight chickens, large and small, several of them fall chickens. I obtained but a few eggs in the fore part of the winter—not more than one or two a day. The feed was corn and oats. In January I tried the experiment of hot feed once a day, in the morning. As soon as the fire was started in the cook stove, I put a quart or so of small potatoes in an old dripping-pan, and set them in the oven. After breakfast I took a quart or more of wheat and buckwheat bran, mixed, put it in the swill-pail,

and mixed into thin mush with boiling water, then added about one quart of live coals from the stove, and put in the potatoes hot from the oven, adding all the egg shells on hand, and sometimes a little salt, and sometimes a little sulphur. These mashed together, are fed immediately in a trough prepared for that purpose, make about ten feet long, of two boards six inches wide, nailed together, and two short pieces nailed on the ends, with a narrow strip nailed lengthwise on the top, and two bearers under. The object of this was to keep the hens out of the trough, and leave room to eat each side of

the narrow strip. At noon I fed six ears of corn cut up in pieces an inch long; and in the evening oats and wheat screenings about a quart. Now for the result. In about a week the number of eggs increased six fold, and in about two weeks, and since, they have ranged from twelve to twenty eggs per day. The coldest weather made no difference. When it was cold and stormy I kept them in the henhouse all day, and generally until ten or twelve o'clock. Such singing over the corn at noon I never heard from hens before—a concert of music that would have done any lover of eggs good to hear."

Veterinary Department.

Conducted by A. SMITH, V. S.



THE HORSE.

Of all domesticated animals the horse may be said to rank the highest, and presents the greatest number of different breeds, and varying in size and strength, perhaps, more than any other quadruped. What a contrast to behold the majestic dray horse weighing two thousand pounds, side by side with the Shetland pony; and yet both sharing that symmetry of form, combined with docility and power of endurance, unequalled by any other of the lower animals, and both so well suited for the duties they are required to perform.

The above cut represents the skeleton of the Horse, and the following remarks will be confined to the osseous system and description of the skeleton.

Bones, or the osseous system, are a solid framework in the animal structure, and are the

hardest, and in a state of health, the most sensible substances in the entire body. They differ in their form, size and strength, according to the situation and importance of the position which they occupy; some serving as pillar support, as the legs, others for the protection of delicate organs, and all affording attachment to the softer parts. Bone is the result of a combination of certain organic salts with a pre-existing animal basis possessing a certain degree of hardness and elasticity. To the inorganic earthy matter bone owes its hardness, and to the animal matter its toughness and elasticity.

The earthy and animal matters are ultimately blended together, in the proportion of thirds earthy to one-third of animal. These substances by certain processes can be separated if bone is immersed in Hydro-chloric acid for a space of time the earthy matter will be dissolved out, the animal matter retaining the shape of the bone; again if a bone is exposed to a

heat with free access of air the animal matter will be burned out.

Analysis of Bone.

The earthy matter consists of	
Phosphate of Lime.....	51.04
Carbonate of ".....	11.30
Fluoride of Calcium.....	2.00
Phosphate of Magnesia.....	1.16
Chloride of Sodium.....

The animal matter is composed of	
Chondrine.....	32.17
Fat.....	1.13

The above is the analysis of healthy bone, in disease the constituents vary. In young animals the bones of the legs sometimes bend very much, this occurrence is owing to a deficiency of earthy matter, and is common in foals and dogs. In old age the bone becomes more brittle and in some cases quite fragile, this arises from a decrease of animal matter.

The bones of the horse are two hundred and forty two in number, and form what is termed the skeleton. In studying the skeleton anatomically, for description it is divided into Head, Trunk, and Extremities.

The trunk consists of the vertebral column, ribs, sternum and pelvis, the vertebral column is made up of a number of single bones termed vertebrae, united to one another by an elastic cartilaginous substance. This column is subdivided into four regions, viz., (B B) the cervical, or those of the neck, (C C) the dorsal, or those of the back; the lumbar, those of the loins; and (E E-F) the sacro coezygeal including sacrum and bones of the tail.

Each region possess certain characters peculiar to itself—a true vertebra has a body, an arch; spinous, oblique, and transverse processes, a hole called the vertebrae foramen, through which passes the spinal cord.

The vertebrae of the neck, or cervical, are seven in number, they possess much longer and larger bodies, than any other vertebrae. The dorsal, or those of the back, are eighteen in number, and are the principal agents in supporting weight, their bodies are smaller than those of any other vertebrae and are short, thick, and somewhat circular—the spinous processes are long and flat—the spine of the first is the shortest, gradually increasing in length to the fifth, which is termed the point of the withers; from the fifth to the thirteenth they gradually decrease in length and incline backwards. The vertebrae of the loins or lumbar are shorter in their bodies in proportion to the size of the horse than in any other animal, they are six in number and are more symmetrical in form than the vertebrae of either the back or neck.

The sacrum or rumpbone in the foetus is made up of five distinct bones, united by fibro cartilage, in the adult becoming ossified, it forms the superior part of the pelvis, P. The pelvis is formed by two bones called the ossa inominata, situated one on each side of the spine, The oss incinata is made up of three bones joined

together at the acetabulum, the three bones forming it are the ilium, ischium, and pubis. The upper part of the ilium is broad and expanded, forming what is called the haunch or hip bone, and terminating anteriorly in four eminences; of the two larger, one is called the superior, the other the inferior anterior spine; the others are called tubercles, and are all for the attachment of the large muscles which occupy this region. When the superior anterior spine is knocked off the horse is said to be hipped.

The lower part of the ilium forms with the ischium, and pubis a cavity called the acetabulum which unites with the head of the Femur (Q) or whirlbone forming the hip joint.

The ischium is flat and quadrilateral in shape, and extends from the acetabulum backwards, terminating in a prominence called the tuberosity of the ischium, this part is often knocked down from blows, &c., giving rise to a flat appearance of the hind quarters. The pubis forms the centre part of the pelvis, the juncture of the two is called the symphysis pubis.

Connected with the vertebral column are the ribs (iii). These consist of a series of bony arches usually thirty-six in number, eighteen on either side; occasionally there exists thirty-eight and even forty ribs; they are divided into two classes, true or sternal, false or asternal. The true ribs are those whose cartilages are inserted into the sternum or breast-bone, eight in number. The false are only connected with the sternum through the intervention of others. The upper extremity of each rib is divided into three parts, head, neck, and tubercles; between the head of each rib and the body of the vertebrae there exists a true synovial joint. Running along the posterior border of all the ribs, with the exception of the first is a groove in which lie the intercostal bloodvessels and nerves.

The extremities are divided into fore and hind, the fore extremity consists of (G) the scapula, (K) humerons, (L) radius, (M) ulnas, (N) carpus or knee, corresponding to the wrist in the human subject, (O) the metacarpal or shank bones and (6) bones of the pastern and foot.

Editorial Notices, &c.

The British Reviews:—

We have received, through Mr. Rowsell, of this city, the American Edition of the current numbers of the *London Quarterly*, the *Edinburgh*, and the *North British Reviews*. In these able exponents of British literature, science and politics, the reader is kept acquainted with the state and progress of all great questions affecting the political, social, and moral condition of mankind generally. Each of these Reviews has a characteristic article on the great American conflict in the current numbers.

that will be read with much interest on this side of the Atlantic. *Blackwood's Magazine* for November likewise contains a vigorously written article on the same topic. We have so frequently recommended this cheap and excellent reprint of the leading British Reviews that a mere statement of the contents of the numbers now lying before us will suffice.

The *London Quarterly* contains eight articles:—*Les Miserables*; *The Platonic Dialogues*; *Modern Political Memoirs*; *Belgium*; *The Waterloo of Thiers*; and *Victor Hugo*; *Aids to Faith*; *China—the Taiping Rebellion*; and *The Confederate Struggle and Recognition*.—The *Edinburgh* has eleven articles:—*Solar Chemistry*; *The Herculanean Papyri*; *The Mussulmans in Sicily*; *The Supernatural*; *The English in the Eastern Seas*; *The Legend of St. Swithin*; *Life of Edward Irving*; *The Mausoleum at Halicarnassus*; *Hops at Home and Abroad*; *Prince Eugene of Savoy*; *The American Revolution*.—The *North British* has nine articles, viz.: *Christian Individuality*; *The Austrian Empire in 1862*; *Poems by A. H. Clough*; *Assimilation of Law*; *France and Scotland*; *Popular Prophectical Literature*; *Syria and the Eastern Question*; *St. Clement's Eve*; *The American Conflict*.

The price of each Review is \$2; or with *Blackwood's Magazine*, \$5. The four Quarterlies and *Blackwood's* monthly, for \$10: a sum scarcely equal to one third of the published price in Britain. New York: Leonard Scott & Co., 79 Fulton street; and the principal Booksellers throughout Canada.

THE RURAL ANNUAL AND HORTICULTURAL DIRECTORY. Rochester, N. Y. Joseph Harris. 1863.

This neat little volume forms the eighth of the series, and to say that it is not one whit behind—whether in matter or execution—the best of its predecessors, is to award no small meed of praise. It consists of 100 well printed pages, profusely illustrated by wood-cuts, and treats on numerous subjects relating to the farm and garden, domestic economy, and rural affairs generally. The price for a single copy is only 25 cents. Clubs or dealers, by taking quantities will be supplied at the usual discount, by applying to Mr. Harris of the *Genesee Farmer*, Rochester, N. Y.

THE JOURNAL OF THE BOARD OF ARTS AND MANUFACTURES FOR UPPER CANADA.

We have much pleasure in calling the attention of our readers to this useful and well conducted periodical. In order to increase its circulation among the mechanical and manufacturing classes of all descriptions, the Board has resolved on lowering the subscription to 50 cents per copy for the year, or 11 copies for \$5. It is published monthly, under the able editorship of Professor Hind, and our agricultural societies could confer a benefit on their members—especially the mechanical portion of them—by encouraging the circulation of this interesting and valuable serial. Communications should be addressed to Mr. William Edwards, Secretary of the Board of Arts and Manufacturers, Toronto.

GALLOWAY CATTLE.—The Galloway cattle have apparently proved themselves well suited to the climate and other circumstances of Canada. They are thrifty and hardy, produce a good carcass of excellent quality of beef, and yield a very fair quantity and quality of milk. These cattle have a strong and vigorous constitution, and being a distinct breed, when crossed with another breed they frequently impress their characteristics upon the produce so strongly as to render it difficult for any but the most experienced judges to distinguish the first cross from the pure bred animal. This circumstance renders deception, should any be disposed to practice it, in the sale or exhibiting of animal of this breed, comparatively easy; and the purchaser of such half-bred animals, with the intention of breeding from them would be grievously disappointed in the result, for the next produce from them would soon exhibit evidences of the intermixture of blood. It is with the view of devising a system by which the pedigrees of Galloway cattle can be collected and registered, and thus enable purchasers to obtain certificates of pedigree in which they can place confidence, that a meeting of Breeders and owners has been called, which will be found advertised in another column.

LAST YEARS' VOLUME.—In answer to a correspondent, we beg to say that we have still a good many copies of last years' volume on hand as also of the preceding year, 1861.

THE CANADIAN AGRICULTURIST
AND JOURNAL OF THE
BOARD OF AGRICULTURE
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EDITORS:

Professor Buckland, University College, Toronto. Hugh C. Thomson, Secretary Board of Agriculture of Upper Canada. Andrew Smith, Licentiate of the Edinburgh Veterinary College and Consulting Surgeon to the Board of Agriculture of Upper Canada.

All orders to be addressed to the Secretary of the Board of Agriculture, Toronto.

BOARD OF AGRICULTURE OFFICE.

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THE UNDERSIGNED, Breeders of Galloway Cattle, feeling the importance of maintaining the reputation of the Herds of this valuable Breed in Canada for purity of descent, and it being necessary to this end that the true Pedigrees of the animals of pure blood now in, or which may hereafter be in the Province, should be carefully preserved and registered in a permanent form for reference, hereby request all the Breeders and owners of Galloways in Upper Canada, to attend a meeting at the Rooms of the BOARD OF AGRICULTURE, Toronto,—

On WEDNESDAY the 4th day of FEBRUARY next, at noon, for the purpose of arranging a system of co-operation in carrying out this object.

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The course will commence on *Wednesday, January 21st*, 1863, and continue for about six weeks. Three Lectures a day, and *no fees*.—The subjects treated of will comprise:—

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

A SMITH, Licentiate of the Edinburgh Veterinary College, and Veterinary Surgeon to the Board of Agriculture of U. C., begs to return his thanks to the Public generally for their support since opening the above mentioned establishment, and respectfully solicits a continuance of the same.

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